

Worcester Polytechnic Institute  
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OCTOBER 1975

# WPI Journal

V. 79 #2

**WORCESTER POLYTECHNIC INSTITUTE**

**APPLICATION FOR ADMISSION**

Please Print

Please return completed form and \$20.00 non-refundable application fee to:  
Admissions Office  
WPI  
Worcester, Mass 01609

Freshman applicant for entrance term 19 to 19

Transfer applicant for entrance term 19 to 19

Name: Last                      First                      Middle & Initial                      Phone (                      )                                                               

Home Address                                                                City                      State                      Zip                     

Current Mailing Address                                                                City                      State                      Zip                     

Date of Birth                      Height                      Weight                      Vision                      Social Security No.                                                               

Present Secondary School                                                                City                      State                      Zip                     

I will not enroll for credit or receive the Commission award if you have or intend to have a suspension or withdrawal from a college or university. Withdrawal or failure to enroll for all of your remaining terms of enrollment.

**FAMILY INFORMATION**

Father's Name                                                                City                      State                      Zip                     

Mother                                                                City                      State                      Zip                     

Occupation                                                                Home Address                                                                City                      State                      Zip                     

Name of Business                                                                Position or Title                                                               

College(s) attended                                                                Address                                                                City                      State                      Zip                     

Degree                                                                Degree                                                               

Home Address                                                                City                      State                      Zip                     

Position or Title                                                                Degree                                                               

Home Address                                                                City                      State                      Zip                     

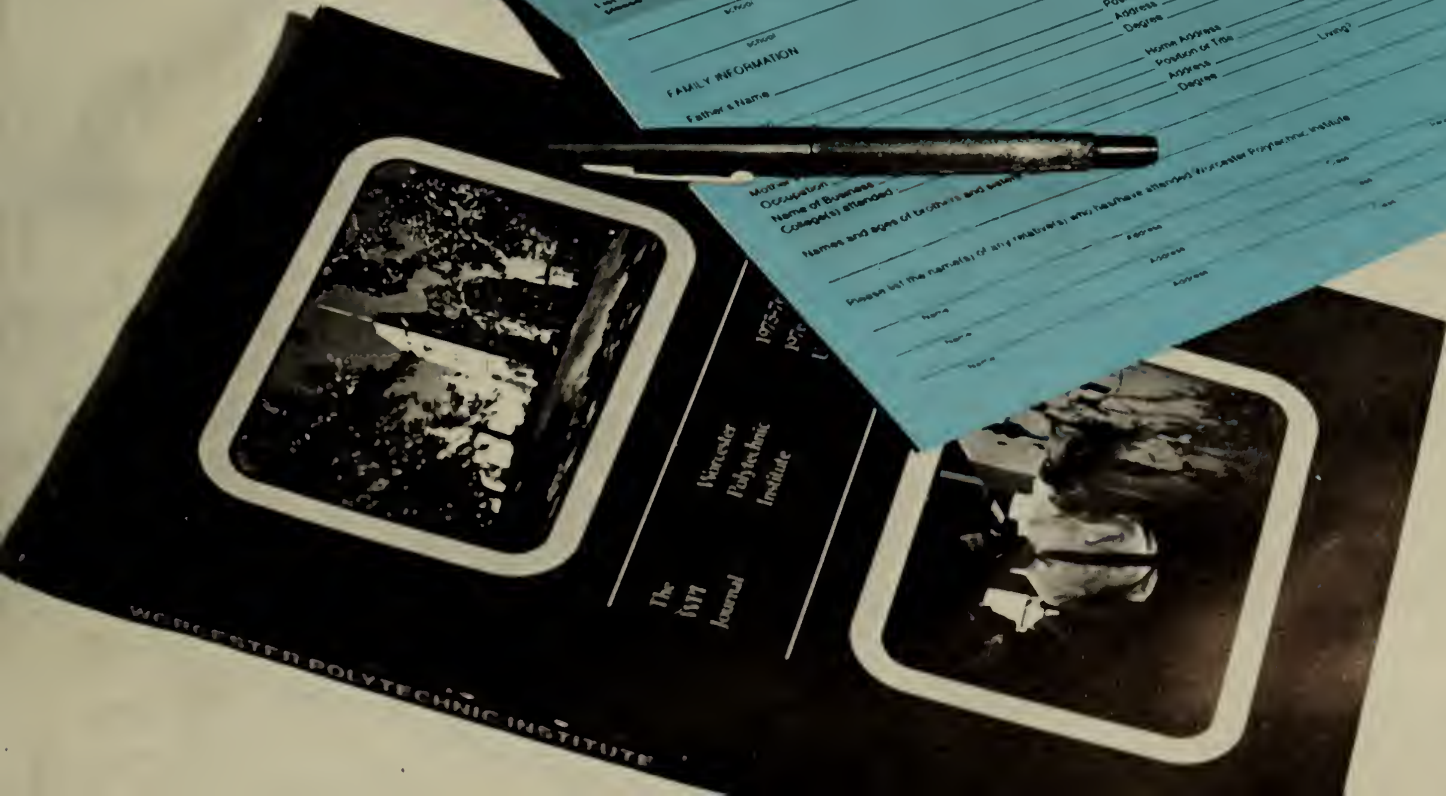
Position or Title                                                                Degree                                                               

Please list the names(s) of any teachers and teachers who have attended Worcester Polytechnic Institute

Name                                                                Address                                                                City                      State                      Zip                     

Name                                                                Address                                                                City                      State                      Zip                     

Name                                                                Address                                                                City                      State                      Zip                     





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## WPI ALUMNI ASSOCIATION

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by the editor

## landmark and a tradition olen . . . and some other things, too

st issue, we ran a story here about dismantling of Boynton Hall's flagpole, and we also printed a picture of WPI's two towers in all their beauty. The flagpole died a natural death of old age and was quietly put away. Now the ornament on the other tower is gone, and not so gently. The arm and hammer weathervane which has stood atop Washburn Shops since 1868 was stolen early in October. The thieves apparently got onto the roof of the building one night, threw a rope up and lashed the vane's base at one of the directional markers. Then they pulled it over until the arm and hammer fell off, and took their booty and left.

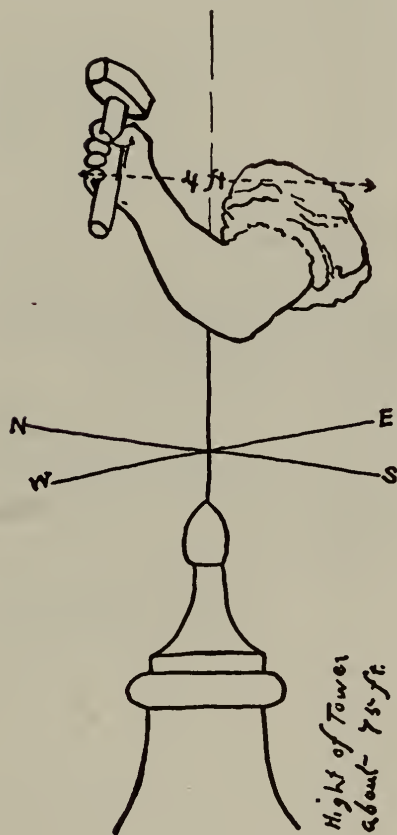
The first question that almost everyone asked was, "Did a student do it?" We just don't know. A year or two ago there was a rash of weathervane thefts throughout New England, some of them done by helicopter. These culminated in the theft of the vane from Faneuil Hall, since recovered. Perhaps the Washburn theft was done for gain and not as a prank. No ransom has been asked for.

The theft was discovered during the morning of October 2, and since then the campus police have been investigating in an attempt to recover the vane. It does not turn up, presumably a replica will be created to take its place atop Washburn's cupola.

The weathervane was designed by Charles H. Morgan for the building. The drawing of it here is a reproduction of his original sketch, taken from the 1877 history, *Seventy Years of the Worcester Polytechnic Institute*. The arm and hammer were adopted as a part of the college seal in 1888.

Actually, it was a bad week for the Institute in other places. On Wednesday, a piece of 19th century embroidery was stolen from the top floor of Gordon Library, where it was on display. According to Albert G. Anderson, head librarian, this is the first theft in the eight years the library has been exhibiting. After discovering the theft, Anderson ordered the rest of the exhibit taken down. Unless he can figure out a way to safeguard future displays, the Library may be forced to cancel its plans for all future exhibits.

And finally, the Physics Department recently discovered the theft of a Nikon autocollimator from Olin Hall. A no-questions-asked reward for its return is being offered.



## What was that?

Where are the trolley doors? Who is Big George? Who are Tuna, Titi, and the Old Bastard? Where on the campus is there a vineyard? Which building is held up by jacks? And which one has gargoyles? What was the score of the 1943 WPI-Harvard football game? To whom is the chairman of the Clark Board of Trustees married?

These and 35 similar questions were part of a scavenger hunt for entering students held during freshman orientation. In teams of five or six, the students spent one evening wandering around campus, vying for the best score.

The informational scavenger hunt was first devised by the Student Affairs Office last year, and it has proved an interesting and entertaining way of introducing new students to some of the traditions and arcane bits of knowledge that contribute to enjoying life at WPI.

## We goofed . . .

In the August issue, we ran a partial list of alumni whose addresses we didn't have. Well, that's what we thought that list was. Unfortunately, it also contained the names of alumni who had died in the past year, as well as "Class of 1934 '34!"

Our records aren't as mixed up as that list was. We know who had died. But in between the hurry of trying to assemble the list as close to publication time as possible, the normal confusion that occurs when a number of the office staff are on vacation simultaneously, and finally a mixup in the computer program that generated the printout—somewhere in all of that we forgot one important checking step and all those wrong names crept through into publication.

The Alumni Office prides itself on the accuracy of its records and the care they take in handling all information relating to alumni. That only makes this mistake that much worse.

On the positive side, we were absolutely amazed at the number of people who discovered our errors and took the time to write or call us about them. Nothing the *Journal* has published before

(except for a questionnaire two years ago) has generated that kind of response. Our thanks to all those people, as well as our apologies to them and to anyone else who suffered any inconvenience or distress or offense.

And you can be sure we'll never let another listing go by without triple-checking it.

### Journal editor gets prize

Ruth Trask, who compiles and writes the class notes for the *Journal*, leads a second life as a successful and now prize-winning free-lance writer. In a recent contest sponsored by the magazine *Writer's Digest*, her short story "Mooney and the Gol Darned Old What's Now"—honest, that's the title—came in 30th place out of thousands of entries. The final judging was by the fiction editor of *The Atlantic Monthly*.



Ruth (who is also wife of Placement Director William Trask) has been actively writing fiction for about three years now, and her work has been published nationally. This second career is a return to one of her former activities, for she holds a BA in creative writing from Middlebury College, and was at one time a campus correspondent for *Mademoiselle*.

It would seem, too, that Ruth's talent runs in the family. Her daughter, Carrie, 17, recently won second prize in a national contest for writing the best conclusion to a TV soap opera which was going off the air. Her 18-year-old daughter Laurie, a freshman at Carnegie-Mellon University in Pittsburgh, is a staff writer for the college paper.



*Please feel free to write the Journal to express your opinions and views on WPI and alumni matters. Those letters which are published may be edited for length or to concentrate on a specific topic. The Journal publishes nearly all letters received.*

### Burning request

*Editor:* I have just read with considerable interest your article "Fire Up Above" published in the August 1975 issue of the *WPI Journal*.

I would like to purchase 100 reprints of this article if you have available.

*Cris H. Schaefer  
Manager of Marketing  
ITT Suprenant Division  
Clinton, Mass.*

### Another limerick

*Editor:* Here's an old limerick written in linguistic protest against the non-phonetic spellings of Worcester, Leicester, etc. It's not original, but it's so old I thought you might find it worth repeating.

There was a young lady from Worcester  
Who ucester crow like a roocester.  
She ucester climb  
Two trees at a time,  
But her sicester ucester boocester!

*Charlie Richardson, '46  
Huntington Station, N.Y.*

### Public vs. private . . .

*Editor:* Although I write this as a private citizen, I am also an alumnus of WPI and an associate dean of engineering at the University of Massachusetts in Amherst.

This letter is in response to that submitted by T. J. Denney of WPI in the August *Journal*. Tech must really be on hard times when its top personnel are willing to become so sloppy in their analyses that they allow false and misleading information to help support cases they make to the public — this time WPI alumni. In his article, Denney says the following:

1. The combined expenditure per student for 1975 is estimated as follows:  
University of Massachusetts  
(Includes medical school)  
\$7,514."

I suspect I know how Denney got his figure but, for the information of those who read the *Journal*, the State-appropriated operating budget for the Amherst campus of UMass for last year was approximately \$70 million and this was for 23,000 students, undergraduate and graduate, making the costs far lower than any of those cited in the article. Denney also overlooked approximately \$250 in required fees charged students over and above the \$300 tuition charge and neglected to comment on the fact that room and board costs are completely carried by the student.

2. "Colleges and universities in the state system are funded by the Commonwealth. The more students they register, the more they get — automatically."

The implication is, of course, that the tuitions revert to the institution and this is incorrect. All tuitions collected revert to the general fund of the Commonwealth. To be sure, in the past, the University was funded on the basis of a 15:1 student to faculty ratio but Denney neglects to note that the support in the critical accounts like equipment, supplies, services, etc., never really did keep pace with the rapidly growing student body although I must admit the faculty salary accounts did. This year, however, legislative and executive actions completely belie the Denney remark.



The whole discussion of public versus private must be taken in historical perspective. I am sympathetic to the private institutions and feel strongly that good ones like Tech must be protected. There are marginal ones that I am not so sympathetic about. But, where were the private schools as recently as 10 years ago?

A Massachusetts Board of Higher Education Report dated January, 1969 indicated that there would be a deficit in spaces for students in higher education of 20,000 in 1969 and that this would increase to 60,000 in 1975 and 113,000 in 1980. Private institutions indicated at that time that they anticipated only limited expansion to accommodate these deficits. It is easy on the basis of hindsight to criticize but any good engineering analysis would have recommended an increase in the size of the public sector under those circumstances. Especially, since at that time, Massachusetts exported (and I believe still does) more students outside the Commonwealth for education than it educates at home. In fact, ten years ago, private institutions were not as philanthropic as they have become today under economic pressures. Tech would have turned up its nose at some of the students we accepted at UMass over the years.

If private education wants public subsidies, it must be willing to forego some privileges in return. We, at UMass, take 95% of our undergraduate student body from the Commonwealth of Massachusetts — Tech considers itself national. We are accountable to the legislative and executive branches of state government for expenditure of our funds — Tech answers only to its trustees.

I regret having to respond so sharply to my alma mater but the words of the good Admiral Cluverius, president of WPI when I was there, still ring in my ears: "Men of Tech, we must always be men of integrity."

Joe Marcus, '44  
Amherst, Mass.

### ... vs. public

*Editor:* You were thoughtful to share with me Mr. Marcus' reply to my earlier letter which appeared in the *Journal*.

Mr. Marcus is quick to point out that the operating budget for the University of Massachusetts last year was approximately \$70,000,000. But he does not include the actual amounts spent: \$78.3 million for operation, \$47.5 million for debt, \$6.9 million for retirement and \$1.7 million for insurance, for a grand total of \$134.4 million of taxpayers' dollars expended. The cost for a full-time-equivalent student was \$5,140. Based on an enrollment of 29,548, the combined taxpayers-student expenditure for the year 1975 was \$7,514.

I was in error in my earlier figure of \$7,514, for it was not annotated to show it as a combined taxpayers-student expenditure. (These figures were compiled by John Silber, president of Boston University, and presented to the Education Committee of the General Court of Massachusetts.)

One of the nagging problems in discussion of tax-supported and independent institutions is the validity of the figures used. I suspect the arguments concerning questions of applying capital expenditures, full-time-equivalent rather than full-time students, and services provided by the state and not charged back to the university will continue. In spite of this, one fact remains perfectly clear. The *cost* of education, whether in private or tax-supported institutions, is approximately the same. The *price* in the tax-supported institutions to the student is \$350.

Mr. Marcus finds fault with the statement that the "Colleges and universities in the state system are funded by the Commonwealth. The more students they register, the more they get — automatically." He goes on to point out that this is related directly to faculty salaries but does not include support in other areas. The legislative Budget Analyst and Research Assistant, responding to a request from Senator James Kelly of the Ways and Means Committee, reported: "Each fiscal year, the legislature appropriates dollars for higher education based on numbers of students." The report goes on to

recommend that dollars for higher education can no longer be appropriated based on enrollment and aggregate totals of proposed new students. It also argues that expansion of public higher education be allowed only after efforts to contract services from private schools are exhausted.

Mr. Marcus' projections for the needs of higher education in the Commonwealth are outdated. He quoted a 1969 report which has since been discarded by educators and planners because of the dramatic changes in birth rates. There were 115,000 live births in 1960, 92,000 in 1970 and 75,000 in 1973. A drop of 40,000 in births per year between 1960 and 1973. Yet \$600 million in new bond issues was appropriated by the General Court to finance further expansion of state-subsidized higher education.

My comments should not be interpreted as being critical of the fine services provided the citizens of this state by the tax-supported educational institutions within it. Clearly, government has met a need which private institutions were unable to fulfill. However, state support of education has been built on a philosophy which guarantees a taxpayers' scholarship to the student whether or not he or she actually needs it. Taxpayers' money has built and supported this system and in the process the private institutions of the Commonwealth, which have served so well for so many years at not cost to the taxpayer, may quickly become an endangered species unless a sound fiscal balance is established between the two systems.

Thomas J. Demey  
Vice President for University  
Relations, WPI





### Committee calls for Trustee nominations

For approximately fifty years, the Board of Trustees of WPI has granted to the Alumni Association the privilege of recommending to the Board three candidates per year for Alumni Term Trustee positions. This provides a total of fifteen alumni members of the Board who serve for a term of five years and may be re-elected once. WPI is fortunate to have one of the largest percentages of alumni on the Board of Trustees among colleges of comparable size in the country.

For the past four years the By-laws of the WPI Alumni Association have provided for a Trustee Search Committee which is charged with the responsibility of recommending annually to the Alumni Council the name of at least one alumnus for each alumni vacancy which exists on the WPI Board of Trustees. The committee is composed of five members representing five decades of alumni. The Alumni Council each May nominates a candidate for each of the three positions and forwards these nominations to the Board itself for election.

In June 1976, Francis S. Harvey, '37, Howard C. Warren, '42, and James J. Clerkin, Jr., '45 will be completing their five year terms on the Board. Only Mr. Warren is eligible for re-election, for Mr. Harvey and Mr. Clerkin have completed two consecutive five year terms and are now ineligible according to the By-Laws.

The By-Laws provide that there are two distinct ways in which alumni may participate in the selection of alumni members of the Board of Trustees. First is the actual proposal of an alumnus to the Alumni Council through the submission of a signed proposal. The mechanics of proposal are threefold. Alumni chapters may propose candidates to the Council by submitting a signed proposal with fifteen signatures or more,

together with a statement by the candidate of his willingness to serve, to the Trustee Search Committee. A second method is for any group of at least twenty-five alumni to propose a candidate by submitting a signed proposal, together with a statement by the candidate of his willingness to serve, to the Trustee Search Committee. For 1976 these proposals must be received by the Trustee Search Committee in care of the Secretary-Treasurer of the Alumni Association on or before November 15, 1975.

The second method for alumni to participate in the Trustee selection process is by suggesting names of alumni directly to the Trustee Search Committee itself. Each year there is a significant input of new names to the committee from which point they are researched and involved by the committee as is deemed appropriate. It is the hope of the committee that a large reservoir of potential candidates who would be honored by this consideration can be maintained. Please contact any member of the Committee with such names or submit the names to Stephen J. Hebert '66, Alumni Secretary-Treasurer, c/o WPI Alumni Office.

The third method is for the Trustee Search Committee itself, which has the responsibility of assuring that there is at least one candidate for each position, to propose candidates.

Formal notice is hereby given that petitions for proposing alumni for positions on the Board of Trustees are now being received and may be received by the Alumni Secretary-Treasurer on or before November 15, 1975. Sample forms for the proposal of candidates are available upon request from the Alumni Secretary-Treasurer.

The Committee thanks all alumni of WPI for their interest and involvement in this most important area which provides for the best possible members to be elected to the Board of Trustees of their Alma Mater. The Committee for the 1975-76 year is composed of C. Eugene Center, '30, Pittsburgh, Pa., Chairman; Francis S. Harvey, '37, Worcester, Mass.; William A. Julian, '49, McLean, Va.; George E. Saltus, '53, Boulder, Colo.; Paul W. Bayliss, '60, Pennington, N.J.; and William J. Hakkinen, '70, Eedyard, Conn.







AD  
1940

ALDER MEMORIAL

# The cycle begins again

*as a new class of entering students begins its WPI stay*



*John Brandon, WPI director of admissions, joined the WPI staff just over a year ago, so the Class of '79, which he describes in this article, is his first class at WPI. Brandon is a graduate of Brown University and holds a master's degree from Stanford.*

by John Brandon

AND THEREFORE, ladies and gentlemen, according to the collective wisdom of the Admissions Office, *you* represent the best class ever at this college."

Any college, any year up until the 1970s. The words rang in our ears, and as freshmen many of us took ever so seriously the responsibilities for achievement implicit in that assessment of us. Not only were we expected to live up to the standards of our chosen alma mater, but now we were told that we would set new and higher standards for future classes to come. That was heady stuff for an 18-year-old.

Unfortunately, however, there were some of us who returned to campus early the next year for cross-country or football practice and inadvertently dropped in on freshman orientation. Our complacent naivete was shattered by hearing the familiar words spoken to the new class: "And therefore, ladies and gentlemen, according to the collective wisdom . . . ."

From the admissions point of view, those were good days indeed. For the past several years, at colleges throughout the land, there have been few "best class ever" discussions. These have been replaced with questions of "Did you fill your entering class?" and "How?" At WPI this year, the class of '79 may indeed be among the best classes ever to enter the college. And it certainly did get filled.

Last year's entering class numbered 520 students. Our goal this year was slightly higher, about 550. We found, though, that we weren't able to "turn the spigot off" quickly enough, and the number of new students stands at 595.

The class of '79 is an interesting aggregate of individuals . . . or an aggregate of interesting individuals, to put it another way. Statistically, they look like this:

- 40% of the class ranks in the top 10% of their high school graduating class.
- More than 80% rank in the top 30% of their high school class.
- 24 states and 14 foreign countries are represented. At a time when geographical distribution is shrinking at most colleges, the number of students from outside the Northeast is growing at WPI. But we are still a very northeastern institution in terms of the homes of the overwhelming majority of the class.



The class is 15% larger than last year's. At other engineering schools, the number of entering students is about the same or slightly greater than last year, indicating a somewhat renewed interest in the field. But none of these institutions that I am aware of has reported an increase of the size we have experienced here at WPI.

There are more women in the new class than any other in WPI's short history of coeducation. And they are an extremely well-prepared group of students. The 65 women include more than half the high school valedictorians and salutatorians entering WPI this fall. Their scores on the math sections of the College Board tests are comparable to those for men students (and as a total group, the median score for the Class of '79 was nearly 200 points higher than the national median for all students taking the exam). The women, however, scored significantly higher on the verbal and composition exams. With a 600 median English composition score, our entering women are the first identifiable subgroup at WPI to achieve that level. Mathematics medians have long been and continue to be in the high 600s, bordering on 700 for the Level II test. (All College Board tests, incidentally, are scored with a maximum of 800 and a minimum of 200.)

One of the new women students, from Norman, Oklahoma, is one of the first fifteen recipients nationwide a scholarship from the Society of Women Engineers.

**B**UT CLASS RANKS and test scores have never told the whole story of an entering class. In assessing their general level of preparedness, Dean of Academic Advising John van Alstyne notes that they include the largest number ever to submit advanced placement exams (college credit for work done while in high school). After having helped them with their initial course selection, Dean van Alstyne credits them with a great deal of self-confidence in coming to grips with the difficult task of designing their college programs.

They're workers, too. Some 40% have held part-time jobs while in school, and the figure nearly doubles if you add in one summer's employment. One-sixth of the class were on the staff of their school newspapers, and they include 21 editors-in-chief. More than a quarter were active in musical organizations. Some 20% were in their student governments, and enough student body presidents entered WPI to make campus politics very interesting indeed if they maintain their interests.

Athletics continues to be the largest nonacademic area of interest. At last count, nearly half the new students had participated in some form of organized or semi-organized sports. Whether or not enough of them wore football uniforms to bring a winning season to WPI is an as-yet unanswered question, but the New York All-City quarterback from Brooklyn Technical High School is going the 595. The undefeated track team has some fine talent coming its way to help in efforts to duplicate last year's record season. The Chess Club should have some interesting times, too, helped by a new student who is ranked among the top 70 players in the United States.

Because of the strong element of self-motivation required of each student under the WPI Plan, academic ability alone is often not enough. For a student to do well and enjoy his educational experience under the Plan, he or she needs a certain amount of maturity, initiative, and curiosity (though this is hardly a comprehensive list). It has been our experience in admissions that one of the best indicators of these factors is prior experience with projects and similar activities. These range from the student who has redesigned the frame of his motocross bike more times than he can remember to a student whose science-fair-winning project took him to national competition with the possibility of a trip to London. Some 20% of the class reported activity like this, and it certainly bodes well for their success at WPI. This year, three students from the Springfield, Massachusetts, area were winners in the state science fair competition. Numbers 1 and 3 have entered WPI; MIT had to settle for number 2.

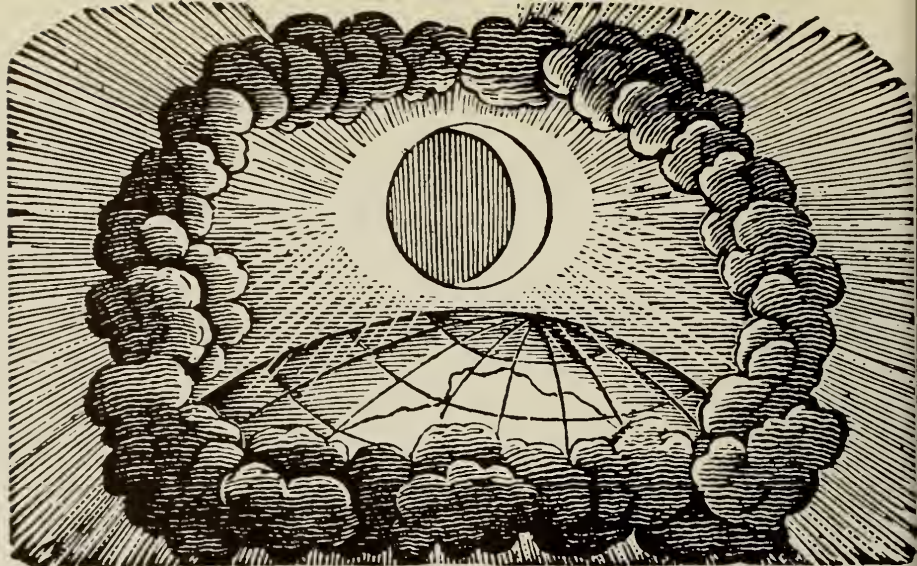
**B**UT WHAT does the admissions picture look like for next year, and for the future? Because of the uncertain state of the economy, a generally declining interest in college-going among young people, and a student-age population that has now peaked in numbers and will decline dramatically in the next decade, it's very difficult to attempt prediction. While it is reasonable to expect that WPI will continue to draw large numbers of students from the Northeast, our goal must be to broaden the potential applicant pool if we are to continue our present success. Our strongest asset is the WPI Plan, which is already instrumental in attracting an extremely high caliber of student and one who sees WPI as a place where he or she can obtain an educational background superior to and different from that available anywhere else.

When the WPI faculty adopted the WPI Plan as the future course of the college, it did so out of the conviction that the traditional engineering and science program could and should be improved upon. The success of the Plan — the professional competence and social awareness of our recent graduates — is increasingly manifest, and that is the real reason we can be optimistic that WPI will prosper and our proud tradition of excellence will continue.

**WPI**

# God and EPA

*as read into the Congressional Record by the Hon. Andrew J. Hinshaw, of California, in the House of Representatives on October 10, 1974.*



In the beginning God created heaven and earth.

He was then faced with a class action lawsuit for failing to file an environmental impact statement with HEPA (Heavenly Environmental Protection Agency), an angelically staffed agency dedicated to keeping the Universe pollution free.

God was granted a temporary permit for the heavenly portion of the project, but was issued a cease and desist order on the earthly part, pending further investigation by HEPA.

Upon completion of his construction permit application and environmental impact statement, God appeared before the HEPA Council to answer questions.

When asked why he began these projects in the first place, he simply replied that he liked to be creative.

This was not considered adequate reasoning and he would be required to substantiate this further.

HEPA was unable to see any practical use for earth since "the earth was void and empty and darkness was upon the face of the deep."

Then God said: "Let there be light."

He should never have brought up this point since one member of the Council was active in the Sierrangel Club and immediately protested, asking "How was the light to be made?" Would there be strip mining? What about thermal pollution?" God explained the light would come from a huge ball of fire.

Nobody on the Council really understood this, but it was provisionally accepted assuming (1) there would be no smog or smoke resulting from the ball of fire, (2) a separate burning permit would be required, and (3) since continuous light would be a waste of energy it should be dark at least one half of the time.

So God agreed to divide light and darkness and he would call the light Day and the darkness Night. (The Council expressed no interest with in-house semantics.)

When asked how the earth would be covered, God said, "Let there be firmament made amidst the waters; and let it divide the waters from the waters."

One ecologically radical Council member accused him of double talk, but the council tabled action since God would be required first to file for a permit from the ABLM (Angelic Bureau of Land Management) and further would be required to obtain water permits from appropriate agencies involved.

The Council asked if there would be only water and firmament and God said, "Let the earth bring forth the green herb, and such as may seed, and the fruit tree yielding fruit after its kind, which may have seen itself upon the earth."

The Council agreed, as long as native seed would be used.

About future development God also said: "Let the waters bring forth the creeping creature having life, and

the fowl that may fly over the earth."

Here again, the Council took no formal action since this would require approval of the Fish and Game Commission coordinated with the Heavenly Wildlife Federation and the Audubongelic Society.

It appeared everything was in order until God stated he wanted to complete the project in 6 days.

At this time he was advised by the Council that his timing was completely out of the question . . . HEPA would require a minimum of 180 days to review the application and environmental impact statement, then there would be public hearings.

It would take 10 to 12 months before a permit could be granted.

God said, "To Hell with it!"



# Frank DeCaria has helped provide a better home for thousands of fish in Old Hickory Reservoir.

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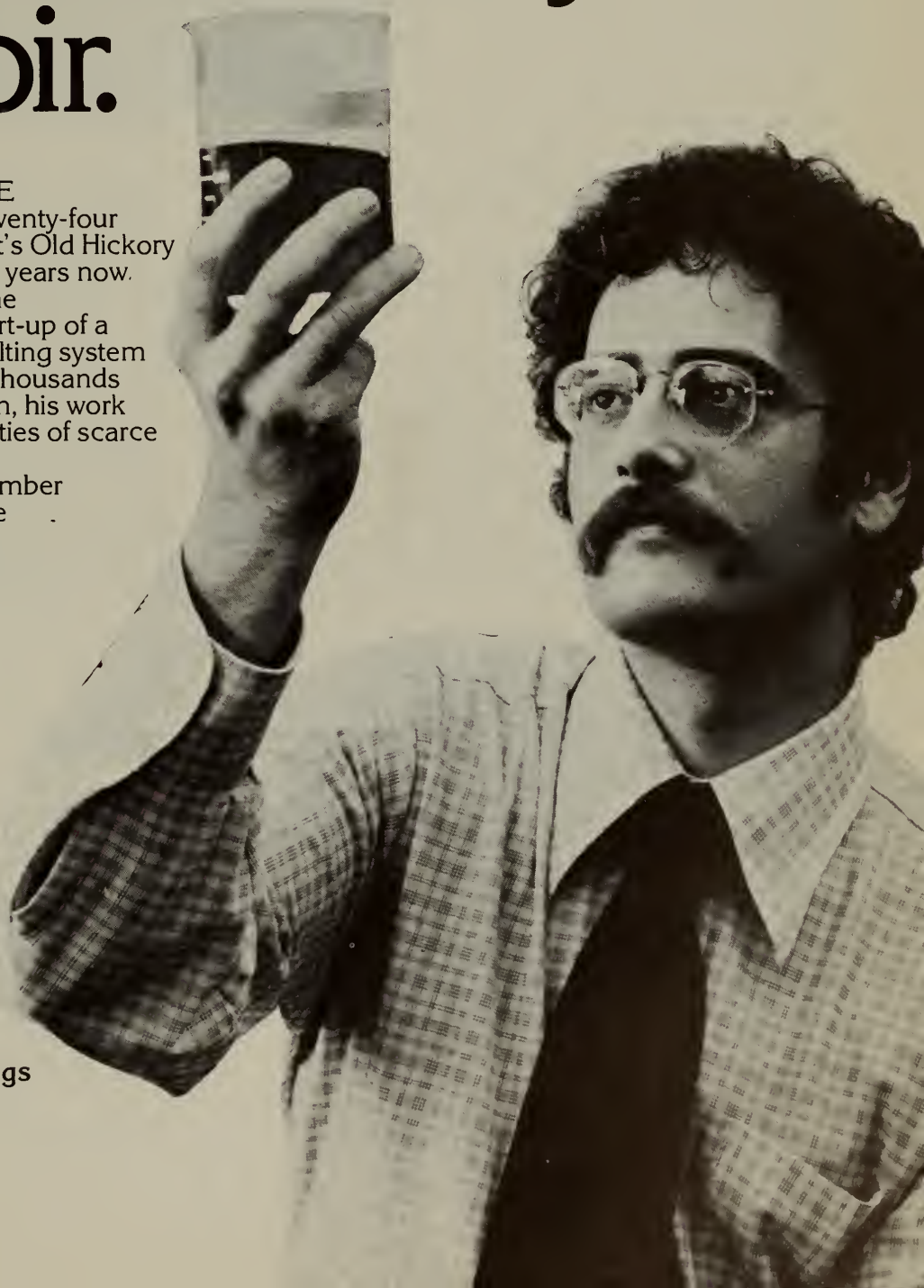
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# From kosher catering to WPI and back again

**I**F THE WOMAN WHO LIVED IN THE SHOE had married Ronald Sarver, '74, she never would have needed to worry about feeding all those children before they went to bed. Ronnie's Catering, Inc., and Ronnie's Kosher Deli & Restaurant, businesses which Sarver owns and operates in Randolph, Mass., would take care of it all.

Sarver serves thousands of people every week through his various enterprises. Nearly 800 people eat at his restaurant every day. Over Memorial Day weekend, he served 4,200 at a regular round-robin of weddings, parties, and Bar Mitzvahs which he catered all the way from Greater Boston to Worcester.

"We had to rent four extra trucks to keep up with the deliveries over the weekend," Sarver says, "even though we have trucks of our own. And we had to employ 88 extra people as part-time help."

At these special occasions the spread is considerably more lavish than chicken soup and bagels. "At a typical Jewish wedding we go all out," he declares. "Customers usually want fourteen appetizers, fresh fruit, roast prime ribs of beef, baked potato, asparagus, fancy fondues, and flaming desserts." Sarver usually presides himself at the biggest affairs, resplendent in red jacket, blue ruffled shirt, and spanking white bow tie. He is a stickler for detail. The hot foods must be hot; the cold foods cold. The service has to be fast, courteous, and performed with a smile; the cleanup, quick.

"Just handling the logistics for this business keeps me going about 70 hours a week," says Sarver, who never finds time to clock-watch, and who tools around the state in a telephone-equipped Mercedes Benz so that he can keep on top of things.

Ronnie Sarver has been on top of things ever since he turned 12 and got a sub shop summer job at Nantasket Beach. At 16 he started his own catering business in Hull. This was purely a home-based operation until one day his mother returned home and discovered that most of her furniture had been moved against the walls and that her kitchen was overflowing with knishes, pastrami, varieties of rye and cissel, and roast beef. The living room was stacked with paper goods. "She evicted me," Sarver chuckles.

In order to get his growing business under cover, he rented an abandoned store on Nantasket Avenue in Hull—a move which brought him immediate success when he advertised chicken or brisket dinners for \$1.75. By the time he graduated from high school, customers were standing long lines waiting to eat everything he had to offer.

Sarver took his catering know-how along with him to WPI, where he began studying mathematics with the thought of someday becoming an actuary. At Tech he was in complete charge of meals and housing at Higgins House when students lived there. "But outside catering kept becoming a bigger and bigger part of my life," he recalls. "I was studying in Worcester and catering in Hull. It got to be pretty hectic."

While still a student he was grossing \$20,000 a year and even had the good fortune of winning \$2,500 in the state lottery. (That \$2,500, plus interest, is still in the bank.) "I took a real ribbing about winning the lottery," he laughs, especially since I had just upped my sandwich prices by 10 cents."

Finally, half way through his junior year, Sarver left WPI. It was obvious that his future didn't lie with the study of math. Also, he says, "the business kept rolling in so fast I couldn't keep up with it. And the time was right. People in catering were retiring and good opportunities were coming up."

**S**ARVER HAS NEVER regretted his days at WPI, however. "Being exposed to an engineering way of thinking has helped me immensely," he declares. "I can look at things more logically and work out problems that never would have been able to solve otherwise."

A case in point is his new commissary in Randolph, which he personally designed. "The contractors probably all ended up hating me," he admits. "I knew just what I wanted, where I wanted it installed, and why."

He smiles. "What mechanical knowledge I gained at Tech has come in handy, too. Especially when something like the cash register, the coffee urn, or the dishwasher goes on the blink. I can usually fix appliances myself, on the spot, or I can tell the repairman what is wrong and how to fix it. You'd be surprised how few caterers have this kind of know-how. It really gives me an advantage."





Ronnie's mother, Judith, supervises the kitchens and has passed on favorite recipes which her mother created when she was the cook at the old Rose Gordon Hotel in Nantucket. Advice, too, comes from his father, Samuel, who is with Boston meat suppliers Morrison & Schiff. His twin brothers have delicatessen backgrounds. On especially busy weekends everybody pitches in, including his aunt and (another) uncle and his older sister. "One could honestly say that this business is 'all in the family,'" he quips.

Ronnie's Catering, Inc., is not like the usual catering service. "It's strictly kosher," reports Sarver. "Still, about 75 percent of our restaurant clientele and 10 percent of our catering clientele is non-Jewish," he adds.

With a twinkle in his eye, Ron recalls one young man who attended a function that he was catering. The menu was sumptuous, as usual, and the guest looked longingly at the food on display, but he didn't take anything to eat. "What's the matter," Sarver asked. "Why aren't you eating?"

"Oh," groaned the man, "I can't. This food is kosher and I'm Catholic."

Sarver laughed and told him about all the non-Jewish people who have eaten his food. The guest breathed a sigh of relief and filled his plate.

Because it is kosher, Sarver's establishment is under rabbinical supervision and has been approved by the Kashruth Commission of the Associated Synagogues of Massachusetts. In kosher restaurants either a meat or dairy menu may be used exclusively to avoid the possibility of dairy and meat utensils getting mixed. Sarver says, "Ronnie's serves only meat products. You cannot get a hot dog and cream cheese (only margarine), a glass of milk, or anything dairy at my restaurant."

In the Boston area many Orthodox Jews still adhere to the kosher tradition. Sarver judges that in recent weeks he purchased some 300 pounds of chopped liver, 1000 pounds of corned beef, and 600 roasting chickens to meet the demand. He also provides food for students keeping

kosher at M.I.T. with the students heating the food themselves in their own kitchen. "It's one of the few kosher kitchens in New England on a college campus," Sarver reveals. "And we give them a bonus. We make kosher Chinese food for them by substituting veal for pork and making chicken 'wonton' soup."

Sarver has had other unusual jobs. He has catered for former Massachusetts governor Sargent in a private home in Randolph, at a reception for opera star Jan Peerce when he was appearing at the South Shore Music Circus. He's also served famed trial lawyer F. Lee Bailey and guitarist Harry Chapin.

Ron admits to a couple of close calls in his burgeoning business. There was the time when somebody on his staff mistakenly prepared for a dinner party at a Jewish temple . . . when it was actually to be held at the Jewish Community Center in the same town. (Luckily it was right around the corner, so no harm was done, according to Sarver.) Also, a few days before each function, he calls his clients to check on the final attendance figure. Once he called such a client prior to a scheduled weekend event and inquired, "Are you still expecting 100?" There was a pause, and then the woman replied, "Yes, we are." She hesitated again and asked, "But aren't you calling a little early?"

"We always check before an event," Sarver informed her.

"Twelve months before," she asked incredulously. "It isn't until a year from next Saturday!"

"I don't remember exactly what I said, but I mumbled something," Sarver says. "And I hung up in a hurry." Anyway, he still handled the job.

Ron Sarver has been handling so many jobs of late that he is branching out. Not long ago he and Willie Newcomb, Steve Engel, and Dave Pulzetti, all members of the class of '74, drove up Mt. Greylock, the highest mountain in the Berkshires and in the state of Massachusetts. "The view was fabulous," he says, "and we noticed that the Bascomb Lodge, which is right on top, was for sale. Somebody suggested that we buy the place, so we did."

Now Sarver is not only president of his catering firm, he is also president of the Sunset Management Corporation which controls Bascomb Lodge. "Willie, Steve, and Dave run the show up there," he reports. "The hotel, the restaurant, the gift shop, the works. They're keeping the place filled. I'm more or less a silent partner."

**A**T THE START of Sarver's career, there were days when the sledding was rough. "We did a lot of business back then," he says, "but we didn't own so much as a table service. We rented everything. The overhead was terrific."

At first practically every dollar he made was plowed back into the business. "I never borrowed a cent, though," he recalls proudly. Such austerity at the beginning is now paying off handsomely. He has a \$250,000 investment in his new Randolph commissary and it's practically all paid for. Gone are the paper cups, plates, and plastic cutlery which he had to use when he first started out. Now he can accommodate 2,800 people complete with dishes and gold or silverplated place settings. He has his own tables, chairs, portable ovens, barbecues, and linens. He has a permanent staff of 23 including a full-time chef and cooks, all of whom are perfectly happy right where they are. How many bosses could they find who would serve the help roast beef when they're catering a party at which the guests are eating chicken? Gary Berlin, '71, who is employed in the atomic energy field, so much enjoys being a part-time *maitre d'* for Sarver that he commutes to Massachusetts from Connecticut on special occasions.

"My motto is to treat the customers and the employees well and the profit will take care of itself," says Sarver.

Some of the profit, which has taken 'care of itself', can now be used for personal enjoyment. He has owned two Mercedes Benzes and taken trips to Europe, Israel, and Hawaii. Last spring he spent a month in Puerto Rico. On the other hand, he hasn't found an apartment that suits him, so he still lives with his parents in Hull. A genial but busy bachelor, he doesn't plan on marriage until his business is more self-sustaining.

"I usually reserve Fridays for dating," he reports. "But why should I bother," he jokes. "Everybody else is looking around for me. Everyone knows that 'perfect little Jewish girl.'"

Sarver claims that at catered functions it is not at all unusual for a nice Jewish grandmother to spend a full ten minutes telling him all about her granddaughter. He laughs. "In my business," he explains, "the phrase 'Have I got a girl for you' is as common as knishes."

He feels that his aunt in Newton probably has the right slant on his matrimonial prospects. "But Ronnie," she worries, "if you get married, who will cater the wedding?"

UPI





# Take a powder



AMERICA, the so-called 'land of milk and honey', is certainly a land of infinite opportunities," says Ronald Chand, '65, president of Arsee Design & Manufacturing, Inc. in Worcester. "Where else in the world could a stranger from a foreign land walk into a bank and an hour later emerge with every cent necessary to acquire his own business—especially when the only collateral he had to offer was his education, his ambition, and a dream?" Chand, a native of India, who proudly came a naturalized citizen last December, first put foot on American soil back in 1963. Ever since that day he has had a love affair with America and Americans.

"Why shouldn't I," he asks. "Since the moment I arrived, everyone has gone out of his way to be helpful." For example, it was the dean of Boston University, which his brother was attending, who introduced Chand to Worcester.

"Not only did he drive me from Boston to WPI," he says, "he also knocked on doors with me until I found a suitable apartment near the campus." It was a welcome which the 19-year-old, fresh from India, would never for-

get. Once at WPI, Chand became the student of Prof. Carl Johnson and Prof. Donald Zwiep, whom he credits with helping to shape his career. It was through the late Prof. Johnson and his association with Presmet Corp. in Worcester that he became interested in powder metallurgy.

"And Prof. Zwiep encouraged me all along the way," says Chand, who received his MS in mechanical engineering in 1965.

After leaving WPI and doing graduate work at Michigan State and Brown University, Chand became associated with Mott Metallurgical Corp. in Farmington, Conn. Inside of four years he was promoted from project engineer to assistant plant manager. He also worked for Tungsten Carbide Products, the firm where he did his master's thesis and which later established a fellowship for him at WPI.

Two years ago when Tungsten Carbide Products came up for sale, Chand approached a commercial bank which so thoroughly believed in his potential and that of the company that it lent him all the money he needed to take over the business. The faith which the bank showed in Chand and his firm has already borne fruit.

Arsee Design & Mfg., Inc. is a one-of-a-kind company in Massachusetts. It manufactures hot pressed and sintered carbides and specializes in powder metal and related tooling.

"Actually," Chand relates, "tungsten carbide is the hardest alloy known next to diamonds, and we are the only firm in the state which makes the product. It is used where wear application requires the hardest material possible. There is a ready market for it in the Northeast, which we serve."

The company which Chand purchased had originally made rough carbide. Arsee not only makes carbide, it finishes it. It has become a manufacturer and fabricator of carbide.

Powdered metals are pressed together and presintered at a low temperature, (1700 degrees F) so that the wax that holds the slugs is burned away. The substance then becomes like chalk and can be machined to proper shape and size. It is then vacuum sintered at around 2600 degrees F to obtain full density and strength.

Chand emphasizes that his company can customize and shape the product to suit the buyer. Preforms can be made close to the finished product. The shop is fully equipped (including a Swiss electric discharge machine) to finish carbide preforms.

"We serve a number of industries," he reports, "even though our specialty is powder metal dies."

Among those who are customers of Arsee are manufacturers in the spring, machine building, stamping, machining, wire, wood, screw, and coated wire industries. "When you come right down to it, we make carbide for almost every industry in Worcester," Chand relates.

Currently Arsee employs five people in the manufacture of carbide and powder metal tools, but business is good and there are tentative plans for expansion. The company could easily be geared to make large quantity parts, too.

"When the time is right, we'll decide," Chand says. Whenever he makes up his mind, it will undoubtedly be the right decision. It's a family trait.

The great grandson of a shepherd, and son of a high school teacher and a nurse, Ronald Chand (along with two brothers and two sisters), has fared well because of what his parents decided years ago — to educate their children in America.

Chand says, "It's worked out wonderfully for us in America. I met my wife, Pamela Sawin, here, and we were married in 1968. All of the Chands have acquired graduate degrees, including two PhD's. The main thing is that no other country on earth offers the opportunities that this one does, in spite of what you read in certain newspapers!"

He cites the case of the early New England settlers who had to clear away trees and dig rocks out of the ground before they could profitably live off of the land.

"They had to work hard," says Chand, "but opportunity was waiting for them right underneath their feet. All they had to do was go after it. It can still be done today."

Ronald Chand is successful, not because he asked what his adopted country could do for him, but because he asked what he could do for himself and his country — then went ahead and *did* it. America did well to answer in kind.

**WPI**

# Math, microcircuits, and mainsails

Back in 1956 the term "Women's Lib" was unheard of. WPI had never granted a degree to a woman (much less to a husband-and-wife team!). And the college had yet to award a graduate degree in physics. But on June 7, 1957 Audrey and Alan Carlan changed all that. ("I didn't invent Women's Lib that day," Audrey says, "although I guess you could say I gave it a quiet boost.")

On that day, for the first time WPI conferred a degree on a coed — and her husband. Both Carlans were awarded master of science degrees in physics, the first so given by the college.

"Six weeks after commencement our first child, Stephen, was born," Audrey recalls. "He was the first baby with a WPI alumna as his mother."

The Carlans came to WPI with an impressive track record. Natives of Brooklyn, they met in an analytical geometry class at Brooklyn College where they graduated in 1951 with a pair of BA's in mathematics. Later Alan served with the Marines, and when he was commissioned a second lieutenant he and Audrey were married. After his discharge in 1953 they studied at George Washington University.

In 1954 the Carlans were assigned to the research center at American Optical Co. in Southbridge, Mass., and also enrolled on a part-time basis at WPI to work on advanced degrees. At AO Alan was a physicist in research and Audrey a mathematical physicist in the optical computing system. Both played an important part in developing the highly publicized wide-screen Todd-AO process used to film and project the movies "Oklahoma" and "Around the World in 80 Days."

After leaving AO and WPI, the family settled in Pennsylvania where Alan founded a successful business in Scottsdale. As president of Power Components, Inc., he directed the production of various types of rectifiers, regulators, switching devices, and other solid-state electronic components. Alan's idea for developing the components was hatched while he was doing graduate work in solid state physics at WPI. Later he implemented his idea while studying at Mellon Institute on a fellowship. The company's products are used in radios, TV sets, automotive parts, missiles, and other industrial and military equipment.

Since 1966 the Carlans have been living in California where they've discovered all-year sunshine and all-year sports. "Sailboating is our passion," Audrey reports. "We have a 29-foot sloop ('Cal 29) and enjoy cruising and racing."

All five Carlans race — and quite successfully. They just purchased a new home, with double the area of the pre-



vious one, "to hold all the trophies," they joke. Last summer they participated in a cruise race from Los Angeles to Santa Barbara and return.

"Sailing a boat can be quite scientific," Audrey explains. "There are all sorts of forces and pressures acting on the boat and the sails, and trimming sails to maximize speed and minimize leeway must be carefully done."

Along with the sailboat goes knowing the rules of the road. Alan joined the U.S. Power Squadrons and then proceeded to take courses in seamanship, advanced piloting, junior navigation, navigation, weather, sail, and engine maintenance. According to Audrey, the Power Squadron is not as liberated as WPI and doesn't admit women as members, but they do allow women to take courses. So she signed up and became the only woman navigator in the Redondo Beach Power Squadron at the time. Then she and Alan taught navigation, and Alan also taught sail.



*The Carlans: (from right) Stephen, Audrey, Susan, Alan, and David*



To support their hobby, Alan works Rockwell International as manager of advanced process development for the microelectronics Division. He is in charge of developing new products and processes to be used in computers, calculators, and processors.

Audrey is an associate professor of mathematics and computer science at Los Angeles Southwest College. She is also chairman of the math department and computer science coordinator.

SW is one of nine community colleges in the LA Community College district. She has been there for seven years, one year less than the college itself.

The Carlan children are very active. Both Stephen and David earned Eagle rank in Boy Scouts. Stephen also earned a bronze palm. Stephen ranked sixth in his graduating class of over 700 at Hilling Hills H.S. in Palos Verdes, Cal. Alan plans to enter Cal Tech. David has completed one year of school and expects to attend Harbor College while completing high school this year. He is looking forward to attending U.C. in San Diego as a premed student. Susan has been in the Girl Scouts. She and her brothers have given numerous piano recitals, and Susan plays the guitar as well. She is an animal lover and has a bunny called Honey. She follows in family tradition, by qualifying for a bra in 8th grade.

To the women now at WPI, Audrey says: "Let me remind you that when I attended classes, I had to carry a ladies' sign around with me, because restrooms were all for men. Because of our daytime jobs at AO, Alan and I attended at night. By the final semester of our third year I was pregnant and studying, but, everything went O.K.

"One further incident that seems amusing — now! We had to get our completed theses in by a certain deadline. We started out from Southbridge, suddenly I discovered that the completed copies of my important computer papers were missing. Luckily, I had a duplicate copy to submit instead. Years later, driving along, I had to make a very sharp stop. The original copies were flying out of the bottom of the seat at the carpet of the car!

"I feel that I am a 'quiet women's worker'. I hope I have helped show that women can compete, at least mentally, with men."

**WPI**

# Jake's crazy idea

This year Oliver B. Jacobs, '10, has had good reason to celebrate. He has a satisfying career to look back on, he attended his 65th reunion at WPI in June, and in August he took a bride!

"Jake," as he is known to his friends, likes to talk about the "good old days," but at 86 he still knows how to enjoy the present and look to the future. The spirit that inspired his inventive mind still runs strong.

"Actually," he admits, "it was the Depression that spurred me on in the inventing field. I was with Bell Labs and some engineers were being laid off. I was afraid my turn would be next. I had to think of something worthwhile."

So, in order not to lose his job, Oliver Jacobs went home, sat down at his desk, and invented something — an invention which was to play a big part in making it possible to use underwater cable to transmit telephone messages across the oceans.

"At first everyone thought that the invention was just another of Jake's crazy ideas," he laughs. Crazy or not, his idea worked. The plan called for the use of amplifiers uniformly spaced along the cable on the sea bottom. These would use vacuum tubes energized by direct current passing through all of the tubes in a continuous path from shore to shore. Very long life operation would be obtained by using very low voltages and currents in the tubes. The resulting restriction of the signal output power capacity would be no handicap: the inputs could be much lower than on land lines because the bottom of the ocean is the quietest place on earth.

This particular invention, one of his 20 patents, helped establish the basis upon which modern transoceanic cables operate today. Another Jacobs' invention keeps the current supplied to the cable constant despite differences in earth potential due to magnetic storm disturbances.



His career at AT&T started when he took a summer job with the company just prior to his senior year in college. In 1925 he was transferred to Bell Labs where he retired in 1954 at the age of 65. "Then another company leased my services to the Bell Labs until my 'second' retirement in 1963," he recalls with obvious relish.

"I worked on telephone problems all those years," he says, "taking time out only for World War I." He is modest about his war services, saying that during his tour of duty in France he "didn't do much." He was, however, a member of the staff of the chief signal officer and was in charge of providing telephone and telegraph equipment in the Signal Corps offices of the American Expeditionary Forces.

Once away from war and his duties at AT&T, he and his late wife, DeEtte, became involved in community activities in Morristown, N. J. They were busy with gardening circles, the Red Cross, Girl Scouts, and conservation organizations. Jacobs served as former chairman of the Morristown Board of Adjustment. From the age of 11, when he published his own newspaper, until failing eyesight forced him to give it up, he enjoyed do-it-yourself printing. He continues to be a man of many interests.

This year he brought with him a charming lady, Miss Marian Bathgate, 82, to help celebrate his 65th class reunion at WPI. On August 23rd they were married. "We're having a wonderful time," he declares. "And we hope to have many more good years together."

Oliver Jacobs is always looking ahead.

**WPI**

# Now you see him . . .

Milton Berle calls him "Fantastic — the greatest magician I have seen." Alice Cooper has told him, "If ever I can help you, let me know." And fellow magicians at the Magic Castle in Hollywood have nominated him two years in a row "visiting magician of the year award," an Oscar-caliber award for magicians.

Such unsolicited endorsement from star performers is music to the ears of Worcester's Steve Dacri, '74, who was bitten by the magic bug at age six and has been on stage professionally since he was twelve.

"Berle calls me a magician," he says (Dacri has appeared on TV with him), "but I consider myself an entertainer first and foremost."

When it comes right down to brass tacks, just what Steve Dacri actually is, besides a prodigious success, is hard to pin down. Still living in the Worcester area, he crisscrosses the country hundreds of times a year to entertain at nightclubs, resorts, trade shows, conventions, and college campuses. A veteran of over 350 TV shows, he now has his own weekly television show, "The Steve Dacri Magical Mystery Tour," which is aired in New England. He owns the Steve Dacri Magic and Fun Shop directly across from the Worcester Public Library. He is opening a magic school, is about to publish a book, and operates a magician's booking service and a nationwide mail-order business.

Dacri smiles as he describes the birth of his mail-order business. "It all came about as a direct result of the WPI Plan," he recalls. "Ken Nourse, who was Director of Admissions when I was applying at Tech, told me that the school was instituting the plan. That sounded like something I could get my teeth into."

Right away he began to work on his project, a book about the mail-order business, one that he has since updated and is planning to publish. "Instead of going around interviewing mail-order executives, I decided to start my own business and write up the results," he says. "Being a magician, I naturally handled magicians' tricks and supplies — and still do."

Dacri went one step further than most businessmen. He invented a number of tricks and novelties himself and retailed them through mail order. His most successful was what he calls a "shrunken penny."

"While still at WPI, I sold 50,000 of those pennies the very first year," he reports, "And even today they're selling at the rate of about 5,000 a year."

Orders for numerous other products poured in. "My fraternity roommate practically had to move out," he

relates. "Our room, the main base for my operations while I was at Tech, was filled to overflowing with inventory, orders, and boxes. It was quite a sight!"

So successful was this venture that Dacri left WPI in 1972 to devote himself exclusively to entertainment and business. "At the time I was giving dozens of performances throughout the country every month and running the business, too. There weren't enough hours in the day."

He did, however, manage to squeeze in enough time to earn an associate's degree from Quinsigamond Community College in Worcester. "My WPI project helped me out a lot at Quinsig," he says. "They gave me a full semester's credit for the research I had done on my book."

His formal education over, Dacri declares that he hasn't done a day of work since. All he does, he confides, is have "fun." Most people would consider Dacri's 'fun' absolutely exhausting — such as his performing at the national trade shows, just one of the many facets of his thriving career.

"I do ten-minute shows every ten minutes all day at the trades," he reports. "It's my job to catch the attention of prospective buyers and sell them on what ever product I happen to be representing." He feels that by working the trades he not only sells his sponsor's products, he also promotes magic and, of course, his own talents. Spin-off contracts have been rewarding.

In order to become familiar with the manufacturer's products initially, he meets with company executives who bone him up on the selling points of the products. Then he creates a special magic act to spotlight those selling points, always with an eye toward making a sale.

Apparently he has been doing quite a job. Already he has worked for Speidel watchbands; the National Electronics Show in Boston; the Premium Show at the Coliseum in New York City; the Tobacco Show; and the recent National Entertainment Conference in Washington, D.C., at which President Ford and comedian Redd Foxx were guests.

"One of the highlights of my year is doing the Toy Fair in New York City," he confesses. "It's held in February, but even then the toy buyers are looking ahead to the next December. Christmas decorations get everyone in a festive mood. It doesn't make any difference that the big day is months away."





Once he has perfected his routines, be it cutting up ladies in magic boxes or his real specialty, close-up sleight-of-hand tricks, Steve Dacri is all set to go on stage. "Except for the dialogue," he admits. "I've paid writers to write dialogue for me, but the minute I step before an audience my mind goes completely blank. Every audience is different," he declares. "A set script just doesn't work. You've got to feel out what people's reactions will be and suit your patter to them on the spot."

Dacri is a master of spontaneous patter and an accomplished comedian. He definitely is not in need of a script. He has an inexhaustible supply of one-liners which evidently come from thin air as do the bewildering array of magic cards, scarves, and ropes which appear from nowhere and do improbable things.

To a goggle-eyed youngster who had the gall to suggest on stage that Dacri might have something up his sleeve, the magician quipped, "How old are you, son?"

"Eight," came the reply.

"Do you want to be nine?"

Goggle-eyes looked very solemn, as if Dacri, with a swish of his magic wand, were about to make him disappear. The audience loved it.

That is another of the secrets of Dacri's success — audience participation. The kids fall all over themselves when he asks for assistants, with adults running a close second. None of them can wait to have their pockets picked, in fact none of them believe it's even happened until they suddenly discover that they have been completely stripped of wallets and jewelry. Billed as "the fastest hands in the world," Dacri lives up to that reputation as he skillfully separates the valuables from his unsuspecting "assistants." Although Fagin, the prototype pickpocket, would be proud of such cunning, police departments all over the country are undoubtedly relieved that he has chosen a more legitimate profession.

These days Dacri is heavily into the entertainment aspect of his career, leaving the mail-order department primarily in the hands of his bride and the magic shop in the care of two employees. He also employs several agents, a lawyer, and accountant, and a business manager.

"Performing is what I love best," he says. "I built up the rest of the business and now feel free to give most of the responsibility to somebody else."

Recently he appeared on the "New England Journal" on Channel 3 in Hartford; Worcester's Channel 27 state lottery drawing; and "News Magazine" in Denver. Right now he's negotiating for a possible stint in Las Vegas and a guest spot on a national TV show. He's scheduled to do ten "Take One" shows with Paul Benzaquin in Channel 7 in Boston and his magic school is slated to open soon at the Sheraton-Lincoln in Worcester. His career just keeps booming along.

Steps to success? Dacri advises: (1) set limited goals for yourself and meet them; (2) keep those goals within reason so that you don't get discouraged and fail; (3) don't generalize by saying, "I want to be rich and famous," without really considering what it is you have to do to get there, and (4) most of all, pick a profession that you have a passion for.

WPI

Another highlight for Dacri is when he's booked at the Fountainbleau in Miami for an organization such as the World Meeting Planners. "It's a fantastic place to sell at," reports. Last year when he was at the Fountainbleau he had one of his better selling jobs. (Or was it magic?) "There was an attractive secretary a few booths away from me and I told myself that she was the one," he recalls. After each of his ten-minute shows he spent ten minutes with the secretary. When she left for Detroit, he realized he'd been seeing her, a statement which she took with a grain of salt. Today Sheryl Ollie is now Mrs. Steve Dacri of Westboro. "She's wonderful," he enthuses, "and is fitting right into the Worcester scene. She even works with two assistants in the mail order department." He laughs. "Last, but not least, she acts as a guinea pig for my newest tricks. I practice three hours a day and naturally I want to get her reaction when I'm perfecting a new routine." One routine that Mrs. Dacri OK'd was his famous cup and ball trick, redesigned with a special twist just for her. One night he presented her with an engagement ring, he got her putting balls under an overturned cup and asking her how many there were. She guessed there were two, but when she lifted the cup the balls were gone. Only a box with a ring remained. She didn't even protest when he showed her into three pieces just 48 hours prior to their wedding last February. After all, he did manage to get her back together again for the ceremony.



*The data on which these class notes are based had all been received by the Alumni Association before September 15, when it was compiled for publication. Information received after that date will be used in succeeding issues of the WPI Journal.*

## 1906

**Franklin Green** was honored on the occasion of his 90th birthday when he was guest of honor at a dinner given him by members and friends of the Salt Creek Baptist Church. Well known in the Dallas area, he went there to teach high school mathematics in 1943. Later he was elected Polk County superintendent of schools and served for eight years. Until last fall, he taught calculus at Portland Community College and still tutors students. He is presently planning a trip to Alaska.

## 1908

**Sumner A. Davis** writes that his son, Sumner D. Davis II (M.D.), passed away on June 19, 1975.

## 1914

**Ray Crouch** has a new address: Park Forest Apts., Apt. 234, 3605 Villaverde Ave., Dallas, Texas, 75234.

## 1915

The Non-Ferrous Division of the Wire Association has selected **Maurice G. Steele** to write a chapter for a forthcoming non-ferrous handbook to be published by the association. Mr. Steele's chapter will be devoted to the carbon-block brazing of copper wire, a superior method of joining copper wire that he perfected while he was attached to the Research Center of Rome (N.Y.) Cable Corp.

## 1932

**Constantine J. G. Orfanos** writes that in recent years he has been active with Electric Utility Equipment projects in Brazil, Columbia, Venezuela, Greece, and Taipei, Taiwan. He has been concerned primarily with thermal and nuclear electric power plants. Last summer he visited his children while on a trip to the West Coast.

## 1933

Currently **Jeremiah H. Vail** is manager of equal employment opportunity at U.S. Steel Corporation in Pittsburgh.

## 1934

**Charles S. Frary, Jr.**, retired in July following 41 years at American Biltrite, Cambridge, Mass. (formerly Boston Woven Hose & Rubber Co.). He has been living at camp while completing a new home in Northwood, N.H.

## 1935

**Dr. Paul R. Shepler** is manager of piston ring and seal development at Koppers Co., Inc., in Baltimore, Maryland.

## 1937

**Morton S. Fine** was awarded the distinguished service certificate by the National Council of Engineering Examiners (NCEE) at their annual meeting held in Boston in August. A former long-term member of the Connecticut Board of Registration for Professional Engineers and Land Surveyors, he was recognized for his outstanding contributions in the area of safeguarding the public welfare through promotion of engineering registration. He served twelve years as a member of the state regulatory board, including three terms each as chairman and vice chairman.

Fine has served NCEE in committee assignments primarily relating to development of the examinations and establishment of uniform standards for registration by the states. He is a registered professional engineer and land surveyor in the Northeast and a registered landscape architect in Connecticut and Massachusetts. He is also a planner in New Jersey. Since 1950 he has offered his services through his own firm, Morton S. Fine and Associates, Bloomfield, Conn.

For many years he has been active in the National Society of Professional Engineers and has served as president of the Connecticut Society. He also served as national chairman of the Professional Engineers in Private Practice. The immediate past president of NCEE, he will remain on the NCEE board until next August.

## 1938

WPI Prof. **Donald W. Howe Jr.**, drove one of six pollution-free vehicles that conquered the 6,288 foot peak in the Mt. Washington Alternative Vehicle Regatta held in June. His blue electric battery-operated car made it to the top in one hour and eleven minutes . . .

**Capt. Milton P. Hubley**, who is with Eastern Air Lines, expects to retire next year . . . **Francis L. Witkege** writes that he is "unretired." Currently he is chief of the Earth Sciences Branch at the Smithsonian Science Information Exchange, Inc., in Washington, D.C.

## 1940

**Rally Bates** serves as engineering manager at Teledyne Relays in Hawthorne, California.

## 1941

Back to teaching math at Burlington (Vt.) High School is **Kenneth R. Dresser**, who recently received his MS from the University of Vermont. . . . Mr. and Mrs. **James H. Hinman** celebrated their 25th wedding anniversary on June 8th at a special dinner at the Harbor Beach Club in Mattapoisett, Mass. Their son, John, graduated from high school that afternoon. Mr. Hinman is chief chemist with Revere Copper and Brass, Inc., New Bedford, Mass.

## 1943

**Norton Co.**, Worcester, has appointed **Nelson M. Calkins, Jr.**, as manager of machines and equipment for the International Unit of engineering and construction services. He will be concerned with the implementation of a recently undertaken Polish program. In 1956 he started at Norton as a plant layout engineer. In 1963 he was promoted to senior engineer and in 1970 to area engineer in the Grinding Wheel Division. He became chief engineer of project and kiln engineering two years ago. . . . **Donald M. Roun** owns Music Alley in Lexington, Mass.

## 1944

Prof. **Joseph S. Marcus**, associate dean of the school of engineering at the University of Massachusetts, was cited as an honoree by the UMass engineering alumni group at its annual awards ceremonies held on May 10th. He received his MSCE from the University of Massachusetts in 1954.

## 1946

The Charles H. Jennings Memorial Award, which is conferred on a student or faculty representative of a college for outstanding welding literature published in the *Welding Journal*, has been won by **Dr. Edward R. Funk**. Dr. Funk shared the prize with three coauthors for the article, "Suppression of Spiking on Partial Penetration EB Welding with Feedback Control." He is an assistant professor in the metallurgy department at MIT; assistant manager of the technical service department at Goodyear Aerospace Corp.; cofounder and president of Johnston & Funk Titanium Corporation in Wooster, Ohio; cofounder and president of Astro Metallurgical Corporation in Wooster; and founder and president of the Funk Metallurgical Corporation. Currently he is an associate professor in the department of welding engineering at Ohio State University. He was a WPI term trustee from 1969 to 1974.

## 1947

**Edward C. Perry** works for Radio Shack, Palm Springs, California.



# Western Electric Reports:

## Moving phone calls bit by bit.

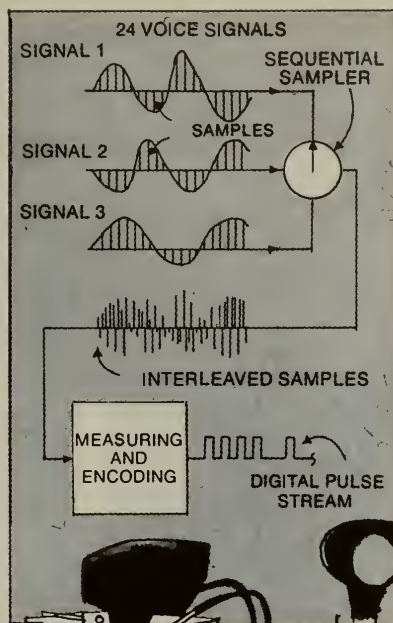
To meet the growing demand for communications facilities, the people at Western Electric and Bell Labs have developed digital techniques, which dramatically increase the number of phone calls that can be carried over existing wires.

In digital communications, a voice signal is sampled 8,000 times a second. Each sample represents the amplitude of the voice's wave pattern on a scale from 1 to 256. This measurement is coded in binary form as a series of pulses or "bits." And the code is transmitted to the receiving end where it's decoded to faithfully recreate the voice. Because this is a sampling technique, the pulses representing a number of voice signals can be interleaved. For example, the T1 System, workhorse of the Bell System's evolving digital network, transmits 24 simultaneous conversations on two pairs of wire.

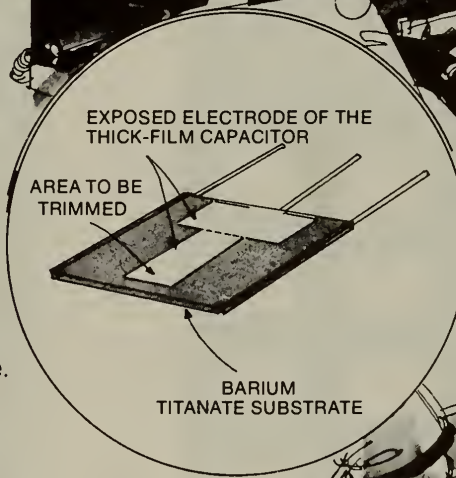
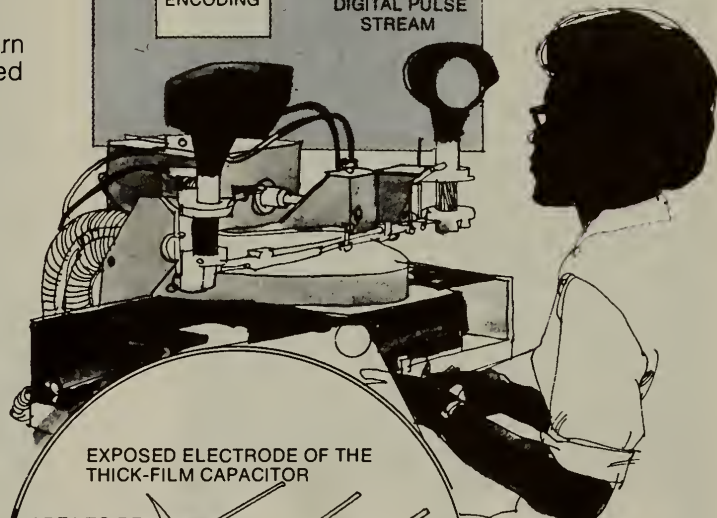
Development of digital techniques has demanded close coordination between designer and manufacturer. Interleaving 24 conversations on wire pairs originally intended to carry a single voice signal meant designing the T1 system to fit the characteristics of cable already in place. It meant manufacturing components that operate with clockwork precision, since the system must transmit a "bit" precisely every 48 nanoseconds. (The time it takes light to travel about 650 feet.) And because the stream of pulses must be regenerated at about one mile intervals — often in manholes under busy city streets — the components must be extremely stable.

Engineers at Western Electric's plant in Massachusetts are working with Bell Labs on a wide range of design and manufacturing innovations. For example, previous timing circuits used in the regenerator for the T1 System were tuned manually. Western Electric engineers have developed a computerized process that tunes the circuits faster and more accurately. Meanwhile, Bell Labs has developed even higher capacity digital systems. The latest can interleave 4,032 simultaneous conversations on a pair of coaxial conductors.

**Benefit:** Digital communications techniques are one more way the Bell System is working to meet our communications needs reliably and economically.

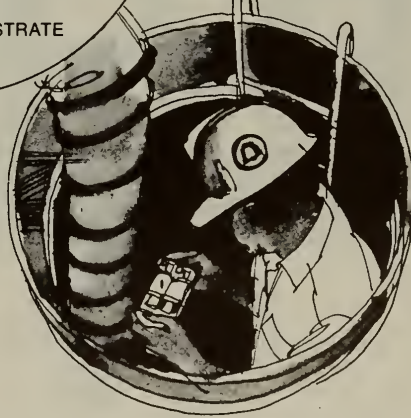


The T1 System samples 24 voice signals and encodes the measurements in binary form for transmission over a conventional pair of telephone wires as a stream of pulses.



The timing circuit is an inductor-capacitor. It is brought to a specific frequency by abrading the exposed electrode of the thick-film capacitor. A computer controls the process by measuring the frequency of the timing circuit during trimming.

The automatically adjusted timing circuit helps make the latest regenerator smaller, less expensive and even more reliable than its predecessors.



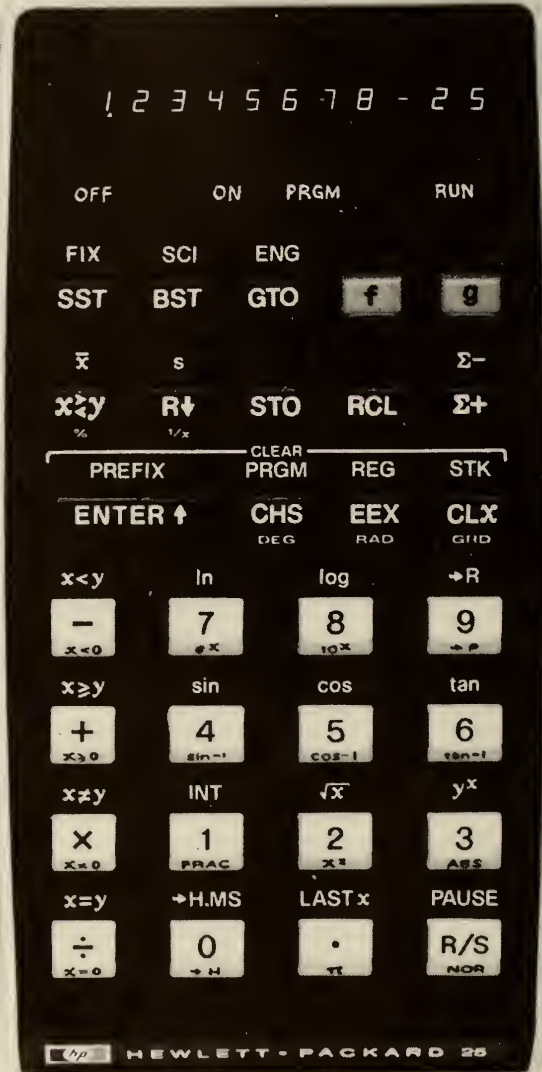
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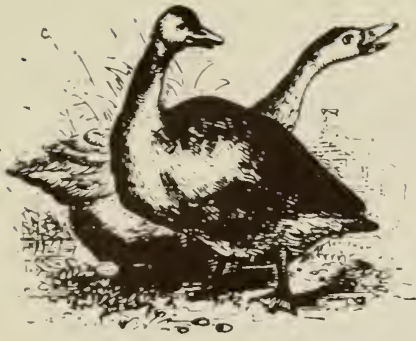
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## We didn't make this one up

When Gordon F. Crowther, '37, was a little boy, he probably never dreamed that he'd grow up to be a goose, but that's what he is — and not just an ordinary, everyday goose, but the biggest one of all!

At the 69th annual convention of the Honorable Order of Blue Goose International held recently in Minneapolis, Gordon, who is engineering personnel administrator for the Factory Insurance Association in Hartford, was elected Most Loyal Grand Gander, the top position in the Order.

The Honorable Order of Blue Goose is a fraternal organization made up of representatives from many facets of the insurance industry. Currently there are approximately 10,000 members with nearly 100 ponds and puddles (chapters) throughout the U.S. and Canada.

In spite of his expanded duties with Blue Goose, Grand Gander Crowther still is a strong WPI booster. He serves as chairman of the nominating committee of the Alumni Association, is immediate past president of the Hartford Alumni Chapter, and for six years was a member of the Alumni Fund Board. He is also deeply involved in the 40th reunion activities of his class. Yes, busy indeed!

"He's never turned me down once when I've asked him to do something," reports Stephen I. Hebert, '66, secretary-treasurer of the Alumni Association.

Looks like an extra "honk" and a few "quacks" are due for the Most Loyal Grand Gander!

1948

Donna J. Eteson, the daughter of WPI Prof. **Donald C. Eteson**, recently became the first woman dental graduate at the University of Connecticut School of Dental Medicine. She and her husband, John Kishibay, notched another first as the first husband-and-wife team to graduate from the Connecticut school. . . . Dr. **Mervyn W. Perrine**, a professor in the psychology department at the University of Vermont, is also a director of Project ABETS, which is concerned with the role of alcohol and marijuana in highway safety. The project, which is located at UVM, has twelve staff members and is funded by the National Highway Traffic Safety Administration and the National Institute on Alcohol Abuse and Alcoholism. Dr. Perrine was a cofounder of CRASH and in 1972 was the originator and director of the Vermont Symposium on Alcohol, Drugs and Driving. That same year he was co-recipient of the award of merit for research in accident prevention from the National Safety Council. . . . **Russell Turner** has been promoted to manager of environmental and energy conservation engineering at Miller Brewing Company in Milwaukee. He had been Milwaukee plant engineer since 1967. In 1963 he joined the firm as a maintenance superintendent.

1949

**Albert A. Dulac** was recently promoted to director of technical services of the Semiconductor Products Division (SPD) at Motorola, Inc., in Scottsdale, Arizona. He will report to the office of the general manager of the SPD division. The company manufactures and markets solid-state components worldwide. . . . **Frederick Krauss** says that he is "proud, relieved, and broke." This year his son, Matthew, graduated from Norwich University; his daughter, Katherine, graduated from UMass; and his son, Courtney, received his master's degree from Georgia Institute of Technology. Two years ago another son, Clinton, earned a BA from Boston University. Krauss says he hasn't calculated to the penny what all this education has cost him. "If I did I'd probably be floored," he comments. . . . Johnson Controls, Inc. of Milwaukee has elected **Donald Taylor** as a director. The company makes industrial and environmental control equipment.

1950

**Arnold Agulnick** now holds the post of general manager at Roy Lapidus, Inc., in Newton, Mass. The firm manufactures hospital equipment. . . . **Ed Ahlstrom**, long associated with Avco Corp., has been active on the steering committee for building a new church in his community. Presently he serves with the American Field Service Program committee which selects students to study abroad. . . . Sailing, travel, skiing, jogging, and tennis are the outside interests of **Raymond L. Alvey, Jr.**, who is located in Lakewood, Ohio. The Alveys have four children, one daughter already a college graduate; a son and daughter still in college; and another daughter in school in Maine.

. . . **Richard E. Amidon**, vice president for manufacturing for New Hampshire Ball Bearings, Inc., Peterborough, is currently town moderator in Hancock, N.H. For two years he served as selectman. He is also a trustee of the Peterborough Savings Bank. . . . Although he used to be a sports car racer, **John O. Archibald, Jr.**, says that his hobbies are now less "virile." At the present time he's interested in antique car restoration, antique guns, amateur radio, sailing, golf, and sculpture (mobiles and stables). A professional engineer, he has been associated with the Carborundum Company for twelve years. He belongs to ACS, ASME, AIME, the Engineering Society of Buffalo and the New York State Society of Professional Engineers.

**George S. Barna, Jr.**, is manager of the Tiros program at RCA-Astrol Electronics Division in Princeton, N.J. He is an associate fellow of AIAA and was a member of a team which received an award for developing the return beam vidicon camera. He is listed in *Who's Who in the East; Who's Who in New Jersey; and American Men & Women in Science and Engineering* (12th edition). . . . Twenty patents, mostly in exposure control and control systems in the photographic field, have been granted to **John P. Burgarella**, who is director of engineering for electronics at Polaroid Corp. in Cambridge, Mass. He has pioneered the use of electronics and electro-mechanical devices in amateur cameras and instrumentation design for photometry and camera manufacturing. He designed magnetics and electronics for Model 100-40 series camera and managed the technology for the SX-70 system including control, integrated circuitry, solenoids, motor, and "flashbar". Son Paul is in the class of 1979 WPI.

**Joseph J. Burgarella, Jr.**, who is with Avco in Wilmington, Mass., enjoys carpentry and gardening. His son, Jim, is a WPI student. . . . **Richard H. Carlson**, now chief control and development engineer at U.S. Steel in Worcester, began work there as a lab. technician 25 years ago. He belongs to ACS, SPE, the Wire Association, and ASTM. Currently he is chairman of the electrical and electronic division for SPE. . . . For 23 years **Harvey W. Carrier** has been employed at United Technologies Corporation. Presently he is associated with facilities planning, which is involved with Pratt & Whitney customer assistance in planning and the overhauling of jet engines. A grandfather, his hobbies include bicycling, photography, wood carving, and piano playing. He is a professional engineer in Massachusetts and has had one patent issued. . . . **Everett S. Child, Jr.**, of E.S. Child, Jr. Real Estate, is treasurer of the National Association of Realtors. He is also a registered representative for Investors Diversified Services and is located in Seekonk, Mass. . . . **John T. Cocker** writes that he has taken up recreation "in earnest," chiefly, sailing. Connected for many years with communications technology at Bell Labs, he claims that he has enjoyed microelectronics but "little fame."

re dancing, traveling, and church work up the spare time of **Henry S. Coe, Jr.** He is currently serving in a staff position in a division responsible for the operation of buildings at Polaroid in Cambridge, Mass. **Richard Connell's** 16-year-old daughter, **Dee**, has won her school basketball team's MVP trophy for two years running, while **Martin**, 17, is an actor with a bent for drama. **Richard N. Jones** serves as product development manager at A.C. Lawrence Leather Co., Peabody, Mass. He was editor of the New England Tanners' Club book, *Leather Facts*, which is now in its sixth printing. He is past president of the Tanners' Club and is active in the American Leather Chemists' Association. He is an original member (now snare drum sergeant) of the nationally known Linn Village Drum Band, which participated last year in the 700th anniversary celebration of the city of Rothenburg in Germany.

**Frank S. Jurcak** is manager of control systems at Turbo-Power & Marine, Inc., a subsidiary of United Technologies Corp. in Farmington, Conn. He belongs to ASME and IEEE. . . . **Francis E. Kearney** currently works as plant manager of Monsanto Company's Bircham Bend Plant in Springfield, Mass. He serves as director of the Greater Springfield Chamber of Commerce, chairman of the Horizons section of the Wilbraham Bicentennial Committee and is past chairman of the western Massachusetts section of AIChE. . . . A registered professional engineer, **G. Willard King, Jr.** is presently superintendent of the die department at Wyman-Gordon Company, Worcester. Last year he graduated from WPI a "second time" from the School of Industrial Management. . . . **Ernest A. Larose** continues with Thiokol Corporation in Huntsville, Ala., where he heads up a group responsible for preparing cost proposals related to solid propellant technology and rocket motor manufacture. He was the program manager for the first stage of the Spartan missile. . . . Currently the capital budget coordinator for Creole Petroleum Corp., a subsidiary of Exxon in Venezuela, **John C. Margo** also has served as vice president and president of the North American Association, an organization that promotes understanding, friendship, and good will between the U.S. citizens living in Venezuela and Venezuelans. . . . **George McAllan**, who works for the New York Telephone Co., has two sons who are through college with one married. His sixteen-year-old daughter is well known in metropolitan AAU swim circles.

At the present time **Dick McMahan** works in Washington, D.C. with the Center for Energy Systems, a research staff of the GE Energy Systems and Technology Division. Daughter Kathleen is at the University of Maryland; Andrew is in high school; and Martha, the family athlete, is in junior high school. . . . Although **Robert L. Moison** heads his own consulting firm, Robert L. Moison & Associates, Inc., Apple Valley, Minn., he also recently helped found Northern Sun Products Co. The new company processes sunflower seeds and other oil-bearing materials. Moison is president and a part-time consultant to the firm. . . . Presently **Dr. Herman "Art" Nied** is employed by GE in the gas turbine

division in Schenectady, N.Y. His responsibilities include development of advanced methods of analysis and computer programs for conducting stress analysis of industrial gas turbine components subjected to elevated temperature. Art also teaches graduate courses at Union College in the evenings. . . . **Francis W. Norton** writes that since graduation he's worked in thirteen states and has helped to supervise forty projects, some funded for billions of dollars. Some of his projects were concerned with large reactors, dams, chemical plants, and the design of a chemical complex. He has received many awards for cost-saving suggestions. . . . **Karl O. Olson** is a senior process engineer in the ITT Royal Electric Division. He is active in church groups, F&AM and as an advisor to Loyalty Chapter DeMolay in Riverside, R.I. He belongs to ASME. . . . **Dr. John C. Orcutt**, who is with Stauffer Chemical Co. in Dobbs Ferry, N.Y., is working on SO<sub>2</sub> abatement process development and industrial chemical manufacturing processor. He is interested in competitive pistol shooting and is also principal clarinet player and trustee of the Northern Westchester Symphony Orchestra Association. . . . Also at Stauffer Chemical in Dobbs Ferry is **Frank W. Pease**, who is manager of purchasing for the corporate engineering department. Presently he is president of his local affiliate of the National Association of Purchasing Management.

**1951**  
**Charles H. Bouchard** has been named marketing manager of Westinghouse Electric Corporation's industry equipment and services group. He will have worldwide staff marketing responsibility for the group's thirteen operating divisions. The group, one of the corporation's three major operating units, operates over 150 apparatus service facilities and field engineering locations. It manufactures motors, process control computers and instrumentation, control systems, and process equipment for welding induction heating, and ultrasonic cleaning. Bouchard joined the firm in 1951 on the graduate student course. In 1968 he was named a sales manager in the industrial systems division at Buffalo, N.Y. That same year he was appointed the division's product line manager for adjustable speed drives, a post he held until 1972 when he became industrial field sales zone manager in Pittsburgh.

**George R. Griffin** was recently appointed to the newly-created post of associate dean at Anna Maria College in Paxton. He will be responsible for the daily operation of undergraduate programs, including academic counseling and consultation. Since 1955 he has been a math teacher at West Boylston Junior-Senior High School, where he was chairman of the mathematics department. He has been a part-time instructor at Anna Maria since 1967.



1952

Stanley I. Berman, vice president of manufacturing abrasive operations for Norton Co., Worcester, has been appointed a trustee at Worcester Academy. A graduate of the Academy, he has also served as a member of the Council of Members of the Worcester YMCA and as an adviser to former Gov. Volpe's Management Task Force.

1953

George T. Abdow and his brother opened another Abdow's Big Boy Family Restaurant in Worcester at Lincoln Plaza in June. Dr. Robert W. Fitzgerald, associate professor of civil engineering at WPI, was a faculty member in the firesafety design for buildings section of the protective design workshops program presented at the University of Wisconsin at Madison last summer. He has been a major contributor to efforts of the Defense Civil Preparedness Agency to disseminate useful information to building design professionals about protective design requirements.

1954

Wyman-Gordon Company, Worcester, has named Norman F. Gustafson as manager of product and process engineering. Previously he was chief of product engineering, steel and high-temperature metals in the firm's Grafton plant. He joined the company in 1956. . . . Bill Hills writes that the Hills family continues to enjoy working and living in Florida. Hills Research & Development, Inc., Melbourne, of which he is president, is doing well in the field of synthetic fibres, textiles, wire, and continuous injection molding of plastics. . . . Stanley P. Negus, Jr., is now plant manager at Rome Industries, Inc., Rome, Ga. . . . R. Kingman Webster, executive vice president of H. K. Webster Company, Inc., has been elected to serve a four-year term on the board of directors of the American Feed Manufacturers Association (AFMA). AFMA is the national trade association of the feed manufacturing industry. Feed manufacturers produce the feed required for the production of meat, milk, and eggs. Webster has served as past treasurer of the Lawrence (Mass.) Red Cross and president of the Y's Men's Club.

1956

The Rev. Paul D. Schoonmaker received his doctoral of ministry degree from San Francisco Theological Seminary in June. The title of his dissertation was "The Redemptive Role of the Church in a Prison Setting." He continues as pastor of the Roversford (Pa.) Baptist Church. The Schoonmakers recently had a baby daughter, Elizabeth, after having four boys. Raymond K. Agar is with Turbo Power, a division of United Aircraft Corp., Farmington, Conn.

1957

G. Eric Friberg, manager of project engineering and design at Toms River (N.J.) Chemical Corp., has been named to the company's management committee. He has been with the firm since 1962 serving as chemical engineer, process engineer, field engineer, area process engineer and manager of planning and special studies.

1958

Donald S. Inglis, manager of the eastern division in Franklin County (Mass.) of the Berkshire Gas Co., has been named assistant to the president. During his seventeen years with the company, he has had staff assignments in sales, accounting, and engineering. From 1961 to 1964 he was manager of the Greenfield Division, later serving as vice president and general manager of the Blue Ridge Gas Co. Since 1965 he has been manager of the eastern division. He is a trustee of Farren Memorial Hospital, director of the Greenfield Rotary Club, and past president of the North Adams Rotary Club.

1959

Norman L. Monks has been appointed plant manager of the Roller Chain Division of Rexnord, Inc., Worcester. Previously he was plant manager at Hobbs Manufacturing Co., a division of Crompton & Knowles Corp. He will manage personnel, manufacturing, engineering, and production. . . . Recently Stanley W. Sokoloff became a partner in the new law firm of Blakely, Sokoloff, Taylor & Zafman in Beverly Hills, Calif. The firm specializes in patents, trademarks, and related intellectual property matters.

1960

Richard D. Brewster, an advisory electrical engineer for Westinghouse, is presently on a three-year assignment in Japan, where he is advising the Japanese in the areas of electrical instrumentation and control. The Brewster family is residing near a small fishing village on the west coast of Japan. "Needless to say," he writes, "the assignment is exciting and challenging."

1961

Currently based at Jet Propulsion Laboratory in Pasadena, Calif. is Alfred L. Dunklee who works as a senior engineer for Martin Marietta of Denver, Colo. Morgan R. Rees is now chief of the Permits Branch for the U.S. Army Corps of Engineers in Waltham, Mass.

1962

Peter C. Albertini is product marketing manager for infrared cooling systems in the CTI-Cryogenics Division of Cryogenic Technology, Inc., Waltham, Mass. CTI has been instrumental in the miniaturization of cryogenic equipment for airborne infrared deflection systems currently in operation. Previously Albertini was manager of space infrared systems sales for Honeywell.

the faculty at Harvard Medical School,

Michael A. Davis was recently appointed assistant professor of radiology at Peter B. Brigham Hospital in Boston, which is affiliated with Harvard.

Bernard F. Dowd has been named administrative engineer at Hahnemann Hospital, Worcester. For nine years he was plant engineer at Lawrence Memorial Hospital in Medford, Mass. Previously he was with Pittsburgh Plate Glass Company, Shell Oil Company and Acme Plumbing and Heating Company. At Hahnemann he will direct the operation and maintenance of all mechanical systems and be responsible for the coordination of renovation and construction at the hospital's health center on Dean St., Worcester. . . . William S. Properzio has received a PhD in medical radiation physics from the University of Florida. Dr. Properzio is a commissioned officer at the X-Ray Exposure Control Laboratory of the National Center for Radiological Health in Rockville, Md.

1963

Dr. Richard A. Kashnow has been appointed a group liaison scientist at the Research and Development Center in Schenectady, N.Y. In his new position he will be responsible for maintaining a two-way flow of information between GE's major appliance business group and the Center. He joined the Center in 1970 as a physicist specializing in research on liquid crystals. He is a member of the American Physical Society.

1964

Richard R. Brown was recently promoted manager of marketing communications at Data General Corporation in Southboro, Mass. He will be in charge of all advertising, press relations, exhibits, and sales promotion related to marketing worldwide. Dick started work for the firm in 1970 as a public relations specialist and later served as manager of advertising and sales promotion. Last November he became manager of corporate information and advertising. . . . Currently Steven C. Grossman is property manager and administrative coordinator at Cabot, Cabot & Forbes Co., Cambridge, Mass. . . . Mr. and Mrs. Edward M. Jablonski, SIM, were given a surprise silver wedding anniversary party by their three children on May 10th. One of their gifts was a trip to Bermuda. Jablonski is an industrial engineer at Ray-O-Vac. . . . Dr. Mason H. Somers, assistant professor of mechanical engineering at the University of North Dakota, has been appointed to the new post of manager of engineering experiment station at the university. The station, founded in 1902, is the R&D arm of the engineering school, administers research contracts and helps faculty members in their research. New research and development projects will be carried out at the experiment station.



ain Frank J. Pinhack, a pilot in the FR, is presently stationed at Westover in Massachusetts.

66

athan H. Pardee has opened his own office for Occidental Life of California in Atlanta and has been appointed general agent for the company. Last year he joined Occidental as an agent for America's Atlanta branch. He is a member of the National Life Underwriters Association.

67

ed: James P. O'Rourke and Miss Mary Dolan in Worcester on June 28, 1975. O'Rourke graduated from Worcester College and teaches at Our Lady of the Holy Child School. The groom, who graduated from the Coast Navigation School of Santa Barbara, Calif., is now working for his doctorate in astrophysics and is an electrical engineer and project coadviser at MIT.

hn P. Dow is in sales and marketing at American Aircraft in Savannah, Ga.

radford A. Johnson received his juris doctorate degree from the University of Michigan in June and is now an estate tax lawyer with the Internal Revenue Service in Cleveland, Ohio. . . . Recently Joel B. Kameron became the first graduate of City University of New York to receive a doctor of philosophy degree in environmental psychology from the school. He now teaches environmental psychology at Ramapo College in Mahwah, New Jersey. . . . Dan B. Levinson holds a position of president at Crown Mt. Construction Corp., Aspen, Colorado.

8

rt J. Attermeyer works as a naval architect in the organization of planning and engineering for repairs and alterations for amphibious ships and is located at the Norfolk Naval Shipyard in Portsmouth, Va. His organization does the early planning for the hulls of amphibious ships. Attermeyer's specialty is the field of ship stability. . . . Gary Horn has purchased Brookside TV Sales & Service in Nabbasset, Mass. He is an avid

l railroader and belongs to the Westbrook Railroad Club and the National Model Railroad Association. He also belongs to Westford Business Associates. Formerly a financial analyst, Neil W. Lee was recently named business development manager for the Coated Abrasives Division of the North American Abrasive Division at Norton Co., Worcester. Before joining Norton he was a project engineer with Huntington Co. . . . Theodor A. Heidt, who has been a lieutenant and civil engineer in the U.S. Navy, is attending Carnegie-Mellon University Graduate School of Industrial Administration in Pittsburgh.

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William G. Polk has been promoted to data processing officer at People's Savings Bank in Bridgeport, Conn. He joined the data processing programming staff at the bank in 1967. Since then he has served as senior programmer, systems analyst, research analyst, and operations research analyst.

. . . Jeffrey E. Shaw is now a section head at Data General, Southboro, Mass.

. . . Malcolm Wittenberg serves as a clerk to Associate Justice P.B. Baldwin of the U.S. Court of Customs and Patent Appeals in Washington, D.C.

## 1969

*Married:* Bruce Lee Tuttle and Miss Carol Ann McClenahan in Centre Hall, Pennsylvania on June 14, 1975. Mrs. Tuttle, a graduate of Pennsylvania Valley High School, is employed at Penn State University. Her husband is a doctoral candidate at Penn State, where he is employed as an instructor in industrial and management systems engineering.

Ernest K. Kenneway, SIM, has been named president of Specialty Valve and Controls of Fairview, Pa., a division of White Consolidated Industries. . . . Donald W. Rule has received a doctorate in physics from the University of Connecticut. He is a member of the American Society of Physicists.

. . . Joseph Stahl has his MBA from American International College.

## 1970

*Married:* Howard G. Norcross and Miss Bethel Jane Bladen on June 7, 1975 in Chatham, Massachusetts. The best man was Garrett Graham, '70. Ushers from WPI were Peter G. Bladen and Thomas Mallory, both of the class of 1970. The bride is a graduate of Colby Junior College, New London, N.H. and is currently a medical secretary. The bridegroom is a partner with his father in their construction business in South Chatham.

The Graduate School of Arts and Sciences at Harvard University has awarded the PhD degree in solid state physics to Stephen E. Bernacki. Dr. Bernacki is on the staff at MIT and is presently conducting research at MIT's Lincoln Laboratory in Lexington. . . . Maria DiNorcia Allo, MNS, received her doctor of medicine degree from the University of Michigan Medical School in May. She began her residency in surgery at the University of

Michigan Medical Center in July. Her husband, Clifford Allo, is research director of the Michigan Governor's Commission on Workmen's Compensation. . . . Lt. j/g Paul Dresser is rounding out his second year as a Navy pilot on the USS Midway. He and his wife, Sue, have been living in Japan, but expect to return to the States soon.

. . . James G. Hannoosh recently received the degree of doctor of philosophy with high distinction from MIT. His thesis, done in the field of mechanical engineering, was entitled: "Craze Initiation in Glassy Polymers." . . . Mr. and Mrs. Richard E. Scholz have adopted a 15-month-old Vietnamese baby whom they have named Tara Lisa. The couple also has a three-year-old son, Karl. Scholz is with the New England Telephone Co. in Framingham, Mass. . . . Suffolk University has awarded Richard Schwartz a juris doctor degree.

. . . Ross Willoughby serves as a computer programmer and analyst at F.W. Faxon Co., a library subscription agency in Westwood, Mass.

## 1971

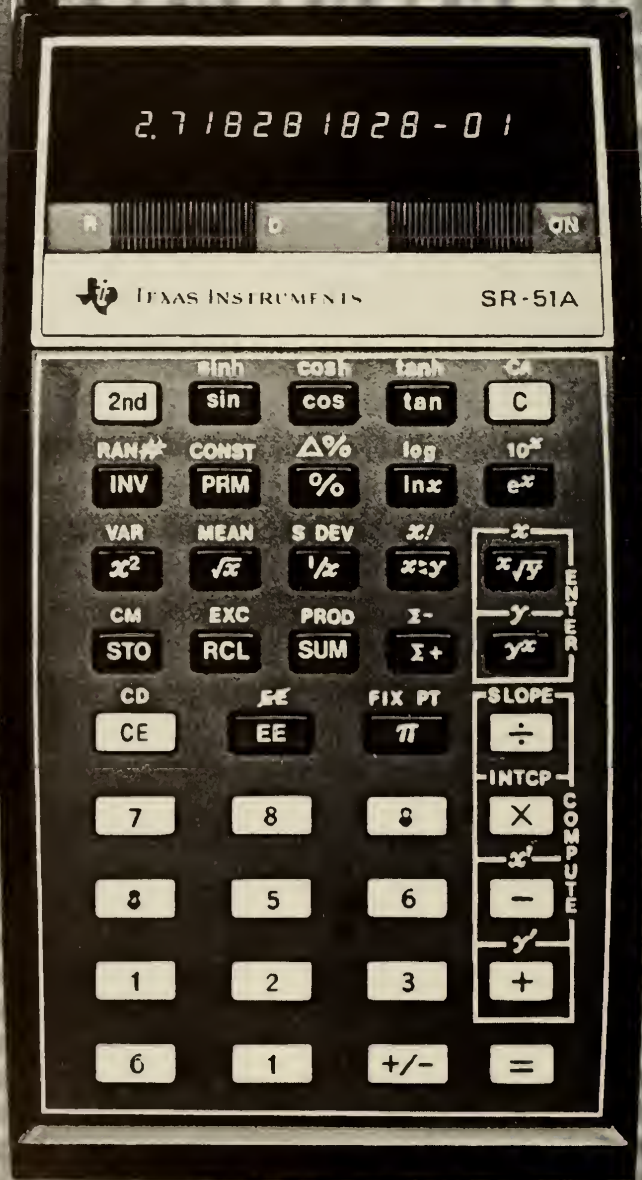
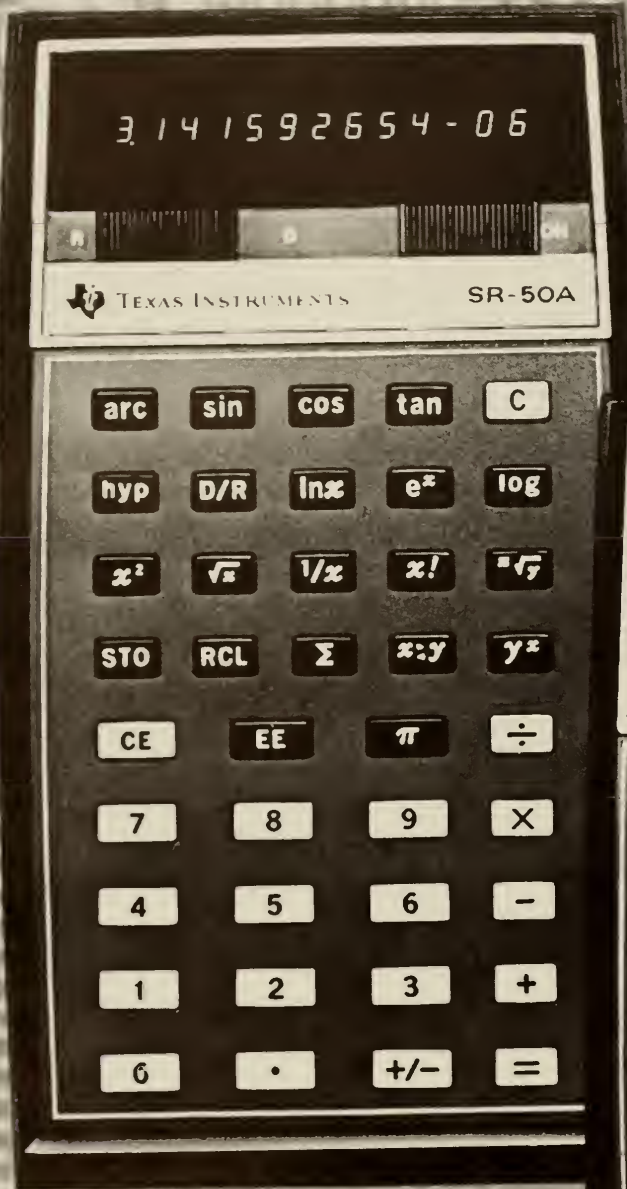
*Married:* James P. Murphy and Miss Laura J. Winslow on June 28, 1975 in Nashua, New Hampshire. The bride is director and choreographer of the Nashua School of Ballet and the Nashua Ballet Co. Her husband works for the Impco Division of Ingersol Rand in Nashua.

*Born:* to Mr. and Mrs. Donald Usher, a son, Christian Donald, on July 9, 1975. Don is with Babcock & Wilcox Co. and is currently on assignment in Harrisburg, Pa.

Gary Berlin works for United Nuclear in Uncasville, Conn. . . . Kent D. Borner is southern New England sales representative for Tenneco Chemicals, Inc., in Piscataway, N.J.



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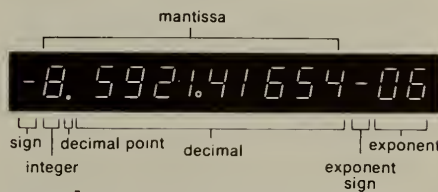
FUNCTION	SR-51A	SR-50A
log, ln x	yes	yes
trig (sin, cos, tan INV)	yes	yes
hyperbolic (sinh, cosh, tanh, INV)	yes	yes
degree-radian conversion	yes	yes
deg/rad mode selection switch	yes	yes
decimal degrees to deg. min. sec.	yes	no
polar-rectangular conversion	yes	no
$e^x$	yes	yes
$10^x$	yes	yes
$x^y$	yes	yes
$\sqrt{x}$	yes	yes
$\sqrt[y]{x}$	yes	yes
exchange x with y	yes	yes
exchange x with memory	yes	no
and $\Delta$ %	yes	no
mean, variance and standard deviation	yes	no
linear regression	yes	no
Trend line analysis	yes	no
Slope and intercept	yes	no
store and sum to memory	yes	yes
recall from memory	yes	yes
product to memory	yes	no
random number generator	yes	no
automatic permutation	yes	no
reprogrammed conversions	20	1
digits accuracy	13	13
algebraic notation (sum of products)	yes	yes
memories	3	1
fixed decimal option	yes	no
keys	40	40
second function key	yes	no
constant mode operation	yes	no

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designed to take a beating. It's a quality calculator. And you know it as soon as you get your hands on one. The heft and solid feel tells you it's a fine-quality instrument even before you press a key.

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miles	nautical miles
acres	square feet
fluid ounces	cubic centimeters
fluid ounces	liters
gallons	liters
ounces	grams
pounds	kilograms
short ton	metric ton
BTU	calories, gram
degrees	gradients
degrees	radians
°Fahrenheit	°Celsius
deg. min. sec.	decimal degrees
polar	rectangular
voltage ratio	decibels

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**Reginald G. Dunlap** recently promoted to a Regional Controllershship in the Folding Carton and Label Division at International Paper Company in Baltimore, Maryland. His position has asset control for production facilities servicing a sales region covering the twenty three coastal or adjacent states in the eastern area. Previously he was the Plant Controller in the company's Container Division, a position he assumed after a promotion out of the Corporate Treasurer's Organization in New York. Prior to joining International Paper, he received an MBA in Corporate Finance from Columbia University.

Presently **Joseph B. Kaye** holds the post of president and manager at City Cleaners, Inc., Springfield, Mass. . . . **Paul Popinchalk** has been employed at Bovee & Crail, mechanical contractors, in Richland, Washington. At the present time he is in charge of counting neutrons on a nuclear power plant project. . . . **Francis J. Wehner, Jr.**, is associated with the Electric Boat Division of General Dynamics in Groton, Conn.

## 1972

*Married:* **Charles L. Deschenes** and Miss Michelle A. Paquette on June 13, 1975 in Albion, Rhode Island. Mrs. Deschenes graduated from Rhode Island College. The groom is a product engineer for Fram Corp., heavy duty air filter group, East Providence. . . . **Linda M. Dupont** to David Gordon on May 18, 1975 in Massachusetts. Mrs. Gordon is an engineering programmer analyst for Morgan Construction, Worcester. Her husband, a graduate of Northeastern, is credit manager for Mast Industries in Norwood, Mass. . . . **Glenn O. Mortoro** to Miss Lynn R. Sanctuary on June 21, 1975 in Shrewsbury, Massachusetts. The bride graduated from Fitchburg State College and the Memorial Hospital School of Nursing. She is a registered nurse. The bridegroom who works for Electric Boat in Groton, Conn., also attends graduate school at the University of Connecticut. . . . **Wesley C. Pierson** and Miss Martha M. Dolan in Northboro, Massachusetts on February 21, 1975. Mrs. Pierson attended Holy Cross College. Her husband is studying for a PhD in the department of pharmacology at the UConn Medical Center in Farmington.

*Born:* Recently to Mr. and Mrs. **Mark Dupuis** a daughter, Bridget. Mark, who set a school record at WPI with a distance of 153'9" in the discus event, is still competing and winning. Last spring he set an all-time New England AAU record of 182'3". He is now competing on a national level and is looking forward to participating in the 1976 Olympic time trials. . . . To **Jack and Lee (Small) Zorabedian** a daughter, Cynthia Lynne, on June 5, 1975. Jack is with the General Electric Boiling Water Reactor Operation in San Jose, Calif.

**Kenneth C. Arifian** serves as a design engineer at Sikorsky Aircraft in Stratford, Conn. . . . Schlumberger-Doll Research Center, Ridgefield, Conn., has employed **Edwin J. Dolph** as a senior programmer and analyst. . . . **John C. Egan**, MNS, is head of the science department at Tyngsboro (Mass.) High School. . . . **Arthur G. Gage**, MNS,

teaches physics in the Agawam (Mass.) Public School System . . . Lt. **Adrien L. Gaudreau, Jr.** has been transferred to Ent AFB, Colorado Springs, Colo., where he works for the NORAD Cheyenne Mountain Improvement Program field office as a member of the Installation and Site Activation Division. The object of the project is to replace out-dated computers with new Honeywell and Data General computers. . . . **George A. Oliver** works for Exxon in Florham Park, N.J. . . . **Robert Pascucci** is attending St. John's University School of Law in the part-time evening program. Presently he is a project engineer for HRH Construction (Management) Corporation in New York City.

## 1973

*Married:* **Fermo A. Bianchi, Jr.**, to Miss Marion J. Hulme on June 6, 1975 in Framingham, Massachusetts. The bride graduated from Vermont College. . . . **James M. Foster** and Miss Faith Hull on May 24, 1975 in West Taghkanic, New York. Mrs. Foster graduated from Becker and is employed by the Dormitory Authority of the State of New York. Her husband works for General Electric Co. . . . **Kenneth M. Johnson** and Miss Andrea S. Hershoff on May 25, 1975 in West Park, New York. The bride has a degree in psychology from Clark University. The groom is a member of the American Society of Planning Officials. . . . **Paul W. Melnick** and Miss Mary H. Hiza in Fairfield, Connecticut on June 28, 1975. Mrs. Melnick graduated from Housatonic Community College and attended the University of Bridgeport. The bridegroom is a technical systems planner at Avco Lycoming.

*Born:* to Mr. and Mrs. **Daniel L. Eide** a son, Daniel L. Eide, Jr., on June 20, 1975. Dan works for Hammond Plastics in Worcester.

**Stephen J. Baum** is with General Dynamics Electric Boat Division in Groton, Conn. . . . In June **Jeffrey R. Berry** received his MS in engineering from the Thayer School of Engineering at Dartmouth. . . . **Garry A. Boynton** now serves as an analytical chemist for the State of New York. . . . **Paul A. Christian** was a coauthor of the article, "Quantitative Analysis in General Chemistry" which appeared in the May issue of the *Journal of Chemical Education*.

. . . **Glen E. Johnson** is a mechanical engineer at Tennessee Eastman in Kingsport, Tenn. . . . **Frederick J. Kulas** has completed the General Electric Company's manufacturing management program and will continue to work as a project engineer in advanced manufacturing engineering at GE's circuit protective devices department in Plainville, Conn. until this fall when he will start the MBA program at Harvard Business School. . . . **Donald A. Kunz** has received his MSEE from Western New England College. . . . Currently **Philip S. Medeiros** is chief of engineering administration at General Dynamics' Electric Boat Division in Groton, Conn. . . . **Thomas O. Murphy** is a manufacturing engineer at Filterite Corporation in Timonium, Md. The company, which manufactures filtration equipment, is a subsidiary of Brunswick Corporation of Skokie, Ill. . . . **Paul Tassinari** received his

MSME from WPI in May. He is presently employed at Alden Laboratories. . . . **John Ward** recently completed his MS degree requirements in atmospheric science at Purdue University in West Lafayette, Ind. He is continuing his work at Purdue and hopes to earn his PhD within the next three years. . . . The University of Kentucky has awarded **Mark D. Whitley** his MS in chemical engineering. . . . **George E. Yesowitch** now manages the specialty gas department at Mass. Oxygen Equipment Co. in Westboro, Mass.

## 1974

*Married:* **Paul R. Boulier** to Miss Linda M. Kelley on April 26, 1975 in Gardner, Massachusetts. The bride is a Gardner High School graduate, is with New England Telephone Co. Her husband is a research associate with FRL and Albany International Co. in Dedham, Mass. . . . **Stuart A. Daniels** to Miss Ann C. Gienty on June 22, 1975 in Bristol, Connecticut. Mrs. Daniels is a Beck graduate and is a medical secretary at University Hospital in Boston. Her husband is a chemist for the Boston Insulated Wire and Cable Co., Plymouth, Mass. . . . **James F. Ingraham IV** to Miss Stephanie M. Martin in Gloucester, Massachusetts on June 21, 1975. Mrs. Ingraham attended Anna Maria College, Paxton, Mass., and is an art major at the Massachusetts College of Art. The groom works at Polaroid Institute, Perkins Chemical Division, Waltham, Mass. . . . **Chester A. Kokoszka** and Miss Laura Lipinski on June 6, 1975 in Meriden, Connecticut. The bride graduated from Skidmore College and is a procurement analyst at the Naval Undersea Systems Center in New London. Her husband is employed at Northeast Utilities as an assistant engineer. . . . **Peter W. Kotilainen** and Miss **Helen Jean Rosen**, '75, in Fitchburg, Massachusetts on June 2, 1975. Mrs. Kotilainen is studying for her master's degree in microbiology. The bridegroom is working for his PhD in biomedical engineering and is employed as biomedical engineer on the critical care team and as the cardiac catheterization technician at St. Vincent Hospital, Worcester. . . . **Thomas Spence III** and Miss Joyce C. Galligan on June 21, 1975 in New Bedford, Massachusetts. Mrs. Spence graduated from St. Luke's Hospital School of Nursing in New Bedford and is a nurse at Faulkner Hospital in Boston. Her husband works for Stone & Webster in Boston.

Cadet **William C. Britton** was awarded a BS degree and commissioned a second lieutenant in the U.S. Army Corps of Engineers at commencement exercises held at West Point. Following courses at Fort Belvoir, Va. and Fort Bragg in Georgia, he will be assigned to an engineering battalion in Germany for three years. . . . **Charles W. Chistolini** is district supervisor of construction and maintenance at Texaco, Inc., Albany, N.Y. . . . **Mary E. Downing** is process engineer at E.I. duPont de Nemours & Co., Wilmington, Delaware. . . . **James C. Ferraris, Jr.**, has joined the Trane Company's Commercial Air Conditioning Division sales office in Hartford, Conn. Trane is a leading manufacturer of air conditioning refrigeration and heat transfer equipment for



mercial, residential, industrial, transport  
 special process applications and has  
 s and facilities worldwide. Ferraris  
 tly completed the Trane Graduate  
 eer Training Program. . . . **George M**  
**na, Jr.**, works as a project engineer at  
 Diamond Coal Co., Knoxville, Tenn.  
**Richard P. Ludorf** has been employed  
 ke Power Co. in Charlotte, N.C. He  
 ved his master's in engineering from RPI  
 ne. . . . **John W., Thurber** is with the  
 Facilities Engineering Command in  
 ndria, Va. . . . **Edwin O. Wiles** serves  
 earch engineer for Southwest  
 arch Institute in San Antonio, Texas. He  
 een at the Institute since  
 . . . **Norman Szamocki** is working at  
 ehem Steel in Bethlehem, Pa.

**75**  
 id: **Bruce P. Altobelli** and Miss Jane  
 no recently in Leominster,  
 achusetts. Mrs. Altobelli graduated from  
 ewater State College. . . . **Thomas E.**  
 er to Miss Marie A. Tassinari on June 7,  
 in Plymouth, Massachusetts. Mrs.  
 er graduated from Anna Maria College.  
 room is employed by the U.S. Army  
 rial Command in Texarkana, Texas. He  
 o attending graduate school at Texas A  
 . . . **Robert E. Bradley** to Miss Cheryl  
 amache in Paxton, Massachusetts on  
 14, 1975. The bride is a senior at Anna  
 College. Her husband is a programmer  
 S. Steel Corp. . . . **Brian E. Carpenter**  
 Miss Susan E. Morrison on June 14 in  
 Scituate, Rhode Island. Mrs. Carpenter  
 ated from Rhode Island College. The  
 n is associated with his father at Long  
 y and Insurance Co. in Scituate.  
**Bruce T. Croft** and Miss LuAnn M.  
 ella on June 7, 1975 in Worcester. The  
 graduated from Eisenhower College and  
 ngham State College. Her husband is  
 yed by the Worcester Foundation for  
 mental Biology in Shrewsbury, Mass.  
**Richard E. Gallagher** and Miss Elizabeth  
 rie in Georgetown, Connecticut on June  
 75. The bride, a graduate of the  
 wich (Conn.) Hospital School of  
 ng, is a registered nurse at Putnam  
 nunity Hospital, Carmel, N.Y. The  
 groom is a test engineer at Sikorsky  
 on of United Aircraft in Stratford, Conn.  
**ried: Stanley I. Goldfarb** to Miss  
 a A. Dumas in Providence, Rhode Island  
 ne 20, 1975. Mrs. Goldfarb attended  
 Maria College, Paxton, Mass. Her  
 nd received a graduate assistantship at  
 where he is studying computer science.  
**avid H. Kingsbury** and Miss Elaine A.  
 is on June 14 in Worcester. Mrs.  
 bury attended Quinsigamond  
 nunity College. The bridegroom is with  
 anto Chemical Co. in Havre de Grace,  
 . . . **Mark J. Koris** to Miss Francine  
 ve recently in Andover, Massachusetts.  
 ride graduated from Wheaton College  
 esley College where she studied for her  
 r's degree. . . . **Vance A. Rowe** to  
 Diane E. McGarry on July 19, 1975 in  
 field, Massachusetts. Mrs. Rowe  
 ated from Becker and is a store  
 ger for Foxmoor Casuals, Inc. The  
 n is a chemical engineer for Monsanto  
 in South Windsor, Conn. . . . Lt.

**Douglas R. Sargent** and Miss Pauline S.  
 Conn on June 7, 1975 in Concord, New  
 Hampshire. The bride graduated from  
 Concord High School and is employed by  
 the Brick Tower Motel, Concord. The bridegroom  
 is a second lieutenant in the U.S. Army  
 Reserve. . . . **Peter E. Schwartz** and Miss  
 Donna J. Corcoran on May 18, 1975 in  
 Worcester. Mrs. Schwartz, a graduate of  
 Becker Junior College, was an executive  
 secretary for Miles Shoe Co. Her husband is  
 a sales engineer for BALCO, Inc., Medford,  
 Mass. . . . **Michael Sundberg** to Miss  
 Paulette Bulat in Connecticut on June 7,  
 1975. The bride graduated from Becker and is  
 employed by Hartford Publications in Enfield,  
 Conn.

**Arthur Aikin** is employed as a materials  
 engineer with the Naval Air Engineering  
 Center in Lakehurst, N.J. He is with the  
 engineering standardizations and  
 specifications department. . . . **John P.**  
**Aubin** is a graduate student at the University  
 of Pennsylvania. . . . Masoneilan International,  
 Norwood, Mass., has employed **John J.**  
**Balint** as a member of the management  
 development program. . . . **Robert J. Byron**  
 has joined Universal Oil Products.  
 . . . **Stephen A. Caggiano** works for AFI,  
 Inc. . . . **Richard Dachowski** is employed at  
 Marlboro (Mass.) Hospital. . . . **Lynn W.**  
**D'Amico** is with Data General in Westboro,  
 Mass. . . . Belden Hemenway Corporation has  
 employed **Joseph T. Del Ponte**. . . .  
**Michael Dolan** has accepted a position with  
 Universal Oil Products Co. in Riverside, Ill.  
 . . . **David M. Dorosz** has joined the U.S.  
 Army Materiel Command. . . . **Charles W.**  
**Embree** is a field and purchasing engineer  
 with Westinghouse. . . . Westinghouse Corp.  
 has employed **Glencraig Fraser, Jr.**, as a  
 project engineer. . . . **Michael J. Gula** is a  
 graduate student at Dartmouth and  
**Randolph B. Haagens** is doing graduate  
 work at MIT. . . . **Robert A. Hart** works for  
 the Federal Communications Commission in  
 Washington, D.C.

**Robert R. Hellman, Jr.**, a graduate  
 assistant in mechanical engineering, is  
 studying for his master's degree at WPI.  
 . . . **Robert D. Jamieson, Jr.**, is associated  
 with research and development at Butcher  
 Polish Co., Marlboro, Mass. . . . **Gerald S.**  
**Kahn** has joined Poly Plate, Inc., Worcester.  
 . . . **Edward J. Karedes** works as a design  
 mechanical engineer at Sikorsky Aircraft in  
 Stratford, Conn. . . . **Mark Ketchum** is a  
 graduate student at the University of  
 California at Berkeley. . . . Union Carbide  
 Corp. has employed **Jerry Kinter**.  
 . . . **George A. Klug** works for Sikorsky  
 Aircraft, Stratford, Conn. . . . **Terrence Lee**  
 is doing graduate study in chemical  
 engineering at Cornell University. . . . **Leo**  
**Letendre** has been awarded a \$1,000  
 scholarship by the NCAA Postgraduate  
 Scholarship Committee's other sports  
 division. The grant will be used at a university  
 or a professional school of his choice.  
 (Harvard) Letendre is one of 32 graduates  
 nationwide to receive the award and one of  
 two New Englanders. During his swimming  
 career at WPI, he broke all existing  
 breaststroke records.

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**Francis B. Clapp, '05**, of Buderim, Queensland, Australia, passed away on May 18, 1975 at the age of 93.

He was born in Melbourne, Australia on November 28, 1881 and graduated as an electrical engineer from WPI in 1905. From 1906 to 1920 he was with General Electric Co. in various capacities throughout the U.S.A., England, Canada, and Australia. He operated his own business from 1921 until 1930 and later served as chairman and general manager of Associated General Electric Industries, Sydney, Australia and chairman of directors of Australian General Electric, Ltd.

Mr. Clapp was a member of SAE and the Institute of Engineers, Australia.

**Roger B. Hubbell, '09**, founder and owner of Hubbell Tool Co., died in Wellesley, Massachusetts on July 2, 1975. He was 88 years old.

A native of Bristol, Conn., he was born on December 3, 1886. In 1909 he received his BSME from WPI. For a number of years he was a sales engineer for Greenfield Tap & Die. He ran the Hubbell Tool Co. of Needham for thirty years, until he was eighty years old.

**Sih-Zung Yang, '14**, of Taipei, Taiwan, died in September of 1974.

For many years he served as director of China Products Trading Corp. in Taipei.

He was born on January 9, 1894 in Shanghai, China. In 1914 he received his BSEE from WPI and in 1915 he earned his MA at Columbia. From 1916 to 1921 he was chief of engineering at Glaston, Williams & Wigmore, Shanghai. Later he served as a manager for Elbrook, Inc. in Shanghai and Tientsin.

During World War II he was director of Merchant Shipping and Defense Supplies, Inc., Washington, D.C.; director and vice president of G.R. Coleman & Co., Inc., Shanghai; and councillor of the Alien Property Administration for the national government of China.

Mr. Yang belonged to Tau Beta Pi, AIEE, and the Friends of China Club and the YMCA in Taipei.

**Allen D. Wassall, '17**, former director of the John Woodman Higgins Armory and former president of Gaychrome Co., died on July 7, 1975 in Worcester. He was 80.

He served as director of the armory from 1962 to 1968. During that time he represented the armory-museum, which has one of the few privately owned collections of armor and ancient weapons in the world, at international conferences and auctions. In 1966 he attended a World Armor Congress in Leningrad and Moscow and visited museums and collections in France and Germany. In 1967 he purchased a cante plate, protective armor made for a horse, which was part of a 16th century matching set — the Higgins Armory already owned the knight's armor. At his retirement, the museum owned 154 suits of armor.

Previously Mr. Wassall had served for 17 years as president of Gaychrome Co. and as assistant to the president of Alden Electronics Co., Westboro, where he had been in charge of exhibits and public relations. At one time he was assistant treasurer of Sweeper Vac. Co.

He was born on August 21, 1894 in Nutley, N.J. In 1917 he received his BSEE from WPI. He served with the Army Air Corps in World War I and had been on the faculty at the University of New Hampshire. He was former chairman of the governing board at Worcester Junior College, a former member of the Great Brook Valley Commission and was active with the YMCA and the Worcester County Power Squadron. He also was a member of SAE, a 32nd degree Mason, a Shriner, and a member of the WPI Advisory Council.

**Daniel T. McCarthy, '21**, died in Springfield, Massachusetts on June 11, 1975 at the age of 76.

He was a consulting engineer who owned and operated D.T. McCarthy Associates in Springfield for many years. Previously he was with H.B. Smith Co., Westfield, Mass.; and Kohler & Kohler Co.

Born on May 3, 1899, in North Brookfield, Mass., he later graduated as a mechanical engineer from WPI. He belonged to the American Association of Engineers and served with the Army in World War I.

**Joesph J. Piekarski, '28**, of Westfield, Massachusetts died on February 8, 1975 at the age of 67.

He received his BS in mechanical engineering from WPI in 1928. For a number of years he was associated with the P.P. Kellogg Co., Westfield, Mass. He belonged to Sigma Xi and Tau Beta Pi.

**Allan G. Hall, '31**, retired manager of distribution for the Brooklyn Union Gas Company, died July 6, 1975 in Ridgewood, New Jersey.

He was born on November 23, 1909 in Worcester. After graduating from WPI as a civil engineer in 1931 he joined Brooklyn (N.Y.) Union Gas Company, where he remained until his retirement forty-two years later.

Mr. Hall was a professional engineer in New York state and belonged to Lambda Chi Alpha. He was on the board of governors of the Elsinore Property Owners Association.

**Clement R. Barlow, '32**, of Newcomerstown, Ohio, died on June 29, 1975 at the age of 65.

He was born on November 24, 1909 in Fitchburg, Mass. and graduated from WPI as a mechanical engineer. From 1935 to 1955 he worked for Simonds Saw & Steel Co. in various capacities. Later he was vice president of Heller Tool Co., Newcomerstown (a subsidiary of Simonds). At his retirement he was general manager for Simonds Tool Co.

Mr. Barlow belonged to Phi Sigma Kappa. His son, Dennis, was a member of the class of 1965 at WPI.

**George W. Busby, Jr., '36**, of Greenville, South Carolina, died on May 2, 1975 after a long illness.

He was born in North Andover, Mass. on January 26, 1914. Following his graduation from WPI as a chemist, he was with Lever Brothers in New York City from 1936 to 1939. For four years he was plant manager for Los Angeles (Calif.) Soap Co. After a two-year stint as a self-employed consultant, he joined Standard International Corp., Andover, Mass., where he served as vice president of manufacturing. In 1967 he became general manager of manufacturing at Texize Chemicals, Inc., Greenville, S.C.

Mr. Busby belonged to the American Institute of Chemists, the American Oil Chemists Society, ACS, the Research Society of America, and the American Association of Advancement of Science.

**Ferdinand S. Skwark, '40**, of Monson, Massachusetts, died suddenly on May 13, 1974.

He was born on November 15, 1916 in West Rutland, Mass., later studying at WPI. For many years he operated the Monson Theatre and the Theatre Shop. He also was correspondent for the *Daily News*. During World War II he served with the Air Force and the Army Airways Communication group.

Mr. Skwark was a member of the Republican Town Committee and the State Club of Massachusetts.

**Leon Rosenthal, '44**, of Haddonfield, New Jersey died on December 12, 1974.

He was born on January 19, 1922 in Philadelphia, Pa. and graduated as a mechanical engineer from WPI in 1944. After serving two years in the Navy, he worked for E.G. Budd Co., Philadelphia and RCA Victor in Camden, N.J. Later he joined Westinghouse Electric Corp., Lester, Pa. and then General Electric Co. where he became manager of the structures test laboratory in Philadelphia.

A registered professional engineer, he was also an instructor in the Technical Institute Temple University. He belonged to Alpha Epsilon Pi and was president of Temple B'nai Shalom in Haddon Heights, N.J.



**"Our Republic was never created to be a leveler of man. It was created to be a lifter, a developer of men.**

"Our Republic was created to let the gifted, the energetic, and the creative rise to new heights of achievement, and to let each man find his own level on the stairway of existence.

"Our Republic was created to encourage men to meet their personal responsibilities and to shirk no public duties. That is why our people have always been concerned about the honest needs of their fellow citizens, the chief of these needs being liberty, justice, and opportunity.

"Our Republic demands that the nation be governed by the capable, the honorable, the far-seeing, the clear-seeing, and not by mediocre men. In the beginning it was so. May it be so again.

"Our Republic demands more from men than any other system in the realm of self-discipline, dependability, cooperativeness, industry, thrift, and honor. For anyone to foster class consciousness, class conflict, misrepresentation, covetousness, violence, theft, and an open defiance of established law—even when done "legally"—is to breed anarchy and tyranny.

"Our Republic was not designed to interfere with the inalienable right of its people to be masters of their own destinies.

"Our Republic was established to make men free!"

We welcome this 200th anniversary as we welcome every important milestone in our lives . . . a significant occasion for celebration, reflection and rededication.

**WYMAN - GORDON** 



■ DECEMBER 1975

# WPJ Journal





TABLE

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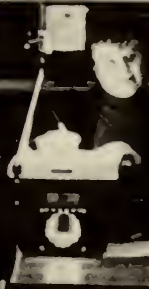
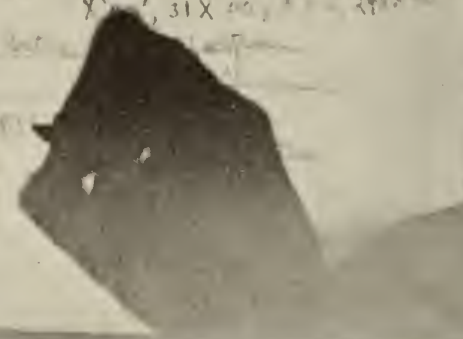
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by the editor

## you reading this magazine?

's kind of a silly question to here. But a lot of nonsilly questions were asked of alumni in a telephone survey. Some 250 alumni, selected at random, were asked about their reading habits and preferences with respect to the *Journal* and *Newsbriefs*. One important question we were looking for answers to dealt with the kind of articles in the *Journal*: should they all — and *Newsbriefs* — be directly related to campus or should general-interest articles be included if there is some connection — authorship by an alumnus or a faculty member (such as the "Fire up above!" article in the August *Journal*)? One-third of the respondents wanted only WPI-related stories, but a clear majority, 60%, wanted a mix of the two types. With regard to *Newsbriefs*, we asked whether alumni wanted to receive it as a separate publication, or would they prefer it integrated into the *Journal*. More than half want *Newsbriefs* to continue as it is, while 36% opted for the publication instead of two.

This survey was done to help the Alumni Association deal with questions raised in a recent report of the Communications Committee. That report suggested that perhaps a publication entirely different from the *Journal* and *Newsbriefs* might

better serve Association and alumni interests, but that alumni should be surveyed to determine their attitudes toward the present publications. A follow-up survey is also being done to try and pinpoint interest in specific areas.



### John Boynton returns?

Not quite, but the replica of the peddler's cart above was just the type of vehicle that launched the fortune of WPI's founder a century ago. The model, built in the 1920s, was lent to Gordon Library by the Society for the Preservation of New England Antiquities, in Boston. The cart and other items were on display in the library's entranceway this fall.

About 18" long, the cart is made of wood and metal, and it carries over 200 small items of household goods, all reproduced to scale. Mops, pails, dishpans, mugs, pitchers, clothespins and washbaskets, bolts of cloth and spools of thread festoon the vehicle.

This exhibition marked the first time that the Society has ever lent out the cart.



# **The WPI Alumni Association**

working for you

*Reunion weekend*

*Homecoming*

*Fund-raising*

*Chapter and regional  
programs*

*Awards for service to WPI*

*The WPI Journal*

*Nomination and election of  
alumni term trustees*

*Group travel*

*Group insurance*

*"Opportunities" – alumni  
placement*

*Alumni records*



*Alumni admissions*

*Awards for professional  
achievement*

*Student scholarships*





# WPI's future as a private college: some different perspectives

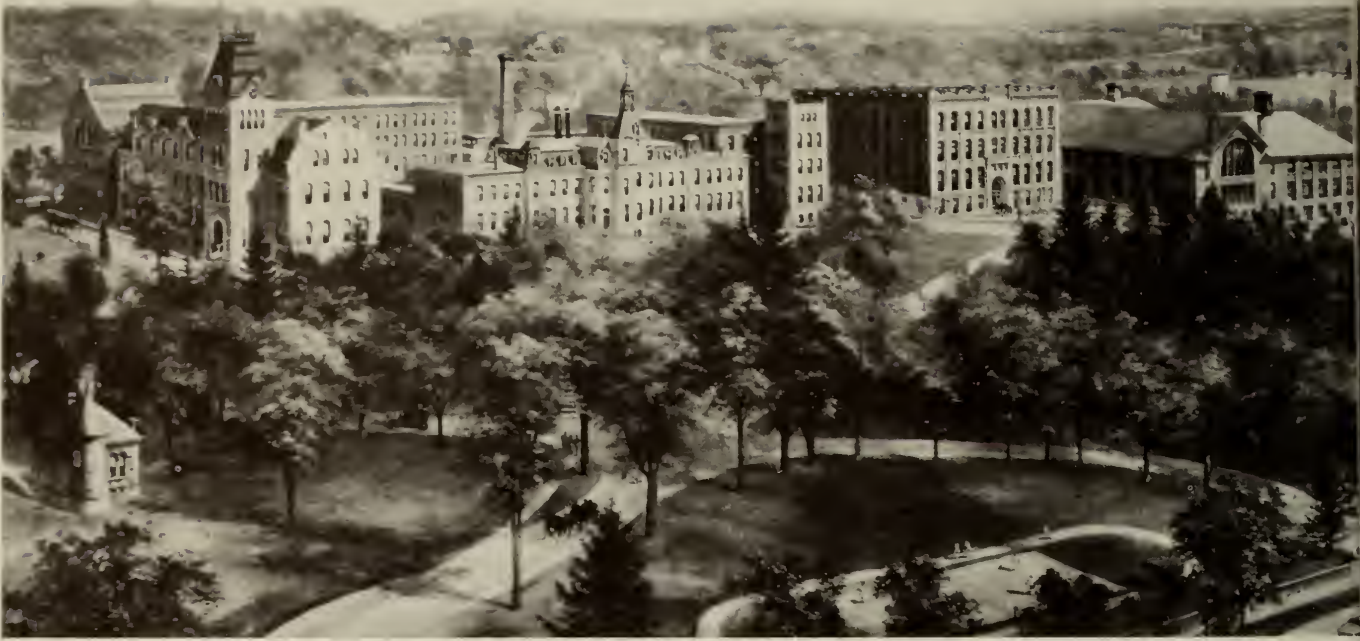
Donald F. Berth

In the past few years there seems to have been mounting concern for the future of *private* higher education. Is it well served? And if so, what are the implications for private science and engineering schools like WPI? We are all aware of the proliferation of two-year, close-to-home community colleges; the upgrading of "teachers' colleges" to more comprehensive institutions in many states; and the rapid growth of research university centers. Soaring operating costs (for private and public institutions) have widened the gap between income and expenses. And the current public disenchantment with higher education has contributed to the dismay. Those of us with memories seem to forget that the 1960-70 decade was probably the most affluent one for higher education, both public and private. So what we are experiencing now is probably closer to the norm — trying to keep the wolf from the door of the academy. What about WPI? In what ways are the broad issues affecting *private* higher education affecting Tech? What are our

bright spots . . . and our soft spots? There are a number of good questions we could be asking ourselves and the faculty and administrators at the Institute; I have chosen to consider those that follow, hoping they may stimulate further dialogue among *Journal* readers.

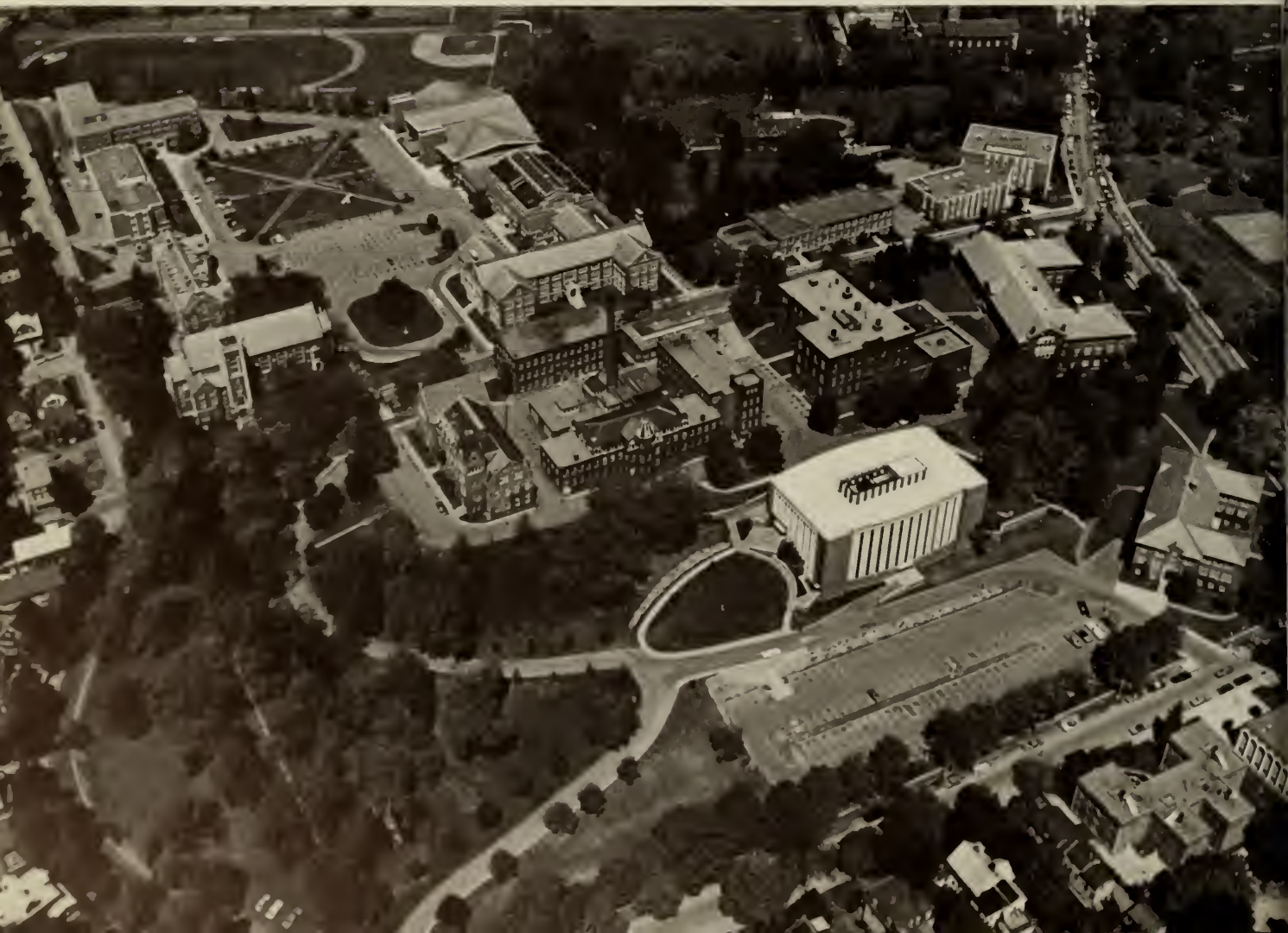
While a few engineering programs existed before the Civil War (only the U.S. Military Academy at West Point, 1804, and Rensselaer Polytechnic Institute, 1824, were of enduring consequence), it was the impetus gained through passage of the Morrill Land Grant Act in 1862 (whose author was a New Englander, Vermont Senator Justin Morrill) that translated the mechanical arts to center stage throughout the nation. The act itself was the basis upon which public higher education grew. Consequently, it is hardly anything new for *private* engineering institutions such as WPI (founded in 1865) to compete with public engineering at large. Massachusetts, however, was to wait until 1947 when engineering was established at its university in Amherst.





*Above: an engraving of the WPI campus as it appeared in the early 1900s.*

*Below: a 1971 aerial photograph of the WPI campus.*



## How does WPI appear today compared to 1900?

Views of the campus in 1900 and today speak for themselves. WPI is a vastly larger operation. The bricks and mortar only suggest scale. But they reflect the enrichment of the offerings of the program that has been enhanced with new laboratories, libraries, recreation facilities and living units. Tech was a really nice place then! About 225 students were enrolled then compared to today's 2100 undergraduates and 300 graduate students. But with this physical enrichment come added costs. Equally dramatic changes have occurred on other engineering campuses as well, and it would be interesting to see the "before" and "after" of our sister institutions. I think they would show that we have fared at least as well as the others. What goes on within the buildings is more important than any superficial external exposure. Yet the appearance of "prosperity" which can be reflected through the maintenance of an active campus and its general "personalized" tone can be a factor in selling itself to prospective students. From my own travels to most of the major engineering and science educational centers in the United States, I would rate WPI's physical plant (when compared to other technological institutes and even most university engineering and science departments) as one of our major assets in attracting prospective undergraduate students. We would lose few applicants on this score alone.

## What about WPI's students? How are they similar? And different?

Usually all of the private institutes of technology (Clarkson being an exception) and the major private universities offering engineering (Cornell being an exception) grew up alongside the industry — e.g., Carnegie-Mellon in Pittsburgh; Case Western in Cleveland; Stevens in Hoboken; RPI in the New York capital district; MIT in Boston, then Cambridge. And that engineering students have tended to come from the immediate region in which one of these schools was situated. This was especially true until the conclusion of World War II. Then, in a sense five high school senior classes (1941-45), bolstered by the G.I. Bill and the demonstrated achievements in military science and technology, flooded the nation's engineering colleges — public and private. This surge allowed institutions to broaden their geographic mix and to strengthen the quality of their classes. WPI had been largely an engineering and science college for Worcester and the surrounding countryside even as recently as 1950. And this was true for nearly all other engineering colleges. Most students were commuters. (Note how many residential facilities have been constructed in the past twenty years on most urban-based campuses).

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*So what we all do is go fishing in the same old pond for fewer fish, trying to lure prospects by more attractive bait.*

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## 3. Who are WPI's 'competitors' for students?

Of course, this broader reach has introduced new competition — and it has made each institution in turn more vulnerable to other local institutions, and more of these in recent years have been public. What I am suggesting is that WPI was largely the first and only choice of generations of Tech alumni, in an era where we were all less mobile and tended to go to school close to home. That condition is nowhere near as true today. Consequently, we are forced to be competitive — in our programs, faculty, facilities, and financial aid — with other colleges and universities who are also competing for the same students. Thus, the broadening of our base (which I favor) has made us increasingly vulnerable to what is going on elsewhere — and this of itself is healthy for WPI's future.

While WPI draws students from throughout the United States and the world (33 states and 30 foreign countries are represented in the 1975-76 student body), its students are concentrated within, say, a 150-mile radius of Worcester — Massachusetts, Connecticut, Rhode Island and southern New Hampshire. What occurs in engineering education in these states, particularly in the public sector, is bound to have an impact on WPI. If, for example, any of these states expand their engineering enrollment capacities at the undergraduate level through the introduction of new programs, more imaginative and effective student recruitment, better experimental facilities, and recruitment of superior faculty, then such factors will have a decided effect on WPI.



#### 4. What of the relative popularity of science and technology among students? Is this more crucial than private vs. public competition?

The wave of student interest in science and engineering following World War II and later from Russia's first space achievement, Sputnik, was translated into enough engineering and science students to fill both public and private schools. But then came the layoffs. The serious engineering unemployment in some of WPI's traditional drawing area had to be felt in reduced student interest in engineering. Nationally, we experienced a *one-third* decline in enrolled freshmen alone. Physics has fared equally poorly. Add to this the growing ranks of unemployed PhD's in many areas of science, especially high energy physics and astronomy.

Most engineering and science students are career-minded: they're preparing themselves for jobs. If they observe relatives and family friends who are engineers or scientists out of work, little can be done by any one educational institution to rekindle an interest. So what we all do is go fishing in the same old pond for fewer fish, trying to lure prospects by more attractive bait. It is then that private colleges and universities rediscover the public institutions — and begin to fear the worst. Yet the public engineering institutions have experienced similar declines in enrollments; some, in fact, have been harder hit than the private schools.

The cyclical features of our economic system, so affected these days by federal priorities and policies, affect private engineering and science colleges like WPI far more, in my view, than does the emergence of strong public engineering centers.

Unfortunately, educational institutions are quite inelastic. Physical plants carry with them substantial fixed costs, requiring "full enrollments." And because education is labor-intensive, cost-cutting options are modest unless faculty and staff are reduced. And if they are, who goes? The small department? The assistant professors? Administrators?

We will have to continue to live with these swings in the economy, and their effects on the pool of prospective students for science and engineering. This will require increased flexibility of the schools; contingency funds to sustain the college through rough periods; and continued vigorous and imaginative education programs to attract the best youth.

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*What we are experiencing now is probably closer to the norm — trying to keep the wolf from the door of the academy.*

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#### 5. How important today is science and technology to the economy in areas where most WPI students live

Unlike an Iowa State or University of Idaho, WPI is situated in a region which is highly urban and industrialized, and which depends on substantial numbers of persons in engineering and the sciences. About 7.5% of the engineers graduated in the United States in 1974 earned their bachelor's degrees in one of the three southern New England states. And it is *only* in Massachusetts and New York State that more than half of the engineering degrees were awarded by *private* engineering institutions.

But what has happened to southern New England's industry — particularly since 1900 — compared to what has occurred elsewhere? We have seen the decay of dozens of old mill towns — Lowell, Haverhill, Holyoke, Manchester, Providence to name a few — whose plants and equipment became obsolete and who, in several instances, did not gauge the competition that came from new advances in technology and business. In spite of the efforts of these and similar New England communities, it has been difficult to restore the economic prosperity enjoyed for several generations. The infusion of new technology, especially of the kind associated with Route 128 has helped, but this is going on in other regions of the United States as well. However, the region once distinguished for its "Yankee ingenuity" and as a leading center for technological employment no longer enjoys the commanding position it once did. This, by itself, has and will have an impact on private and public technological education.

It was the perceived technological vitality of the region that supported the early developments of institutions like WPI. How technology will figure in the future of the region must be factored into the programs of WPI. One wonders what kinds of technology-based organizations can flourish in a region where taxes, fuel costs, transportation, and government services are at or among the highest in the nation?

The future degree of prosperity in Lynn, Worcester, or Springfield is likely to be more of an influence on the development of present interests among area youth for engineering and applied science. A few warning signals are present: the numbers of college-age youth is declining; the percentage going on to college is declining; students interested in engineering are now roughly 6% of the total, down from a high of about 12% in the early 1950s. We may once again see a decreased mobility in our society, due to energy costs alone. This may mean that more WPI students will once again come from the local region. WPI will have to continually monitor its programs for their effectiveness in preparing graduates for significant leadership in the new science and technology order.

Industry which is located within the 150-mile region and which requires engineers and scientists as keystones for their success must also support the educational institutions that serve their interests. Indeed, most of us in higher education would be happy to have gifts which match those slipped under the tables to governments abroad, to say nothing of here in the United States.



## 6. Do WPI's finances match its changing needs?

How well off is WPI? How can I answer this question? No two educational institutions are really alike enough to allow objective comparisons. Even among the private institutes of technology which seem the closest models to WPI, several have sizeable graduate programs which both generate and consume substantial funds. A few have reasonably large shares of their enrollment in lower educational cost-per-student programs such as business and the liberal arts. Some have modern facilities while others may spend a relatively larger part of their operating budget to maintain less efficient facilities.

In absolute terms, WPI's endowment would place it in the top 100 "richest" institutions; probably within the top 75. Yet when compared to Rice or Caltech, we are a *distant* rich cousin! I have found three simple ratios to serve as benchmarks upon which to gauge financial strength of an institution, particularly a college rather than a research university. They are:

- a) Annual Giving/Operating Budget
- b) Endowment/Operating Budget
- c) Endowment/Student

Based on 1971-72 data, WPI showed the following, compared to a few other private schools:

	(a)	(b)	(c)
WPI	0.210	3.46	\$13,700
Caltech	0.244	3.48	72,500
Carnegie-Mellon	0.119	3.65	29,600
Lehigh	0.168	2.61	12,500
MIT	0.187	3.75	49,000
RPI	0.170	3.22	17,200
Stevens	0.092	4.31	26,000

For ratio (a), annual giving in 1971-72 to the operating budget, we are doing reasonably well. Endowment coverage contrasted with annual expenditures (ratio b) is also good, but endowment in back of each student (c) is relatively poor. [Editor's note: the current figure is even lower, at around \$10,500.] Caution should be advised in drawing conclusions from this one-year performance.

As was pointed out by President Hazzard in the December 1974 *WPI Journal*, our endowment income kept reasonable pace with operating expense (at about 15% of the latter) but since 1966, endowment performance has not been able to maintain that share. This is one area that needs strengthening for the balance of this century. A substantially improved level of alumni annual giving (both in numbers of alumni making gifts and in the level of the average gift) will also help.





## 7. Will students, and their parents, be *willing* to pay for private higher education in the future?

Fred Hargadon, Stanford's admissions dean, commented in the January 1975 *Stanford Observer*, that "Given the variety of consumer choices, colleges should not underestimate the importance of *willingness* to pay for college education as contrasted with simple ability to pay. Willingness is far more difficult to measure precisely (in terms of determining financial aid award levels) than ability to pay. The electrician in New York City may earn the same income as the vice president of a bank in a small midwestern town, yet they are likely to allocate their income in quite different ways."

Turning to the region itself, the citizens of Massachusetts, Connecticut, Rhode Island and southern New Hampshire, who have been and are so dependent on technological enterprise to sustain their economy, we owe much to a private engineering school like WPI. They have enjoyed the productivity of professional scientists and engineers in numbers well beyond those they have supported as taxpayers in the region's *public* science and engineering programs. To put it in blunt terms,

they have had a bargain. And they can still have a bargain supporting private education where more of the education costs are covered by endowments and established facilities. Happily, there is growing evidence that the public and the politicians recognize this. Their help, particularly in subsidizing the expenses of needy students at existing private schools, end up costing them far less than in financing any facilities expansion for undergraduates in public engineering colleges.

What about the future economic vitality of the southern New England region? How prominent a role will science and technology play? How attractive will a career in science or engineering be to tomorrow's teenager? Will a college education continue to be a goal valued by a majority of the population? Will WPI have the means and the people to provide an appealing and rewarding education in science and technology?

Questions like these seem equally as important as the public vs. private issue which seems to have commanded our attention of late. Some lie well beyond the control of the Institute, its alumni and benefactors. But working together they can exert some real influence in ensuring the values of independence that have been, in the end, the real hallmark of private higher education.



Donald F. Berth, '57, is a director of special projects at Cornell University's College of Engineering. He has long been interested in history and in engineering education. In 1966 he founded Cornell's engineering magazine, *Engineering: Cornell Quarterly*, and was its editor through 1971.

Berth holds bachelor's and master's degrees in chemical engineering from WPI.



# The Impossible Job?

## *A Special Report on What It Takes to Run a College These Days*

WANTED," the advertisement might say: "President, to direct an enterprise manufacturing societal products. Diversified interests range from agronomy to zoology. Duration of manufacturing process: 3.7 years. Profit potential: none. Loss: \$5,500 on every unit produced.

"President must represent company to vast constituency: 63,000 shareholders, state legislators, government bureaucrats, and the community at large.

"Salary: not commensurate with responsibilities."

Uncommonly candid? Perhaps, as far as the ad goes. But it does not tell all. Nowhere does it mention:

► That the company's diversity is held together only by a shaky commonality—and supported by even more precarious financing.

► That the volatility of the product and the experimentalism of its labor force have made legislators and politicians, on whose support the manufacturer depends, increasingly wary of the enterprise.

► That the corporation is a proving ground for social legislation, a bellwether of social change.

► That the institution's former products—many of them gone from the scene for decades—are, in effect, its majority shareholders.

► That it is their contributions that in large part must finance today's manufacturing deficits.

Nor does the advertisement prepare its reader for the unusual nature of the products themselves:

► That they must be treated not as mere products, but as elements demanding a place in the councils of their producers.

► That the products are being marketed with ever-greater difficulty in the job-scarce society for which they are produced.

Nor does the help-wanted ad hint at the unique qualities of the enterprise's labor force:

► That the workers expect—and demand—to be





treated not merely as workers, but as part of the company's governance.

► That, at the same time, they are unionizing in ever-greater numbers.

And the ad omits entirely the most telling point of all:

► That the exigencies of the job are likely to drive the president from his office in five years.

LITTLE WONDER that Hernan B Wells, for 24 years president of Indiana University, should say that a college president needs to be born "with the physical

stamina of a Greek athlete, the cunning of a Machiavelli, the wisdom of a Solomon, the courage of a lion if possible—but above all, the stomach of a goat."

THE COLLEGES AND UNIVERSITIES that modern presidents are called upon to govern are rarely in good health.

An ever-growing number of America's institutions of higher learning—and not merely the newer and inevitably hustling ones—sway at the edge of a financial abyss. Institutions whose names are synonymous with academic excellence and financial invulnerability—the



versity, wrote: "Resignations are usually followed by a listing of personal accomplishments. One item only, on my list: for seven years I survived."

Should the help-wanted ad be amended to reflect the perilousness of the undertaking?

HOW MUCH of the individuality of his college or university, for example, must a president be prepared to sacrifice?

How much rivalry and variety will be lost in the struggle to keep institutions alive in a time of inadequate financing? A "tide of growing homogeneity," Warren G. Bennis, the president of the University of Cincinnati, calls what is happening to much of American higher education—"with the inevitable result that each university and college [begins] to resemble all the others, becoming a franchise service, a sort of chain of Holiday Inns of the Mind."

Writes Fred Hechinger, in the *New York Times*:

"Will the universities, like the railroads, pursue a defeatist, obsolescence course until the government at last tries to bail them out? The risk that they may opt for a passive response to their current crisis of identity, money, and goals is heightened by the fact that the universities have become accustomed to having their goals spelled out for them by the off-campus world—such are the demands of defense and other external mandates."

Does the ad need a further addendum?

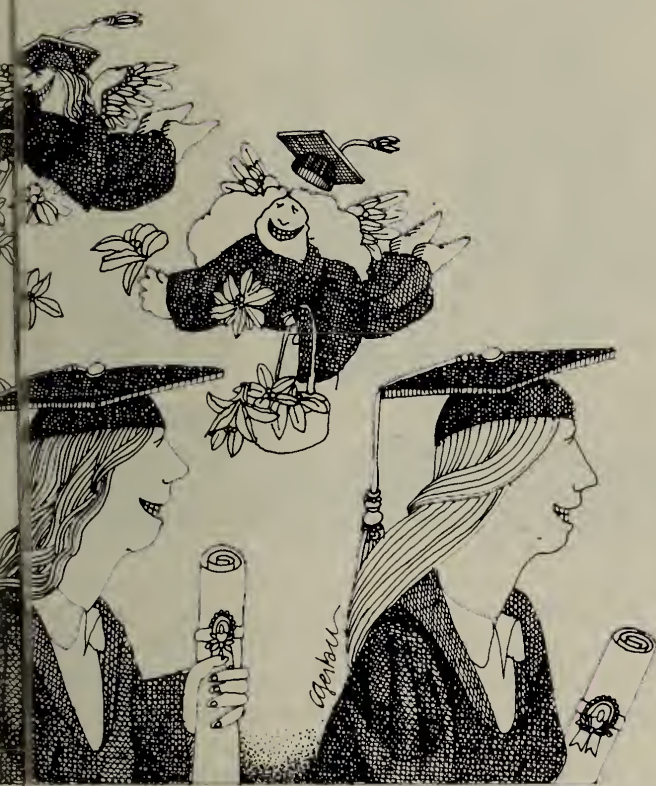
"Should disregard the thinking of predecessors," it might say. "Must look within for answers."

THE PRESIDENT of Reed College, Paul E. Bragdon, suggests a middle course:

"Viewing society and higher education within it, no one today seems likely to adopt the Panglossian stance that all is, or soon will be, for the best in this best of all possible worlds. No ideology, doctrine, or faith in a pragmatic, problem-solving approach is likely to create a sense of confidence in the future. Growing anxiety, numbing uncertainty, and a paralysis of the will are likely companions in an age of complexity, contradictions, and confusion.

"Maybe, however, a variation of the classic response to Panglossism—cultivate your own garden—is the most constructive course to follow. Callously turning aside from the torment and problems of men and women everywhere, abdicating responsibilities thrust upon us, subsiding into hedonism or into activities designed exclusively for personal self-fulfillment—none would form part of the suggested variation.

"The appropriate variation asks that we recognize that there are many things within our control which can be done; that general despair should not keep us from



widows-and-orphans stocks of higher education—are in financial trouble. One Ivy League university, after eating into the principal of its endowment by over \$2-million in seven years, has embarked on a three-year austerity program to eliminate the university's deficit spending.

A Carnegie Commission report estimated in 1973 that fully two-thirds of the nation's colleges and universities were in serious financial difficulty or headed that way. Two more years of inflation have not diminished the count.

Richard P. Bailey, former president of Hamline Uni-





doing them; and that, in fact, we should proceed to do them. The doing of them may give us the faith and foundation of confidence to attack the additional problems to which there are no instant or easy solutions.”

THE COLLEGE PRESIDENT must run his or her enterprise without the tools of the conventional corporate head. The college president cannot stockpile products until a more favorable economic climate comes. The college president cannot apply for tax and tariff relief. The college president cannot decrease profit margins, for there is no profit. Yet the college president cannot calmly tolerate loss, though loss is inevitable.

Nor can the college president lower the quality and content of his institution's product; to do so would be to defeat the very purpose for which his enterprise exists. But maintaining, let alone improving the product's quality and content entails financial strains so grave as to threaten every college's existence.

The paradoxes are serious. Alumnae, alumni, and

the general taxpayers—and the trustees and legislators who hold their proxies—demand that the college or university president improve the efficiency of his manufacturing process; yet the savings effected by increased efficiency might be gained only at the expense of the product's value. Says Clifton R. Wharton, Jr., the president of Michigan State University:

“The most disturbing element in the latest fiscal crisis is the presumption that the universities can continue to realize significant savings through continuous increases in productivity and efficiency, without corresponding reduction in quality of services. . . .

“The search for ever-greater increases in productivity can best be put into proper perspective by contrasting pictures of two extremes. Take first the image of a teacher on one end of a log with a student on the other end, then contrast it with the image of our freshman class of 7,000 sitting in our football stadium while one lonely professor stands at the 50-yard line in front of a microphone. The former represents the ancient notion

teaching; the latter would be a demonstration of extremely high productivity—assuming that it were efficient.

“The choice between these two educational models, as well as among the many idealized models, depends on a delicate and subjective balancing of educational philosophy and economic efficiency. I often wonder whether as a matter of public policy the ever-growing pressure for greater productivity is not leading us to the football-stadium classroom. Is this what the students, their parents, or the taxpaying citizens really want? From the criticism I hear, I doubt it.”

Inexorably, the president finds himself in the dilemma Emma Cincinnati's Bennis describes:

“We have the size and scope of big business, with all the opportunities to increase our productivity. People would like us to run like the Metropolitan Life Insurance Company. In fact, a university is more like the Metropolitan Opera Company. . . .

“In 1860, at the forerunner of our conservatory of music, it took a quintet 58 minutes to play a concerto by Brahms; in 1975 it also takes 58 minutes. Nor can we improve that performance by using one violin instead of two, or a moog synthesizer to replace all the strings.”

But even unlike the venerable and equally threatened opera company, the president of a college or university cannot take his show on the road when times get desperate, hoping to play to S.R.O. in Tokyo to relieve financial strain at home. “The only power I have,” says Willard L. Boyd, president of the University of Iowa, “is the power to persuade.”

EQUIPPED, THEN, with only his voice, the president finds himself at the helm of an organization offering both a product and a service for which the demand is leveling off—even as the costs of producing and performing continue to rise. The price of the fuel to heat the dormitories and classrooms and laboratories multiplies. The annual salary increments for faculty and staff members drop farther and farther behind the advances in living costs. Projections by the U.S. Office of Education tell him that full-time enrollment, which increased over 100 per cent from 1960 to 1970, will increase only 17 per cent in the present decade. (It will, says the government, actually decrease 1.3 per cent in the first two years of the next decade.)

The same projections tell his faculty members that, while the number of doctorates granted by America's institutions of higher education tripled in the 1960-70 decade, the employment of full-time teachers will actually decrease .9 per cent from 1978 to 1982. The National Science Foundation tells the researchers employed by colleges and universities (who account for about 61 per cent of the nation's basic scientific work)

that real spending on basic research is expected to decline by 8 per cent from last year to this.

Does the college presidency, then, call for a defeatist? Must the new president be versed, as Kenneth E. Boulding suggests, in “the management of decline”?

“One of education's first priorities,” says Mr. Boulding, who is program director at the University of Colorado's Institute of Behavioral Sciences, “[is to] develop a new generation of academic administrators who are skilled in the process of adjusting to decline.”

On the basis of all that, should the help-wanted ad be amended again?

“Must be able to deal with decline,” perhaps it should say. “Must accept diminished circumstances.”

THE TYPICAL CAPTAIN of the corporo-educational enterprise has been trained as an academic, not as a professional manager; as a pedagogue, not as a public-

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**“People would like us to run like the Metropolitan Life Insurance Company. In fact, a university is more like the Metropolitan Opera Company.”**

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relations expert. But he is called upon to be the latter, while he serves the former. He must do battle against the hesitancy of his institution to view itself as a business, and he must do equal battle against the confusion of his own roles.

R. Miller Upton, for 21 years (until last summer) the president of Beloit College, calls the failure to make a clear distinction between economic and academic realities the major weakness of leadership in higher education:

“So many of my colleagues, saying they know nothing about business, will delegate the business aspects almost totally to their financial vice-presidents. In terms of good management, you can never take that position.

“If you don't have a sense of the importance of the economic base to the academic purpose, the institution is going to suffer. A president must never be embarrassed by the word ‘selling,’ or by any of the other sound business terms.”

If the college or university is serving a predominantly black constituency, suggests James E. Cheek, president of Howard University, the president must do further battle. The enemy in this case, Mr. Cheek says, is the



**“Colleges have to be run in a businesslike fashion, but I’m not sure you can run them exactly like businesses.”**

temptation to sacrifice identity for short-term survival:

“Leaders of black colleges and universities must show a greater willingness to demonstrate the importance of their institutions. They cannot allow them to be taken for granted, nor can they conform to the easy perception that integration will, in and of itself, improve the quality of higher education for black people or increase the quantity of access to higher education for black people. They must hold to the belief that an institution can have a traditional black mission and a predominantly black enrollment and still be integrated.”

Similar challenges confront the presidents of women’s colleges. They—with their trustees and institutions—must choose whether to embrace the rush toward coeducation, or to resist it. As Jill K. Conway, the president of Smith College, notes, the choice is riddled with complexities:

“Up to the present, . . . attention has been focused on the access of women to institutions of higher education, with little or no thought given to the relationship of women students to the curriculum, women scholars to research activity, or women graduates to the occupational structure of society. When access is considered in isolation, the logic of coeducation as an equitable social policy appears to be overwhelming.

“The logic for educating women in male-controlled institutions is by no means so strikingly apparent, however, when one views the question of equity of treatment of the sexes from the perspective of the content of the curriculum, the opportunity to participate in the creation of new knowledge, and the potential for subsequent career development.”

TO GAIN his or her job, a prospective college president must win the acceptance of competing interest groups, which occasionally are as concerned with establishing their positions vis-à-vis one another as with ferreting out the best candidate. To perform successfully, says Glenn A. Olds, president of Kent State University, the president “has to be academically competent so that he will enjoy the support of the faculty, administratively competent so he can perform feats of fiscal dexterity, able to deal with students, of impeccable integrity, and fearlessly open.”

Yet, suggests Ernest L. Boyer, chancellor of the State

University of New York, to avoid dismissal the president cannot become identified with any of the groups he represents. “If a president starts giving student answers, faculty answers, or trustee answers, he’s lost.”

No wonder, then, that the job is so perilous and the list of casualties ever-lengthening—or that, at one point in the past year, at least 78 four-year institutions of higher learning were without chief executives. Consider:

► At the University of Texas at Austin and Southern Methodist University, presidents were dismissed or pressured into resigning by their boards after becoming identified with faculty concerns.

► At the University of New Hampshire, Thomas Bonner resigned as president after prolonged warfare with the state’s political leadership and incessant editorial salvos from William Loeb’s *Manchester Union Leader*.

► The University of Colorado dismissed its president after the faculty voted no confidence in him.

► At Missouri’s Stephens College, students and faculty members—disturbed that a woman had not been picked to head the female institution—asked the man whom the board had selected to reconsider his acceptance of the presidency.

The college president, in short, must balance the ideal and the real—and he cannot, as Jacques Barzun noted in *The American University*, “forget the difference between the golden and the leaden functions he is supposed to perform.”

NOR CAN THE PRESIDENT FORGET that his products are not cars or switch-dimmers or sky hooks, but people. If the company fails to tool them properly, the losses will be very human ones.

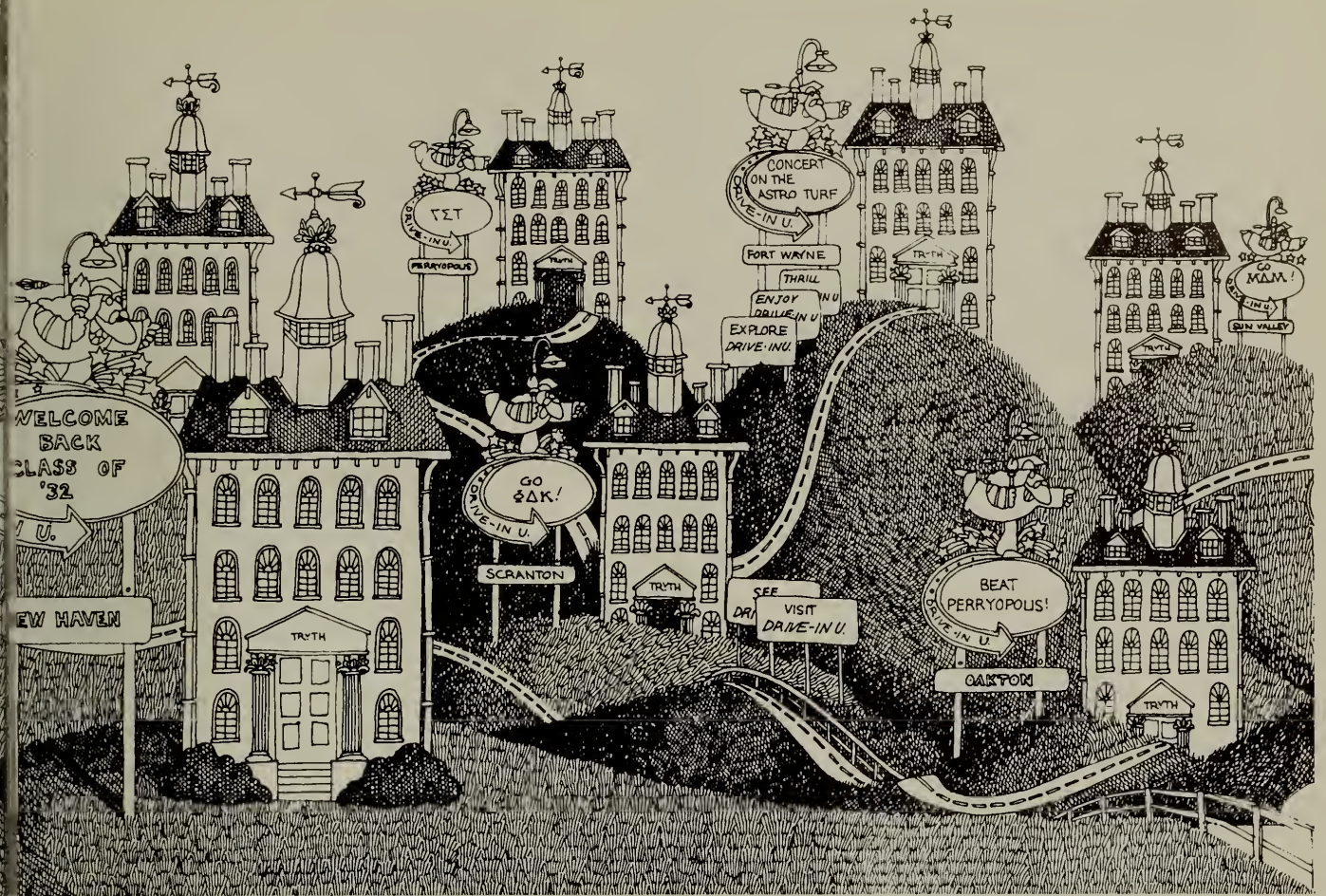
At this point more than at any other, the corporate analogy falters. The products are men and women, and the process is the often-meandering one of discovery and learning.

“Colleges have to be run in a businesslike fashion,” says the president of Bowdoin College, Roger Howe, Jr., “but I’m not sure you can run them exactly like businesses. The absence of a bureaucracy would be very quickly remarked upon by the faculty if the checks didn’t turn up on payday; but a lot of academicians would argue that efficiency, while a good thing, is not the highest of all possible virtues.

“In the educational process there is occasionally a good deal to be gained from a certain amount of inefficiency. If you get so that everything is in exactly the right place, it eliminates serendipity, and one of the exciting and useful things about an educational process is discovery. You want to be careful to preserve the capacity for this in the midst of all your efficiency.”

The University of Iowa’s Willard Boyd makes a





er distinction between academic and corporate  
 arship: "The college president must keep things  
 d up so that the intellectual life will grow." The  
 ssity of ferment, he argues, is even greater during  
 e present besieged state of higher education:

hese are conditions which either can frighten col-  
 and universities into blind 'intellectual protec-  
 sm' of the past and present, or challenge them to  
 k future 'intellectual risks.' The latter is the more  
 ult, yet more creative, course. It is not antithetical  
 e intellectual process. Quite the contrary, it is the  
 ice of it."

ne advertisement for a president, then, needs this  
 anation:

Must create an adventuresome corporate structure,  
 rve a noncorporate end."

AS THE PROBLEM facing today's college or university  
 icient boils down to this: how to apply the tech-  
 gy and lessons of corporate management to the  
 human process of education. With that problem  
 es this more difficult quandary: how to measure  
 worth of a human product.

he Rev. J. Donald Monan, president of Boston

College, would begin to evaluate the success of an  
 educational enterprise by looking at the alumnae and  
 alumni:

"I have sometimes said—and I believe it—that col-  
 leges exist for alumni and not for students. If everyone  
 fell off the earth after commencement, there would be  
 a genuine worth in what you're doing; but in the long  
 run—in service to society—institutions have their effect  
 through the long-term careers of their alumni.

"If you can touch their whole character and their  
 professional expertise, you are doing something impor-  
 tant for society through alumni."

Yet there is no easy way for today's college or  
 university president, grown increasingly remote from  
 the ebb and flow of campus life, to touch a student's  
 character. The college president of yore, who spent his  
 Saturdays pacing the sidelines and his Mondays parsing  
 Latin, is as rare as the college of yore. Although one  
 notable group of modern presidents has gone public—  
 Duke's Terry Sanford announces for the White House,  
 the University of Chicago's Edward H. Levi takes over  
 the Justice Department, the University of Alabama's  
 David Mathews is called to head up H.E.W.—many  
 more have gone private. Faced with multitudinous obli-



gations to a many-faceted institution, they delegate authority and become inundated by their functionaries; or, eschewing extensive delegation, they become buried in the manifold details of their position. Few stand up in the middle, talking in public about the problems, challenges, and duties of higher education; and the few who do are too often quoted to engage the public's attention for long.

A recent poll by *Change* magazine asked 4,000 college presidents, government officials, foundation executives, and journalists to pick the leaders of higher education. Among the top 44 were only seven presidents.

Yet even if the president does come home from his travels, even if he does emerge from his office, even should he choose to speak out, is it possible for him to touch the character of such a complex structure as a college or university?

If the president can bear the burden, he might reach some students in the classroom, others at dinner and sports. He can have students living in his home. He can, as does Iowa's Boyd, advise a handful of students.

He can put his office in the middle of the quad and open the door to all who drop by. But can he identify their character? And, even if he accomplishes that, can he affect it?

Legal sanctions and social change have foreclosed the day when colleges could act *in loco parentis*, with the president as reigning patriarch or matriarch.

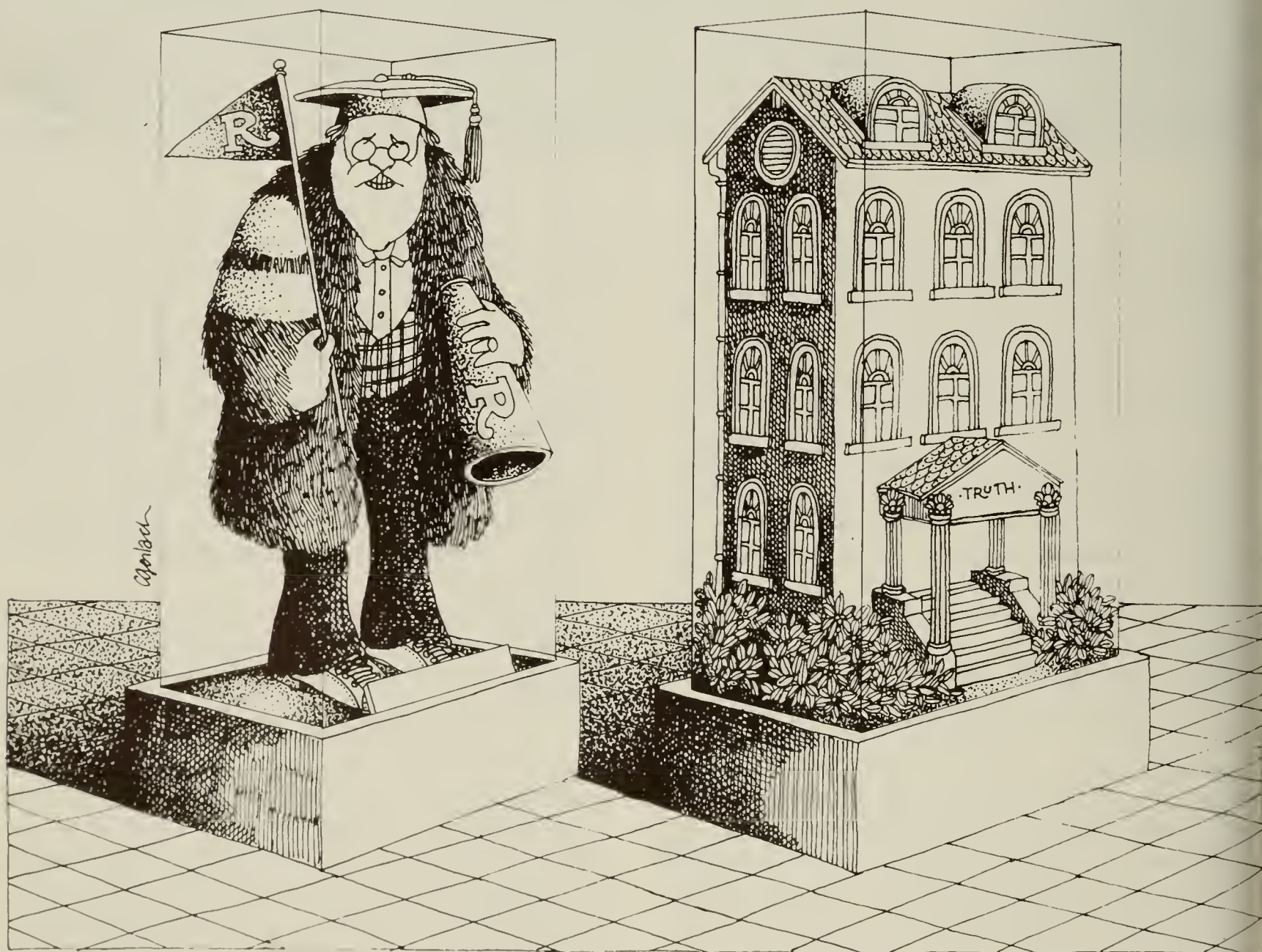
Says Bowdoin's Howell:

"Our kids are all legally adults; it's incumbent on us to treat them as adults in all kinds of ways besides just legally admitting that it is the case. The institution cannot have a simple set of values which it says is the only moral code to live by."

But, he adds: "I don't believe that this cuts down on the sense of being concerned about values, particularly in a liberal-arts institution."

Says Boston College's Father Monan:

"At least for many institutions, concern with values is something very new. In the '50's you had some very prestigious presidents saying that the whole value dimension was to be left to other agencies and the school was to be concerned with truth."





"I don't think you have to make facile distinctions like that. For everyone there is a recognition today that here is a clearer obligation. However, to communicate values is not like communicating calculus."

Some beginnings, suggests Father Monan, lie at the very core of the job. The president must show the faculty and students that he understands the value of the academic life and that he wholeheartedly supports it in all its manifestations. He must, if his constituency is to take him seriously, show that he views them with equal earnestness.

But the data for measuring the touching of character are squishy. Frequency-of-repair records and percentages of the marketplace tell hard facts about light witches and their manufacturers, but no charts can measure the relative worth of a technician and a lawyer, a contemplative person and one of action. Indeed it may well be—as J. Douglas Brown, the emeritus provost and dean of the faculty at Princeton University, suggests—that the very obscurity of the data, the immeasurability of the product, increases the president's centrality within a college or university:

"An industrial organization may seek to merge the functions of leadership into a combination of senior specialists in production, finance, and public relations—not always successfully. A church, in order to safeguard its traditions, may place leadership in a collective body. But the university not only deals in a host of intangibles rather than profit, but also must move forward with vigor and sensitivity. Therefore, only a person, a president, can effectively combine tradition

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**"A president wants to be liked—by alumni, by faculty, by students and trustees. But in pursuing this, he may end up becoming a mediator."**

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and vigor to gain understanding response from a complex of cooperating constituencies."

Yet, however central to the institution the president becomes, he must lead if he is to be followed. Says Beloit's Miller Upton:

"A president must be willing to be out front, in places where he knows he's going to get shot at. This is difficult. There's a great temptation to play it easy. A president wants to be liked—by alumni, by faculty, by students and trustees. But in pursuing this, he may end up becoming a mediator.

"Leadership in education is difficult because of the

collegial nature of the community; it's tougher than in business, where lines of authority are so tightly drawn and easily availed of. But it is possible to be a leader and not just a mediator."

ASSUME FOR THE MOMENT that the president can hunker down to the job at hand; that he can lead; that in ways mysterious or practical he can see to the touching of the institution's complex character. Can he then turn successfully to the very corporate business of building a better mousetrap—of tooling a product that society wants, a product society needs?

In the difference between wants and needs lies another dilemma—and yet another distinction between the leadership of business and education. To create a product the public wants is a relatively easy and often lucrative matter, once the want has been identified and the technology refined. To create a product to fill a projected and abstract need, the want of which might never be articulated, would be business folly, yet how much such an approach makes education sense—how much it is higher education's duty—may well be a measure of the limits of the corporate approach to education. If, as many who practice the art believe, a president's primary responsibility is to plan for the future, then it may be his equal or greater obligation not to settle for survival in a mean world, but to strive for utility in a grander one.

MANY OBSERVERS of the present educational scene, like *Dædalus* editor Stephen R. Graubard, see presidents and their institutions enmeshed in a survival strategy:

"Today, when higher education has receded from the front pages of all newspapers, when television has few student demonstrations to film and no non-negotiable demands to report, when the federal government seems generally bereft of ideas on higher education, and when state legislatures wrangle usually over the size of budgets and university presidents dash about searching for new monies to offset inflationary costs for which increased student tuition and fees are quite insufficient, there is an almost instinctive concern within every institution to look out for itself, to create those conditions that will guarantee its own 'survival' and possibly increase its competitive advantage. There is not much talk of reform: the problem is to get through a difficult time, a time of 'no growth' and of persistently rising costs. Colleges and universities seem frightened and confused."

To the extent that survival in whatever form becomes the goal, the criteria of survival become the measure by which the president is evaluated. Again, Stephen Graubard:

"To an extent that was not true previously, presidents and deans are judged for their ability to manage



and husband funds. Even where they have been selected as 'crisis managers,' they are generally prized for their efficiency as fiscal agents."

Tooling a product to meet present ends and future needs poses temptations and hard choices—particularly in periods of high unemployment, when the demand for specific occupational training increases. Boom times provide the means for intellectual activity; hard times heighten the demand for vocational skilling. Beloit's Miller Upton and others suggest that the measure of an institution's—and its leaders'—commitment to liberal education might well be the tenacity with which it clings to its historic educational mission in depressed times.

Says Reed's Paul Bragdon:

"Let us acknowledge straight-away that there is a need and a place for vocational education, and that most students are going to enter the work force upon completing their formal training, *i.e.*, they're going to have to find jobs. We should not fail, however, to note a number of ironies.

"First of all, most institutions, public and private, throughout the world are today seeking as leaders broadly educated men and women who have mastered the methods of understanding and attacking problems, not the narrowly trained specialist. Secondly, the seemingly unyielding problems of our times will not be solved by vocational certificates any more than by good intentions alone, but will require the attention of educated and trained men and women with high moral purpose. Thirdly, in a society in which more leisure time is likely to be available, we have to ask what the results will be—enriched lives or lives marked by boredom, booze, and the boob tube?

"The welcome addition of increased opportunities for vocational education should not obscure the significance of a liberal education in the lives of men and women and for the fate of society."

Says Martin Meyerson, president of the University of Pennsylvania:

"Those of us in colleges and universities ought to help unite the profession or the calling with liberal learning. If we do not, we shall have failed the rightful aspirations of many of the young who seek a life of service. Moreover, unless we imbue vocation with a sense of liberal learning, we shall have failed to improve life as well."

But to unite the need for specific skills with a broad exposure to thought and culture is more complex than overseeing the merging of the acetates and alloys that produce switch-dimmers. Ironically, the direction may be easiest for presidents whose institutions serve the underprivileged, if only because, for them, need supersedes theory. Says Howard University's James Cheek: "Because blacks have the greatest trouble finding jobs,

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**"Presidents are generally prized for their efficiency as fiscal agents."**

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we must be acutely aware of where shortages are and will be in the labor market, particularly in the professions; and we must tailor our programs to those shortages."

FOR ALL THE LEADEN REALITIES of the president job, the golden possibilities beckon. "I think," muse the American historian Henry Steele Commager, "we should support, or if necessary create, a group of men and women whose business is to think far ahead of their contemporaries, whose business is not to represent their own country, their own class, their own time men and women who should be excused from many of the pressures and passions of their own day and permitted to imagine a different kind of world, to anticipate problems and propose solutions to them. . . . Needless to say, we have at least an embryo, just such a class. I refer to the university."

But the leaden realities lie in wait. Purely contemplative creatures require the sort of foundation support that has dried up in the present financial climate and may not readily revive again. X-ray technicians are at work; English doctors of philosophy are at home, typing *curricula vitae*.

The balance of the tangibles and intangibles in educational planning and the articulation of purpose are, says Harvard University president Derek L. Bok, critical functions for presidents and their deans:

"As spokesmen for their institutions, they cannot expect to win the understanding and support of a wide community unless they can explain with conviction what their colleges are supposed to accomplish. In deciding how to allocate new resources—or indeed how to distribute their own time and energy—they can hardly establish coherent priorities without some sense of the ultimate purposes which they hope their college will achieve.

"For these reasons, presidents and deans must formulate their own sense of the institution's goals even if their faculties are unable or unwilling to undertake the task."

It has been a neglected function, he adds:

"Our colleges seem to exist without making much of an effort to define their aims. In the thick reports of undergraduate education that many colleges have produced in recent years, there is little discussion of what





is that a liberal-arts education should provide for the student.”

The articulation of purposes, however, can rarely be accomplished solely in the light of today or tomorrow. The college or university president is not allowed to forget that the majority shareholders in his corporation are themselves its past products, with an attachment to that past.

If the traditions of the past are to be violated, if old ways are to be altered to meet a new world, the alumni and alumnae want an explanation from the president. And they vote their approval or disapproval in a most tangible and meaningful way—with dollars and cents that aggregate into the annual-giving totals upon which the daily functioning of the institution’s manufacturing process so heavily depends.

Perhaps, then, any ad for a college president should contain a warning:

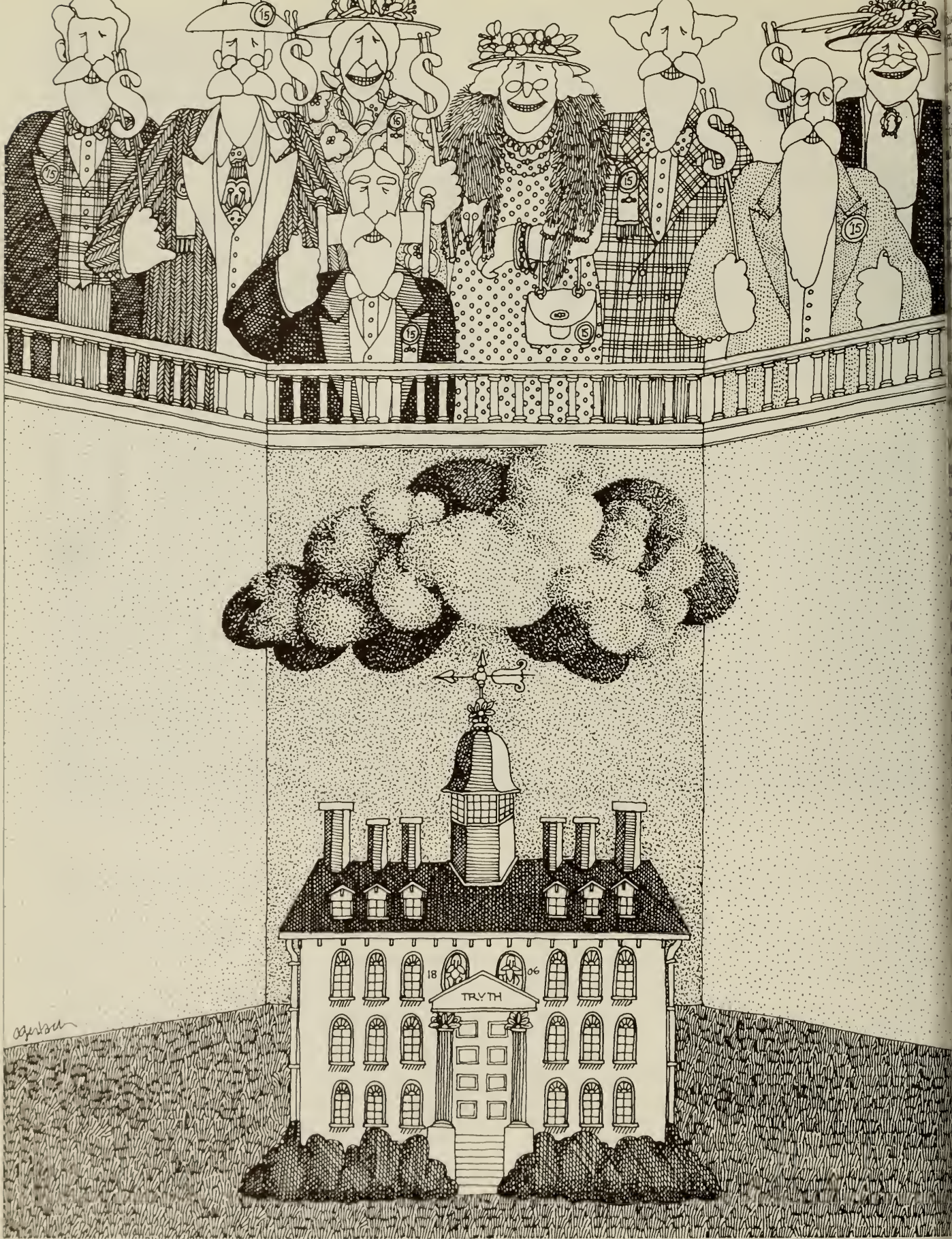
“Caution: past products may dictate direction of present process.”

ASSUME—again for the moment—that the president can divine a course on which to set his enterprise. Can he steer it to his objective, through the welter of organizational detail?

Here, again, lie the challenge and necessity of balance. Says Princeton’s ex-provost, J. Douglas Brown:

“Apart from the central role of leadership in terms of the goals, values, and standards of his institution, the president must have a sense of organization and of the administrative arts of working through organization to attain institutional goals. It is this aspect of his role







ich makes a shift from professor to president most difficult for many.

"The professor can express ideas and purposes with clarity, but the president must implement them through complex processes of gaining willing and effective cooperation in scores of areas and at all levels. It is in the advanced interplay of leadership in ideas and leadership in an operating, dynamic organization that the quality of a president is tested. Too much emphasis on either aspect at the expense of the other may lead to high purposes without accomplishment or a well-run educational factory."

Yet even the art of balancing is not what it once was. To reconcile research facilities and faculty development with classroom space and teaching loads, football aspirations with faculty salaries called for a fine bit of juggling. But the task has been immensely complicated by new legal realities in the academic world.

Consider the case of a university in the Southwest, which, as of July, 1975, had eighteen lawsuits pending against it or its officers in which the university was accused of violating constitutional or civil rights. Several of the suits claimed that the university's admissions procedures were arbitrary and capricious. Others, filed by students and faculty members, charged improper and unlawful dismissals. A research assistant was seeking \$500,000 in damages for the university's failure to renew his contract; a faculty member not recommended for renewal was seeking a million. Several women professors charged they had been discriminated against because of sex; a male nurse contended that he would have been dismissed from his position with the university had he been female. A plaintiff had sued because, she said, the university had failed to provide her with an abortion. Two Mexican-Americans, former employees, alleged a broad discriminatory policy on the part of the university.

Finally, the president of the university was being sued for \$5-million by a former professor in the medical school, who contended that the president had illegally requested both the doctor's resignation and the restitution of funds allegedly received from the university by the doctor without authorization.

(Legal routes are, of course, mutually available. When Frank I. Keegan was ousted as president of Bem State College in Massachusetts, following a no-confidence vote by his faculty and administration, he filed suit against the trustees, seeking \$200,000 in damages and reinstatement as president.)

The proliferation of suits against the institutions poses still another grim specter for the president. Insurance companies are increasingly reluctant to provide liability coverage in the civil-rights area; and without that sort of basic protection—seemingly so far removed from the world of academe—the academic support

systems cannot begin to function. What kind of legerdemain is needed to balance such a complex?

And, of course, where will the presidents and their institutions find the money to finance the support systems they devise, however perfectly? Indeed, more and more where will they find the funds to underwrite those systems that already exist? How to look to the future while keeping the present afloat? How much to scuttle so that the enterprise can get where it is going? And what kind of college or university will arrive at its destination?

How even to find the money to meet the rapidly rising costs of complying with federal social programs

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**"The student unrest of the '60's taught presidents that we could not dictate any longer, that we had to share power and seek counsel."**

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—with the financial demands of equal employment opportunity, of equal pay, of affirmative action, of non-discrimination by age, of occupation safety and health, of minimum-wage and fair-labor standards, of unemployment insurance, of social security, of health-maintenance organizations, of pension-security-act provisions, of wage and salary controls, and of environmental protection? At one large, public university such costs have tripled in a decade. At a large, private university they rose from \$110,000 in 1964-65 to \$3,600,000 last year. At a medium-sized private institution, they grew 150-fold in the same period—from \$2,000 to \$300,000.

Must the president reach out blindly for funds—any funds? Or must he somehow weigh the future effects of present relief from financial strain? "Why Richard," Sir Thomas More was made to say in *A Man for All Seasons*, "it profits a man nothing to sell his soul for the whole world . . . but for Wales!" How can a college or university president identify what and where the institution's soul is, and when it is being bartered?

WHO IS A MAN (AND WHO IS A WOMAN) for this season?

Boston College's Monan suggests that Aristotle might serve well as a college president.

"If a president needs one thing, I think he needs judgment—practical judgment that is able to understand the complexities of problems and foresee the



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**“Whenever I watch the university’s man riding the power lawnmower, cutting figure-eights, in complete control of his machine and total arbiter of which swath to cut where and when, I envy his superior autonomy. I don’t have his power.”**

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types of consequences that will flow from the alternatives that are open. He must be able to make good decisions, and that’s what Aristotle stressed in his *Ethics*.”

Father Monan, however, issues one caveat: “Many philosophers’ theories about life don’t always coincide with their own abilities to live life and make judgments themselves.”

Bowdoin’s Howell nominates Elizabeth I: “She’s certainly used to balancing tight resources and still keeping things going. And she’s a marvelous public speaker.”

Perhaps our help-wanted advertisement needs further modification:

“Must be resourceful and practical. Should have a grasp of today and a clear vision of tomorrow.”

ONE FINAL QUESTION needs to be asked. It may negate the need to answer any of the others.

Does the modern president have the *power* to lead?

A veteran watcher of the office, who has served under five presidents, notes that in the modern institution “power is so diffuse. Everyone has negative powers, not positive ones. They can veto, but they can not effect.”

Faced with government regulations; the moral and legal pressures of organized parents, consumers, and environmentalists; the scrutiny of alumni and trustees; and the often-competing wants of some 500 on-campus governance and interest groups, Cincinnati’s Warren Bennis expresses a longing and frustration that many presidents share:

“Whenever I watch the university’s man riding the power lawnmower, cutting figure-eights, in complete control of his machine and total arbiter of which swath to cut where and when, I envy his superior autonomy. I don’t have his power.”

A study of leadership in higher education, published in 1974 by the Carnegie Commission, concludes:

“The presidency is an illusion. Important aspects of the role seem to disappear on close examination. In particular, decision-making in the university seems to result extensively from a process that decouples problems and choices and makes the president’s role more commonly sporadic and symbolic than significant. Compared to the heroic expectations he and others might have, the president has modest control over the events of college life.”

Should he find himself largely symbolic, more the present Queen Elizabeth than an Elizabeth I, the new college or university president might well look to the immediate track record of his predecessors to discover where (and why) his power has gone. Many lost their chambers—literally—as the ’60’s wrenched to a close and student occupiers moved in. But many, too, may have figuratively abandoned their offices in the crunch of the warfares at home and abroad.

Many presidents—sharing, at least in part, the politically liberal sentiments if not the radical tactics of their rebellious students—acted reluctantly, if at all, to curb campus disorders. Civil persons, they confronted incivility; persons prone to explore, to weigh, to seek the middle road, they found many of their students holding rigidly to political and philosophical stances; peaceful persons, they were expelled by force.

Says Father Theodore M. Hesburgh, president of the University of Notre Dame:

“The public at large had been told that the university could solve all the nation’s and the world’s problems. But when they came to solving their own new problem of student unrest, most university administrators appeared helpless.

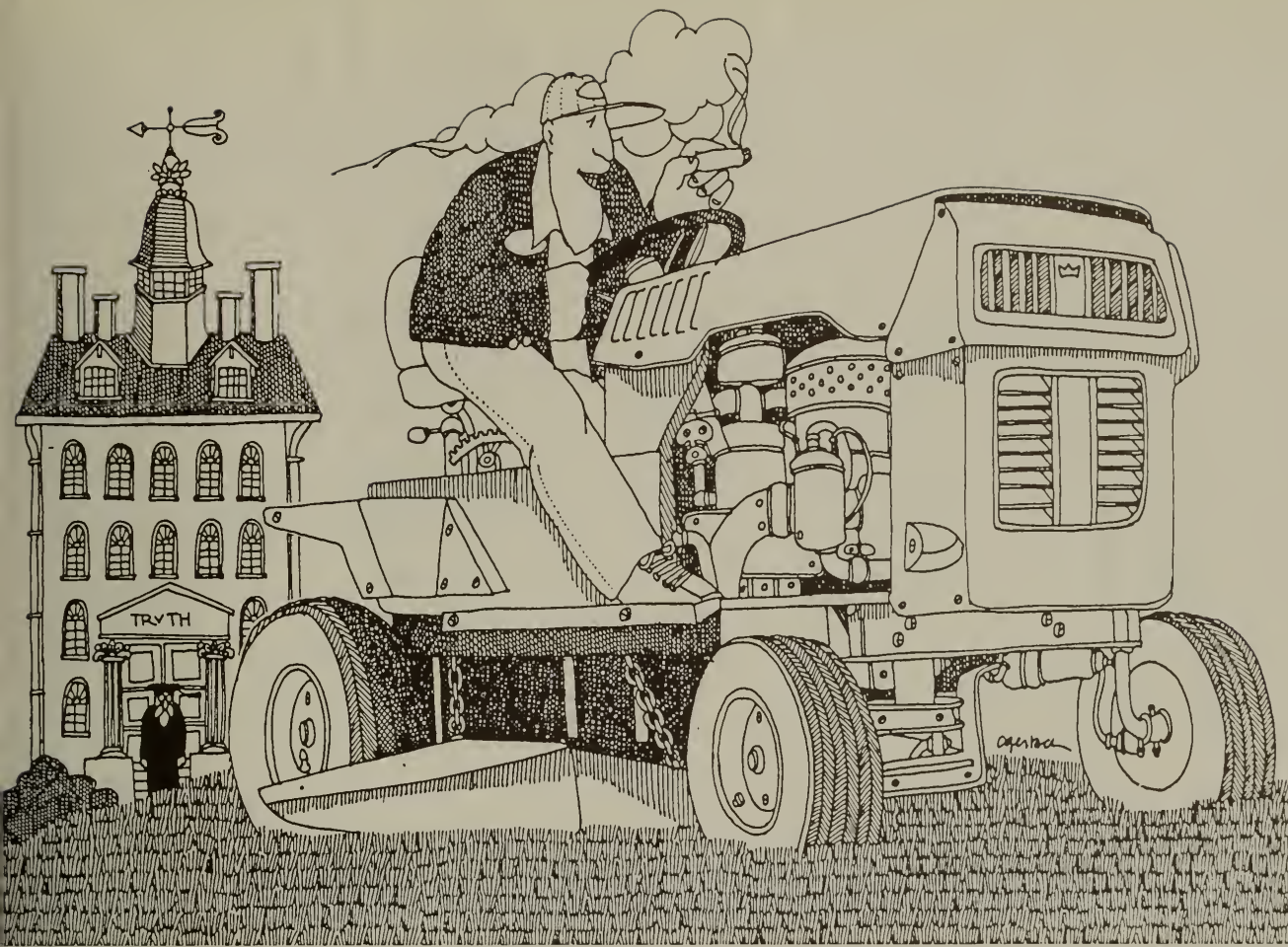
“. . . University presidents, the font of all wisdom, were treated to student contempt, insult, intimidation. Their offices were occupied and ruined; their authority, unexercised or disregarded. Most became scapegoats for the total failure of the university to cope with disruption.

“The exodus of distinguished presidents was unprecedented in the history of American universities. From Berkeley to Harvard, from Chicago to Stanford, the presidential offices were emptied, and all efforts were made to find new men versed in crisis management. Often they stayed less than two years, as at Indiana, Columbia, and Stanford; those that lasted kept a low profile.

“There was no conventional wisdom for the traditional presidents to fall back on. One week one president was fired for calling the police and another was fired for not calling the police.”

However dire the events, says Father Hesburgh, the aftermath was more profound:

“The worst results of the happenings of the ’60’s were the crisis of confidence and loss of nerve they



duced in the universities, coupled with a growing disdain and even contempt for universities on the part of those who had loved them most: parents, alumni, benefactors, legislators, students, too.”

How much of the presidents’ loss of power is a function of their unwillingness to exercise it? Has the machinery, by bringing the arbitration of social conflict to its grinding processes, dulled the fangs of the presidency? Or was the power already lost before it was so recently tested?

Was the leadership vacuum of the late ’60’s only a dramatic expression of a *fait accompli*?

For that matter, is reduced presidential power necessarily bad for the institution?

James Cheek, who freely owns that he has less power now as head of Howard University than he did a decade ago when he was president of Shaw University, does not rue the loss:

“The student unrest of the ’60’s taught presidents that we could not dictate any longer, that we had to share power and seek counsel. Unlike the corporate executive, the college president must be willing to exist as first among equals. In the narrow sense of executing

my own duties and responsibilities, this sharing has made the job more difficult; but in the broadest sense, it has been good for the presidency and for the educational community.”

Barnaby C. Keeney, president of the Claremont Graduate School and for 11 years president of Brown University, suggests that the final years of the last decade brought to the fore a continuing presidential and institutional deception that undermined and finally destroyed the public confidence necessary to the successful exercise of such delicate power.

“We have a long tradition and a well-established practice in American higher education of saying one thing and doing another. This practice was particularly virulent in the 1960’s for a number of reasons, and it contributed to the loss of credibility of college and university presidents and their institutions.

“We stated our lofty aims and described our virtuous practices, and then sometimes acted sordidly. The most obvious example of such action is in the usual description of the purity of amateur athletics, of which the practices of recruiting with little restraint and unscrupulously giving scholarships



to athletes who cannot graduate are part. We inherited and made strict rules for student conduct and enforced them unevenly, more so than was made necessary by the need for flexibility. We described our institutions as open to all qualified students, and then made only



token attempts to recruit from outside the middle class.”

Should the advertisement contain a final qualification: “Must say what is meant, and mean what is said”?

WILL THE NEW PRESIDENT be the image of the giants of the academic past, charismatic men and women whose presence resounded through the entire education community?

“They had scholarly tastes,” writes Harold W. Dodds, for 24 years president of Princeton University. “Each came to the office possessing an academic background. Each was . . . of broad interests; several were leaders in the political and diplomatic, as well as the educational, life of the country. Although none was able to ignore the undergirding functions, including fund raising, without exception they gave educational philosophy, policy, and program top priority.”

But could they live with the discord that is a pervasive and perhaps vital part of *modern* campus life?

Could they, indeed, have achieved greatness in the present constrained, regulated academic world?

Will the president become, as the former president of Cornell University, James A. Perkins, predicts, “an elected official, nominated by the university senate and approved by the board, for a limited term . . . the consensus-maker, the broker between constituencies, the link—but not the only link—between the board and the senate”?

Will higher education’s leaders of the future be per-

sons primarily skilled—in the words of Clark Kerr chairman of the Carnegie Council on Policy Studies in Higher Education and former president of the University of California—in “the ability to cut and trim”? Can a president skilled to cut and trim also lead? O



will the leadership be not outward but inward, a withdrawal toward a stable center?

Must tomorrow’s college and university presidents, then, be mediators, low-profile crisis managers trained in the arts of conciliation? Apostles of efficiency? Task-oriented—a closed circle of managers revolving from institution to institution as particular needs demand particular talents?

The constituents—the alumni and alumnae, the taxpayers, the lawmakers—will have the final say.

WHO will answer the ad?

## *This special report*

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# Thank You!

## Report of the 1974-75 WPI Annual Alumni Fund



Dear WPI Graduates:

One of the great challenges and a source of satisfaction for a college president is to meet and work with diverse groups on behalf of his institution. Diverse as these groups

are in background, attitude, and age, they usually have one thing in common — enthusiasm for their Alma Mater. None does better in this regard than the alumni of WPI who generously support us in many ways.

In these challenging economic times the Annual Alumni Fund is of critical importance. The leverage it gives us in accomplishing our objectives is enormous. In this past fiscal year exemplified the positive results: the \$215,000 Annual Alumni Fund was a significant factor in our total operating budget. It was made possible by many sacrificial gifts from alumni throughout the country and world. To each and every one of you I extend the heartfelt thanks of an appreciative institution for your generous and most meaningful support.

Special thanks go to the classes who celebrated their 25th, 40th, and 50th reunions last June. Your special anniversary gifts to

the College were most significant and heartwarming. The classes of 1925 and 1950 applied their gifts to a neuroelectrophysiology and a life science laboratory, respectively, as part of the renovation of Salisbury Hall. The class of 1935 endowed scholarships in their name. These gifts help us to continue our provision of outstanding engineering and science education.

Many individual alumni worked to make the Annual Fund a success in 1974-75. Particular thanks go to Fund Board Chairman Walter J. Charow '49 and his fellow Fund Board Members Leonard H. White '41, G. Albert Anderson '51, Howard I. Nelson '54, Peter H. Horstmann '55, and Daniel J. Maguire '66. Their leadership has been conspicuously successful. We give them our thanks for their long hours, hard work, and success.

Sincerely,

George W. Hazzard  
President



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Bromberg, '51, Richard A. Coffey, Jr., '51, Donald J. Corey, '51, William J. Cunneen, '51, Arthur H. Gerald, Jr., '51, Harvey L. Howell, '51, Edmund G. Johnson, '51, Frank A. MacPherson, '51, Albert A. Mahassel, '51, Thomas A. McComiskey, '51, Edward C. Moroney, Jr., '51, Duncan W. Munro, '51, John L. Reid, '51, James E. Rich, '51, Robert V. Ripley, '51, Ramsey U. Sheikh, '51, Donald F. Stockwell, '51, Richard G. Bennett, '52, Norman V. Frank, '52, Richard T. Gates, '52, Richard C. Gillette, '52, S. Paul Li, '52, Paul H. Sanford, '52, George T. Abdow, '53, Richard A. Davis, '53, Richard J. Hall, '53, John E. Leach, '53, William Mears, '53, Arthur M. Shepard, '53, David T. Van Covern, '53, Robert C. Woodward, '53, Michael S. Zucker, '53, Jaak Jurison, '54, Russell R. Lussier, '54, Harry L. Mirick, Jr., '54, Dr. Werner M. Neupert, '54, Fabian Pinkham, '54, Walter A. Reibling, '54, Edwin Shivell, '54, Gordon E. Walters, '54, Dr. Howard J. Dworkin, '55, Prof. Hartley T. Grandin, Jr., '55, Martin A. Rafferty, '55, Robert C. Stempel, '55, Clifford W. Burwick, '56, Dr. Raymond R. Hagglund, '56, Joseph F. Paparella, '56, David A. Pratt, '56, Pete J. Stephens, '56, George P. Strom, '56, Donald F. Berth, '57, Dr. John L. Buzzi, '57, Richard J. Ferguson, '57, George H. Long, Jr., '57, Edward J. Moineau, '57, William W. Rawstron, '57, Arthur Shahian, '57, Richard M. Silven, '57, Harvey A. Berger, '58, David B. Denniston, '58, Jasper Frees, '58, Philip M. French, Jr., '58, Marian C. Knight, '58, Robert A. Moore, '58, Joaquim S. S. Ribeiro, '58, James J. Vedovelli, '58, Richard N. Gustafson, '59, Thomas F. Humphrey, '59, Peter A. Nelson, '59, Philip H. Puddington, '59, Dr. George P. Rizzi, '59, Howard H. Street, III, '59, Mark H. Abramowitz, '60, William M. Aitken, '60, Paul W. Bayliss, '60, Dwight M. Cornell, '60, Richard P. Harding, '60, Peter A. Lajoie, '60, Sang K. Lee, '60, Benjamin B. Morgan, '60, Francis G. Toce, '60, David J. Welch, '60, James M. Dunn, '61, Lee P. Hackett, '61, Larry L. Israel, '61, Arthur W. Kroll, '61, Charles W. Mello, '61, Lloyd W. Pote, '61, John W. Powers, '61, Frederic A. Stevens, '61, Dr. James W. Swaine, Jr., '61, Ronald C. Ward, '61, Bruce W. Woodford, '61, William A. Brutsch, '62, Carmine A. Carosella, '62, James L. Forand, Jr., '62, David L. Goodman, '62, Major Jay P. Hochstaine, '62, Capt. John R. Tufano, '62, Dr. Richard F. Dominguez, '63, David E. Dunklee, Jr., '63, Ralph D. Gelling, '63, Robert H. Gowdy, '63, John B. Lawson, '63, Robert M. Mellow, '63, Russell E. Person, '63, Stuart P. Bowen, '64, Paul A. Covec, '64, Larry G. Hull, '64, Dr. Bruce S. Maccabee, '64, Thomas G. McGee, '64, Thomas J. Modzelewski, '64, Frederic C. Scofield, III, '64, William E. Shanok, '64, Robert H. Cahill, '65, Alexander B. Campbell, II, '65, William D. Galebach, '65, Walter J. Ruthenburg, III, '65, Dr. David M. Schwaber, '65, Chester J. Sergey, Jr., '65, Alfred G. Symonds, '65, Terry G. Tracy, '65, David C. Johnson, '66, John V. Magnano, '66, Earl C. Sparks, III, '66, Edward S. Ciarpella, '67, Thomas A. Gelormino, '68, Gregory H. Sovas, '68, Alfred G. Freeberg, '69, Leonard Polizzotto, '70, Joseph R. Radosevich, '70, Raymond J. Biszko, '71, Gregory S. Dickson, '71, Reginald G. Dunlap, '71, Thomas J. Kaminski, '71, Paul B. Popinchalk, '71, Frank W. Steiner, '71, Francis J. Wehner, Jr., '71, William N. Ault, '73

# The Alumni Fund Board

Walter J. Charow, '49	General Chairman
Leonard H. White, '41	Chairman, Presidents Advisory Council
G. Albert Anderson, '51	Member
Howard I. Nelson, '54	Chairman, Phonothon Program
Peter H. Horstmann, '55	Chairman, Special Gifts Program
Daniel J. Maguire, '66	Chairman, Anniversary Program

## The Volunteers

The fund is successful because of the many hours of time and effort which were donated by individual alumni who are the key link in the solicitation process. We acknowledge with grateful thanks the efforts and successes of the following volunteers:

### SPECIAL GIFT PROGRAM

William M. Aitken, '60, J. Norman Alberti, '24, G. Albert Anderson, '51, Carl W. Backstrom, '30, Donald R. Bates, '40, Robert A. Berg, '59, Delbert Betterley, '42, George H. Birchall, Jr., '42, Kenneth R. Blaisdell, '40, Jack F. Boyd, '39, Robert Boyea, '58, Cushing C. Bozenhard, '46, John W. Daley, Jr., '57, Prof. John Lott Brown, '46, Richard Burke, Jr., '38, George Button II, '46, Edward M. Cahill, '55, Walter J. Charow, '49, Edwin B. Conklin, Jr., '56, Walter F. Conlin, Jr., '46, Rollin K. Corwin, '65, Paul M. Craig, Jr., '45, Gordon F. Crowther, '37, Albert M. Demont, '31, Allen R. Deschere, '38, Michael A. DiPierro, '68, Paul C. Esario, Jr., '42, Robert E. Dunklee, Jr., '40, Robert J. Edgerly, '45, Raymond J. Forkey, '40, Allan Hazer, '47, Thomas B. Graham, '38, Donald J. Grenier, '55, Joseph M. Halloran, Jr., '40, Dr. William E. Hanson, '32, John P. Harding, Jr., '47, Stephen J. Hebert, '66, Peter H. Horstmann, '55, Thomas F. Humphrey, '59, Chandler W. Jones, '26, William A. Julian, '49, P. Warren Keating, '40,

Wayne E. Keith, '22, Luther C. Leavitt, '34, C. John Lindegren, Jr., '39, Daniel L. Lintz, '49, Francis W. Madigan, Jr., '53, Louis J. Marsella, '56, Philip Michelman, '51, Charles B. Miczek, '46, Allen M. Mintz, '48, Robert A. Muir, '41, Daniel F. O'Grady, '30, Edward J. Odlum, '31, Francis J. Oneglia, '42, Carlton J. O'Neil, '20, Bradford W. Ordway, '39, Julius A. Palley, '46, Joseph F. Paparaella, '56, Russell W. Parks, '41, Harvey L. Pastan, '49, Edward A. Pendleton, '46, Arthur P. Pingalore, '44, Albert J. Raslavsky, '39, Lester J. Reynolds, Jr., '50, James E. Rich, '51, Samuel Ringel, '47, Edmund J. Salate, '48, George E. Saltus, '53, Trueman L. Sanderson, '31, Raymond B. Shlora, '40, Robert F. Stewart, '50, Louis E. Stratton, '39, George P. Strom, '56, Donald Taylor, '49, Etienne Totti, Jr., '42, Otto A. Wahrlab, '54, Sigurd R. Wendin, '25, Sidney B. Wetherhead, '45, John R. Wheeler, '17, Leonard H. White, '41, Norman A. Wilson, '42, Robert F. Wilson, '41



## PHONOTHON PROGRAM

Arnold J. Antak, '68, Richard A. Arena, '71, James P. Atkinson, '69, William N. Ault, '73, Gregory W. Backstrom, '70, Walter J. Bank, '46, Nicholas J. Barone, '65, Donald W. Bean, '58, Capt. Francis L. Belisle, Jr., '70, L. Thomas Benoit, Jr., '66, Carl W. Bergman, Jr., '46, Paul H. Bergstrom, '38, Edouard S. P. Bouvier, '55, James W. Bowen, '74, John J. Bresnahan, Jr., '68, Daniel J. Brosnihan III, '62, Gedney B. Brown, '55, James R. Buell, '73, William S. Bushell, '37, Neil T. Buske, '59, Edward F. Cahalen, '27, Robert H. Cahill, '65, Edwin C. Campbell, '43, Donald C. Carlson, '65, John H. Chapman, '37, Raymond F. Cherenzia, '73, R. Norman Clark, '33, Joseph J. Conroy, Jr., '46, George Davagian, Jr., '68, Ralph A. Di Iorio, '70, George D. Eldridge, '63, William F. Elliott, '66, Willard R. Ernst, '53, Richard M. Filippetti, '73, Charles S. Frary, Jr., '34, George F. Gamache, '68, Douglas J. George, '69, Carl A. Giese, Jr., '43, Michael T. Glynn, '68, Michael G. Gordon, '56, Philip J. Gow, '43, Miles W. Grant, Jr., '59, William G. Hillner, '70, David G. Holloway, '59, Timothy C. Johnson, '71, Elliott D. Jones, '32, John D. Kaletski, '72, Lawrence Katzman, '69, Charles D. Konopka, '68, Robert J. Leduc, '72, Richard A. Loomis, '55,

Daniel J. Maguire, '66, R. Michael Malbon, '63, Arthur H. Mallon, '39, Frederick W. Marvin, '46, Daniel G. Mazur, '38, Donald M. McNamara, '55, John C. Meade, '46, Richard R. Nabb, '73, Donald R. Nelson, '59, Howard I. Nelson, '54, Peter A. Nelson, '59, Stewart W. Nelson, '66, Robert G. Newton, '40, Lcdr. Brian J. O'Connell, '62, John R. Palitsch, '74, Lawrence A. Penoncello, '66, Neal D. Peterson, '51, Stephen W. Petroff, '68, Walter E. Pillartz, Jr., '61, Andrew L. Piretti, '68, F. David Ploss III, '70, Leonard Polizzotto, '70, Albert Pollin, '55, Richard G. Ramsdell, '41, Lynwood C. Rice, '44, William G. Ritchie, '48, John E. Rogozenski, Jr., '67, James F. Rubino, '74, Edward G. Samolis, '52, Leon R. Scruton, '70, Herbert H. Slaughter, Jr., '40, Richard A. Sojka, '72, Stanley W. Sokoloff, '59, Douglas H. Tarble, '73, Jayantil T. Thakker, '66, Victor H. Thulin, '42, Francis G. Toce, '60, John G. Underhill, '44, Jeremiah H. Vail, '33, Charles F. Walters, '55, Elbert K. Weaver, '60, Leonard J. Weckel, '66, Leon F. Wendelowski, '69, Ralph D. Whitmore, Jr., '42, Francis L. Witege, '38, Nancy E. Wood, '73, Robert R. Wood, '73, Bruce T. Work, '74, William H. Wyman, '65, Paul C. Yankauskas, '42, Ronald L. Zarella, '71, Michael P. Zarrilli, '71

## ANNIVERSARY PROGRAM

Harold R. Althen, '52, Gerald F. Atkinson, '51, Bruce M. Bailey, '51, David C. Bailey, '25, Harold A. Baines, '26, Leo T. Benoit, '36, Carl F. Benson, '36, Milton E. Berglund, '26, Karl H. Bohaker, '35, Carleton W. Borden, '36, Richard C. Boutiette, '52, John R. Brand, '36, Paul J. Brown, '50, Harold S. Burr, '36, Carl F. Carlstrom, '25, Allen C. Chase, '36, George L. Chase, '36, Everett S. Child, Jr., '50, B. Austin Coates, '35, Henry S. Coe, Jr., '50, Henry S.C. Cummings, Jr., '50, Walter G. Dahlstrom, '36, C. Marshall Dann, '35, Phillip R. Delphos, '26, Henry M. Demarest, Jr., '51, Walter B. Dennen, Jr., '51, Dr. Paul M. Downey, '36, Donald L. Edmunds, '36, Clifford I. Fahlstrom, '27, Robert Fowler, Jr., '36, George W. Fuller, '36, Rafael R. Gabarro, '51, Alexander L. Gordon, '36, J. Edward Guild, '36, Allan F. Hardy, Jr., '35, Daniel J. Harrington, Jr., '50, William H. Haslett, Jr., '51, Lawson T. Hill, Jr., '50, E. Carl Hoglund, '27, Arthur V. Houle, '25, Richard E. Howard, '51, Daniel L. Hussey, '25, Carl E. Johansson, '51, Edmund G. Johnson, '51, Joseph A. Johnson, Jr., '35, W. Evans Johnson, '51, F. Kenwood Jones, '36, Arthur W. Joyce, Jr., '50, Francis E. Kearney, '50, Kirke Leonard, '51,

Donald C. Lewis, '51, Stanley R. Lindberg, '51, Robert M. Luce, '51, Dewey R. Lund, '51, Philip A. MacArdle, '27, Frank A. MacPherson, '51, Luther B. Martin, '25, Thomas A. McComiskey, '51, James H. Meiklejohn, Jr., '50, Henry L. Mellen, '25, Stanley L. Miller, '51, David M. Morley, '36, Edward C. Moroney, Jr., '51, William F. Mufatti, '51, Duncan W. Munro, '51, Edwin H. Nahikian, '51, Roland L. Nims, '35, John J. O'Donnell, '36, Kenneth W. Parsons, '50, Charles C. Peirce, '51, Michael C. Rallis, '36, George E. Rocheford, '36, Robert W. Rodier, '51, Lawrence F. Scinto, '51, Robert B. Scott, '25, Paul F. Seibold, '50, Ramsey U. Sheikh, '51, Alan F. Shepardson, '36, George A. Sherwin, '36, Lester A. Slocum, Jr., '51, Dr. Stedman W. Smith, '36, Eric W. Soderberg, '35, Vartkes Sohigian, '51, Donald J. Spooner, '51, Mabbott B. Steele, '26, Philip J. Sullivan, '35, Roger W. Swanson, '51, Gordon S. Swift, '35, Henry D. Taylor, '51, Robert B. Taylor, '35, Joseph E. Thomas, '51, John M. Tracy, '52, Arthur D. Tripp, Jr., '36, Abbott D. Wilcox, '36, Plummer Wiley, '35, Samuel R. Winther, '51, Robert C. Wright, '36, Frederick L. Yeo, '36

## GIVING BY CHAPTER

Chapter	# In Chapter	# Of Gifts	Percent Participation	Goals	Total Cash	Cash - % Of Goal	Average Gift
Berkshire	77	26	33.77	1,600.00	\$ 727.67	\$ 45.47	\$ 27.99
Boston	1062	394	37.10	24,000.00	20,471.00	85.29	51.96
Central New York	111	55	49.55	2,800.00	1,795.00	64.10	32.64
Chicago	130	45	34.62	6,000.00	2,942.50	49.04	65.39
Cincinnati	52	18	34.61	1,600.00	945.00	59.06	52.50
Cleveland	103	44	42.71	3,500.00	2,950.00	84.28	67.04
Connecticut Valley	362	141	38.95	11,500.00	6,082.00	52.88	43.13
Detroit	106	49	46.23	3,000.00	2,810.00	93.66	57.35
Eastern Connecticut	163	68	41.72	3,000.00	9,674.49	322.48	142.27
Hartford	688	288	41.86	20,000.00	10,253.34	51.26	35.60
Hudson-Mohawk	185	94	50.81	4,500.00	4,074.20	90.53	43.34
Los Angeles	276	97	35.14	18,000.00	4,305.00	23.91	44.38
New Haven	404	154	38.11	10,000.00	6,133.34	61.33	39.82
New York	505	179	35.45	17,500.00	13,916.68	79.52	77.75
North Shore	352	144	40.91	7,500.00	5,647.48	75.29	39.22
Northern California	192	83	43.23	7,000.00	3,764.00	53.77	45.35
Northern New Jersey	468	222	47.44	17,000.00	18,969.01	111.58	85.45
Pacific Northwest	50	19	38.00	4,000.00	2,007.00	50.17	105.63
Philadelphia	318	123	38.68	7,000.00	4,626.82	66.09	37.62
Pittsburgh	81	46	56.79	4,000.00	2,295.00	57.37	49.89
Rhode Island	383	121	31.59	7,500.00	3,851.02	51.34	31.83
Rochester-Genesee	120	62	51.66	2,500.00	2,170.00	86.80	35.00
Southeastern	86	29	33.72	3,000.00	592.75	19.75	20.43
St. Louis	19	9	47.36	1,000.00	210.00	21.00	23.33
Washington	446	204	45.74	15,000.00	10,749.16	71.66	52.69
Western New York	80	38	47.50	2,500.00	1,109.50	44.38	29.19
Wilmington	104	46	44.23	3,000.00	2,080.00	69.33	45.22
Worcester	2066	639	30.93	50,000.00	35,372.06	70.74	55.91
Out of District	1983	656	33.08	42,000.00	33,125.50	78.87	50.50
Address Unknown	609	12	01.97		1,920.35	0.00	160.03
<b>Totals</b>	<b>11,581</b>	<b>4,105</b>	<b>35.45</b>	<b>300,000.00</b>	<b>\$ 215,569.87</b>	<b>\$ 71.85</b>	<b>\$ 52.51</b>

### IN MEMORIAM

Memorial gifts of \$4,895.00 were received in memory of the following alumni:

James E. Smith, '06, Lester H. Greene, '12, Marquhar W. Smith, '13, Richard W. Young, '16, Allen D. Wassall, '17, William F. Ronco, '25, Harold P. Kranz, '29, Lothar A. Sontag, '29, Warren C. Whittum, '30, Ladislaus T. Jodaitis, '35, Lawrence F. Hull, '64, Robert W. Suhr, '65.

### BEQUESTS

Bequests totaling \$290,750.99 were received during the past year from the estates of:

Olmer H. Wilmarth, '97, Joseph W. Rogers, '01, Edwin M. Roberts, '04, James H. Manning, '06, Arthur J. Knight, '07, Herbert P. Sawtell, '08, Harold P. Conklin, '11, John Barnard, '13, Harry B. Lindsay, '13, Wyman H. Varney, '13, Edward T. Jones, '14, Raymond W. Burns, '16, Paul M. Abbott, '20.





### GIVING BY CLASS

Class	Total in Class	# of Gifts	Percent Participation	Total Cash Gifts	Average Gift
1890	1	0			
1895	2	0			
1896	3	0			
1897	2	0			
1898	1	0			
1900	2	0			
1901	3	0			
1902	2	0			
1903	6	1	16.66	50.00	50.00
1905	4	1	25.00	50.00	50.00
1906	7	4	57.14	138.00	34.50
1907	10	6	60.00	305.00	50.83
1908	14	7	50.00	360.00	51.42
1909	12	4	33.33	250.00	62.50
1910	18	5	27.77	300.00	60.00
1911	13	4	30.76	275.00	68.75
1912	29	14	48.27	1,440.00	102.85
1913	27	12	44.44	1,170.00	97.50
1914	32	16	50.00	2,505.00	156.56
1915	38	19	50.00	7,899.49	415.76
1916	47	19	40.42	1,427.50	75.13
1917	57	25	43.86	4,054.00	162.16
1918	45	22	48.89	985.00	44.47
1919	38	23	60.52	6,367.80	276.86
1920	67	35	52.23	3,685.00	105.28
1921	54	26	48.14	1,840.00	70.76
1922	75	35	46.66	2,135.00	61.00
1923	62	39	62.90	3,275.84	83.99
1924	54	31	57.40	376.00	12.12
1925	67	28	41.79	4,340.00	155.00
1926	105	51	48.57	10,978.50	215.26
1927	74	35	47.29	4,410.00	126.00
1928	90	50	55.55	1,661.00	33.22
1929	81	43	53.09	1,288.00	29.95
1930	115	46	40.00	3,022.00	65.70
1931	115	54	46.96	5,997.00	111.06
1932	110	46	41.82	3,138.00	68.22
1933	123	62	50.40	3,189.17	51.43
1934	113	72	63.71	4,201.67	58.35
1935	134	78	58.21	13,660.50	175.13
1936	103	52	50.48	4,698.00	90.34
1937	107	59	55.14	4,747.75	80.47
1938	136	63	46.32	5,129.34	81.41
1939	140	78	55.71	3,070.00	39.36
1940	153	72	47.06	3,703.50	51.44
1941	155	68	43.87	2,850.00	41.91
1942	161	78	48.45	2,729.87	35.00
1943	143	62	43.36	1,817.50	29.31
1944	157	63	40.13	4,374.00	69.43
1945	142	61	42.96	2,779.98	45.57
1946	315	89	28.25	3,403.04	38.24
1947	79	31	39.24	1,292.00	41.68
1948	188	64	34.04	4,090.85	63.91
1949	243	128	52.67	5,588.35	43.66
1950	212	103	48.58	5,882.50	57.11

Class	Total in Class	# of Gifts	Percent Participation	Total Cash Gifts	Average Gift
1951	196	81	41.32	6,243.18	77.07
1952	173	19	10.98	1,115.00	58.68
1953	186	78	41.93	2,741.00	35.14
1954	157	57	36.31	2,485.00	43.60
1955	148	58	39.19	2,430.35	41.90
1956	164	65	39.63	2,037.00	31.34
1957	230	82	35.65	2,715.00	33.11
1958	235	75	31.91	5,038.00	67.17
1959	277	102	36.82	3,232.00	31.69
1960	297	92	30.98	2,740.00	29.78
1961	318	103	32.39	3,504.30	34.02
1962	283	75	26.50	2,085.00	27.80
1963	264	92	34.85	2,702.00	29.37
1964	322	96	29.81	2,679.48	27.91
1965	327	112	34.25	3,257.65	29.08
1966	346	106	30.64	2,547.00	24.03
1967	354	102	28.81	1,973.96	19.35
1968	448	121	27.01	3,670.00	30.33
1969	354	115	32.48	2,129.00	18.51
1970	392	103	26.27	2,208.32	21.44
1971	453	124	27.37	2,783.48	22.44
1972	357	68	19.05	1,052.00	15.47
1973	537	131	24.39	2,320.00	17.71
1974	477	60	12.58	850.00	14.17
Other		4		100.00	25.00
<b>Total</b>	<b>11,581</b>	<b>4,105</b>	<b>35.45</b>	<b>215,569.87</b>	<b>52.51</b>

#### GIFTS BY SIZE

Gift Range	Number of Cash Gifts	Cash Total
5000 and above	2	\$ 11,889.49
2000 - 4999	5	13,399.00
1000 - 1999	22	23,855.09
600 - 999	7	3,976.00
300 - 599	80	24,708.35
100 - 299	543	65,202.76
50 - 99	545	28,345.88
25 - 49	981	26,158.04
1 - 24	1,920	18,035.26
<b>Total</b>	<b>4,105</b>	<b>\$ 215,569.87</b>

#### DISTRIBUTION OF GIFTS

Student Aid	
Alumni Scholarships	\$ 29,000.00
Additional Financial Aid	10,000.00
Athletic Department	18,743.00
Faculty Salaries	20,000.00
Computer Center (PDP-10 Computer)	40,333.00
Restricted Gifts	
Class of 1925 (Biomedical Neuro-electrophysiology Labs)	4,340.00
Class of 1935 (Endowed Scholarship)	13,660.50
Class of 1950 (Life Science Instrument Lab)	5,882.50
Class of 1934 (Admissions Office Renovation)	4,201.67
Class of 1948 (Audio-Visual Facility)	4,090.85
Other Restricted Class Gifts	27,444.68
General and Miscellaneous	37,873.67
<b>Grand Total</b>	<b>\$215,569.87</b>



# Honor Roll

An asterisk (\*) before a name in the class list indicates that the alumnus has been a continuous contributor to the Alumni Fund since his graduation or since the Fund began in 1924. We heartily thank these loyal donors.

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## CLASS OF 1912

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Degree	# Alumni	# Cont.	% Giving	Total Giving	Avg. Gift
Mechanical	3045	1247	41.0	\$ 71,839.41	\$ 57.61
Civil	1491	560	37.6	37,876.14	67.64
Electrical	2683	1104	41.2	56,949.29	51.58
Chemical	1117	416	37.2	15,444.74	37.13
Chemistry	560	242	43.2	18,626.00	76.97
Physics	385	99	25.7	2,767.00	27.95
Math	280	67	23.9	1,175.96	17.55
Management	198	55	27.7	1,097.00	19.94
General Science	18	7	38.8	15.00	2.14
Computer Science	98	12	12.2	190.00	15.83
Life Science	18		0.0	0.00	0.00
Humanities & Technology	22	4	18.2	30.00	7.50
Business	25	1	4.0	10.00	10.00
Other	136	7	5.2	85.00	12.14
Sub-Total, Degrees	10,076	3821	37.92	206,105.54	53.94
Non-Degree	1,505	284	18.87	9,464.33	33.33
Grand Total	11,581	4105	35.45	\$ 215,569.87	\$ 52.51

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During the year, thoughtful gifts were received from the following individuals for their special anniversary class gift accounts. On behalf of each of these classes, a warm thank you is extended to each of the donors listed below:

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George J. Heckman, Howard F. Stephenson  
Total Gifts: \$60.00

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Total Gifts: \$250.00

## GIVING BY FRATERNITY

Fraternity	# Alumni	# Cont.	% Giving	Total Giving	Avg. Gift
Phi Kappa Theta	755	308	40.8	\$ 20,012.54	\$ 64.98
Phi Sigma Kappa	713	297	41.6	19,287.83	64.94
Theta Chi	744	324	43.6	19,009.55	58.67
Lambda Chi Alpha	685	303	44.23	18,066.15	59.62
Alpha Tau Omega	710	302	42.5	17,163.57	56.83
Phi Gamma Delta	640	255	39.8	15,637.00	61.32
Sigma Phi Epsilon	763	350	45.9	15,388.34	43.97
Sigma Alpha Epsilon	672	292	43.4	11,984.67	41.04
Alpha Epsilon Pi	431	177	41.1	7,885.68	44.55
Tau Kappa Epsilon	235	74	31.4	2,266.96	30.63
Sigma Pi	125	30	24.0	720.00	24.00
Delta Sigma Tau	65	17	26.1	477.00	28.05
Sub Total Fraternities	6538	2729	41.7	147,899.29	54.20
Non-Fraternity	5043	1376	27.3	67,670.58	49.18
Grand Total	11581	4105	35.45	\$ 215,569.87	\$ 52.51



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on which these class notes are based  
 been received by the Alumni Association  
 November 15, when it was compiled for  
 on. Information received after that date  
 used in succeeding issues of the WPI

8  
 D. Simonds is now residing on  
 shore Rd. in South Hero, Vermont.

0  
 ss meeting held at WPI before the  
 luncheon on June 7, Edward A.  
 was elected president. Those present  
 ng were, Millard Clement, Alvan  
 Leonard Howell, Oliver Jacobs,  
 Martin, and Edward Hanff.  
 her official business being presented,  
 nment was taken to the 1910 dial in the  
 front of Boynton Hall where the class  
 nion picture was taken. After the  
 a few observations were recalled from  
 l, small voice" of the dial to be  
 ed for publication later.  
 members unable to attend the  
 were Carlisle Atherton, Charles  
 Ralph Gold, Irving Peters, and  
 viss.  
 Submitted by Millard Clement

4  
 S. Crandon serves as consultant to  
 ident at ASG Industries, Inc., Little  
 n, R.I.

5  
 ott's health is improving and he is  
 e to play golf again as well as get up  
 high country.

8  
 C. Adams, an active member of the  
 tiquet Trout Club in Weston, Vt.,  
 a complete fly fishing outfit to a  
 n the next camp last August, later  
 out that the visitor was Edwin C.  
 ell, '43. They report that the setting  
 ffect for Tech storytelling.

1929  
 Edward E. Lane, who for many years was  
 eastern division manager for North American  
 Press, Milwaukee, has retired.

1931  
 On the retired list is Robert Bumstead, who  
 was vice president and conservation director  
 at MFB Mutual Insurance Co. in Providence,  
 R.I. . . . Formerly the university engineer at  
 the University of North Carolina, F. Dudley  
 Chaffee is now retired. . . . William P.  
 Dennison is also retired. He was a district  
 project engineer for the Massachusetts  
 Department of Public Works. . . . Henry F.  
 Friel is product manager at Wire Conveyor  
 Belts Inc. in Easton, Md. Previously he was a  
 senior engineer at CF&I Steel Corp., Palmer,  
 Mass. . . . Sumner F. Hall, president and  
 treasurer of C.D. Hall, Inc., Webster, Mass.,  
 is a retiree. . . . Ralph Hodgkinson, who  
 had been director of craft demonstrations at  
 Old Sturbridge Village, retired last December.  
 . . . After working for E.I. du Pont de  
 Nemours Co. in Philadelphia for many years,  
 Oscar W. Tissari has retired. . . . A. Francis  
 Townsend has retired from his duties at  
 Persons-Majestic Mfg. Co. in Worcester.

1932  
 Robert I. Belmont retired last February. He  
 had been North East regional manager for  
 Bay State Abrasives in Westboro, Mass.

1933  
 Ethan D. Bassett is with Electronic Coils,  
 Inc., Springfield, Mass. . . . Allen L.  
 Brownlee, general manager of the WICO  
 Electric Co., West Springfield, Mass., has  
 been named a director of the West  
 Springfield Chamber of Commerce. A  
 registered professional engineer, he holds 14  
 patents for inventions in this country and  
 others in Great Britain and Canada. At the  
 time when WICO was acquired by the  
 Prestolite Co. (a division of Electra Corp.) in  
 1967, Mr. Brownlee was vice president of the  
 company. He is a director and member of the  
 executive committee of Junior Achievement,  
 a Boys Club trustee, and past officer and  
 director of the Westfield YMCA. . . . R.  
 Norman Clark is an abrasive engineer at  
 Waltham Grinding Wheels in Manchester,  
 Mass.

Harry T. Jensen, vice president of  
 engineering at the Sikorsky Aircraft division  
 of United Technologies, Bridgeport, Conn.,  
 has been promoted to the newly-created post  
 of vice president of technology. He will be  
 responsible for appraising and planning the  
 division's technical and engineering programs  
 and their relation to Sikorsky's business  
 goals. Since joining the company in 1941, he  
 has served as engineering manager, chief  
 engineer, and chief test engineer. He holds  
 patents on aircraft design and test methods  
 and is a fellow of the American Helicopter  
 Society, the Royal Aeronautical Society, and  
 an associate fellow of the American Institute  
 of Aeronautics and Astronautics.

Wesley B. Reed combined his clever  
 humor and fine bass voice in his musical  
 presentation, "Music from the Attic", which  
 was a highlight of a bicentennial program  
 given in East Haddam, Conn. last September.  
 He demonstrated a hammer dulcimer, a  
 plucked dulcimer, a pseudo-English cittern,  
 and several homemade psaltries. Recently  
 retired as a senior physicist from American  
 Optical Corp., he plans to open his 30-year  
 collection of over 250 musical items to the  
 public as a museum.

1934  
 Harold B. Bell, former purchasing agent for  
 Hobbs Mfg., Worcester, is now retired. . . .  
 Merritt E. Cutting has retired as a chemist  
 at Barre Wool Combing Co., South Barre,  
 Mass., where he was employed for many  
 years. . . . Albert T. Phelps, who served as  
 assistant chief engineer at the Savage Arms  
 Division of Emhart Corp., Westfield, Mass.,  
 has retired. . . . Dr. Gordon P. Whitcomb is  
 a retiree. He was manager of college relations  
 at American Cyanamid Corporation.

1935  
 Frank H. Madigan, who served as a district  
 sales manager at Norton Co. for many years,  
 has retired.

1936  
 Roger W. Bruce has joined Persons-Majestic  
 Mfg. Co. in Worcester. . . . George E.  
 Rocheford continues with the U.S. Army  
 Corps of Engineers, Waltham, Mass. Present-  
 ly he is assistant chief of the structural sec-  
 tion. . . . C. Norman Svenson is a retiree.  
 He was a standards engineer with GE's Aero  
 Inst. & Prod. Support Division in Wilmington,  
 Delaware.

1938  
 Formerly a staff engineer at Caterpillar  
 Tractor Co., Donald B. Clark has been  
 appointed as an assistant director of research  
 in charge of engineering materials work at  
 the Peoria (Ill.) based company. He joined  
 Caterpillar in 1971 as a staff engineer and  
 was promoted to administrative staff engineer  
 two years ago. He is a member of the  
 Society of Automotive Engineers and the  
 American Institute of Aeronautics and  
 Astronautics.

1939  
 Charles H. Amidon of Holden, Mass., is a  
 self-employed consultant. . . . David H. Hunt  
 has been appointed executive vice president  
 of the Spencer Turbine Company. Located  
 in Simsbury, Conn., he was formerly chief  
 engineer, then vice president of engineering  
 prior to his promotion. He joined the  
 company in 1954. . . . Ward D. Messimer,  
 former vice president of Illinois Railway  
 Equipment Co., Chicago, has retired.



# The further exploits of Foxy Grandpa

Remember Foxy Grandpa? Ed Delano, '30, first made national headlines back in 1970 when he bicycled from California to Massachusetts to attend his 40th class reunion at WPI.

This year he turned 70 and decided to celebrate in typical Foxy Grandpa fashion. Not only did he bike from his home in Vacaville, California to Quebec City, Canada (3260 miles!), he also journeyed to the Veterans' World Championships in Austria where he picked up an armload of trophies.

"However, now I'm known as 'the Yankee Kangaroo' in international racing circles," he chuckles. "That's because, even though I represented America, I trained with the Australian team at the invitation of Cecil Cripps, secretary-treasurer of the Veteran Cyclists' Association of Australia."

Delano, the only veteran American cyclist registered for the race, joined the Aussies in Paris in August to train for the World Cup series slated to be held in St. Johann, in the Tirol. While in Europe he trained, toured, or raced in France, West Germany, Austria, Italy, Holland, and Denmark.

"We traveled from place to place in a bus with a van following us carrying

our bicycles," he recalls.

After ten days of training in St. Johann, Foxy Grandpa placed in more than half of the events, even though some races were not run by age class. In the championship race he placed 15th out of 40 starters from eight countries. The 40 starters represented the top veterans in the world with 35 racers in the 60-year bracket and five in the 70-year bracket. "The oldest was 76," Delano reports.

The big race, held on August 22nd on a well-maintained road in the rugged foothills of the Austrian mountains, was participated in by veteran cyclists, with a 75-year-old German placing eighth!

"The Australian team copped the cup in the 35 to 40 year class," says Foxy Grandpa. "Cecil Cripps himself won third in the 50 to 55 class."

Delano feels that currently the average Australian veteran is equal in ability to an American 10 years younger, with the latter growing by leaps and bounds each year. In the U.S. a veteran is anyone 40 or over.

The day after the championship race, Foxy Grandpa carried the U.S. banner during the cyclists' torchlight parade which wound through the streets of St.

Johann. The procession ended with awards ceremony.

"I was happy to receive my award," Delano comments. "But I wish I could have understood German!"

While on this, his first trip abroad, Foxy Grandpa participated in a number of other races, including one held at Mantes, France, near the Seine River northwest of Paris. He was the oldest of 60 riders by 10 years, but he made better time than five of them.

"The course ran through several small towns," Delano says. "And the police were out in force. If a motorist tried to interfere with a racer at an intersection, the gendarmes would warn him off the road into the weeds."

Foxy Grandpa nearly panicked on one—during an event in northern Italy south of the Brenner Pass. The course was extremely hilly and laced with U-turns and turn-arounds. "Everyone ran out of sight and I was completely alone," he recalls. "I was afraid that I missed a turn-around. I had no passport with me, no Italian currency, and no glasses. Worst of all, I didn't remember the names of any towns, and I couldn't understand Italian!"

Finally he glimpsed a rider ahead of him and a landmark tunnel located near the end of the course. "That really got the adrenalin going," he says. "I knew then that I had only a mile to go."

Foxy Grandpa made a firm friend during the race, however. "He was a heavy-set Italian, who was a bit slow on the hills," he reports. "He turned out to be a month older than I. During the awards ceremony they had us on stage together. They presented me with a turtleneck sweater and gave us each a bottle of wine. We cemented Italian-Australian relations on the spot. We were the oldest in the race."

In Koflach, Austria, Delano competed in a 19.5 kilometer two-man trial and placed 10th out of 20 teams. While in Koflach he placed third in the 66-and-over class, racing over steep mountain roads. "I was only 28 seconds behind Eddy Bisson, who was good enough to get his picture in the program," says Delano.

Foxy Grandpa copped another third place in the King of the Mountain (summit) competition. "I didn't have a chance to train for this particular race," he reveals. "If I had, I could have done better."

In Amsterdam he finished the 50-kilometer, 20-lap course at the Wieland circuit in one hour and 10 minutes. During a bicycle tour in Denmark he recalls, "A giant blond Dane gave me a massive push up a hill so I could catch up with the pack."

"The Danes and the Austrians couldn't do enough for us to make out





...able, he says w...  
...ians paid him the singular honor  
...king him an honorary member of  
...eam.

...d what of Foxy Grandma, back  
...in Vacaville while her Yankee  
...broo was off in Europe living his  
...enging and unforgettable  
...ence?" One has to believe that  
...used to such goings-on. It took  
...6 days to bike to his 40th WPI  
...n five years ago. It took him  
...35 days to pedal his Cinelli to  
...ec City early last summer. ("The  
...ians gave me a rousing welcome,  
...ete with police escort. They  
...l me like a celebrity and invited  
...the guest of honor to a dinner  
...Canadian dignitaries—they even  
...ed me into the bridal suite at the  
...ay Inn, dirty bicycle and all," he  
...bers fondly.)

...y Grandpa (so-named by his  
...children) does not forget Foxy  
...ma on his cross-country jaunts.  
...ones her every evening from his  
...to let her know how things are  
...She also makes his advance  
...ations when necessary.

...prefers touring alone, however.  
...young men ride too fast and the  
...en too slow," he says. "Besides,  
...ing to the old adage, 'he who  
...alone travels best.'"

...ano, a retired superintendent of  
...ifornia State Division of  
...ay Maintenance, knows his  
...y" well. Since taking up cycling  
...est 12 years ago "to relax", he  
...alked up 40,000 miles in races  
...urs. He has maintained champion  
...for four years at the Senior Sports  
...tional, and his exploits have  
...ports news in the *San Francisco  
...er, Los Angeles Times, Sports  
...ed, and Bicycling*. His armload of  
...es from the World Cup races held  
...ria last summer, turned out to be  
...isting on the cake.

...st goes to show what a "Foxy  
...broo" can do!

...ipt  
...we went to press, it was learned  
...oxy Grandpa was being "studied"  
...Irvin Faria, director of the  
...n Performance Laboratory and  
...ian of the men's physical education  
...ment at the University of Califor-  
...Sacramento. After a series of  
...us tests it was discovered that  
...o had apparently reversed the  
...process through continued exercise.  
...r as a college athlete, he performs  
...e is 40, and at 70, his racing  
...just keep getting better.  
...no," concludes Dr. Faria, "is a  
...unusual physiological specimen.  
...g him has proved that the aging  
...s can be reversed and that is quite  
...omenon."

**WPI**





# Ted Lewis's annual dream

Twenty-two years ago Leonard "Ted" Lewis, '27, a Shriner and former WPI gridster, dreamed of seeing his Shrine and football interests combined to help raise money for crippled and burned children confined in Shrine hospitals throughout the U.S. and Canada.

"Why don't we sponsor a schoolboy football classic with the proceeds going to help such children," he asked a fellow Shriner.

The reply was, "Ted, you've got more damned courage than brains. It will never work."

Ted Lewis, a Claremont, N.H. oil executive, has reason to smile over that remark. In two decades the plan that would "never work" has earned over \$500,000 for crippled children and brought summer football to New England.

"I can't take complete credit for the idea behind the Vermont-New Hampshire Shrine Football Classic" he confides. "As New Hampshire Potentate I attended a convention in Charlotte, N.C. and was taken to a Shrine benefit football game where a lot of money was raised. I felt we could do something similar in New Hampshire and Vermont."

In the beginning a postseason football game was planned. The New Hampshire Interscholastic Athletic Association advised that eligibility rulings

could harm the players so a summertime game was established. "The N.H.I.A.A. gave us some good ideas and helped us get the thing going," Lewis says.

Originally the early games were held in various locations including the Holman Stadium in Nashua, N.H., Cowell Stadium at the University of New Hampshire, and at Centennial Field at the University of Vermont.

"Now the Classic is held annually at Dartmouth's Memorial Stadium in Hanover," Lewis reports. "We expect to keep it there for as long as the game is played."

Memorial Stadium seats about 20,000 and recently the game has drawn only about 15,000 people. Lewis worries about the attendance level.

"The response from most Shriners, as far as participation goes, has been great," he says. "But there have been weak spots which should be strengthened. Also, we have to draw more people from the heavily-populated areas like Manchester and Concord."

Still, Lewis, who remains an active member of the Shrine Board of Governors, has reason to be satisfied with his 'brain-child'. The average cost per patient in a Shrine burns hospital is \$13,000 and the cost to qualified parents is absolutely nothing, thanks to such Shrine efforts as the football classic. Participating Shriners work tirelessly and entirely without pay for the cause. "We're proud to say no one takes a dime," says Lewis. "Our greatest satisfaction is restoring life and limb to a burned or crippled child."

## 1940

**Richard T. Messinger**, a resident of Norwell, Mass., is a self-employed insurance broker.

## 1941

After spending 22 years as a missionary in India, the Rev. **Edward G. Jacober** will now do missionary work in Israel with the Arabs in Jerusalem and the West Jordan area.

... **Victor A. Kolesh** works for Riley Stoker in Worcester. ... The **Norman Morrisons** visited the **Harold E. Robertons** last summer on their way from Glacier National Park, Montana to Seattle, Washington, and Vancouver, British Columbia.

## 1942

Presently **John M. Bartlett, Jr.** holds the post of manager of manufacturing in the cable controls division at American Chain & Cable Co., Inc., Adrian, Michigan.

... **Norman C. Bergstrom** serves as a supervisor at U.S. Steel Corp. in Gary, Indiana. ... **Philip L. Camp** is currently with the Electric Boat division of General Dynamics in Groton, Conn. ... Previously with Hercoform Marketing, Inc., a Hercules subsidiary, **Robert S. Fleming** now serves as a project engineer in the engineering department at Hercules Incorporated, Wilmington, Delaware.

## 1943

Last summer **Edwin C. Campbell** visited the Wantastiquet Trout Club in Weston, Vt. where he borrowed a fly fishing outfit from a member who turned out to be **Lyman Adams**, '28. Ed writes that there was lots of talk about the "ones that got away." ... **Alex Petrides** works for the firearms division of Colt Industries in Hartford, Conn.

## 1944

**Raymond E. Herzog** currently is located Los Angeles, Calif., with Atlantic Richfield Co. ... **Leonard Israel**, a home builder in Worcester, was recently given the Silver Beaver Award by the Mohegan Council, E Scouts of America. He is a member of the council's executive board, the Jewish Committee on Scouting, and B'nai B'rith Lodge of Temple Emanuel and its Brotherhood. Formerly he was scoutmaster of Troop 36 at the temple. He is past president of the West Boylston Rotary, a member of the Worcester Area Chamber of Commerce, and past president of the Massachusetts Home Builders Association.

## 1945

Currently **Philip V. Tarr, Jr.** holds the position of executive vice president of Midwest Sintered Products Corp. in Riverdale, Ill. ... The Rev. **Edward I. Swanson** has been named executive secretary of the General Commission on Chaplains and Armed Forces Personnel. He has been serving on the Commission staff assistant executive secretary and director of publications since July of 1971. The General Commission has functioned since 1917 as the nation's principal agency in support of military-related ministries. The Washington-based agency publishes *The Chaplain*, a professional journal for military and Veterans Administration chaplains. Rev. Swanson has served as its editor for the past four years. He wrote *Ministry to the Armed Forces and Serviceman's Prayer Book*.

## 1946

**Robert H. Farwell** has been elected a vice president of GTE International, Inc. He is director of the company's Factory Projects Organization which has its headquarters in Burlington, Mass. Currently the organization is developing a \$233 million project for the Algerian government. Farwell joined GTE in 1965. In 1969 he was appointed vice president of operations of GTE International Systems Corp., a GTE International subsidiary. In 1971, during a leave of absence, he served as deputy general manager of the INTS Consortium which is constructing a communications system in Iran. ... **Paul F. Gorman** has been named vice president of Chas. T. Main, Inc., Boston. His main responsibility is for the firm's services in conjunction with nuclear facilities. Prior to joining Main, he was vice president of the Boston Power Department of United Engineers & Constructors and a director of Jackson & Moreland International. Formerly he was vice president and manager of the power department for the Jackson & Moreland division. He is a professional engineer and has a certificate of qualification from the National Council of Engineering Examiners.

**August C. Kellermann** serves as international manager at Conoco Chemicals in Houston, Texas. ... Previously with Bechtel Inc., **Frank L. Mazzone** is now marketing manager for the Linde division at Union Carbide Corp. in Tonawanda, N.Y. ...

**H. Merritt**, a senior product engineer and manager of abrasive machining at State Abrasives, Westboro, Mass., is working on the development of abrasive machining as a metal removal process at a conference sponsored by the Society of Manufacturing Engineers held in Hartford, Conn., in September. . . . **Walter O. Muller**, plant manager at Chevrolet-Detroit Axle, is currently program manager at Chevrolet's manufacturing staff. . . . **Capt. Edward L. Rodier**, USN, has retired. He is a spectator general at the Naval Communications Center in Washington, D.C. **Edward G. Tamulevich** is employed by a Co., Worcester.

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**E. Kimball** is with Kaiser Aluminum Chemical Corp., Portsmouth, R.I.

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**Erick C. Gilbert** works for the Department of Agriculture in Beltsville, Md. **William E. Meadowcroft** serves as vice president at Boam Company in Livonia, Mich. **Benjamin D. Richter, Jr.**, vice president of Warren Brothers Co., a division of Standard Oil, Inc., was transferred from Louisville, Ky., to Cambridge, Mass. in August. He formerly with Allis-Chalmers Mfg. Co., and **Edward A. Seagrave** is now general manager of operations at J.I. Case Co., Kenosha, Wis. He writes that he is enjoying challenges in the construction equipment industry. His son is in medical school at the University of Texas; a son and daughter are at the University of Illinois; one son is married and two are at home. . . . **Edward A. Shafer, Jr.** works for the Bostitch Division of Textron, Inc. in East Greenwich,

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**James J. Bigda** is a building projects engineer at Codata Corp. in Larchmont, N.Y. **Lawrence B. Borst** is with Aramco Chemical Co. in Houston, Texas. . . . **Hans E. Bost** teaches industrial arts at New Bedford (Mass.) High School. . . . **Robert A. Bost** has been appointed divisional vice president of operations and research for the Abrasive Materials Division of Norton Co., Worcester. Since joining the firm in 1949 he has been a senior research engineer in the Abrasive Division; chief of the department's bonded unit; assistant director of research and development for the abrasives division and director of research and furnace design. An inventor named in five Norton patents, his efforts led to key innovations in abrasive materials including Norton's proprietary zirconia abrasive grain used in the company's line of NorZon bonded and coated abrasives. . . . **Bernard C. Walsh** serves as a design engineer with Acme Cotton Products Co., East Killingly, Conn.

1950

**Helge V. Nordstrom** works as a manufacturers' representative for Charles Drayton Co., Southboro, Mass. . . . **A. Kenneth Stewart** is president of Teledyne Pines in Aurora, Illinois.

**John W. Peirce**, manager of price policy and marketing information at Foxboro Co., has served the town of Sherborn, Mass., as a member of the advisory committee and as a selectman. . . . Genoa, the oldest town in Nevada (population 135) is the home of **Richard C. Pieper**, senior vice president and general manager of Bently Nevada Corporation, worldwide suppliers of machinery protection instruments. The town sits at the foot of the Sierra Nevada mountains and offers unlimited recreational opportunities. The Piepers are planning to build a new home there. . . . **Dr. Hugo S. Radt** serves part time as an adjunct associate professor in the department of engineering science at the State University of New York at Buffalo. He is a principal engineer at the Calspan Corp. . . . **Les Reynolds**, product manager for the textile chemicals section at American Cyanamid, has served as a founder and first president of the nation's leading corporate planning group, the North American Society for Corporate Planning. "With 1400 members, it's going strong," he says. He and his family are active in church and community work in Basking Ridge, N.J.

This fall **Edward P. Saling, Jr.**, heads for Montreal along with other members of the Manchester (Conn.) Barbershop Chorus to compete in the district competition. When not enjoying barbershop singing, he works as an assistant project engineer in the engineering department at Pratt & Whitney Aircraft in East Hartford, Conn. . . . **Elaine**, the daughter of **Eli S. Sanderson**, graduated with a BSCE from WPI this year. Another daughter, **Marilyn**, is also a WPI student. Sanderson continues his 25-year association with Norton Co. where he was recently advanced to manager of planning and control for engineering and construction services. . . . Summer found **Robert F. Shannon** cruising aboard his 34-foot Tartan sloop in Nantucket waters. In the winter months he has been involved with the Eastern Connecticut Symphony Orchestra, which he served as president from 1963 to 1970. Professionally, he is senior research engineer for Pfizer Central Research. His principal patent covers the crystalline sorbitol process which is now being used by Pfizer on a commercial scale. . . . Horology is the hobby of **Robert E. Smith** who is a charter member of the American Watchmakers Institute. A senior project engineer with the Cambridge (Mass.) Thermionic Corp., he is also a member of ASME; ASM; the National Society of Professional Engineers; Numerical Control Society; and the Electronic Connector Study Group. He is a certified engineer in the field of product design and a registered professional engineer in Pennsylvania.

**Robert F. Stewart**, former president of Consumer Operations for Rockwell International Corporation, has been elected to the newly created post of senior vice president of strategic planning at United Technologies Corporation, East Hartford, Conn. He joined Rockwell in 1971 as president of the industrial products group and was elected a corporate vice president in 1972. In 1974 he was elected president of Consumer Operations (Admiral, power tool division). Previously he was a corporate vice president of Litton Industries, Inc. . . . Currently **Henry Styskal, Jr.**, is president of Teledyne TAC, a company engaged in the manufacture and sale, worldwide, of high speed production equipment for the electronics and semiconductor industries. He serves as a senior member of the board of directors of the Additive Technology Corp. . . . **Edward J. Sydor**, general manager of National Friction Prod. Corp., Logansport, Indiana, belongs to several technical, professional and civic groups, with most of his leisure time hobbies being centered in the home. Son Doug graduated from Michigan Technological University and Neil from Purdue. . . . Besides being involved in the design and development of many Univac (Sperry Rand Corp.) systems, **John R. Taylor** has found time to pursue his hobbies. He enjoys amateur radio, camping, boating, and watching sports. He is a former president of his local civic association; Boy Scout committeeman; and a member of IEEE and the Computer Group. . . . **Donald W. Thompson's** sons are all WPI students: Eric, '77; Roy, '78; and Craig, '79. He coaches the Babe Ruth team in Shrewsbury, Mass. and is building a summer camp. . . . **Joseph R. Toegemann** is still product development chemist at Uniroyal Inc., Providence, R.I. He has two sons in college and a daughter who is a high school junior. He is working for his MBA at Bryant College in Smithfield. . . . Not only is **Russell Waldo** president of Russell Waldo and Assoc., he is also a partner in Lombardi and Waldo, Architects, Engineers, and Land Planners, his professional practice covering New York and New England. He is a incorporator of the Guilford (Conn.) Savings Bank and a commercial fisherman. He has two daughters in college and a son, Jonathan, at WPI. . . . Trombone playing is still an important part of Jeremy Welts' life and he is associated with the Concord (Mass.) band and orchestra. He manages the Middlesex Brass Quintet, a group which he founded eleven years ago. He is with Big Band, Inc., Medford, and has played for over 25 musical productions in the area during the last ten years. He is also interested in color photography and did the cover for the Feb. 1974 issue of *The Instrumentalist*. He is employed by the corporate research division of Raytheon in Waltham.



## 1951

**Robert W. Baldwin** is employed as a project manager at Heat Research Corp. in New York City. . . . Previously a sales engineer at Nichols Engineering, Inc., Shelton, Conn., **William E. Mansfield** presently serves as vice president. . . . **John B. Seguin** holds the position of district sales supervisor for Norton Co. in High Point, N.C.

## 1952

**Robert L. Cushman** is manager of sales engineering at Sol-R-Tech, Inc., Hartford, Vermont. . . . **W. Dieter Hauser** holds the post of director of international technical marketing services at Airco Electronics in Bradford, Pa. . . . NALREP, the monthly report of the Fermi National Laboratory, recently featured an account of the Single Arm Spectrometer System, which was devised, in part, by Dr. **Robert E. Lanou, Jr.**, a professor at Brown University, Providence, R.I. . . . **Donald R. Quimby** continues with Union Carbide and is now with Union Carbide Philippines, Inc., Makati, Rizal, Philippines.

## 1953

Dr. **Willard D. Bascom** is presently head of the adhesion section in the chemistry division at Naval Research Lab in Washington, D.C. . . . **Arthur L. Danforth** works as laboratory manager at Mass. Materials Research, Inc., West Boylston, Mass. . . . Formerly with Evans Products Co., **Edward Goodhue** is now with Goodhue Warehouse in Middleboro, Mass.

## 1954

**David A. Bisson** holds the positions of vice president of sales and chairman at Trend Graphics in Mt. View, Calif. . . . **David F. Gilbert** serves as assistant works manager at DuPont in Deepwater, N.J. . . . **Roy E. Hayward, Jr.**, is a commission exhibit coordinator at Astra Pharmaceutical Products, Inc., Worcester. . . . **George Idlis** works for Inline Technology in Fall River, Mass. . . . Previously with GE in Syracuse, N.Y., **Laurence I. Sanborn** presently works in the microelectronics department at Hi-G Co., Inc., Windsor Locks, Conn.

## 1955

*Born:* to Mr. and Mrs. **Robert J. Schultz**, their fourth child, a daughter, Mary-Jo, on September 12, 1975. Prof. Schultz teaches civil engineering at Oregon State University in Corvallis.

**Dean M. Carlson** has been appointed vice president in charge of real estate operations for the Price Organization, Inc., of Severna Park, Md. Two years ago he retired from the U.S. Army with the rank of lieutenant colonel. He had served in the Corps of Engineers and the Military Intelligence Branch. Since his retirement he has become a realtor associate and has been active as a

salesman and instructor with one of the largest brokers in Maryland. He is past president of the Frankfurt (Germany) Chapter of the Reserve Officers Association.

**J. Hamilton Givan** serves as sales representative at Piper Associates, Inc., Needham, Mass. . . . **Daniel A. Grant, Jr.** is with Chas. T. Main, Inc., Boston. . . . Presently **Richard C. Lindstrom** holds the post of chief inspector at Pratt & Whitney Aircraft, Middletown, Conn. . . . **Thomas F. Mahar, Jr.** continues with IBM and is now located in Manassas, Va. . . . **Charles F. McDonough** is manager of licensing projects and international chemicals (R&D) at American Cyanamid Co., Wayne, N.J. . . . **Robert C. Stemple** has been appointed director of engineering for the Chevrolet Motor Division in Detroit. Since October of 1974 he has served as chief engineer for engines and components for Chevrolet Engineering. He joined GM's Oldsmobile Division in 1958. In 1973 he was named as a special assistant to the president of GM. A member of the Society of Automotive Engineers and American Society of Mechanical Engineers, he also holds an MBA from Michigan State University.

## 1957

After 17 years with MIT's Lincoln Lab. in Lexington, Mass., **John H. Atchison, Jr.** has moved to Florida where he is senior principal engineer at Electronic Communications, Inc., in St. Petersburg. He has responsibilities in military digital communications systems design. . . . **Richard G. Bedard**, director of instructional media for the Worcester public schools, has been elected president of the Massachusetts Association for Educational Communications and Technology (MAECT). He was also selected by MAECT to serve as a delegate to the 1975 Lake Okoboji Educational Media Leadership Conference at the Iowa Lakeside University Laboratory. Currently he is enrolled in a doctoral program at the University of Connecticut. . . . **James A. Cheney** has joined the Linde division at Union Carbide Corp. in Union, N.J. . . . **Andrew S. Crawford, Jr.** now serves as process control manager at Uniroyal in Mishawaka, Indiana.

**Edward M. Dennett, Jr.** continues with the Oliva Division of Sangamo Electric, Atlanta, Ga., where he is presently sales and marketing manager. . . . **Charles I. Friedman** is with GTE Automatic Electric Labs in Northlake, Ill. . . . **John M. Hoban** has joined Applicon, Inc., Nanuet, N.Y. He was with Honeywell. . . . No longer with GE, **Richard J. Quinn** is currently a senior engineer for Westinghouse Electric Corp. in Pittsburgh, Pa. . . . **James F. Richards** holds the post of general manager at Wire Lab. Co. in Richfield, Ohio. . . . Dr. **William A. Saxton** is president at Datacomm User, Inc., a subsidiary of Computerworld, Inc., Newtonville, Mass. . . . Dr. **Alexander Vranos** is a consulting scientist with the United Technologies Research Center in East Hartford, Conn.

## 1958

**Normand L. Bedard** works as assistant program manager for the U.S.A.F., Elect Systems Devel., Hanscom Field, Bedford, Mass. . . . Dr. **Joseph E. Boggio** has been promoted to the rank of full professor of chemistry at Fairfield (Conn.) University. In 1964 he began as an instructor at Fairfield and was subsequently elevated to assistant then associate professor. . . . **Bernard M. Campbell, Jr.**, serves as a project engineer at Ionics, Inc., in Watertown, Mass. . . . at the present time **Arthur J. Hesford** is with Delta Airlines in Boston. . . . **William Wesolowski**, a development engineer for Sprague Electric Co., has been transferred from Adams, Mass. to Worcester where he will head a new department to accommodate the transfer of a product line from North Adams. He had been serving on the Adams Board of Appeals.

## 1959

**Robert A. Bleau** is with TRW in Colorado. . . . Dr. **Richard J. Bouchard** currently manages a corporate advanced development group at Sanders Associates in Nashua, New Hampshire, where he has been employed for 15 years.

Dr. **Joseph D. Bronzino** has been promoted to a full professor of engineering at Trinity College in Hartford, Conn. Prior to joining the faculty in 1968, he had been assistant professor of electrical engineering at the University of New Hampshire. He is director of a joint biomedical engineering program between Trinity and RPI's Hartford Graduate Center. He is also a clinical associate in the department of surgery at the University of Connecticut Health Center, a member of the cooperating staff of the Worcester Foundation for Experimental Biology in Shrewsbury, Mass. . . . **Donald Carignan** serves as president of Westfield (Mass.) Instruments Corporation. He is a registered professional engineer. . . . **Lee H. Courtemanche** is manager of market development at Sundstrand Fluid Handling Division in Denver, Colorado.

**David G. Daubney** works at St. Regis Paper Co. in Attleboro, Mass. . . . **Richard Dehais** has received his MSEE from the University of Vermont. . . . **Donald C. Go** is chief engineer at Amkey, Inc., in Andover, Mass. . . . **Bob Hoag** has assumed the position of director of purchasing at the Miriam Hospital in Providence, R.I. Previously he was with Texas Instruments, Inc., in Attleboro, Mass. He and his wife, Mary, live in Attleboro with their children, Michael, 6 and Erinn, 7 months. . . . Dr. **Glen H. Smerage** was a visiting faculty participant at Oak Ridge National Lab. (Tenn.) last summer. . . . **Charles T. Smith, Jr.** is department manager of computer design at Raytheon Co. in Sudbury, Mass. . . . **John Wheeler** works at T-O Richardson Co. in Concord, Mass.

# "At Du Pont I work closely with control agencies to protect the environment."

—Sam Severance

Sam Severance is a BSChE from Georgia Tech. Five years ago he joined Du Pont fresh out of school as Area Engineer. Now he's a Technical Supervisor in Newark, N.J., Pigments Plant.

Sam and the people he supervises spend a full 30 percent of their time working on environmental control, both in the plant and on effluent discharge systems outside the plant. As a result of this type of commitment, Du Pont has one of the best safety, health and environmental records in the industry.

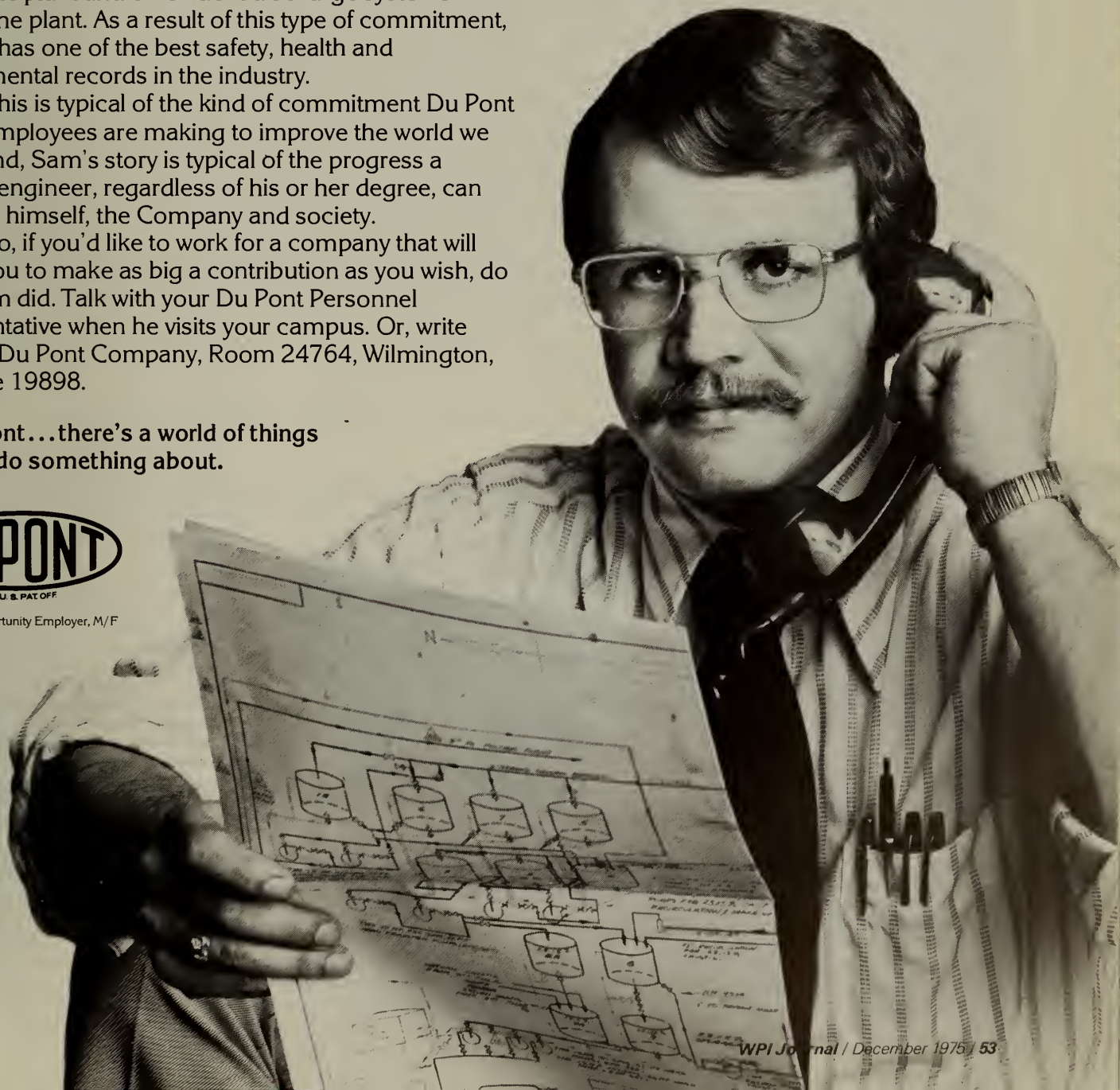
This is typical of the kind of commitment Du Pont and its employees are making to improve the world we live in. And, Sam's story is typical of the progress a Du Pont engineer, regardless of his or her degree, can make for himself, the Company and society.

So, if you'd like to work for a company that will let you make as big a contribution as you wish, do as Sam did. Talk with your Du Pont Personnel Representative when he visits your campus. Or, write to Du Pont Company, Room 24764, Wilmington, Delaware 19898.

Du Pont...there's a world of things we can do something about.



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# 1960

Formerly director of international staff activities for Xerox Corporation, Stamford, Conn., **Paul A. Allaire** is now chief staff officer of Rank Xerox Limited in London, England. . . . **Stephen C. Arthur** owns and operates Arthur Electric Co., Coventry, R.I. . . . **LCDR Kevin J. Burke** recently graduated from the U.S. Naval War College and is currently assigned as the executive officer of the frigate "USS Badger", with home port being Pearl Harbor. Since joining the Navy in 1962 he has spent about half of his time on sea duty with destroyers and half in graduate school, the Pentagon, and the Naval War College. . . . **Ronald A. Carlson** works at A-C Mfg. Inc., in Shrewsbury, Mass. . . . **Russell A. Fransen** is project manager at Warren & Van Praag, Inc., Decatur, Ill., where he is responsible for all street, highway, drainage, and site engineering.

**Stephen J. Hewick** has joined Amman & Whitney of New York City. A bridge engineer, his current address is Dacca, Bangladesh. . . . **Arthur J. LoVetere** has been appointed corporate vice president of marketing at MacDermid Incorporated in Waterbury, Conn. He will direct sales, product management, sales promotion, and advertising. With the firm since 1957, he served as technical sales representative, regional sales manager, and marketing manager. He is a trustee of the Metal Finishing Suppliers Association.

**Robert J. Mercer** serves as vice president of W. R. Grace Properties, Inc., Philadelphia. . . . **Richard S. Meyer** holds the post of manufacturing engineer at National Grinding Wheel in North Tonawanda, N. Y. . . . **Harry F. Ray** is regional sales manager in the rubber chemicals division of Monsanto Co., Akron, Ohio. . . . Presently **Stephen Rybczyk** serves as engineering manager at Pacific Telephone in San Jose, Calif. . . . **Bruce E. Schoppe** is the plant manager at Monsanto's Santa Clara (Calif.) plant. . . . **Walter B. Suski, Jr.** now works as government communications supervisor for AT&T in New York City.

# 1961

**Henry P. Alessio** serves as principal at William E. Hill & Co., Inc., in New York City. . . . **Seth Arakelian** works at Riley Stoker Corp., Worcester. . . . Currently **George Brodeur** teaches mechanical drawing, power mechanics, and general metal shop at Hopkinton (Mass.) High School. He also serves as coordinator of the work study program and as assistant coach of the varsity football team. He is president of the Kiwanis Club, was a member of the town planning board, and president of the Hopkinton Teachers' Association. The Brodeurs, who have seven children of their own, recently took a deaf child into their home as a foster son. . . . **Nicholas A. Caputo** works for the Worcester Housing Authority. . . . **Ronald J. Dellaripa** has been employed by Bank Building Corp., Bloomfield, Conn.

**Richard H. Federico** is with Stone & Webster, Boston. . . . **Wayne F. Galusha** has joined Vector General, Inc., Baltimore, Md. . . . **Walter H. Johnson** is employed by the power system division of United Technologies in South Windsor, Conn. . . . **Stephen W. Klein** serves as a scientist with Science Applications, Inc., La Jolla, Calif. . . . **Peter F. Kuniholm** is now a project engineer at Malcolm Pirnie, Inc., White Plains, N.Y. . . . **Phil O'Reilly** has been living the past three years in Surrey, England on assignment with Air Products, Ltd. He serves as European corporate planning manager for the firm. He, his wife, and four children enjoy the experience of living in a foreign country and occasionally take trips to the Continent. . . . Associated for many years with Picatinny Arsenal, **Wayne L. Taylor** presently is with the munitions and general equipment section at Yuma (Ariz.) Proving Ground.

# 1962

**Walter B. Ambler** has joined Dana Industries in Attleboro, Mass. . . . **Terry Furhovden** is manager of hybrid integrated circuits at GE in Syracuse, N. Y. . . . **Wilfred G. Harvey, Jr.** holds the post of production control manager at Compugraphic Corp., Wilmington, Mass. . . . **George E. Loomis** works as project manager at Gilbane Building Co. in Providence, R. I. . . . The Rev. **Andrew D. Terwilleger** is an agent for Phoenix Mutual Life Insurance Co., Hartford, Conn. . . . Dr. **John K. Tien**, associate professor at Columbia University's Krumb School of Mines, has been awarded the Bradley Stoughton Young Teacher Award for 1975. The award is presented to teachers in the field of metallurgy and materials sciences who have demonstrated a knowledge of both metallurgy and engineering education and a promise for outstanding future growth in both fields.

# 1963

**Gary Adams** serves as an assistant professor at Thames Valley State Technical College in Norwich, Conn. . . . **Edward H. Coughlan** is with Polaroid, R&D, in Cambridge, Mass. . . . **Edward P. Gosling III**, continues at Newport (R. I.) Electric Corp., where he is currently assistant line superintendent. . . . **Leslie J. Hart** is with GTE Laboratories, Inc., in Waltham, Mass. . . . Prof. **Joseph R. Mancuso** of WPI's management engineering department has completed requirements for his doctorate in educational administration at BU and will receive his degree at commencement in January. . . . **James A. Parker, Jr.** is manager of product development at Collier-Keyworth Co., Gardner, Mass. . . . **Joseph R. Santosuosso** works as assistant project manager at Ebasco Services, Inc., New York City. . . . **Henry P. Torcellini** is presently with Everett O. Gardner & Assoc. in Tolland, Conn.

# 1964

**Peter Baker** is with Metro Business Ass. in Vienna, Va. . . . **Thaddeus Betts** serv. chief sanitary engineer at Southern Vermont Engineering, Inc. in Brattleboro. . . . **Will E. Chase, Jr., SIM**, has been appointed general manager of U.S. Steel's Electric Cable Division in Worcester. He will be responsible for coordinating production and sales of electrical cable products. After joining the company in 1935, he was advanced to assistant foreman in 1939 and was named plant manager in 1971. . . . **Fenner** is now industrial market manager Systems Engineering Labs in Dallas, Texas. . . . **Donald Ghiz** directs the purchasing department at Continental Oil Houston, Texas. . . . **Edward R. Menco** with Associated Testing Laboratories, Inc. Burlington, Mass.

Previously with Craftsman Products, Worcester, **Albert J. Metrik** currently serves as an electrical systems engineer at General Electric in Erie, Pa. . . . **Robert W. Palm** recently received an official commendation from the Navy for his "sustained superior performance" as an electronics engineer at the Naval Ordnance Laboratory at White Oak, Md. A civilian employee, he has taken numerous advanced courses at MIT and Johns Hopkins Science Institute in Laurel, Md. He received his MS in electronics engineering from Michigan State. . . . **Harold E. Monde, Jr.** is engineering superintendent at Wisconsin Electric Power, Oak Creek, Wis. He and his wife, Susan, have a daughter, Kristi. . . . Dr. **Eugene E. Niemi, Jr.** has entered the Michigan State University College of Osteopathic Medicine. . . . **Michael P. Penti** serves as a project manager for NP Construction Co., Craig, Colo. . . . **Thomas W. Spargo** is with Jamesbury Corp. in Worcester.

# 1965

Continuing with Pratt & Whitney Aircraft, East Hartford, Conn., **Michael J. Cavanaugh** is presently serving as a product support engineer. . . . **Lee A. Chouinard** works as sales engineer at Amoco Chemicals Corp. in Madison, N. J. . . . **Charles J. DeSimone, Jr.** holds the post of assistant vice president at the Society for Savings in Hartford, Conn. . . . **James F. Fee** is with Cyborg Corp. in Brighton, Mass. . . . **Leonard G. Feldman** serves as quality control manager at W. R. Grace & Co. in Cambridge, Mass. . . . Currently **Robert E. Hawes, Jr.** employed by the Gillette Company's safety razor division in Boston.

Dr. **Donald L. Kerr** is a research associate at Kodak in Rochester, N. Y. . . . **William Nickerson**, an R&D engineer at Aeronutronics-Ford, is located in Palo Alto, Calif. . . . **Edward A. Obermeyer**, who has been with Kendall Co. for many years, is now division manager of quality control for the firm in Charlotte, N. C. . . . **Stephen N. Rudnick** holds the position of research associate in the department of environmental health sciences at Harvard University. . . .

# STUDENT ENGINEERING DESIGN COMPETITION

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### 1974-75 Student Engineering Competition – First Awards

#### UNDERGRADUATES

##### Mechanical



Frank Lawrence, Jr.

\*John J. Kane

California Polytechnic State University

"Self-propelled Lifting Device Adapted to Mechanical Tree Pruning"

##### Structural



Irving J. Zatz



G. Robert Morris



John S. Kubata  
"Final Design for A Cayuga Lake Inlet Bridge and Ithaca Bypass Highway"



\*William McGuire  
Carnell University

#### GRADUATES

##### Structural



Christopher J. Adams

\*Egor P. Papav

University of California, Berkeley

"The Shart Transverse Fatigue Properties of Structural Steel"

##### Mechanical



William R. Heincker



Rodney S. Eck



Srinivasa H. Raghavan



\*David A. Summers  
University of Missouri



"Excavation of Coal Using A High Pressure Water Jet System"



**Charles R. Seaver** now works as an assistant technical divisional superintendent at DuPont's Polymer Intermediates Department plant at Victoria, Texas. The Seavers have a one-year-old daughter, Melissa Ann, and a four-year-old son, Charles Allen. . . . **Ronald W. Wood** is a project engineer at Ingalls Shipbuilding Division of Litton Industries in Pascagoula, Miss.

## 1966

**William Baker** is a process engineer at Raychem Corp. in Menlo Park, Calif. . . . **Philip S. Blackman** owns and operates Blackman and Associates which deals with engineering and management, network analysis, and quality control. Located in Honolulu, Hawaii, he is also a captain and headquarters company commander in the U. S. Army Reserve. . . . **Paul M. Castle** holds the position of manager of shipping and material handling for Miller Brewing Co. in Fort Worth, Texas. . . . **Dr. Ronald D. Finn** is the technical director of radiochemistry and radiopharmacy at Mount Sinai Medical Center in Miami Beach. He is also assistant research professor of radiology at the University of Miami School of Medicine.

Lt. **Charles P. Jaworski** (USN), who recently received his doctor of dental surgery from Case Western Reserve, is now stationed at the Portsmouth Naval Hospital Regional Medical Center in Portsmouth, Va. . . . **David Jorczak** currently works at the James Hunter Machine Company, North Adams, Mass., where he is a project engineer dealing with textile machines for nonwoven textile products. . . . **James E. Loomis** serves as assistant superintendent at Stone & Webster, Boston. . . . Capt. **Jan W. Moren** is presently stationed at Fort Monmouth in New Jersey. . . . **Russell W. Morey** holds the position of manager of material analysis at Honeywell Information Systems' field engineering division in Needham, Mass.

**Charles Pike** is a river resource specialist for the California department of water resources in Sacramento. . . . **William J. Remillon** serves as chief chemist at American Cyanamid Co., Palmyra, Mo. . . .

**Jay A. Segal**, who recently received his Juris Doctor from St. Johns University School of Law through evening study, joined the New York City law firm of Rosenman, Colin, Kaye, Petscheck, Freund, and Emil in September. Since graduation he has been employed at Hazelint Corporation in Greenlawn, N. Y. Jay and his wife, Norma, reside in Brooklyn. . . . Capt. **John A. Stockhaus** has been assigned to Camp Grayling in Michigan, where he holds a permanent position with the government. . . . **Gerard A. Toupin** now serves as manufacturing manager of the new Torrington Co. plant in Cairo, Ga. . . . Continuing with Allied Chemical Corp., **Robert C. Zahnke** presently holds the post of process specialist at Allied Chemical Corp. and is located in North Claymont, Delaware.

## 1967

*Married:* **Frank D. Manter** and Miss Lynda C. Prairie on July 19, 1975 in Swanton, Vermont. The bride is a graduate of Montreal General School of Nursing and is a registered nurse. The bridegroom, an electrical engineer, is studying for his master's degree.

**George E. C. Batten** holds the post of executive director of West Essex Nursing Service in West Caldwell, N. J. . . . **Edward J. Botwick** has opened a law office in New Haven, Conn. He received his Juris Doctor degree from the University of Connecticut School of Law. Previously he was an associate with the law firm of King, DuBeau and Ryan. . . . Last June **J. Roger Daugherty** completed his MBA requirements at UCLA. He is now starting his own management and systems consulting firm in Washington, D. C. . . . **Ronald S. Gosk** works for MFE Corp. in Salem, N. H. . . . **Allen J. Ikalainen** serves as a sanitary engineer with the EPA in Boston.

**William C. Kunkler**, SIM, was recently named vice president of corporate development at Wyman-Gordon Co., Worcester. Since 1958 he has served the company as a research and development planner, planning manager for the eastern division, and director of corporate planning and acquisitions. . . . **Bharat C. Mehta** was awarded his MBA at Pennsylvania State University last spring. Currently he is chief of the program planning and evaluation section of the Pennsylvania Department of Environmental Resources in Harrisburg. . . . **Kenneth H. Rex**, who was recently awarded a PhD in astronomy from RPI, is presently an instructor in the physics department at the State University of New York in Brockport. . . . **Robert Shen** is a project leader for National Cash Register in Ithaca, N. Y. . . . **Elliot F. Whipple**, who received his MBA from the University of Pennsylvania Wharton School of Finance, is a senior product specialist with Texas Instruments in Attleboro, Mass.

## 1968

*Married:* **Gregory H. Sovas** and Miss Carol Anne Furey in Haverhill, Massachusetts on July 12, 1975. The bride attended Hudson Valley Community College. Both she and her husband are employed by New York State Department of Environmental Conservation.

**Joseph S. Adamik, Jr.** is a product engineer in the marketing department of Infilco Degremont, Inc., Richmond, Va. . . . **Dr. Francis L. Adessoio** is a member of the technical staff at Rocketdyne in Canoga Park, Calif. . . . **Robert A. Balouskus** has joined the consulting department of W. R. Grace & Co. in Columbia, Md. . . . Formerly a teacher at Thayer Academy, where he was also head coach of basketball and soccer, **Kenneth R. Blaisdell** is now a science and math teacher at the American Community School in Beirut, Lebanon. . . . **Joseph A. Borbone** is chief engineer at Boston Digital Corp. in Holliston, Mass.

**Robert L. Bradley** currently serves as a project engineer at O/Z Gedney in Terryville, Conn. . . . **John L. Clune** works as senior engineer at Mobil Research & Development

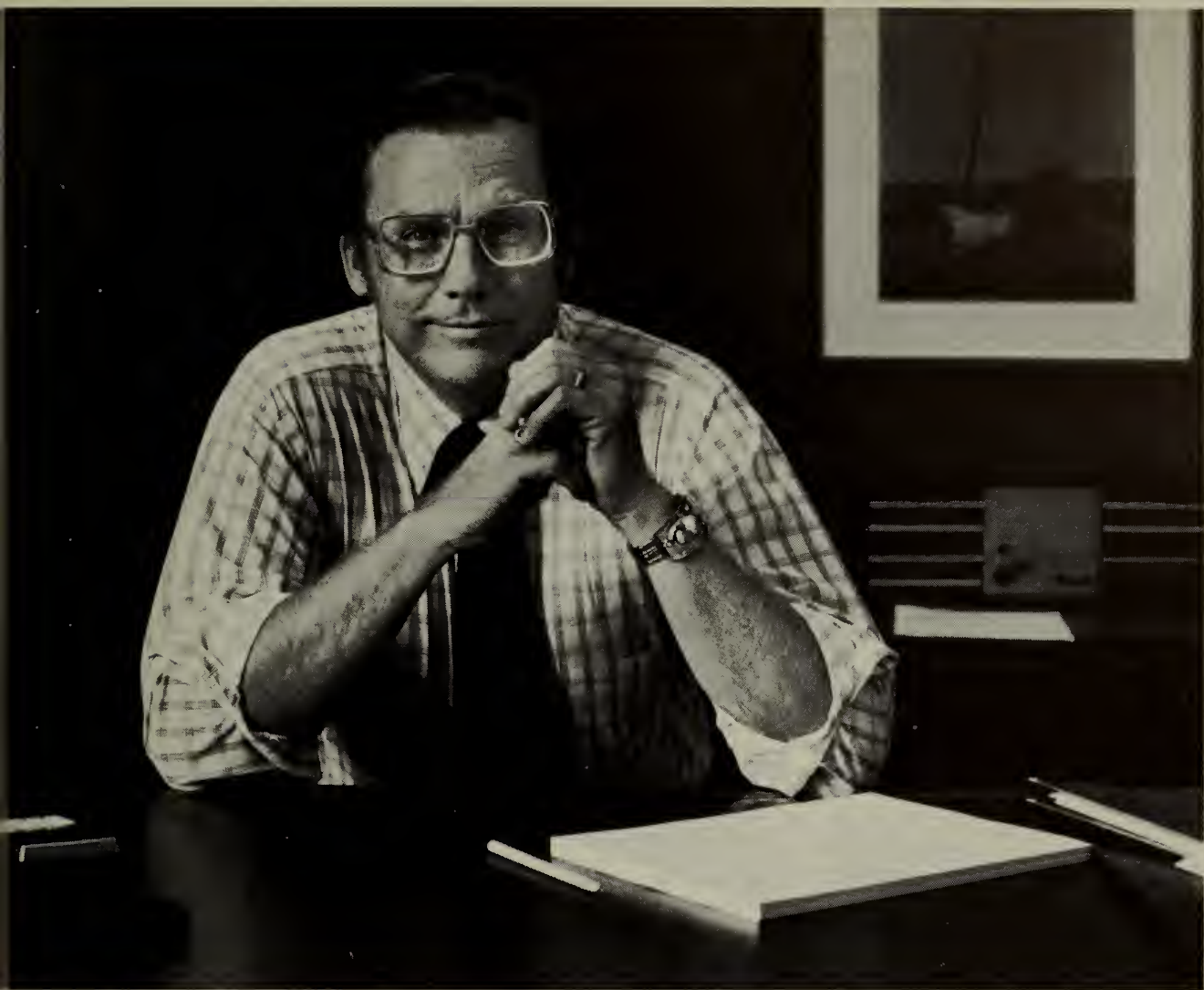
Corp. in Princeton, N. J. . . . **Ronald G. Cummings** has a law practice in Allston, Mass. . . . Lt. **Peter S. Heins** has been transferred by the Coast Guard from Miami to Elizabeth City, N. C. He is now flying the Lockheed "Hercules" HC-130 on long range search and rescue, logistics, and the International Ice Patrol. . . . **William J. Krikorian** was recently qualified as a professional engineer and civil engineer by the Massachusetts Board of Registration of Professional Engineers. He is a senior civil engineer for the state Bureau of Building Construction. . . . **Richard Kung** works for GTE Sylvania in Needham, Mass.

**David F. Moore** teaches at LaSalle Junior College in Auburndale, Mass. . . . **Dr. Michael Paige** has been appointed the associate director of the Software Technology Division of Science Applications Inc. in San Francisco. He has gained national recognition as a spokesman for software engineering, a new discipline which is concerned with formalizing the improving development of reliable computer software systems. . . . Currently **William D. Poulter** a senior marketing engineer at Pratt & Whitney Aircraft in West Palm Beach, Fla. . . . **Stephen M. Pytko** is a graduate student at Amos Tuck School, Dartmouth College, Hanover, N. H. . . . **Kenneth W. Roberts** holds the post of systems associate at Mobil Oil Corp., New York City.

Continuing with the Environmental Protection Agency in Washington, D. C., **Jack S. Siegel** is now chief of the regional programs section for the office of enforcement. . . . **David J. Weinberg** has received his MS in biomedical engineering and is working as a biomedical engineer for the Triservice Medical Information Service at the Walter Reed Army Medical Center in Washington, D. C. He is also a biomedical engineering consultant for Medical Technology Resources, Inc., Alexandria, Va. . . . **David C. Williamson** serves as a staff engineer for the SWL Division of General Research Corporation, Herndon, Va. . . . **Robert D. Woog** continues with AT&T Lines and is presently a methods engineer at Somers, N. J.

## 1969

*Married:* **Charles T. Doe** and Miss Sally J. Roberts in Worcester on July 12, 1975. Mr. Doe attended North Adams (Mass.) State College and graduated from Worcester State. Her husband works for State Mutual Life Assurance Co. . . . **Peter T. Grosch** and Miss Helen E. Dorset on July 19, 1975 in Rome, Georgia. The bride graduated from Auburn University and is employed as an elementary school teacher. The groom is a machine products manager at Soabar Co., Philadelphia. At his graduation from Emory University in June, when he received his MBA, he was given the George Mew Management Award for his outstanding scholarship in the area of management. . . . **Robert A. Spicuzza** to Miss Diane B. Grudzien on September 20, 1975 in Prospect, Connecticut. Mrs. Spicuzza graduated from UConn and is a medical technologist at Putnam Hospital. The bridegroom is doing doctoral work in physics at the University of Connecticut.



## I am Kodak's Director of Business and Technical Personnel

If you would like to work for Kodak, write and tell me about yourself. First, though, let me tell you about us.

We make photo materials and image-handling equipment in Rochester, N.Y. and Windsor, Colo. In Kingsport, Tenn., Longview, Tex., and Columbia, S.C., we make industrial chemicals, fibers, and plastics.

Most of the people who make our business decisions thought they were being hired for technical work.

Those who resist the drift (or the draft) into business matters obviously burn with desire to keep doing technical work. Only that type ought to make a life career of technical work.

We are impressed by an engineering degree because engineering courses are tough. If you acquire an engineering degree despite having had to keep your mind on other pressing matters at the same time, you look all the better to us.

You also look a little better to us if you do it

in one engineering discipline like chemical, mechanical, electrical, etc. The interdisciplinary stuff you learn after you get here. Yet most of our engineering is in fact interdisciplinary.

Whether you come as a chemical, mechanical, or electrical engineer, what's important is evidence that you know how to dig down deep enough into fundamentals to understand a problem.

Good grades in college provide that evidence. Deeper understanding is the academic goal.

But Kodak is a business, not an academic institution. Understanding the problem is necessary but not sufficient. To *do* something effective about it takes drive, fortitude, persistence, thoroughness. It takes ability to juggle a lot of things at the same time. Grades are only part of the evidence of the strength needed on both the business and technical sides.

**If you are confident you have that evidence and are still interested in us, please so inform me, Ed Butenhof, Kodak, Rochester, N.Y. 14650.**





*Born:* to Mr. and Mrs. Joseph E. Stahl a son, Nathan Alan, on April 1, 1975. Nathan has an older brother, Jamie, 3½. Joe received his MBA in June from American International College. Recently he was promoted to engineering manager at J. P. Steaven, moulded product division, Easthampton, Mass.

George Banks has been named a mathematics teacher at Pawcatuck (R. 1.) Junior High School, where he will also serve as assistant soccer coach. . . . **Anthony Bergantino, Jr.**, formerly with the U. S. Army, is presently working at Polaroid Corp. in Waltham, Mass. . . . **Anthony J. Crispino** is a staff scientist at Science Applications in Oakland, Calif. . . . **John F. Doda** works as a staff engineer at Klockner-Moeller Corp. in Natick, Mass. . . . **Donald B. Esson** has been employed by Pratt & Whitney in East Hartford, Conn. . . . Currently **Alfred G. Freeberg** is with the U. S. Air Force at Offutt AFB in Nebraska. . . . Continuing with Pratt & Whitney Aircraft, East Hartford, Conn., **Michael Gan** now serves as senior design engineer. . . . **Thomas C. Gurney** is at Gordon-Conwell Theological Seminary in South Hamilton, Mass. He and his wife, Sherry, reside in Beverly.

**Richard H. Gurske** presently holds the position of environmental engineer at VTN Colorado, Inc., in Denver. The Gurskes have two daughters, Diana, 4, and Rachel, 2. . . . Formerly a senior design engineer for National Steel Corp., **Charles D. Hardy, Jr.** now serves as a nuclear project engineer at General Dynamics in Quincy, Mass. . . . **David G. Healey** was recently promoted to assistant chief engineer at Tighe and Bond in Holyoke, Mass. He has been project engineer for the Chicopee and Holyoke Water Pollution Control Projects. He joined the firm after receiving his MS in sanitary engineering from the University of Maine in 1970. . . . Dr. **Steven A. Hunter**, a graduate teaching assistant and instructor at WPI since 1969, has been appointed as assistant professor of engineering and science. For three years he was a National Science Foundation trainee. In June he received his PhD from WPI.

**Andrew J. Heman** serves as a process design engineer at Union Carbide in Tarrytown, N. Y. . . . **Gregory T. Hopkins** is on the technical staff at Mitre Corporation in Bedford, Mass. He is also on the board of directors of Regent Engineering, Wilmington, Del. . . . **David H. Johnson** holds the post of network manager at New England Telephone & Telegraph Co. in Cambridge, Mass. . . . Dr. **Robert P. Kusy** is assistant professor of oral biology in the Department of Orthodontics at the University of North Carolina in Chapel Hill. He received his PhD from Drexel Institute of Technology. . . . **Gary L. Leventhal** works for the Rower Dental Supply Division of Healthco, Inc., Boston. . . . Lt. **Ronald C. Lewis** is with the U. S. Navy in the civil engineer corps.

**George T. McCandless, Jr.**, who recently received his MA in economics from Georgetown University, is presently pursuing his PhD at the University of Minnesota, where he also teaches principles of economics. . . . **Gregg Pollack** holds the position of vice president of Eurotec International, New York City. He is in charge of domestic and Latin American sales.

Eurotec is an import-export company that specializes in micrographic equipment. Gregg does extensive international traveling and is out of the country two or three weeks each month. . . . **David B. Pratt** works for Compter Design & Applications in Needham, Mass.

**Gerald H. Robbins** serves as an open space planner for the County of Orange, Calif. He was married in June. Last year he received a master of landscape architecture from the University of Illinois. . . . Dr. **Robert P. Rocco** is a physician in family practice in Hollister, Calif. . . . **James V. Rossi** is employed at Stone & Webster, Boston. . . . **John A. Taylor** serves as a senior development engineer at St. Regis Paper Co. in West Nyack, N. Y. . . . **David C. Thulin** is with the Town of Barnstable, Mass.

## 1970

*Married:* **Stephen P. Henrich** to Miss Christine L. Rossetti recently in Saugus, Massachusetts. Mrs. Henrich graduated from Merrimack College and teaches in the Saugus public schools. The groom is manager of F. W. Woolworth in Allston, Mass. . . . **William R. Naas** to Miss Dana L. Booker on September 21, 1975 in Linthicum, Maryland. The bride attended Anne Arundel Community College and will graduate next year. She is employed by the Department of Defense. Her husband works for Sanders Associates of Nashua, N. H. . . . **Michael P. Trotta** and Miss Rita M. Lanigan on June 28, 1975 in Stoughton, Massachusetts. Mrs. Trotta graduated from Framingham State College and teaches home economics at East Bridgewater (Mass.) Middle School. The bridegroom is with Fay, Spofford and Thorndike, Consulting Engineers.

**Paul A. Akscyn** is now an instrumentation engineer in the central engineering department of ICI United States, Inc., in Wilmington, Delaware. Formerly he was an instrumentation engineer with Crawford & Russell, Inc., Stamford, Conn. . . . **Charles J. Anderson** has been hired as the first full-time planner-engineer in Scarborough, Me. His duties will fall into three categories — code enforcement, planning-engineering, and the provision of technical aid to the supervisor of public works and public utilities coordinator. He will also provide aid to the Planning Board and be a liaison man for the permanent building committee and economic advisory committees. Previously he was a graduate teaching assistant at WPI and a planner in the Worcester city manager's office.

**Philip D. Bartlett** works for American Cyanamid in Renton, Washington. . . . **Peter J. Billington**, an MBA graduate student at Northeastern University, Boston, is also a graduate assistant in the dean's office in the College of Business Administration.

**John T. Bok** serves as a sales engineer at B. F. Perkins, a division of Roehlen Industries in Chicopee, Mass. . . . **William S. Coblenz** is a graduate student in the department of material science and engineering at MIT. . . . **Raymond Danahy** is a physics instructor at Norwich University, Northfield, Vt. . . .

**Andrew M. Donaldson**, who is with Burr & Roe, Inc., Oradell, N. J., currently serves group supervisor of the power conversion group for the Clinch River Breeder Reactor plant. . . . **Roger E. Etherington** works for Dow Chemical Co. in Plaquemine, La. . . . Having recently received his PhD from MIT Dr. **James G. Hannoosh** is presently a project engineer with Foster Miller Associates, a consulting firm in Waltham, Mass. His specialty is in the mechanical behavior of materials.

**Robert D. Huard** is employed by the water division of the Metropolitan District Commission in Boston. . . . **John S. Keenan** serves as a radwaste engineer at Northeast Nuclear Energy Co., Millstone Nuclear Power Station, Waterford, Conn. The Keenans have a two-year-old daughter, Beth. . . . Currently **Lothar W. Kleiner** works for the department of polymer science at the University of Massachusetts in Amherst. . . . **James A. Metzler**, formerly a computer scientist with the National Security Agency, is now an assistant professor of mathematics at Drew University. Previously a mathematician at the Woods Hole Oceanographic Institute, he holds advanced degrees from Boston University. . . . **Bradford R. Myrick** holds the post of design engineer at Ingersoll-Rand Co., Nashua, N. H. . . . **Edward M. Mason** recently received his MS degree in management science and engineering from WPI. Currently he is employed by Standard Oil of Indiana at the corporate headquarters in Chicago. . . . **Lloyd S. Palter** works as a support engineer for Stone & Webster, Boston. . . . Having earned his law degree from Suffolk University, **Richard J. Schwartz** is now an attorney at Gould Title Co. in Worcester. . . . **Richard H. Steeves** serves as superintendent of the Dewey & Almy Chemical Division at W. R. Grace in Chicago, Ill.

## 1971

*Married:* **Allen H. Downs** and Miss Harriet Y. Russell in Wolfeboro, New Hampshire on August 16, 1975. Mrs. Downs graduated from the Boston School of the Museum of Fine Arts, where she teaches. Her husband is with Electronic Instrument & Specialty Corp. in Stoneham, Mass. . . . **Douglas W. Kullman** to Miss Deborah L. Ripple on June 28, 1971 in Columbus, Ohio. Among the ushers were **Dwight S. Dickerman** and **David A. Fagundus**, '70. Mrs. Kullman attended Bliss College in Columbus. The groom is with the State of Ohio Department of Highways.

*Married:* **John V. Marino** to Miss Patricia A. Trout on August 9, 1975 in Ridley Park, Pennsylvania. The bride graduated from Delaware Community College and attended Millersville (Pa.) State College. Her husband was with Westinghouse Electric in Lester, Pa. for three years and is now doing graduate work at WPI. . . . **Robert A. Payne** and **Roberta E. Brandt** in Salt Lake City, Utah on September 30, 1975. Mrs. Payne is a senior at the University of Utah. The bridegroom is studying for his MBA at the same university.

**Albert W. Stromquist, Jr.** and Miss C. Linker on June 28, 1975 in Hampton, Massachusetts. The bride graduated from the State University of New York at Binghamton and New York University where she earned her BA. Currently she is doing graduate work at UMass. Her husband is completing his MS degree in geology at UMass. He will be employed as a petroleum geologist in New Orleans, La., for Amoco Production Co.

**John J. Cleary** has been appointed associate project administrator at WPI and is currently assigned to the Interactive Qualifying Project. Previously he was a reporter for the Worcester Telegram. . . . **Douglas E. Johnson** is a graduate student at MIT. . . .

**George W. Johnson** works as a computer programmer at Pratt & Whitney Aircraft in Stratford, Conn. . . . **Benjamin H. Hoff** received his MBA from Boston University in May. Recently he was promoted to the position of senior compensation administrator in the camera division of Kodak Corp. . . .

**Michael S. Latka** serves as administrative assistant for contract management in the office of planning and community development, city manager's office, for the City of Worcester. . . .

**Robert P. Mills, Jr.** was recently promoted to assistant actuary in the actuarial department at State Mutual Life Assurance Company of America in Worcester. Named a senior actuary in 1974, in his new position he is responsible for actuarial services. He is a fellow of the Society of Actuaries.

**Robert G. Plonsky** serves as a contract administrator at Sikorsky Aircraft in Stratford, Conn. . . .

**Harold C. Sanderson** has completed his master's in electric power engineering from RPI. . . . **Alan Shapiro** recently exhibited his photos of Ecuador at the Berkshire Museum. For 2½ years he was with the Peace Corps in Ecuador where he helped devise audio-visual training programs to operate and maintain radio communication systems. Currently he is with American Science and Engineering Co. of Springfield. . . .

**David A. Smith** works for General Dynamics in Concord, Calif. . . . **Glenn S. Spang**, after completing his first year in a graduate program in atmospheric sciences at the University of Albany, served as a participant in a summer colloquium on the physics, chemistry and dynamics of the stratosphere at the National Center for Atmospheric Research in Boulder, Colo. . . .

**Martin Wolf** has been named analytical chemist in the chemical studies section of product quality control for the agricultural division of Ciba-Geigy Corporation in Greensboro, N. C. . . .

Previously he was a residue analyst and instrument specialist. In his new position he is responsible for developing instrumental chemical methods for analysis of agricultural chemicals from the manufacturing process and the chemical studies group. He joined the firm in 1969.

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### 1972

**Glenn E. Cabana** works for Orth Tech Inc. in Salem, N. H. . . . Formerly a supervisory engineer at Saab-Scania of America, Orange, Conn., **Daniel L. David** now serves as manager of the technical services department. . . .

**James N. DeVries** holds the post of chairman of the science and math department at Dayton Christian Schools, Inc., Dayton, Ohio. . . . Currently **Michael DiBenedetto** is studying for his MSEE at WPI. . . . **David T. Hayhurst** is a PhD candidate and teaching assistant at WPI. . . .

**John D. Kaletski** was recently named department head of process services at Clairol, Inc. He will be responsible for all chemical inventory control, dye batching, export, powder bleach, and cosmetic compounding. Formerly he was a supervisor in the processing department. He started at Clairol in 1972 as a cosmetics and aerosols supervisor.

**Steven M. Kay** works for Dent-X Corp., Port Chester, N. Y. The company is a division of Phillips Medical Services and produces dental x-ray processors. . . . **Richard L. Pastore** is an environmental engineer for the U. S. Environmental Protection Agency in Boston. . . .

**Suresh N. Patel** serves as a design engineer for the Lummus Co. of Canada in Ontario. He is a member of the Association of Professional Engineers of Ontario. . . . **Steven P. Rudman** is a field service engineer at Riley Stoker, Worcester. . . .

**Dr. Brian J. Savilonis** now holds the position of senior research scientist at the University of Virginia in Charlottesville. . . . **Prakash B. Virani** recently received a master of science degree from Rutgers University.

### 1973

*Married:* **David B. Hubbell** and Miss Maureen M. Curtin recently in Maryland. Mrs. Hubbell graduated from the University of Maryland and teaches junior high in Braintree, Mass. The bridegroom is in his third year at BU Medical School. . . .

**Stephen E. Kaminski** and Miss Linda G. Hutchinson on July 19, 1975 in West Springfield, Massachusetts. The bride graduated from Becker Junior College. Her husband is with the Department of Agriculture in Washington, D.C. . . .

**Frederick Kolack** and Miss Kathi Cobb on September 6, 1975 in Stone Ridge, New York. The couple is living in Albuquerque, N.M., where the bride is an RN with a newborn intensive care unit which serves the entire state and the groom is studying at the University of New Mexico for his master's in construction management.

*Married:* **Roger E. Lavallee** and Miss Cathleen M. Corcoran on August 23, 1975 in Springfield, Massachusetts. Mrs. Lavallee graduated from Cardinal Cushing College in Boston. Both she and her husband teach at Cathedral High School in Springfield. . . .

**Claude L. Lemoi** and Miss Tina Zuber on July 12, 1975. The groom works for General Electric in Fitchburg, Massachusetts. . . .

**Stephen S. Martin** and Miss Cheryl Sweatman last August in Fitchburg, Massachusetts. Mrs. Martin, a graduate of Fitchburg State College, teaches in New York. The groom is a student at the University of Rochester School of Medicine and Dentistry. He is taking part in a U.S. Public Health Service program designed to give students in-depth clinical and research training. Upon graduation he expects to receive both an MD and PhD.



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*Married:* **Peter McDermott** and Miss Karen A. Casey recently in Milford, Massachusetts. The bride, an Anna Maria graduate, is a teacher. Her husband is a chemical engineer in Canton, Mass. . . . **Aram Nahabedian, Jr.** and Miss Christine N. Piquette on September 13, 1975 in Springfield, Massachusetts. The bride attended Holyoke Community College. The bridegroom is a field service engineer with Westinghouse Electric Corp. in Hartford, Conn. . . . **Edmund C. Pastore** to Miss Susan M. Durand on September 7, 1975 in Providence, Rhode Island. Mrs. Pastore attends Rhode Island College. Her husband is studying at the University of Rhode Island. . . . **Anthony M. Scandura, Jr.** and Miss Leahbeth Mirsky on August 17, 1975 in Wesleyan Hills, Connecticut. The bride, a graduate of UConn, teaches at Mansfield Training School. The groom is an electronic technician in the physics laboratory at Yale University.

**Jeffrey A. Barry** is a diagnostic programmer at Digital Equipment Corp. in Marlboro, Mass. . . . **Richard B. Belmonte**, who recently received his master's degree from Texas A&M, is a chemical engineer with the U.S. Army Materiel Command at Aberdeen Proving Ground in Maryland. . . . **William A. Birkemeier**, who received his MCE from the University of Delaware, is currently a hydraulic engineer at the Coastal Engineering Research Center in Fort Belvoir, Va. . . . **David L. Burkey** holds the post of systems analyst at Searle Medidata, Inc., in Lexington, Mass. . . . Presently **John E. Dewar** is an assistant bridge engineer for the Federal Highway Administration in Albany, N.Y. . . . **Gene L. Franke** has received his MS in metallurgical engineering from the University of Illinois. Currently he is a materials engineer at David W. Taylor Naval Ship R&D Center, Ferrous Welding Branch, Annapolis, Md.

**Timothy A. French** serves as a raw materials control engineer for DuPont in Glasgow, Delaware. . . . **George P. Gosselin**, associate software specialist at Digital Equipment Corp. in Maynard, Mass., is presently working on account for the University of New Hampshire. . . . **John J. Homko**, who has been with Data General for two years, is now working for his PhD in electrical engineering and bioengineering at Carnegie-Mellon University in Pittsburgh. The augmented degree will satisfy requirements of both programs. His research will apply specifically to bioengineering. . . . **Charles W. Kavanagh** holds the post of assistant superintendent of Turner Construction Co. in New York City. His wife, Joann, is a teacher. . . . **John H. Lecko** is with the petroleum products division at Veeder-Root Co. in Hartford, Conn. . . . Presently **Joel S. Loitherstein** is a sanitary engineer at Hoyle, Tanner & Assoc., Manchester, N.H. . . . **Kenneth M. Makowski** serves as a project control engineer at Combustion Engineering, Inc., Windsor, Conn.

**Marc A. Mandro** has received his MS degree from Rutgers. . . . **Michael R. Kenney** received his MS degree from Rutgers in June. . . . **Wallace A. McKenzie, Jr.** serves as operations research analyst at Converse Rubber Co. in Wilmington, Mass. He has also worked for the New York state legislature and as a public opinion analyst for a congressional candidate. Recently he received his MBA from RPI. . . . Having been awarded his MS in urban and environmental studies from RPI, **Wayne H. Pitts** is presently a transportation planner and engineer at Vollmer Associates in Louisville, Ky. . . . Formerly a chemistry teacher at Immaculate High School, Danbury, Conn., **Kenneth C. Pulls** is now a chemist at Heatbath Corp. in Springfield, Mass.

**Stephen J. Saucier** serves as management systems engineer at Haricom Inc., Providence, R.I. . . . **Edward J. Swie** who has earned his master's degree in civil engineering from the University of Illinois, is currently working for the Economic Development Administration (U.S. Dept of Commerce) in Chicago. . . . Previously with Mobil Research and Development Corporation's laboratory in Paulsboro, N.J., **Thomas S. Szatkowski** recently joined the firm's office of patent council in New York City. . . . **Richard H. Turner** works for Prudential Lines Inc., New York City, where he is involved with equipment control. . . . **James A. Viveiros** works as a graduate research assistant at WPI's Alden Labs. He is on leave of absence from the Harris Corporation, Printing Press Division of Westerly, R.I., while studying for his MSEE. . . . **Richard C. Whipple** has been awarded his MS from Purdue University and is currently a nuclear engineer at Combustion Engineering, Inc., Windsor, Conn. . . . **Nancy E. Wood**, who is employed by Westinghouse Hanford Co., Richland, Washington, was chosen as the Westinghouse "Desert Flower" for 1975.

## 1974

*Married:* **Charles W. Dodd** and Miss **Anne M. McPartland**, '75, of Houlton, Maine on July 19, 1975. Mrs. Dodd is with Pfizer Chemical, Groton, Conn. Her husband works for King-Seeley Thermos in Norwich. . . . **Roland A. Lariviere** to Miss Pauline A. Lillie on September 6, 1975 in Worcester. The bride attended Worcester State College, graduated from the former Norwalk (Conn.) Hospital School of Nursing, and is a registered nurse at Backus Hospital in Norwich, Conn. The bridegroom is a nuclear construction engineer at Electric Boat in Groton. . . . **James J. Litwinowich** and Miss Ann M. Murphy on August 16, 1975 in Worcester. Mrs. Litwinowich graduated from Quinsigamond Community College and Framingham State College. She taught in Worcester. Her husband works in the Highway Design Division of the State Department of Public Works and Highways Concord, N.H.

*Married:* **Robert F. Praino, Jr.** to Miss Anne M. Misiuk in Auburn, Massachusetts August 10, 1975. The bride is a graduate of the Memorial Hospital School of Nursing, Worcester. She is a registered nurse on the Memorial staff. The bridegroom is a graduate student at WPI. . . . **Lawrence W. Saint, Jr.** to Miss Nancy Ann Pohner on October 4, 1975 in Springfield, Massachusetts. Mrs. Saint graduated from Springfield Technical Community College and is a physical therapist assistant at Hampshire County Hospital. Her husband is assistant plant manager of Guilford Gravure, Inc. . . . **Sheldon I. Stricker** to Miss Amy B. Wessel in Windsor Connecticut on September 27, 1975. Mrs. Stricker graduated from Southern Connecticut State College. The bridegroom employed by Stone & Webster, Boston.

... **Peter W. Tunnicliffe** and Miss A. R. Jameson on August 9, 1975 in Northampton, Massachusetts. Mrs. Tunnicliffe graduated from Bay Path Junior College and is currently a teacher at Waterbury College. She teaches in Watertown. Her husband works for Camp Dresser & McKee. . . . **Bruce T. Work** to Miss Anna L. Delli on August 16, 1975 in Simsbury, Connecticut. The bride attended Boston Conservatory of Music and is a realtor currently associated with J.E. Holmgren Associates. Her husband is vice president of engineering and sales at Work Electrical Co. in Springfield. . . . **John W. Young** and Miss A. A. Haponski on July 5, 1975 in New York. Mrs. Young, a graduate of Cornell University, teaches physical education. Her husband is a team manager at Charmin Paper Products Co. in Mehoopany, Pa. . . . **Bert J. Cimikowski** serves as an instructor in the systems and information management at Vanderbilt University in Nashville, where he is studying for his master's degree in computer science. . . . Since receiving his MSCE from Northeastern University, **Edward S. Dlugosz** has been an assistant engineering specialist for the Pennsylvania Water Resources Control Board in Harrisburg. . . . **David S. Korzec** is now in the power generation service division at Westinghouse Electric Corp. in Boston. . . . **K. Lackey** holds the post of regional manager for GCA/McPherson Instrument Corp. in Atlanta, Ga. . . . **Alle Riel Lord** teaches hospitalized and out-patient students in Kinston, N.C. . . . **Ben L. McGrath** is an MBA student at the Wharton School of Finance & Commerce at the University of Pennsylvania. . . . **Mark Bergren** currently works for the service center at Babcock & Wilcox Co., in South Bend, Ind. . . . **William G. Hill** holds the post of production supervisor at ACIGRAF International Corp. in Middletown, Conn. . . . **Robert W. Ryder** is an applications programmer at Codon Computer Corp. in Bedford, Mass. . . . **Joseph R. Peck** works as a service engineer for Babcock & Wilcox Co., Dallas, Texas. . . . **Harold M. Takanen**, process controller for the Hotpoint division of GE, is responsible for the outgoing production index for Hotpoint ranges. . . . **Harold D. Ventre** has accepted a position in engineering with the plastics division of Pont Chemicals at their Sabine River plant in Orange, Texas.

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... **Raymond G. Acciardi** and Miss Catherine M. Monast on October 5, 1975 in Northampton. The bride is a North High School graduate. Her husband is a naval architect for the U.S. government in Bath, Me. He is a member of the American Concrete Institute, Phi Kappa Phi, and Chi Epsilon honor fraternity. . . . **John J. Baker** to Miss Bertha M. Gagnon in Norwich, Connecticut on November 13, 1975. Mrs. Baker graduated from Norwich Free Academy and is an executive secretary. Her husband is manager of software productions at Data General

Corp., Southboro, Mass. . . . **Marti J. Burgwinkle, Jr.** to Miss Janice M. Gradone in Northboro, Massachusetts on June 21, 1975. The bride graduated from UMass. The groom works for Walsh Construction Co. in Yarmouth, Me.

*Married:* **Mark J. Drown** and Miss Gail E. Dudley in Wayland, Massachusetts on September 6, 1975. Mrs. Drown graduated from Springfield College. . . . **Lt. Maurice L. Giroux** and Miss Aline Binette on August 30, 1975 in Plainville, Connecticut. The bride graduated from Plainville High School. Her husband is in the U.S. Air Force. . . . **George D. Hill III** to Miss Patricia D. Henry on August 9, 1975 in Wickford, Rhode Island. Mrs. Hill graduated from Brown University. . . . **Michael J. Irwin** and Miss Nancy J. Morrisey on October 4, 1975 in Weymouth, Massachusetts. The bride graduated from Sacred Heart High School, Weymouth, and was employed by New England Telephone in Boston. The groom is a chemical engineer for Procter & Gamble, Cincinnati, Ohio.

*Married:* **John E. Kelly** and Miss Allison T. Hill in Upton, Massachusetts on July 18, 1975. Mrs. Kelly has studied at Bradford College and Worcester Art Museum School. Her husband is doing graduate work in agricultural engineering at Cornell University. He is working on an assistantship financed by the federal government to develop safety testing specifications for roll bars on farm tractors. . . . **A. Laurence Jones** and Miss Angela A. Cappiello on July 26, 1975. Mrs. Jones, a graduate nurse, graduated from the University of Bridgeport. The groom is an associate programmer analyst at American Can Company in Greenwich, Conn. . . . **William F. Oehler** and Miss Wendy Konopacki on May 24, 1975 in Holyoke, Massachusetts. Mrs. Oehler graduated from Holyoke Community College. Her husband is a graduate student at WPI.

*Married:* **Frank E. Vanzler** to Miss Ellen I. Tucker on August 24, 1975 in Newton, Massachusetts. The bride graduated from UMass, Boston, and is a credit assistant for the UNA Corporation. The groom is with the Boston Metropolitan Area Planning Council. He is also working for his master's in urban affairs at Boston University. . . . **Mark P. Youngstrom** and Miss Connie J. Crooker in Holden, Massachusetts on August 9th. Mrs. Youngstrom attended Worcester State College. The bridegroom is a sanitary engineer for Pickard & Anderson, consulting engineers, in Auburn, N.Y.

**James D. Aceto, Jr., Robert J. Ankstius, Peter J. Arcoma, Scott R. Blackney, '73, Steven H. Coes, Robert J. Donle, Karl E. Hansen, Michael S. Schultz, James C. Sweeney and Alexander V. Vogt** are all working as soils engineers for Alaskan Resource Science Corp. in Fairbanks. . . . **Said-Kazem Sohraby Anaraky** is a graduate student at the Polytechnic Institute of New York. . . . **Richard G. Aseltine, Jr.**, a teaching assistant in the ME department at WPI, is pursuing his MS degree in biomedical engineering. . . . **Claudia Berger** is a laboratory supervisor at the University of Massachusetts Medical School in Worcester.

... **Garrett T. Cavanaugh** has received a \$250 prize from the James F. Lincoln Arc Welding Foundation of Cleveland, Ohio, for a project he completed as a senior and submitted to the 1975 Engineering Student Design Competition. He received fourth award for his design of a hemivalvectomy prosthesis.

**Bruce T. Croft** has enrolled at the Illinois College of Podiatric Medicine in Chicago. Much of his clinical training will take place in the college's own clinic, which is the largest foot clinic in the world, with over 30,000 patients being treated annually. At the end of the four-year curriculum, Croft will receive a Doctor of Podiatric Medicine. . . . **Robert W. Cummings** is with Central Vermont Public Service Corp. in Rutland. . . . **Mario P. DiGiovanni** has joined Monsanto Industrial Chemical Co. in Sauget, Ill. . . . **Robert Fair** works for Turner Construction Co. in Detroit. . . . **Denise Gorski** is currently employed as a gift recorder in the Office of University Relations at WPI. She is responsible for recording all contributions received from WPI fund-raising campaigns.

**David P. Hajec** works as a field engineer for Turner Construction Co. in Dayton, Ohio. . . . **Thomas J. Hutton** is an inspector at the Hartford Steam Boiler Inspection and Insurance Co. in Philadelphia. . . . **Nicholas P. Kyriakos** serves as a resident engineer with Stauffer Chemical Co., Bucks, Alabama. . . . **Kenneth W. Linder** has accepted a position as a field engineer with the Factory Insurance Association in Detroit, Mich. He is involved with fire protection engineering. . . . **David R. Lyons** has joined Data General, Southboro, Mass., as a programmer. . . . **James M. McKenzie** is a resident engineer trainee for the Veterans Administration in Washington, D.C.

**Raymond W. Mott** has been employed by Universal Oil Products and is located in Bolingbrook, Ill. . . . **Daniel C. Nelson** serves as a chemical process engineer at Fiber Materials, Inc. in Biddeford, Me. . . . Currently **George C. Njoku** is a medical student at UMass Medical School in Worcester. . . . **Paul D. O'Brien** is with U.S. Steel in New Haven, Conn. . . . **Michael P. Simanonok** is with Texas Instruments in Dallas, Texas. . . . **Joseph A. Soetens** serves as an instructor in computer science at WPI. . . . **Jeffrey S. Wnek** works as a paint chemist at Lilly Chemical in Templeton, Mass.

**Robert C. Lerner** is a grad student in astrophysics at the University of Rochester. . . . W.R. Grace and Co. of Lexington, Mass., has employed **Paul S. Loomis** as a technical services representative in the U.S. and Canada. . . . **Bruce MacWilliam** works as a manager of operations for WACCC at WPI. . . . **Richard J. Mariano** is with Estee Lauder Co. . . .



**David R. McGowan**, who received his master's degree from WPI, is currently employed at Youngblood Laminates in Millbury, Mass. . . . **Steven F. Mealy** has joined the Naval Surface Weapons Center in Silver Springs, Md. . . . **David E. Medeiros** is with the Gillette Company Toiletries Division in Boston. . . . **Kevin G. Mischler** was recently appointed to the position of planning director of the city of Millbury, Mass. . . . **Robert B. Murray** works for Walpole, (Mass.) Scrap Metal. . . . **Peter Palmerino II** has accepted a position with Monsanto as a process engineer in St. Louis, Missouri. . . . **Christine E. Powers** serves as a process engineer at Clairol, Inc., Stamford, Conn. The firm is a division of Bristol-Meyers Co. . . . **Norman D. Rehn** works for GTE Sylvania Corp.

**James B. Reynolds**, SIM, has been appointed assistant treasurer in addition to his regular duties of controller at Jamesbury Corp., Worcester. He joined the firm in 1965. . . . **Peter Rucci** is with Stauffer Chemical Co. . . . **David C. Salomaki** has been awarded a teaching assistantship at Stanford University in California where he is doing postgraduate work. . . . Westinghouse Corporation in Pennsylvania employs **David P. Samara**. . . . **Siddharth C. Shah** serves as a vessel engineer at Crawford & Russell, Inc., Stamford, Conn. . . . **William J. Stieritz** is a graduate student at UMass. . . . **John M. Taylor** has been employed by the Westinghouse Electric Corp. on the graduate placement and training program. His training will involve on-the-job assignments in operating divisions principally oriented toward the design and manufacture of large motors. Currently he is located in Buffalo, N.Y. . . .

**Steven J. Tozier** works for Pratt & Whitney Aircraft. . . . **David Williams** has been accepted at the University of Wisconsin in Milwaukee where he will work on a master's degree in urban planning. . . . **Stephen A. Zambarano** recently began work at the Naval Underwater Systems Center. . . . **Michael J. White** has received a research assistantship at MIT.



**Frank C. Harrington, '98**, a former WPI trustee, and prominent for nearly fifty years in Worcester insurance, civic, and fraternal affairs, died on August 26, 1975 at his summer home in Bass River on Cape Cod. He was 99 years old.

He was born in Worcester on February 6, 1876, the son of Francis A. Harrington, who became a mayor of Worcester in the 1890s. Following his graduation from WPI as a mechanical engineer, he manufactured specially designed machinery and operated a wholesale plumbing business. In 1908 he joined the Masonic Protective Association and was elected secretary the following year. (In 1922 the Association changed its name to the Massachusetts Protective Association, Inc.) He was named treasurer of the Paul Revere Life Insurance Co. when it was founded in 1930.

Mr. Harrington had served as secretary of the Ridgely Protective Association (Odd Fellows), director of the Worcester County National Bank, and as vice president and director of the YMCA. A 33rd degree Mason, he was a Past District Deputy Grand Master of the 23rd Masonic District. He was Past Master of Althelstan Lodge, A.F. & A.M., and a member of Isaiah Thomas Lodge. He was a Royal Arch Mason and a past eminent commander of Worcester County Commandery No. 5, Knights Templar. He belonged to Sigma Alpha Epsilon fraternity.

Active in community affairs, Mr. Harrington worked for many years in the Golden Rule Campaign as a team member and sponsor. He was past president of the Worcester Country Club, a member of the Worcester Grange, trustee of the Worcester Masonic Charity and Educational Association, and past Thrice Potent Master of the Worcester Lodge of Perfection, Scottish Rite Bodies.

He served as vice president of the WPI Alumni Association in 1912-1913, as a long-time member of the college finance committee, and as trustee from 1939 to 1949. He received an honorary doctor of engineering degree from WPI in 1945. Harrington Auditorium, which was dedicated at WPI in 1968, honors him and his brother, the late Charles A. Harrington, '95.

**Frederick W. Read, Sr., '05**, a retired metropolitan plant superintendent for the Western Union Telegraph Co., died on July 17, 1975 in Freehold, New Jersey. He was 77.

After graduating as an electrical engineer from WPI, he joined American Telephone & Telegraph in 1905. When the company was split following President Theodore Roosevelt's antitrust crusade, he went with the Western Union division where he worked until his retirement.

A long-time resident of Port Washington N.Y., he was a charter member of the Port Washington Players Club, a member of the local Home Guard during World War I, and past president of the Nassau Boy Scout Council. He was chairman of the New York Safety Council from 1937 to 1940.

Mr. Read was born on June 12, 1880 in Fall River, Mass. He was active in community affairs for 26 years following his retirement the age of 69.

**Irving L. Peters, '10**, died on August 4, 1975 in Worcester at the age of 88.

He was born on May 31, 1887 in Worcester and graduated from WPI in 1910 as a mechanical engineer. During his lifetime he was associated with B.F. Sturtevant Co.; Riter-Conley Mfg. Co.; Westinghouse; Alster & Goulding; Duncan & Goodell Co.; Chase Parker & Co.; and Waite Hardware Co. of Worcester. In 1965 he retired from the American Asbestos Co. of Cleveland, Ohio.

**Clarence W. Taft, '11** died on August 16, 1975 at his home in Worcester. He was 88 years old.

Before retiring in 1963, he had worked for 52 years at the former Leland-Gifford Co. in Worcester, where he was production manager. He was a member of Tau Beta Pi, Tech Old Timers, and Worcester Mechanics Association.

Mr. Taft was born on October 27, 1887 in Hopkinton, Mass. In 1911 he graduated from WPI as a mechanical engineer.

**Dr. Douglas F. Miner, '15**, retired scientist, author, educator, and civic leader, died on July 20, 1975 in Annapolis, Maryland after a long illness.

He was born on September 13, 1892 in Hazardville, Conn. In 1912 he received his A.B. from Clark University. He earned his BSEE from WPI in 1915 and his MSEE in 1917. In 1940 he received an honorary doctor of engineering degree from the University of Pittsburgh. During World War I he was a captain in heavy artillery and during World War II, as a lieutenant colonel, he helped to develop training schools for Air Force personnel.

Following World War I, he joined Westinghouse Corp., East Pittsburgh. During his 25 years with the company he was engaged in high voltage research and was in charge of materials and process engineering for the entire corporation. He was an education and patent consultant and received the Silver Medal of Merit for his standardization program.

From 1938 until 1956 he was associated with Carnegie Tech first as the Westinghouse professor of engineering, then as assistant director of the College of Engineering and Science. At his retirement he was director of student affairs and welfare.

Miner, who was also consulting engineer for Westinghouse, was a member of Eta Pi, Sigma Xi, Eta Kappa Nu, and a member of AIEE. He wrote 30 published articles and was author of the book *Insulation of Electrical Apparatus*. He was listed in *Who's in America*.

Past president of the Pittsburgh chapter of the Alumni Association, Dr. Miner also served on the board of the YMCA and as president of the Community Chest and Y Club in Annapolis, Md.

**Mr. M. Smith, '15** of Evanston, Illinois died away on September 28, 1975.

He was born on June 30, 1893 in Canajoharie, N.Y., and later studied electrical engineering at WPI, graduating in 1915. For two years he worked with Westinghouse Electric. After returning with the army in World War I, he worked on the Chain Belt in Milwaukee. For many years he was an agent for New England Mutual Life Insurance Co.

Mr. Smith was a former member of the Executive Committee and a past secretary-treasurer of the Chicago Chapter of the Alumni Association. He belonged to Phi Kappa Delta, Skull, and the University Club in Chicago.

**Mr. N. Pike, '17**, of Matawan, New Jersey, former chief mechanical engineer for Hanson-Van Winkle-Munning Co. for 40 years, died on June 22, 1975. He was

native of Ashland, Mass., he was an electrical engineering graduate from WPI. He worked briefly for Denison Co., Northampton, Mass., and American Steel & Wire Works in Worcester, he was with Hanson-Van Winkle-Munning from 1920 to 1961. At the time of his retirement he was chief mechanical engineer of the company.

Mr. Pike was a member of Tau Beta Pi, Sigma Xi, and the Masons. He was a past officer of his American Legion post and president of Liberal Building & Loan Association (Carteret Savings) in Matawan. During World War I he was with the U.S. Army Artillery.

**Mr. J. Wyman, '17**, who retired at the age of 67 after serving 25 years on the teaching staff at Franklin Institute in Boston, died on August 21, 1975 in Stoneham, Massachusetts. He was 82 years old.

Mr. Wyman was a native of Ontario, N.Y., he joined the U.S. Army Transport Service after graduating from WPI as a mechanical engineer in 1917. He became associated with Elder Steel, Worcester, Mass. (Water Co., Sword Electric Co., Whiting Milk Co., Wentworth Institute, MIT).

Mr. Wyman belonged to ASEE, ASTM, and was a past treasurer of Morgan Memorial's Hayden Goodwill Inn for Boys Association.

**Mr. D. Jacques, '20**, of Worcester died away recently.

He was born on May 28, 1898 in Worcester, Mass. He studied mechanical engineering at WPI. During his career he was the proprietor of Jacques & Son, Worcester; sales manager of the Jacques Division of Hobbs & Co.; and sales engineer for F. H. Harris & Co., Holden, Mass. He was a member of Phi Kappa and A.F. & A.M.

**Curtis N. Rice, Jr., '23**, passed away suddenly on August 1, 1975 at his home in Sarasota, Florida at the age of 73.

At the time of his retirement in 1966, he was operations controller for the Northern States Power Company in Minneapolis, Minn. Previously he was manager of plant accounting at Northern States, a firm he joined in 1933. He had also been associated with Byllesby Engineering & Management Corp. and New England Telephone Co., Boston. From 1925 until 1928 he was a valuation engineer assisting Prof. A.S. Richey at WPI.

Mr. Rice, who was born on October 19, 1901 in Lowell, Mass., received his BSEE from WPI in 1923. He was a registered professional engineer and a board member of the Controllers' Institute of America. He belonged to Edison Electric Institute, the Sarasota Power Squadron, and American Management Association. He was a lifetime member and past president of the Minnesota Horticultural Society, a lifetime member of the Men's Arboretum, and belonged to the Men's Garden Club of Sarasota and the Sarasota Shrine Club.

**Gunnar A. F. Winckler, '25**, of Seabrook, Maryland died on May 21, 1975.

He was born on August 21, 1901 in Sweden and graduated with his BSEE from WPI in 1925. During his lifetime he was a research engineer for GE, Lynn, Mass.; president of Winckler Engineering Laboratories, Boston; and research engineer at Winchester Repeating Arms Co. He was with Colin Mathieson Chemical and United Nuclear, New Haven, Conn.

A former senior scientist at Johns Hopkins University's applied physics laboratories, Silver Spring, Md., he was also a member of Phi Gamma Delta and Tau Beta Pi. Among his patents was a design for a lighted life jacket which was approved for use by the U.S. Government.

**Richard S. Boutelle, '26**, retired Boston district manager of the Ford Motor Co. (1956 to 1963), died in Newton, Massachusetts on September 3, 1975.

He was born on February 20, 1904 in Worcester, graduated as a civil engineer from WPI, and joined Ford in 1927. He stayed with the company until his retirement in 1963. During his career he held executive positions with Ford in Chester, Pa., Norfolk, Va., New York City, and Boston.

Mr. Boutelle was a member of Sigma Alpha Epsilon and the Harvard Club of Boston. He attended the Harvard Graduate School of Business Administration.

**Arthur T. Simmonds, '28**, former director of hydro production for New England Power Company, died on September 20, 1975 in Littleton, New Hampshire.

A native of Philadelphia, he was born on April 12, 1904. In 1928 he graduated as an electrical engineer from WPI and then joined New England Power Company where he was employed until his retirement 42 years later. While with the company he was a meter inspector in Worcester, and Shelburne Falls, Mass., and with the Fall Mountain Electric Co., in Bellows Falls, Vt. In 1934 he became meter foreman in Littleton, N.H., where in 1938 he was promoted to technical assistant. Later he became supervisor of operations, assistant (northern) division superintendent, and superintendent. At his retirement he was director of hydro production with headquarters in Lebanon, N.H.

Mr. Simmonds was past president of the Littleton Rotary Club, Chamber of Commerce, Hospital Association, Eastern Snow Conference, and director of Littleton Savings Bank. He also served as director of the Littleton Community Center Corp., trustee of the N.H. Masonic Home, and was very active in the Masons and Shrine. He was a licensed professional engineer and was appointed by the governor to the Citizens' Advisory Group of the Connecticut River Basin.

**Alfred W. Young, '28**, of Largo, Florida died recently.

He was born on July 5, 1906 in Norwich, Conn. In 1928 he graduated with a BSME from WPI. From 1928 until 1942 he was with the National Advisory Committee for Aeronautics (now NASA). He continued as an engineer with the National Aeronautics and Space Administration until his retirement in 1970. He belonged to Tau Beta Pi and Sigma Xi.

**Gerson E. Berger, '31**, died last summer in Brighton, Massachusetts at the age of 67.

He retired in 1973 after many years as an electrician at MIT. A Worcester native, he was born on April 14, 1908, later becoming a student at WPI.

Mr. Berger was a member of Temple B'nai Moshe, Brighton, the Brookline Birdwatchers Club, the Massachusetts Audubon Society and the Brighton Historical Society.

**Burton H. Simons, '36**, of Morristown, New Jersey died on June 4, 1975.

He was born on July 3, 1915 in Worcester and graduated from WPI with his BSEE in 1936. For many years he was with the Bell Telephone Labs in Whippany, N. J., where he was a member of the technical staff.

Mr. Simons belonged to Lambda Chi Alpha and Sigma Xi. He was an associate member of IRE.



Aram Kalenian, '33, founder and president of Vee Arc Corp., Westboro, Massachusetts, died on September 7, 1975 in Boston after a short illness. He was 64.

He was born in Worcester on April 12, 1911 and graduated as a chemist from WPI in 1933. Prior to founding Vee Arc, he served as chief design engineer of Armeno Cereal Co., Northboro. He also was a former project engineer for Pratt & Whitney Aircraft Corp. in Hartford, Conn. In 1968 he graduated from the advanced management program of the Harvard University Graduate School of Business Administration.

Mr. Kalenian held numerous U. S. and foreign patents on flexible aircraft couplings, lathe chucks, and adjustable speed motor drives. He became widely known in 1958 for his invention of the Reactron, a variable speed DC motor control. His father's cereal company in Northboro became famous in the early 1960's when it manufactured elements for survival biscuits to be used in bomb shelters.

A civic leader in Westboro, he had been chairman of Veterans' Housing, a member of the town finance committee, and trustee of the Westboro Savings Bank. He was an advisory board member of the Worcester County National Bank and a member of the Chief Executive's Club of Central Massachusetts and the Employers' Association. He also served as a member of the WPI Alumni Fund Board.

**Herbert E. Sheldon, '44**, an executive with American Telephone & Telegraph Co., passed away on June 8, 1975 in Morristown, New Jersey.

A native of Brockton, Mass., he was born on August 5, 1922. In 1944 he received his BSEE at WPI. During his career he was associated with the New England Telephone Co., the Bell Telephone Laboratories as head of technical employment, and the Illinois Bell System. For the past five years he held a technical personnel executive post at AT&T headquarters in New York City.

During World War II Mr. Sheldon served as an engineering officer on an LSM in the Pacific theater.

**Walter P. Matzelevich, '45**, died in Boston, Massachusetts on April 23, 1975. He was 52 years old.

For the past eight years he served as vice president of manufacturing at Market Forge Co., Everett, Mass. Previously he held the same position at Anderson Power Products, Boston and at James R. Kearney Corp., St. Louis, Mo. He had also worked for Line Material Industries and A.O. Smith Corporation in Milwaukee, Wis.

Mr. Matzelevich, who was born on February 10, 1923 in Worcester, graduated from WPI in 1945 with a BS in mechanical engineering. He was a member of Tau Beta Pi, Sigma Xi, Skull, and Sigma Phi Epsilon. In 1948 he received his MBA from Harvard Business School. He was active in scouting and belonged to the Rotary and the Chamber of Commerce.

Lt. Col. Robert E. Bernado, '58, a retired Air Force officer, died on September 21, 1975 in Nashville, Tennessee after a long illness.

He was born on December 12, 1934 in Boston. He received his BS from Tufts in 1956 and his MS from WPI in 1958. While on active duty with the Air Force, he spent two years in Vietnam as aircraft commander of the C-130 transport and the AC-130 gunship. He received the Distinguished Flying Cross, the Meritorious Service Medal, and 18 Air Medals. Last year he retired from the Air Force.

**John V. Forcino, SIM '62**, of Holden, Massachusetts died on June 20, 1975. He was 57 years old.

For many years he was employed by Grinnell Fire Protection Systems, Inc. of Rhode Island. He was born in Groton, Mass. on October 23, 1917 and later attended WPI. During World War II he was with the Signal Corps in Europe. He was a graduate of Becker Junior College.

Michael M. Field, '72, of Swarthmore, Pennsylvania died on August 14, 1975.

He was born on July 24, 1950 in Ridly Park, Pa. After studying at WPI, he received a degree in airplane maintenance engineering technology from Parks College of Aeronautical Technology, a branch of St. Louis University. At the time of his death he held a commercial pilot's rating and was employed by Altair Airlines.

He was a member of Pi Mu Epsilon, the national mathematics honorary society. He was the son of David M. Field, '44.

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# Alumni Magazines

## Can Make

## Gloomy Reading

George R. Coffey

As keeps up, I'm going to cancel my subscription to the publication I've been getting for more than twenty-five

years. In my college alumni magazine, the contents of which I find more depressing by the issue.

Some time back I had learned to accept the fact that my class was moving steadily toward the front of the parade, with an ever-lengthening list of "Alumnitems" on the classes falling in behind.

Also, I've adjusted to the reality that with a few notable exceptions, the wedding and birth notices are reserved almost exclusively for alumni who graduated 10, or even 20 years after I did.

What really began to hurt was the disturbing frequency of obituaries involving people presumably not older than I, and in some cases almost exact contemporaries.

When dismissing the recurring reminders of one's own mortality and the diminished proclivity for child-producing, another standard fare for an alumni magazine is enough to make you question how you are doing in life's competitive game.

On one issue, there's the announcement that a guy who graduated just a year ahead of you has been named president of one of the nation's largest companies. And you're the one who was always horsing around in school, cutting classes, ducking exams and generally bringing nothing that indicated he was going to be a world beater!

Another time, you find a glowing tribute about a classmate who has been honored by some learned society for pioneering research on a hitherto unexplored scientific plateau. And she was the one, you recall from high school, who had as much trouble as you did telling the difference between a stamen and a pistil.

To add insult to injury, there is a report on a younger classmate who has been elected to Congress and is considered a hot contender for the U.S. Senate, if not president. Wasn't he the awkward kid whose debating team was consistently defeated?

That's the trouble with alumni magazines. They report only on the triumphs of graduates, forcing you into the inevitable comparisons of how your progress stacks up against others.

Do college newsletters ever tell you about the guy who was evicted from his home for non-payment of the mortgage, enabling you to boast that it never happened to you? Not a chance.

That so-and-so has put on 40 pounds and can't touch his toes with a yardstick, allowing you the pleasure of crowing about your own stabilized, if unevenly distributed, weight? Never.

That someone else has lost all his hair, giving you the satisfaction of pointing to your own full crop, even if it is getting increasingly grey? Of course not.

Life as presented in an alumni magazine is always a series of onward and upward steps, of novels published, big business deals consummated, movies directed, or awards received. All of which leaves the average reader, regardless of his own accomplishments, to compare them with what always seems to be the oneupmanship of other alumni.

About the only recourse is to content yourself with what you have been able to do, or avoid doing, like going broke or landing in jail.

What you can't do, actually, is cancel your subscription to an alumni magazine because you'll keep getting it as long as you're carried on the rolls as a graduate of good ole Estee U.

So, you might as well accept the fact that there will be constant reminders that others are achieving new heights even when you're not. But, you'll also be reassured to know that everyone else is getting older, and moving farther forward in the book, just like you.

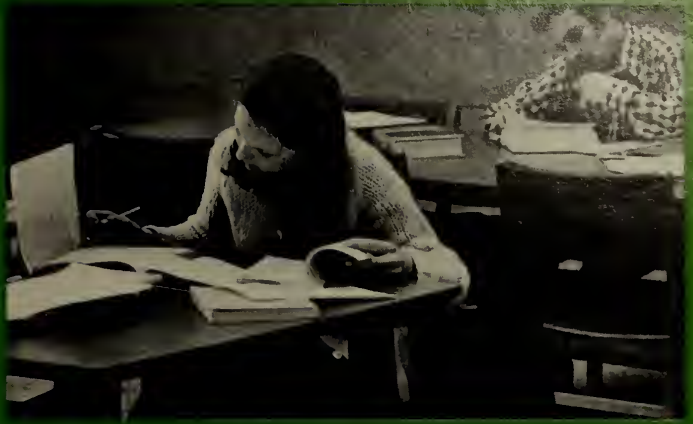
*This "appreciation" of alumni magazines was originally published in a California newspaper, where Larry Israel, '61, noticed it and sent it on to us. George Coffey is a San Francisco public relations consultant who, for a time, was a syndicated columnist.*





FEBRUARY/APRIL 1976

# Journal



It is clear that the Plan

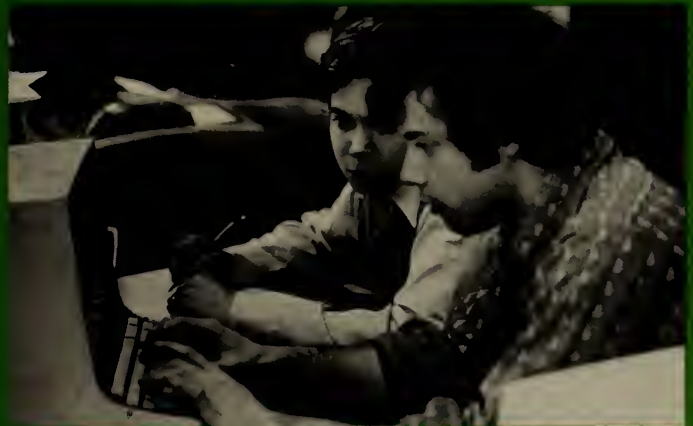
is a process, a living and

not a mechanical thing,

and depends heavily on the

particular constellation of

people and events at WPI.”



— Bruce Mazlish, M.I.T.



## Dedication

### *To the faculty of WPI . . . and their dedication, which made the WPI Plan possible*

"Our foresight with respect to the nature of the problems was, I believe, quite good. What we—or at least I—failed to foresee accurately was the determination, perseverance, and resourcefulness that the entire WPI community has brought to bear on those problems."—*George Pake, Vice President, Research, Xerox Corporation*

"WPI embarked on the Plan with an already lean faculty: a student-faculty ratio of 14 to 1. Every essential feature of the Plan has added to the faculty load; none has reduced it. . . .

"So why is the Plan working so well? . . . The answer lies in the faculty's willingness to put in extraordinary effort, dedication, and long hours way beyond the call of duty."—*Eugene D. Reed, Executive Director, Bell Laboratories*

"To create an honors college, like Plan II at the University of Texas, or the subcolleges of Michigan State, or the E<sup>3</sup> program at IIT, is no great trick, even though I think it a valuable accomplishment. But to reform a whole institution and an entire set of fields is, in contrast, unprecedented, and in my judgment could only have been undertaken with a certain innocence, and by people with a dedication to the institution rather than to their specific disciplines.

"I have visited classes taught by those I have referred to as the 'home guard loyalists' of WPI, who have been there a long time, teacher-scholars who are not looking for their next chance somewhere else. At other engineering schools I have visited, people in that position would be resentful. At WPI I have been impressed with their indomitable energy and dedication, their genuine interest in students and their development, and their lack of evangelical desire to convert students to supposedly more noble callings. They do not feel that their own status depends on sending students to graduate school in their own specialties."—*David Riesman, Henry Ford II Professor of Social Sciences, Harvard University*

"A major effect of the Plan has been to substantially increase the level of workload and stress experienced by a large majority of the faculty. When compared to other schools, WPI faculty reported significantly greater increases in time devoted to school-related activities and significantly greater feelings of stress and fatigue. Similarly, WPI faculty reported significantly less time available for research and consulting as a result of implementing the Plan. . . . However, archival data do not show that research productivity has declined markedly at WPI since implementation of the Plan. The general trend suggests that research activity declined slightly in the first two years of the Plan but increased to record levels in the third year.

"In comparison to other schools, WPI faculty spend significantly greater amounts of time interacting with students, planning and monitoring project work, interacting with colleagues in other departments, and dealing with outside organizations (especially organizations of a non-industrial nature); and significantly more time reading outside of their special field.

"WPI faculty view their own school as being a substantially more fluid, complex, and flexible environment than do their counterparts.

"The changes implemented by the Plan have been the source of major frustrations and uncertainty for many faculty, as well as sources of satisfaction. These changes have also resulted in considerable self-questioning, learning, and self-initiated adaptation. WPI faculty members have stretched their competencies beyond the areas of expertise normally expected by their disciplines."—*from a report on the effects of the WPI Plan implementation on faculty and administration, by Frank Baker, State University of New York at Buffalo, and John J. Gabarro, Harvard University*

"Our observation of the ingenuity, resiliency, and dedication of faculty and administration in meeting the tremendous pressures to date give us a great deal of confidence in the amount to be achieved by this experiment."—*John R. Whinnery, Professor of Electrical Engineering, University of California at Berkeley*

Plan is a process, a living and not a mechanical thing, depends heavily on the particular people and events at . . . It is clear that the surmounting of problem after em was only possible by a rather unique constellation y people and efforts. . . .

"As one student remarked, you can change the ents in the course of four years, but you can't change aculty in that time. It is remarkable, nevertheless, how n the faculty *has* changed in the course of our three visits, in the sense of rising to the challenge of the I have been impressed by the dedication of many long- members of the WPI faculty to the Plan and to the in which new faculty are fostering the aims of the " —Bruce Mazlish, head of the humanities department,

Those are remarkable tributes to a remarkable group achers and scholars, the WPI faculty. The process ringing the WPI Plan into being, making it a reality ad of a theoretical model, has fallen largely on their lders, and they made it happen. They did it at tre- dous cost in time and energy, in loss of income igh reduced opportunity for consulting, in 12 and 15 days spent breaking new ground in teaching meth- and interactions across the traditional boundaries of emic specialization.

The kinds of sacrifices they have made cannot go re- ver, and as the Plan becomes fully operational, mes a more familiar and less revolutionary enter- , the faculty and the Institute will have to find new better ways of dealing with the overload.

That is the major problem facing WPI in the next years: How to adequately reward a faculty that has n more of itself than perhaps any faculty at any cution of higher education.

It may not be much to offer, but I'd like, here in this nal, to say "Thank You" to all of them. This issue is cated to the WPI faculty, for it is they, against tre- dous odds, who conceived, designed, and created WPI Plan. All of us at WPI—whether we are ents, administration, alumni, parents, and just ested bystanders—owe them a tremendous debt.

R.K.





# WPI Journal

Vol. 79, Nos. 5 & 6

February-April 1976

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# The WPI Plan— What, where, why, and how

**W**ORCESTER POLYTECHNIC INSTITUTE has been the center of a unique transformation over the last decade. Completely changing its traditional goals, methods, and measurements, WPI brought forth a system called "The WPI Plan." It did so in one step, with requiring specific courses being the Plan put major emphasis on project-oriented learning, on self-motivation, and above all on a bachelor's degree based on the student's demonstrating professional competence in his field of specialization. **The WPI Plan.** The phrase is familiar to all WPI faculty, parents, and students. But what *is* the WPI Plan? What does it mean—to the student, to the faculty, to the Institute itself, to past graduates, to engineering employers? What does it mean? Is it significant, and if so, why is it significant? And most basic of all: Does it work? And how well?

For five years the WPI Plan has been in a state of flux. It was difficult for us on campus to know, at least, just what to make of it all. There were enormous problems involved in trying to make a theoretical educational model into a smoothly functioning system. And when we tried to explain to people who were involved just what was this WPI Plan, we found that too many people had quite the same idea of what it was and what to become. The WPI Plan had so many different parts that needed explanation, it was difficult for even those of us on campus, much less outsiders, to describe what was going on. Sometimes we didn't know for sure ourselves just what were the trees and where was the forest.

But now things are clearer. For two years, every student entering WPI has been studying under the Plan. As of June more than 550 students will have earned bachelor of Science degrees under the Plan. Thousands of projects have been undertaken by WPI students. We now know just what the WPI Plan is, and what it can do.

And in this issue of the *WPI Journal*, we'd like to share some of the excitement of what the WPI Plan is—as people who are interested and involved with it. So here is the WPI Plan—what, where, why, and

As I sit here and write material for this issue, I am a fair game for charges of bias—after all, WPI pays my salary. But throughout I have tried to substitute the thoughts of others whenever a judgment or evaluation seems called for. Most of all I have drawn upon the reports made to the National Science Foundation by an outside panel of educators, engineers, and scientists who visited WPI twice a year for two days at a time during the three crucial years when the WPI plan was being put into operation. In a later section of the magazine, I discuss the panel at some length. But their views of the WPI Plan were too wide-ranging, too thoughtful, too close to the nerve, merely to be set off by themselves. In fact, their perceptions of WPI pervade this issue and provide a unique insight into the WPI Plan.

**O**ne final word. In writing this issue, it became clear that 64 pages of impersonal and educational rhetoric would find no audience still awake by the end. So we've tried to make these stories as human and as interesting as possible. Because the WPI Plan, in action, really ends up being more than simply the sum of its parts, we've included profiles of seven students—1974 and 1975 WPI graduates—and their academic careers at WPI. And we've scattered them throughout the issue. We feel that it is in these profiles that you can see just how the Plan operates, how students choose the elements of their programs, and how one aspect of the WPI Plan relates in practice to another.



# In the beginning



*"This Institute has a claim to public favor and indulgent consideration because it is the first attempt in our country to combine theoretic knowledge and practical training."* —Stephen Salisbury II, 1871

*"This school was not framed on the model of any existing elsewhere."* —Seth Sweetser

*"The whole scheme must be regarded as an experiment in American education, which, at the present stage, is sufficiently promising to warrant its further prosecution."* —Catalog, 1871

Right from the beginning, Worcester Polytechnic Institute was an innovator, an institution in the forefront of educational practice. But somewhere along the way, that thread of innovation and experimentation got put aside. And so it was in the late 1960s that a group of concerned faculty drafted a new statement of purpose for WPI and developed a radical new approach to the education of scientists and engineers.

*"By means of coordinated programs tailored to the needs of the individual student, 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 advance, 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."*  
—endorsed by the WPI faculty, 1969

From that statement of goals, let us first describe the basics of the WPI Plan, the four degree requirements: two projects, a minor in humanities, and a competency examination. It is these four items that mark the cornerstones of WPI's educational edifice.

# the four degree requirements

## The Major Qualifying project

Each student must investigate a problem in his major field of interest. This project is expected to occupy the student's time for the equivalent of seven weeks full-time (which at WPI is reckoned at around 50 hours a week). The student may work alone or in conjunction with other students, on campus or at an off-campus internship center. A faculty advisor will guide the student, but it is the student's own motivation, independent action, and ability to learn on his own that will determine his progress.

Major projects typically deal with real problems. They are not made-up, hypothetical, or imaginary situations to be dealt with. Often the projects are supplied by, and done in conjunction with, businesses, industries, and social and governmental agencies who can call on the resources of WPI students and faculty in dealing with their particular problems.

Each student working on a major degree project must submit a final report on the project, though sometimes these are done as identified sections of a joint report. The project is evaluated by faculty and by outside people who have been involved.

## The Interactive Qualifying project

A second project is also required. It may be a second major project, but students are strongly encouraged to get involved in a project which will relate technology and their major field of interest to the very real needs of society. These Interactive Qualifying Projects force students to become aware of the consequences of technology and its impact on our lives, to consider moral and ethical values as they relate to their professional fields.

## The Competency Examination

A student's competence is tested through a complex problem, or series of problems, much like what the student can expect to encounter as he or she begins a career. The student is assigned one or more problems and has access to reference materials, computer facilities, library, laboratories, and so forth. At the end of a designated period, usually two days, the student submits a written report back to his examination

committee. An oral examination follows, and here the student's method of attack, the soundness of fundamental principles and alternate approaches are discussed and questioned. The exam is designed to test for understanding of methods, ability to use available resources, grasp of fundamental principles and theories, and ability to apply current techniques. All this is done under fairly tight deadlines, so it also measures the student's performance under pressure.

## 4. The Sufficiency

Students majoring in science or engineering are required to develop a specific minor in the humanities. Students must select five thematically related courses in the humanities, and then, in a sixth activity (usually independent study) the student must write a paper that develops his particular area. This sufficiency involves the same amount of work and academic credit as the two degree-qualifying projects combined.

Students who are majoring in a humanities or social science area are required to develop a sufficiency in science or engineering.

## 4+ . A Few Miscellaneous Requirements

Although the previous four degree requirements are the whole of the WPI Plan, the college does have a few smaller requirements for graduation.

Each student must complete 12 units (the equivalent of three years) of work before taking the competency exam. For transfer students, there is a minimum residence requirement of 8 units of work.

Four physical education courses must be completed.



PLEASE NOTE:  
The photographs that illustrate this issue have been chosen for their depiction of activities involving WPI students and faculty. In most cases, however, individuals who are specifically referred to in accompanying articles are not shown in photographs because none were available.



## Jon Anderson—

*“Every engineer he’d ever known who’d gone on into law made a darn good lawyer”*

Jon Anderson wants to go into politics. So of course he started off by majoring in chemical engineering at WPI. “I talked with a lawyer in my hometown in Vermont who went on to become lieutenant governor. He said that engineering was a real good background for law, and that every engineer that he’d ever known who’d gone on into law made a darn good lawyer.”

Jon looked at three engineering schools in New England. “I went down to WPI and had an interview about the Plan. After that I didn’t even bother to interview the other two schools because they seemed to be caught up in more traditional education. The idea of going to WPI where people were discussing what was the best education—rather than having settled on one thing and you just have to fit the mold—that, I think, was what really attracted me.”

Jon chose chemical engineering because he felt it really combined both science and engineering. He feels this background will be helpful to him in the future by enabling him to communicate with scientists and understand the process of scientific research as well as engineering and problem-solving.

One of the most exciting parts of Jon’s program was his interactive qualifying project. He videotaped the Senate Watergate Committee hearings and edited them down to a 6½ hour presentation. “We thought the Watergate hearings would go on for two weeks, certainly no longer than three. Then I would sit down and prepare an hour-long tape reviewing the hearings and tying them into American history. We didn’t think it would be that big a job.

“After the hearings had gone on for several months we began to change the focus of the project. And we ran into some money problems. We had originally hoped to save good sections of tape and erase the rest. And after a while that just became impossible. So we started to run over our budget, but Dean Bolz stretched a point and committed some more money to buy tape. For the school, it really only amounted to buying the tape before they would normally, because after the whole project was over the tapes would be available to be erased and reused.

"So around Christmas time, 1973, I edited the tapes to a four hour and twenty minute story of what happened at the Watergate. We juxtaposed Nixon's account and Haldeman's and Erlichmann's accounts with those of John Dean and some of the others. I tried to be very fair about it, because I was managing editor of the WPI newspeak, and because I was very conscious of Nixon's attacks on the press. Then I put together a half-hour segment on wiretapping—how society tried to control wiretapping and its technology, and failed in this case. Finally, there is an hour-and-a-half exploration of the reasons that different people used in justifying their breaking the law, doing things they knew to be illegal.

"From this project, I really knew that I wanted to be a lawyer. And I became much more careful about my own behavior and feelings. I thought about honesty and became much more aware of the way we all have our little Watergates, as someone put it.

"All in all, it was quite a project. The result is six hours and twenty minutes of videotape; it represents well over 500 hours of work by me. I got a tremendous amount of confidence in being able to do all that."

Jon's major project in chemical engineering was concerned with molecular sieve zeolites—compounds which are able to separate out parts of other fluids. Oil companies use them in refining; they make possible low-temperatures and pressures, and they save money. Another use is to separate pollutants from smokestack gases. To use them in this way, one needs to know how fast gases diffuse through the packed beds of the small zeolite crystals. Anderson attempted to compare two different methods of determining the rates at which different gases diffuse—one very simple and one much more complicated. His results did not seem to indicate any reasonable method of comparison. "I worked harder on that than anything else I did at WPI. It was fairly frustrating. I guess I know how rugged scientific work is now, and I have a deep appreciation for how hard and how frustrating it can be."

To meet the sufficiency requirement, Jon did three courses worth of independent study on foreign policy and presidential elections, together with other coursework. For his final paper, Jon studied the politics of Royall Tyler, the first American comedy playwright to be professionally produced, and a man who later became chief justice of the Vermont Supreme Court. Jon happened to pick Tyler because they shared the same hometown, Brattleboro. Jon discovered that Tyler had been adamantly opposed to slavery until 1801, when he switched parties from the New England-based Federalist Party to the southern Democratic/Republican Party. And after 1801 he never said another word about slavery or the South. Jon's paper was published by the Vermont Historical Society.

At competency exam time, Jon was "shocked and horrified. They made it sound like just months and months of work in the assignment, and we only had five days. But what they really intended was for me to take that assignment, figure out what was most important, and do five good days of work on it."

Jon graduated two terms early, by taking overloads (mostly independent study) for much of his time. He was happy to be able to do this, because he spent the time until the next September working to earn money for his first year at Yale Law School. Washing dishes. "Dish washing was the first thing I found, and the job situation up here in Vermont was pretty bad. But by living at home I saved nearly everything I earned."

**WPI**



# The basic elements of the WPI Plan





# Planning how to make it through the Plan

Two of the most important aspects of life under the Plan are the design and planning of each student's individual program, and the part that the faculty advisor plays in this process.

Freed from the traditional structure of required courses, the WPI student has the entire course catalog open to him or her. A major field of interest need not conform to a previously established standard sequence; the student is able to design his own major program, so long as it is one in which the faculty can assess his competence.

Roy Seaberg, associate director of admissions and a '66 WPI graduate in civil engineering, recalls the flexibility of the curriculum when he was a student: "In the last semester of my senior year, I had one elective course. Everything else was prescribed in the catalog."

By contrast, Plan students have the freedom to explore other areas, to combine course offerings from different departments to meet their specific interests. For example, the last Commencement program listed the following fields (in addition to the traditional departments) in which students received bachelor's degrees:

- Urban and environmental planning
- Urban development planning
- Applied mathematics
- Digital systems
- Electrical instrumentation
- Power systems
- Sanitary and water resources engineering
- Experimental nuclear science
- Chemistry: bioinorganic emphasis
- Interdisciplinary: chemistry-life science
- Dramatic literature
- Chemistry: organic emphasis
- American History
- Chemistry: mineral chemistry emphasis
- Systems software engineering
- Life sciences and engineering
- Structural engineering
- Mathematical physics
- Transportation
- Interactive operating systems
- Mechanics and design
- Electronic systems
- Applied nuclear physics
- Environmental studies
- Transportation engineering
- Environmental science
- Urban planning
- Chemistry: chemical education emphasis

The price the student pays for this freedom is the responsibility for designing a program—courses and project work—that hangs together and accomplishes the student's goals. If the student arrives ill-prepared for his competency exam, the fault should lie squarely on his own shoulders. To help prevent such last-minute disasters, the faculty advising system has been set up.

To be sure, there were advisors before the Plan, but their role has taken on significant new meaning under the WPI Plan. Because of the individualized approaches that can be taken, each student generally needs more advising than under a more traditional program: more frequent contact with his advisors, and more time spent with them.

A student begins designing his or her program even before arriving at WPI. Correspondence during the summer before that first term between incoming students and the Dean of Academic Advising begins the process of exploring alternatives. During the first year in particular, students are encouraged to "shop around" and sample courses from different areas—mindful, to be sure, of the basic need for beginning math and science course work.

As the student's experience grows, as he finds out about the possibilities open, discovers the directions in which his interests lie, his plans typically grow more specific: he begins to have a picture of the kind of program he wants to develop, perhaps becoming interested or involved in a project to help test out those interests.

In his first year or two, the WPI student can rely heavily on the counsel of his advisor; but he soon learns his way around, begins getting informal advising from other faculty members, particularly if his interests are changing. And of course, the student learns from other students just what the score is regarding the value (as well as the difficulty) of certain courses and instructors, and the strengths, weaknesses, and idiosyncrasies of given departments.

Some faculty members are better at teaching than at research, and vice versa. Just so, some faculty members are better at advising students than are others. This has presented problems for many students and faculty, problems that have attracted a lot of attention. Putting them in perspective, however, one outside observer, Bruce Mazlish of M.I.T., has said: "Advisors are obviously an important part of any college experience. . . . In my own view, the situation [at WPI] is no different from that of any other college or university. Advisors will vary greatly in quality, and the students equally so in their need to have advisors with whom they do or do not work closely."



## Elaine Sanderson—

### *What to do when a textile mill becomes a jigsaw puzzle!*

"My father had gone to WPI, and when I was little I asked him if I could go to this school. He said, "Well, by the time you're old enough, there might be girls there.' And sure enough there are. So here I am."

In high school, Elaine Sanderson was especially interested in math, although before she graduated she had changed her sights. She started off her first two years at WPI with courses in chemistry, math, physics, and basic engineering. By the middle of her second year, Elaine had settled on civil engineering as her major. "I was in environmental engineering, but I didn't see any future in it for the direction I wanted to go in. But I had taken a physics course with mechanics, and I really liked mechanics. Civil engineering is pretty close to that, and I finally decided that's what I really wanted."

During her second year, Elaine finished her interactive project. She was part of a group working with the Worcester Juvenile Court, investigating the feasibility of a centralized computer information system covering the police, probation officers, the court itself, and all the different agencies that work with juveniles. The group discovered that there was an enormous amount of duplicated information the different agencies were collecting separately. Elaine's group proposed a central data bank which everyone could draw on, but which would not contain "sensitive" information that shouldn't be available to many of the users. The plan was never implemented because state legislation was changed in such a way as to forbid the concept.

One of the real values of this project, according to Elaine, was the experience in learning how to deal with people in public life—how not to step on their toes, how not to offend them so they won't talk to you. "And then you get back on campus and you have to present your report, so you get a lot of practice getting up in front of groups and talking about it. We presented our results to at least ten other students working with the juvenile court, plus probation officers, representatives of other agencies related to the court, and some professors." Was it an unnerving experience? "I thought it was fun."

During her senior year, Elaine served as chairman of the Worcester branch of the Society of Women Engineers. In fact, she was instrumental in the organization's formation, knocking on dorm doors to drum up interest among women students. She was also a member of the women's crew team—which meant getting up at 5:30 every morning in the fall to go out and row, running three miles a day during the winter months, as well as working out with weights, and rowing once or twice a day during spring . . . including spring vacation. But the outdoors has a strong appeal for Elaine, and she was also a member of the Outing Club and the Canoe/Kayak Club. And maybe that's a part of the reason she chose civil engineering.

Elaine's major project got its start while she was taking an Intersession course at nearby Old Sturbridge Village. One of their problems was to move a cotton mill, dating from 1823, from its present location in Phoenixville, Connecticut, to Sturbridge. In order to do this, the building had to be completely dismantled and then reassembled. Elaine had to do a complete engineering study of the building, to determine how sound were the original materials, particularly wooden beams and stonework, and how well they would withstand the moving process. She had to figure out what had to be replaced and what could be preserved. Finally, Elaine had to investigate what additional supporting structures had to be built to make the building safe for the millions of visitors who will troop through it. This was a particularly difficult phase of the problem because she also had to preserve, as much as possible, the original appearance of the structure. This meant hiding the required electrical wiring and sprinkler systems by designing false floors and ceilings, to use one example.

Elaine's work has given Old Sturbridge Village a careful and detailed estimate of the amount of work that will be needed—and the money it will take—to relocate and reconstruct the old mill.

Elaine's sufficiency was closely related to her project work: she did a paper on New England industrial mills, after having taken courses in the history of technology, urban history, and a number of related Intersession courses involving historical concerns and field trips around New England.

During the fall of her senior year, Elaine took her competency exam. And flunked it. "I wasn't ready for it then. I had only one year of civil engineering courses, which wasn't enough. Now, later, I can see how much more material I have gained, how much I didn't have before. Civil has five or six distinct areas, and since I'm going into general civil engineering I should have some knowledge of several of these different areas. I'm basically a structural engineer, but I do have to know about wastewater treatment, construction management, planning, soil mechanics. You have to get a very well-rounded background to be a general civil engineer. And the competency makes you do that." In March, Elaine retook the competency exam and passed.







# Projects: the heart of the Plan

**P**rojects are the central educational experience under the WPI Plan. And there's a good reason for that.

"Bright kids used to come here with pet projects they wanted to work on," says Dean William R. Grogan. "We would tell them, 'No, you put that aside until you have taken math and chemistry and physics, and so on.' If they wouldn't do it our way, we'd flunk them."

"That was short-sighted. Now we encourage students to pursue their pet projects, let them work on them until they discover for themselves just what kind of theoretical background they really need to continue. Then the students have a genuine interest in that basic course we want them to take, and we don't have to force it down their throats."

There are other important benefits to project work. It involves students in groups and teams, and they can learn how to work together to solve a problem. Most of the projects at WPI, whether they originate with students, faculty, or outside WPI, are real problems that need solving; they're not makework, and they're not trivial. Many are directed at solving real and immediate problems faced by business and industry, government and social agencies that have working arrangements with WPI.

There are four basic elements to every project. First is the idea or problem itself. Second is the student or

student team to work on it. Third is the faculty advisor. And fourth are the resources that the project team can call upon, which often include extensive facilities and/or cooperation from a participating outside sponsoring organization.

Each project has one or more faculty advisors who will act as counselors, resources, prodders, overseers, and ultimately as evaluators and graders. Generally a faculty advisor will be involved because the project is in his special area of interest (or maybe it's not, but he happens to be interested in the problem anyway). For many projects, there are several advisors from different fields.

While two projects are required for graduation, students are expected to work on other projects too—as preparation for the degree-qualifying projects, and as projects in their own right. The Plan originally envisioned students spending 25 percent of their time on projects and independent study. In practice, it has worked out to slightly less than that.

Because the nature of project work is so basically different from classroom work, many students have found difficulty in adapting. To help ease the transition, a new course, "Project Initiation," is offered to introduce students to some of the things that will be expected of them, and to give them some practical working and organizational tools for projects.



The outside participating organizations are an important part of the project structure. They provide real and urgent problems for students to work on, they offer a wide variety of resources and working environments for students to sample, and they keep a fresh and steady flow of new ideas coming in to WPI, which helps keep students and faculty aware of the current technical problems of business and industry.

There are several levels of participation by outside organizations. The most extensive is when WPI and the organization agree to establish an off-campus Project Center inside that organization, where a number of projects will be going on at all times. A faculty member will be assigned as site director, who will be in general charge of the projects and the students. Right now there are several Project Centers at

- Digital Equipment Corporation, Maynard, Mass.
- Norton Company, Worcester, Mass.
- Small Business Administration, Boston, Mass.
- St. Vincent Hospital, Worcester, Mass.
- U.S. Army Laboratories, Natick, Mass.
- WPI Project Center, Washington, D.C.

In addition to these project centers, there are many other organizations which have sustained project activity over an extended period of time—as much as four years in some cases. These project locations include:

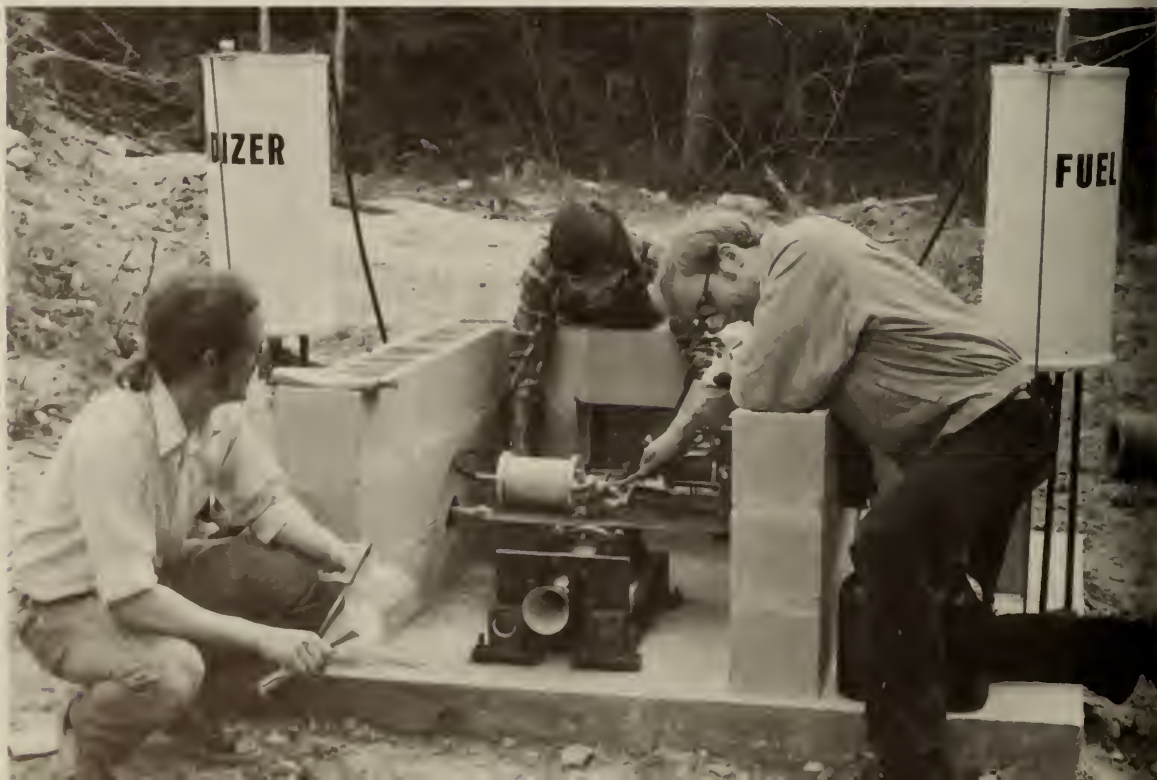
- Central Massachusetts Regional Planning Commission
- Data General Corporation
- General Electric Company
- Pratt & Whitney Aircraft Corporation
- Sprague Electric Company
- New England Electric Systems
- Worcester Foundation for Experimental Biology
- Worcester Science Center

Finally, several hundred other organizations have sponsored WPI student projects, including:

- American Optical Company
- American Telephone & Telegraph
- Army Materials & Mechanics Research Center
- Cape Cod Planning Commission
- Department of Commerce, Washington, D.C.
- Department of Health, Education, and Welfare, Washington, D.C.
- Department of Transportation, Washington, D.C.
- Department of Housing and Urban Development, Washington, D.C.
- Environmental Protection Agency, Washington, D.C.
- Hewlett-Packard, Inc.
- Honeywell Corporation
- New Haven (Conn.) School System
- Society of Plastics Engineers
- State Mutual Life Assurance Company
- Thermo Electron Corporation
- Thom McAn, Incorporated
- Uniroyal, Incorporated
- Western Electric Company
- Weyerhaeuser Paper Corporation
- Worcester Airport
- Yankee Atomic Electric Company







## Cliff Ashton—

*We took a different approach than the company engineers, and ours turned out a lot closer to what really happens"*

When we talk about the WPI Plan, we often stress some of the more "exotic" programs which have been done, such as Dave Demers' fire protection major. But what about the more common type of engineering program?

Cliff Ashton is a mechanical engineer. He chose Pratt & Whitney, after looking over a number of schools (including MIT in England), because of the individual responsibility placed on a student by the WPI Plan and the ability to design his own program.

"In planning my program, I got a lot of help from my folks. My father is associated with engineering, though he's not an engineer himself. I got inputs from my father as an advisor and from friends who had already been through the mill. And I decided I wanted to get an undergraduate degree in mechanical engineering—not to specialize in any one field but to get a firm background in the engineering sciences, a good grasp of the fundamentals, and then go on from there. I've found that the more I learn about engineering, the more I think the best for an engineer to have a grasp of all the different areas. In ME this might include machine design, heat

transfer, fluids. In the future I expect to be able to talk with other engineers, so I tried to pick up courses in electrical, civil, and chemical engineering as well."

As Cliff sees it, the main intent of the WPI Plan is to give an engineer or scientist an understanding of other areas. "If an engineering student isn't careful, he can be immersed in just his own discipline. But he also has to be able to work with people, understand their feelings, understand what drives people to do what they do, even if only in a basic sense."

Cliff's major qualifying project involved some very sophisticated research. In conjunction with Pratt & Whitney Aircraft, he and a group of students studied the problem of containing failed turbine parts within a jet engine. If a jet engine is operating and one of its turbine blades breaks, for example, you don't want the blade to go flying right through the outer casing and into the passenger cabin or the fuel tank. It's a serious problem, keeping the parts within the engine or at least shooting them out the back end where no injury or damage will result. Pratt & Whitney approached WPI with this problem, and Cliff and the group took it on. They began with a literature search to find out what other people had done. They came up with an idea, a method of analysis, which they thought would help move toward a solution. "Obviously we couldn't expect to solve it. These guys had been working on it for fifteen years, and we weren't about to knock it off in three terms."

The students proposed a ballistic testing program, got it approved by the company, then built the testing apparatus and tried to model what actually happens when a turbine blade hits a containment case. After four





terms of work, they came up with a set of results they considered meaningful. They went down to Pratt & Whitney and presented their results to the project engineer and some twenty other engineers. "What was so personally gratifying," Cliff recalls, "was that they were really interested and thought we had done a really fine job. They wanted to see this thing continued because we got significant results. We had taken a different approach in our ballistic tests than they had, and ours turned out to model more closely what really happens. The company wants to have the project continue."

Pratt & Whitney was happy with the student group. Cliff remembers the project engineer saying, "You know you guys are better than some of the engineers we have down here. They can't communicate to people what their thoughts are. They can put it down on paper, maybe. You can get the best results or the best data, but if you can't interpret it and explain it to people in a meaningful way, then it's worthless."

For his interactive project, Cliff worked on another aspect of the same Worcester Juvenile Court project that Elaine Sanderson was involved in. He and two others began a program of "micro-experiences." "We saw that the court system obviously lacked manpower. They always need people. And the probationers needed more one-to-one contact with people. We tried to fill that need, a one-to-one relationship along with a learning experience that might be fun for the kid. That's where the term micro-experience comes from. In my case, I tried to understand why this one individual had got in trouble. He was a normal kid, kind of looking for things to do, and he got messed up in stealing cars. I worked with him in auto mechanics. He loved it and I did too."

Cliff feels that he attacked this problem from an engineering point of view. He tried to follow a logical sequence in setting up this test program, and in evaluating its success. But he didn't approach it in the way a sociologist might, for instance. Since Cliff's work on this project, the micro-experience program has been continued and expanded, with many other students doing project work in this area.

Cliff's competency exam involved an analysis of the home fireplace: if you operate it between October and March in addition to your home heating system, does it really help your heating situation? That was about the entire problem statement. Cliff had to pick a house and also an approach. After some back-and-forth contact with the faculty member who had written the problem, Cliff set to work. He determined that using the fireplace was not beneficial, that it actually required more heat from the furnace (and therefore more cost) to heat the house. Cliff presented a few possible approaches to improve the situation. "It was grueling, working on one problem for two days with a deadline coming up, but definitely a valuable experience. It showed me that I could solve an engineering problem.

"It was an important part of the whole experience at WPI, in knowing where to go and how to approach a problem. I think the Plan teaches you how to learn."



# The major project

The first of the two required projects is in the student's major field of study. This project requirement gets students deeply involved in their major field in working, problem-solving situations. It develops, stretches, and tests students' competence and ability to put their knowledge and skills to use. The project occupies at least the equivalent of three courses—seven weeks work at about 50 hours a week—although it is usually spread over several terms, and carried out at the same time as other work.

As a part of the WPI Plan, the major project gives students a real taste of what *work* in their fields will be like, and so it helps confirm or deny students' real interest in their majors. One of the problems with traditional classroom and laboratory teaching is that it has always been very different from life in the working world. Traditional engineering instruction, for example, has had very little to do with what an engineer actually does after graduation.

Projects have proved to be important to students in getting jobs, too. The fact that a student has had some "real" experience in his field is often a significant factor in job interviews. Bruce Mazlish of M.I.T., one of the NSF visiting committee members, commented that "students see the (major project) as a help in getting a job, and indeed are spreading the word that the choice of a difficult project is desirable in that regard."

The best way of assessing the results of Plan projects is to look at a selection of recent projects.

**Air Cushion Vehicle Test Bed:** John Barnes designed and fabricated an air cushion vehicle to test the effects on performance and stability of changes in the construction of the skirt (rigid or flexible), and the configuration of the interior air chamber.

**Electronic Piano Tuner:** John Chipman and Warren Peabody, after studying past methods of tuning pianos, concluded that there were serious defects, and they developed a new electronic method. First John designed a special transducer to measure the piano wire's frequency (without the background pickup a microphone could hear), then hooked it up with a frequency counter and multiplier. Warren then designed a direct-reading electronic instrument for the actual tuning procedure. A reference oscillator can be switched to any note of the piano, and is compared with the actual measured frequency. Differences appear on a meter, calibrated in beats per second, while panel lights indicate whether the string is sharp or flat. The final instrumented procedure is accurate to 0.008 percent, and it is simple to operate. It needs no technical expertise, musical knowledge, or special hearing ability.



**Superconductivity of Niobium:** Linder Gettner studied the basic properties and theoretical explanations of superconductivity, using a niobium core and a liquid helium bath. Although she ran into some trouble with producing liquid helium, she was able to obtain data on niobium's superconductive properties—and she learned about the problems that face working physicists.

**Security in Computer Systems:** With the increasing presence of computers in our lives, both in terms of personal data banks and money transfers, there is a stronger need than ever to make computer systems safe from unauthorized access. The students in this project devised a secure operating system for the DEC-10, featuring levels of password protection and an audit trail of file access. Armed with a knowledge of security procedures, an understanding of operating systems, and a review of current and projected computer security systems, the students concluded that a computer can be as secure, within human limits, as any manual system, and as safe as a bank vault.

**Mark Twain and Religion:** After a year spent reading Twain's complete writings and other materials, Stephen Page produced a comprehensive study of Mark Twain's religious attitudes. "I never did find out whether the real Mark Twain was an optimist or a pessimist . . . he was, however, a man torn between writing seriously or humorously regarding religion."



**Design and Construction of Experimental Apparatus to Study Oxidation of Nuclear Reactor Fuel Rods:**

Students interested in nuclear reactor accidents involving loss of coolant found that there was insufficient data available on what happens to the zircalloy coating on fuel rods in the critical temperature range of 1600-2800°F. Therefore they designed and built their own research apparatus to develop the necessary data, studying both the inside and the outside of the tubing. This project was funded by New England Electric, Yankee Atomic Electric, and the Electric Power Research Institute.

**Motion in Mammals:** In cooperation with a local pharmaceutical manufacturer, Kurt Lutgens did a study of motion in mammals in his junior year. He dissected a dog skeleton and studied the muscle patterns and the directions of motion by applying the laws of mechanics. He studied reflexes in relation to short-term anesthesia in dogs and sheep, and he constructed an apparatus for obtaining electroencephalograms from dogs and sheep. In making his final report, he made use of videotape. The results of this project were presented at a scientific meeting in Sweden and have been published in this country.





## Michael Kallet—

*"I never did get a look at liquid helium"*

For Michael Kallet, the WPI Plan offered the freedom to pursue his interests in science—first chemistry, then theoretical physics—without having to follow a rigid predetermined curriculum. Beginning with his first year, he began to study the history of science, and later worked up his sufficiency requirement in the area. He examined why science develops, particularly the interaction between experiment and theory. How does a theorist come up with a theory? Does he take it from experiment, or does he pull it out of the blue? Mike concluded that some observation and experiment was necessary.

Although two projects are required for graduation, most students participate in other, "non-qualifying" projects as a part of their program. Mike has carried this one step further by working for a year and a half on a project without registering for credit. In this investigation of the dispersion of a quantum wave packet, he has made use of WPI's computer center "to solve an equation and graph the results because I couldn't do it myself. It would have taken years." Since Mike had learned BASIC and FORTRAN in high school, and worked two summers programming for an engineering firm, he only took one computer course at WPI—and that to learn a few refinements of a language he was already familiar with.

As a theoretical physicist, Mike Kallet may well end up teaching, and he's had experience here too. For his interactive project, he helped physics professor Van Bluemel redesign the quantum mechanics course and put together videotapes. "I enjoy teaching, but this project showed me that it's not all fun. There's a lot of preparation involved, but you get a lot of satisfaction when you explain to someone how something works and he finally understands it."

Mike spent nearly a year on his major project, dealing with liquid helium and its properties of superfluidity. It seems that liquid helium never really freezes unless it's put under pressure. If it's brought down to about  $-270^{\circ}\text{C}$ , it becomes almost a frictionless fluid: it flows with zero viscosity, and heat travels through it very quickly. Mike set out to do a theoretical study, but decided some experimentation was in order.

"My first goal was to see if I could just look at liquid helium. It's so cold that it's difficult to get any accumulation of it . . . like putting water into a pan that's  $400^{\circ}$  or  $500^{\circ}$  and trying to find a pool of liquid. We used a helium dewar, a double insulated glass tube into which you pour liquid nitrogen to help keep it cold. But it leaked . . . a very small leak, but we were unable to find it and plug it, and I never did get a look at the stuff."

During Mike's second year at WPI, he spent the two spring terms in Europe. He studied at the City University of London under WPI's exchange program, taking physics courses as well as a history of finance in London. "I'm happy I went. If I hadn't, I probably would have graduated in three years, but going to London was really fantastic, and so was seeing the rest of Europe afterwards. I met a lot of people with different values and different ideas, learned that most people are the same—just a little bit different in little ways."

While applying to graduate school, Mike found that some schools were skeptical of WPI's grading system, which can't be realistically converted to the standard numerical average. Others, including Yale, where he is presently enrolled, liked the system and were enthusiastic about the sort of preparation that the Plan provides.

**WPI**



# The interactive project: bridging the gap between technology and people

Two projects are required under the WPI Plan. The second may be of the same sort as the student's major project, but most students choose an altogether different type of project. Known as an IQP (for Interactive Qualifying Project), this project allows students to bring their technical backgrounds and methods to focus on problems of society. In the IQP we find not only the mathematical language of science and engineering, but an active involvement with moral and ethical judgments, social needs, value systems, and cultural considerations.

Before discussing some of the unique aspects of the IQP, let's first look at some actual projects.

**Miniparks:** Neal Wright and John Aubin collaborated on a proposal for a series of "miniparks" to be located throughout Holden, Massachusetts. The two students interviewed local residents to determine public opinion, then went ahead with the cooperation of the Holden Planning Board and selectmen to produce, in the span of a year, the final design and report on the minipark network.

**Problems Faced by New Employees:** Richard Turner spent seven weeks on a project at the Ford of Britain engine plant, as a participant in the WPI-City University of London exchange program. He studied the four-to-five week induction period that new employees must go through, and how it affected their attitudes. The Dagenham plant which Turner studied is the largest factory under one roof in all of Europe, producing 6,000 engines a day. Turner determined that workers found their jobs repetitive and boring, while management exerted significant pressure on the assembly line to meet production requirements and cut costs. Turner concluded that an education program for management at a national level was needed, and that a uniform induction period for new employees should be considered.

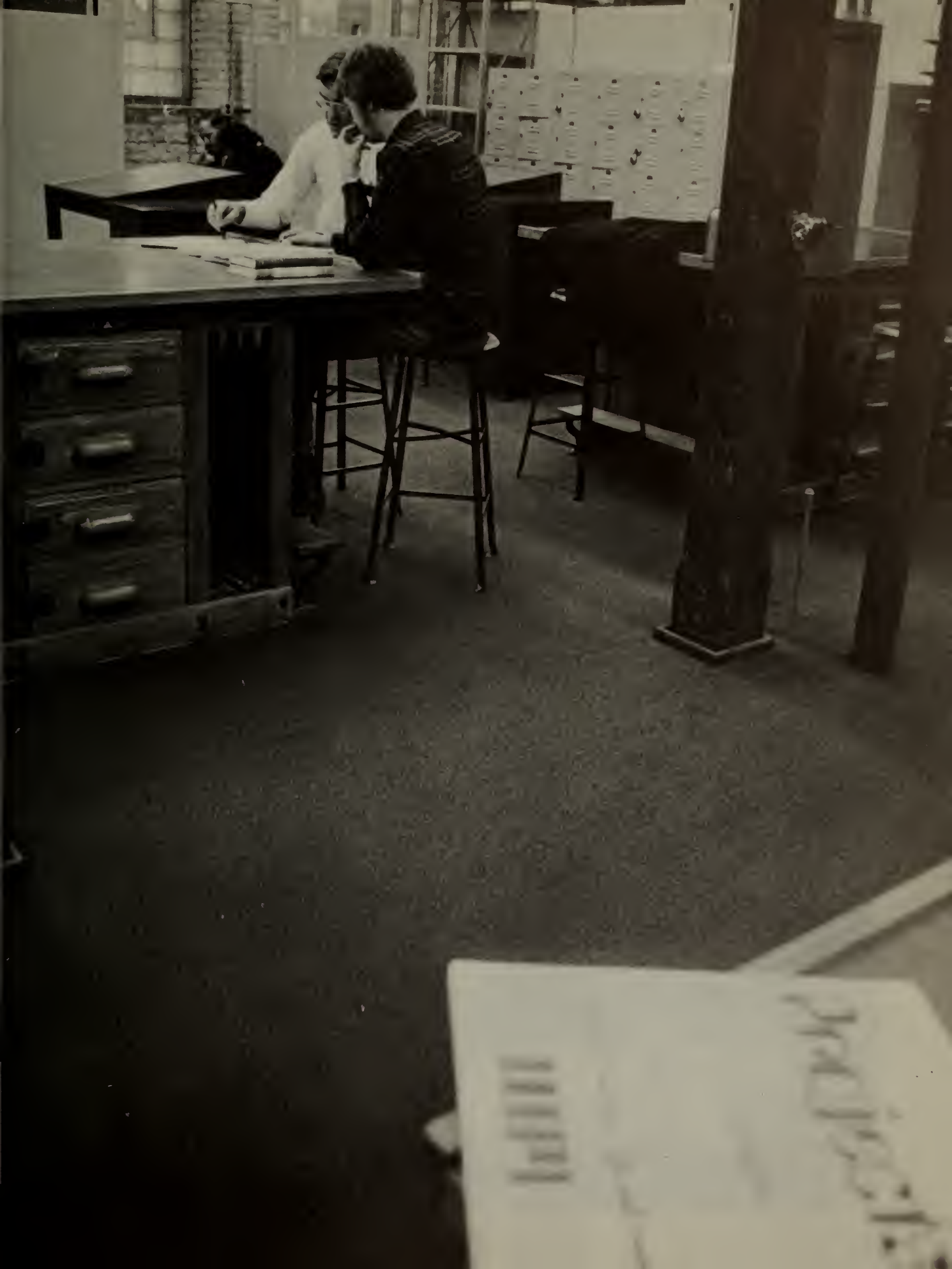
**Energy Conversion to Direct Coal Combustion:** Students at the Washington Project Center explored the feasibility of conversion to coal for large industrial and utility installations currently using oil or natural gas. The students drew up a number of policy, legislative, and research recommendations. The group recommended investment in new mining methods and modernization of coal transportation systems, particularly eastern railroads.

**Regional Systems Modeling:** This long-term project tried to formulate a mathematical model to describe and predict urban life in the metropolitan Worcester area. The students tried using the urban dynamics model of Jay Forrester (publicized in recent years by the Club of Rome), but found it difficult to apply to a specific urban system. When they tried to use it with historical data, they found that most of the information they needed was unavailable or very difficult to acquire.

**Where Do You Build a Power Plant?** To meet growing energy demands, new power plants will have to be built in this country. Four WPI students at the Washington Project Center recently dealt with the factors involved in determining sites for oil refineries and electrical power plants. They studied and evaluated engineering constraints, environmental problems, economic considerations, legal questions, and sociocultural effects—background knowledge necessary for an intelligent analysis of legislation affecting the issue.

**The Protection of Wetlands:** The Wetlands Protection Act of 1972 gave local conservation commissions the authority and responsibility to impose conditions on the use of wetlands to minimize harmful effects. WPI students discovered, though, that local conservation commissions are generally understaffed, with little money to spend. The group therefore established an ongoing operation, the WPI Wetlands Protection Program, in which interested undergraduates can serve as technical resource people to these local groups, carrying out impact studies and other types of research, giving valuable advice to the commissions.

**Occupational Health Hazards:** The costs involved in industrial health hazards—accidents and occupational diseases—are currently borne by society in general. Two WPI students studied how to make such costs chargeable to the industry. In this way, the cost of occupational disease becomes a competitive factor in the cost of the final product. The students are hopeful that, if such a system could be instituted, marketplace competition will become a factor in reducing the incidence of such hazards.





**Who Gets Treatment?** Bruce Croft studied the values involved in deciding what patients should get priority in access to rare therapy equipment, such as kidney dialysis machines. He mailed a questionnaire to 500 individuals to test his hypothesis that people from lower-income brackets will prefer a decision process based on randomization (such as by a lottery) while higher-income people will opt for a system that evaluates the patients "social worth."

## Coordination and Support of IQPs

Because of the unique and different nature of interactive projects, a totally different kind of faculty support has been developed. It seems the rule rather than the exception that for IQPs there will be a team of faculty advisors from different disciplines. Much of the work is aided by a new academic nondepartment called the Division of Interdisciplinary Affairs, with a rotating staff representing a variety of departments.

These projects call upon the faculty for a somewhat different outlook, too, and for broader horizons than are often found among engineering professors. To assist WPI faculty in these areas, two separate summer programs have been run, aimed specifically at developing IQP ideas and introducing some of the methodologies and concepts of the social sciences.

## WPI Washington Project Center

Some of the most effective IQPs have taken place at the Washington Project Center, in conjunction with the following organizations:

- Department of Commerce
- Department of Health, Education and Welfare
- Department of Housing and Urban Development
- Department of Transportation
- Environmental Protection Agency
- National Science Foundation
- Council for Environmental Quality
- Consumer Protection Safety Commission
- New England Congressional Caucus
- National Association of Manufacturers
- Institute of Electrical and Electronic Engineers
- District of Columbia Civil Defense
- Public Technology, Inc.

At the Center, 20 students at a time spend seven weeks living in Washington and working on their projects. Two WPI faculty members direct the Center's work and advise students as they carry out their projects.

"It's a real experience calling up some of these agencies," commented Bryan Young last year while he was working on a Washington project. "Sometimes you find the right person who can help you on the first try. Then again, you can spend half a day getting calls transferred from one office to another."





Washington is accustomed to college student "interns," but the project work of WPI students is not the typical internship in which a student works along with someone in an agency. "We outline our project before we leave Worcester, we know what our objectives are, and when we get here we're ready to do a specific job," said another student. "With only seven weeks here, we have to be organized."

Looking at a couple of projects gives an idea of the challenges that the Washington Center provides. Bryan and John Manning worked at the IEEE office, helping the society get factual information needed to formulate the IEEE energy policy. "We've been looking into strip mining and gasoline taxation problems particularly," said John. "Washington just has to be about the best place in the world to find information. Every agency has a good library. That's part of the problem, though—just learning which library to try!"

In another project, Tom Vaughn and Dan Garfi were at the National Science Foundation. "We're trying to develop a better way to transfer the information contained in the final reports of NSF-sponsored research projects to the agencies which can effectively use this information. It sounds easy, but it's a real problem."

About the Washington Project Center, and the students who work there, social scientist David Riesman (of the NSF committee which visited WPI during the first three years of Plan implementation) has written: "Some of the project reports I have seen are admirable. They establish what I have long believed: namely, that able undergraduates can do as serious work as most graduate students, and as inventive." Riesman also felt the Center had other important lessons for WPI students: "If one considers how provincial are the origins of WPI students, not only in terms of social background but also in geographic terms, the Washington sojourn means as much to them as, for example, the Stanford year in Tokyo means to Stanford undergraduates—it may be at least as much of a culture shock."

A group of Washington Project Center students were asked what was the single most important thing they had learned in Washington. Their final consensus was that there appears to be no ultimate truth when you are searching for information. Every bit of collected information seems to contain some built-in bias. "I'll probably never again take for granted any collected data, just because it's published," said one student. "I'm going to try to find the same data from another source just to check it."

## The IQP Problem

Many people have hailed the IQP as the most important, or most unique, part of the WPI Plan. Yet it has also posed some of the thorniest problems in carrying out the concept. There is the problem of how to maintain academic standards (quality control) when a project ranges far afield of a faculty advisor's professional expertise. There is the problem of how that faculty member can best—or even adequately, sometimes—advise on such a project. How much technology content should there be? How much social reference? How do you compare problem-solving projects with those whose main emphasis is a learning experience, such as teaching? When is an IQP really a major-field project?

This brief article will not suggest answers to these questions, but they are considered every day. In fact, each project has to be treated on an individual basis, and as the WPI faculty gains increasing experience with these projects the problems begin to dissolve.



## David Lyons—

*“Classwork is fine, but when you have to sit down and do it yourself and make it work. . . when your grade stands or falls on this one program—that’s practical experience!”*

David Lyons spent most of his fourth year at WPI goofing off. So after that year “majoring in girls,” he needed an extra year to complete his degree requirements in computer science. And he graduated with honors.

David entered WPI as an electrical engineering major, switching to computer science partway through his first year. He began work on his major project during the summer after his third year. He ended up spending a year and a half on it, designing a computer program to keep track of all the projects currently going and others available at WPI for students. The periodically printed listings available at the time were so hopelessly out of date by the time they appeared that there was a real need for David’s project. The original intent of the project was to have two or three students work on it, but David ended up being the only student involved.

During his fourth year, David worked on his sufficiency in philosophy, particularly the philosophy of religion. At the end, instead of a final paper, David and ten others participated in a term-long seminar on the philosophies of religion. Each week, two students presented a paper and led an hour-and-a-half discussion on different aspects of religion.

David found the flexibility of the WPI Plan very helpful, and very much in accord with the way he works. “I learned that unless I’m pushed I don’t do much. I find I can’t turn myself on and off to do a job. I can’t leave my work at the office, so to speak. I take it home and think about it. It kind of bothers some people at times, because they see me apparently goofing off and think I never do any work, when actually I’m sitting there thinking about a problem.”

David learned some lessons about the relationship between classroom work on the one hand, and projects and work experience on the other. “I found how hard it is to get a project started. And once you get it started, it’s really hard to stop it. That was a problem with my major project—there was always a little bit more to do to make it a lot better, a little more to add here and there. It just kept going on and on. But at some point you have to draw the line and say that it’s done.

“It’s really helped in the job market that we have these projects. Companies feel they’re getting somebody with practical experience, someone who knows what it’s like to do some real work. Classwork programming is fine, but when you have to sit down and design a system and program it yourself and have it work. . . when you’re doing that for your grade, and it stands or falls on this one program—that’s practical experience!”

Lyons’ second project involved writing a user’s manual aimed at people who know nothing about computers. His 50-page book was meant to be a sort of text book to familiarize a person with computers by using a program they would find helpful and which would overcome a layman’s fear of using computers because they’re so big and complicated. He wrote a special program to produce and store form letters, with the ability to choose paragraphs at will, insert names and other types of information, change wording around, and so forth. The idea was that no matter how well a form letter is written, there will always be occasions when it doesn’t fit. David’s program allows all the necessary manipulation, and it allows the user to store a copy of the finished letter for future reference.

David found the project very difficult. The problem of communicating with people who don’t have the same technical background was, in fact, the central problem in writing the user’s manual.

David’s competency exam (he was able to choose from three different problems) involved the design of an operating system for a computer. “An operating system is the programming of the computer that keeps track of all the users and decides which programs are going to be able to be run, takes care of the accounting, makes sure you’re authorized to use the computer, and does the neat little programming things for you. I was to design this for a specific computer, which I could choose: it could be imaginary, and it had to be reasonable. It couldn’t be a computer that was so vast and complex that it didn’t need any programming. It had to be a mini-computer.”

The way David handled the exam also illustrated the Plan’s relation to real life. “At noon on Wednesday, I picked up the question. By four o’clock that day we had to submit a first draft of the report. Four o’clock came around, I submitted my report, and I said ‘To heck with this!’ I found myself in a party that night and even got a little sloshed. What a great beginning! Thursday I didn’t really do a lot of work on the problem either. I thought about everything, and I kept sorting things out in my mind. Friday morning, though, I got up and figured I knew about how I wanted my solution to be, so I just wrote the whole thing down and handed it right in.

“I was the first one of the four students taking the exam to hand in the report, and I had the chance to pick the time on Monday for my oral exam. I picked the last one. My advisor asked why I did that, why didn’t I go first and get it over with? I said I didn’t like to get up early in the morning. So I slept late Monday, then reported in the afternoon for the exam. I was amazed. Some of the questions I got were totally theoretical: ‘Why did you do it this way?’ and so forth. A lot of my answers were that the point they raised wasn’t a part of the problem, so I didn’t consider it. And that was a totally acceptable answer because it was completely correct.” David got the first Distinction the department had ever awarded for a competency examination.

Except for a few small wrinkles in his interactive project, David finished all his work in March of his fifth year. Although he didn’t graduate until June, he began work immediately at Data General Corporation, in a small “think tank” research and development section.

# Laying it on the line: the competency exam

Three or four years of work, and the question of whether or not you graduate from WPI comes down to one examination, designed to test your "competence" as a scientist or engineer or whatever. Is this fair? Is it workable?

David Riesman: *"Can one indeed measure competence of an engineer over less than a lifetime? One can measure various components: articulateness, ability to use the resources of the institution on one's own. Yet the ability to work under pressure that such an examination requires, and to know how to pace oneself without becoming prematurely exhausted, is not a task to which WPI students, or for that matter most academicians, are accustomed. It is only people in practical life who have to work this way!"*

To many people's way of thinking, the competency exam has been one of the thorniest parts of the Plan to put into practice. Difficulties with other areas—the volume of projects, adapting to 7-week terms, increased workloads—all boiled down ultimately to questions of logistics, support, and available resources. But the competency presented a basic philosophical problem: was it measuring "competence," whatever that was, or was it measuring the comprehensiveness of a student's knowledge of a given field?

This confusion was apparent from the start. The document which served as the model for the Plan, "The Future of Two Towers, Part IV," called the exam a comprehensive, although it talked about measuring competence. The first Plan catalog carried on this nomenclature, though subsequent catalogs changed the term to competency exam.

As a result, different departments interpreted this degree requirement in very different ways. Another NSF observer, Eugene Reed of Bell Labs, put it this way: "There is a lack of consensus between and within departments whether the exam should test competency or comprehensiveness. Should it deal with fundamentals or methodology?" Some departments began to require a "pre-competency" exam which was, in fact, a comprehensive. It gradually became clear to most faculty, though, that this situation could not be allowed to stand. As Bruce Mazlish put it, "If the competency exam can be turned into a measure of the student's professional comprehension of a particular field, it begins to subvert the general intention of the Plan. Students will learn very quickly that they must take specific courses in order to pass."

A general consensus does seem to have been reached among Plan administrators and guiding faculty committees that the competency exam should be problem-oriented, that it should test the student's ability to attack (and perhaps solve) such a problem within his major field of study. Although a student obviously requires a vast reservoir of knowledge and data in his field, what the competency exam tries to assess is the student's ability to use that knowledge, and his understanding of what he is doing.



Once this basic philosophical question was settled, though, there was still the problem of designing and giving the exams. An illuminating insight into these difficulties was recently written by Jo Ann Manfra, Thomas Shannon, and John Zeugner of the humanities department, concerning the development of a competency exam for students majoring in humanities and technology (history):

"There was an antipathy toward operational definitions of the historian. Consequently, the first H/T major faced a kind of competency examination that was offhandedly drawn up and reflected the historians' own professional training—a mini-Ph.D. examination. The student failed, naturally enough, since he had not really been given comprehensive exposure to four fields of history, and since the department discovered competency and comprehensiveness were not equivalent.

"The student's anguish and the department's embarrassment that its first student major would not graduate spurred a rethinking of how to measure competence in the study of history. The science/engineering side of the college was formulating competency measures in terms of problems to be solved within time constraints. That approach was adopted in a rather haphazard fashion by the history department.

"The student was reexamined and this time he was asked to identify a contemporary problem and explain, in Toynbee's phrase, 'How this came out of that,' to discuss how the past shaped the present dilemma. The student had deliberately been given the choice of the problem. The department assumed he would fix on an area of his own strength and avoid the embarrassing question of comprehensiveness. Department experts in black history, urban affairs, and foreign policy were standing by, expecting civil rights or the plight of the inner city, or the war in Viet Nam as logical problems for historical explanation.

"Alas, the student selected as his problem, Marcuse's postulate of sexual desublimation in advanced technological societies. It was a deft selection, for he was able to introduce personal experience as well as historical knowledge. The kinds of sources the student could summon, the kinds of points he made, the terminology he used, the dialectic he employed, the bibliography he cited in his long essay, the department soon discovered it could not adequately evaluate. His competence was different from ours. Naturally, he passed. And the problem of measuring or even identifying historical competency was moved a notch up on the department's priority list."

In practice, the usual competency exam is in two parts. The first is a problem given to (or selected by) the student, who then has a certain period of time, which is typically two to three days, to investigate solutions, approaches, lines of attack, and submit a written report about what has been done. Then, in the second part of the exam, the student faces a panel of faculty members (sometimes including off-campus experts, where their special knowledge is needed) to discuss—and defend—what he did and didn't do. After this oral exam, the examining faculty meet to discuss the student's performance and grade it.

Normally, a student is not allowed to schedule a competency exam before completing at least 12 units of course and project work (the equivalent of three years' study).

## *Answering the siren call*

Like a lot of 8-year-olds, Dave Demers wanted to be a fireman. But for him it wasn't just a passing childhood phase. By the time he was in high school, in Lunenburg, Massachusetts, he was a volunteer firefighter for the town. And he still is.

But Dave wanted to do more. He liked his high school science courses, and he decided to go into an engineering aspect of firefighting. He applied to M.I.T. and WPI and was accepted at both schools. "It was a question of atmosphere, and I liked the atmosphere here at WPI much better . . . a small school rather than a factory. And I also prefer the practical approach rather than the theoretical."

At WPI Dave started to map out a unique program in fire protection engineering. He talked with a practicing fire protection engineer and a nearby insurance company, and they stressed the importance of a general background of engineering basics with slight concentration in one field. Dave decided to study mechanical engineering as his main area, but his program grew to include chemical engineering, civil engineering, and electrical engineering courses as well as some nuclear engineering work with WPI's on-campus nuclear reactor.

Because he was so sure of the direction he was going in, Dave used every opportunity he got to expand his knowledge of fire. In a law course, he did a paper on the legal aspects of arson. For a hydraulics course paper, he wrote about fire pumps. For history, he wrote about the social impact of steam fire engines in the nineteenth century. And for his humanities sufficiency, he did his final paper on the "disaster theory" of getting things done—a theory which states that to accomplish any major social change a disaster is needed. Using the Boston fire of 1872 as a case study, he showed how this affected fire protection measures afterwards.

Dave's major qualifying project dealt with fire protection in buildings. He developed the basics for an information-retrieval system for fire protection, and then worked on a systems approach to fire safety in buildings, making use of the fault-tree method of analysis, originally developed by Bell Labs for missile safety. He didn't know it at the time, but the General Services Administration of the federal government had an entire staff working on the very same subject. The government results closely paralleled Dave's own—they were more sophisticated, but then they'd spent a lot more time at it, too. The final part of Dave's major project involved working with a fire protection consulting firm.

As his interactive project, Dave studied the Worcester Fire Prevention Bureau. He started with the history of the organization, going back through available records, then began going along on their inspections and on fire investigations. He went to court with the Bureau many times, on prosecutions for arson and on abatement orders. He concluded his project with an analysis of what they were doing and recommendations for improving their procedures. Some of these recommendations have already been put into practice.

Even Dave's summers contributed to his knowledge of fire protection. He spent two summers working as a construction laborer, which gave him some practical insight into how buildings are put up. (This knowledge has certainly come in handy, because as this account is being written Dave is supervising the installation and engineering of the sprinkler system in the John Hancock Tower, the tallest building in Boston.) Another summer, Dave worked for a fire extinguisher service company, and another he was a firefighter with the U.S. Forest Service in California, jumping out of helicopters and chasing forest fires all over the state.

WPI doesn't have a fire-protection department, even though Dave built his program in the field. To measure his competency, a panel of two faculty members and a consulting fire-protection engineer gave Dave the following problem: working from a set of architectural plans, figure out how to improve the fire safety of a proposed high-rise home for the aged, and put the recommendations into a letter to the builder.

After passing his competency exam, Dave was all set to go to work for Mobil Oil in Illinois, working on fire protection for the petroleum industry. And then, out of the blue, the consultant who had been on Dave's competency board, and with whom Dave had worked slightly on one of his projects, offered him a job. Dave is now working for him, "because there's a lot more to fire protection that interests me than just petroleum problems. And I'm glad to be able to stay in New England."

**WPI**



# The sufficiency: an appreciation for human values

In most engineering/science colleges, the humanities are traditionally—if not openly—regarded as orphans or stepchildren. They constitute a small fraction of the courses required for graduation, and they are often self-consciously designed to exert some sort of “civilizing” influence on the future engineer. In their turn, students at such colleges tend to regard the humanities as so much “cultural bull,” a necessary if distasteful hurdle to be jumped on the way to a degree and a job in the real world.

But the WPI Plan is an attempt to educate engineers who can see and deal with relationships between their professional activities, the needs of people and society, and the values of our cultural heritage. And that means that study of the humanities is a central part of the Plan.

There were two different approaches that could have been taken in building an appreciation for human values into the WPI Plan design. One would be to offer a traditional humanities minor program—an array of survey courses in different areas of the humanities, backed up with a “cafeteria” selection of more specific courses in the various fields. This approach was rejected, however, as being in some ways too superficial, too diffuse to have real impact. It would have been much the same sort of offering as the non-technical electives WPI had before the Plan, but without the stimulus of even necessarily requiring any specific number.

Instead of this older model, the Plan designers decided it would be more fruitful—and more of an educational experience—if students were to investigate one area of the humanities—their choice—in some depth. This would not only give students a focused and concentrated introduction to the humanities, but it would show them just what in-depth study in the humanities entails. This is in fact different from the sort of study needed in engineering and science and math, and it is every bit as difficult—an aspect of humanities scholarship that few engineering students ever learn to appreciate.

Thus was born the humanities sufficiency for Plan students majoring in science or engineering. The sufficiency involves the equivalent of a full half-year of study (six courses) in one area of the humanities, built around a theme of the student’s own choice. Students have several broad areas in which they can develop their sufficiency themes: drama and theatre, history, history of science and technology, foreign languages, literature, music, philosophy, art, and religion and social ethics.

Sample sufficiency topics, to give some flavor of the diversity possible, include the following:

The U.S., the U.S.S.R., and detente

Psychology viewed humanistically

Remaining human in the modern world

Varieties of religious experience

Love and marriage

The U-2 incident as presented in the contemporary press and in later memoirs

Thomas Jefferson’s contributions in practical technology

The military performance of General Philip Sheridan during the Civil War

Ordered strengths—the ethical views of Locke,

Kant, Darwin, and Biblical Christianity

Islamic philosophy

Creativity in philosophy

Why man seeks religion

A history of American thought before the Civil War

The development of storm theory in the United States

New England Transcendental thought in science and literature

Huckleberry Finn and escape from civilization

Arthur Koestler: his life and political novels

Frank Zappa and his music

An analysis of Wagner’s Lohengrin

An analysis of two productions of the American Shakespeare Theatre

A parallel between *Othello* and the passion of Christ

Rural life in novels by Hardy and Twain

Typically a student will be interested in one of the general areas and will take a course or two while deciding just exactly what the theme of his sufficiency will be. A sufficiency program will normally involve five related courses taken as background and preparation, then culminate in an independent study for one term actually writing the final paper or project. In certain areas, students working around the same general topic will partici



by the editor

## 50 years since Goddard's rocket

When the Auburn Rotary Club began their plans for a 50th anniversary celebration of the first successful launching of a liquid-fueled rocket by Dr. Robert Goddard, '08, they turned to WPI for help.

They wanted someone to construct a full scale replica of that first rocket as a focal point for the ceremonies. WPI officials immediately thought of Felix Tozeski. His official title is Technical Designer and Instructional Associate in the Mechanical Engineering Department. Unofficially, he's the man people on campus turn to when they need help with a tricky project involving welding or machine shop work.

For the past 20 years, "Phil" has taught students how to weld, how to cast metal and how to operate machine tools. He teaches them only the fundamentals since his students will never earn their living on the machine. Instead, they'll be designing mechanical equipment or supervising production someday. "They have to know the basics," said Tozeski, "so they'll understand how things are actually made in a shop."

He started the rocket project last fall. First he visited the Robert Hutchings Goddard Library at Clark University, where Dr. Goddard's notebooks and papers are carefully preserved in a special vault. Mrs. Robert Goddard herself helped him locate some of the early notes, documents and photographs which provided him a start. Later, he went to the Smithsonian Institution in Washington where officials at the Air and Space Museum still under construction arranged for him

to make measurements and sketches from the authentic replica of Goddard's first rocket which will occupy a prominent place there.

Their greatest help was a set of drawings used to build their replica.

"Once I had all this information, it was just a case of making all the pieces and putting them together," commented Phil.

His job was easier than Dr. Goddard's was 50 years ago because Phil knew his rocket would never fly. The intricate inner workings of the original rocket which couldn't be seen are missing from his replica. However, he added a special touch for realism. Phil's rocket does "fire" with the aid of piped-in propane gas which shoots a long flame from the nozzle for show purposes.

"People have been asking me whatever happened to Goddard's original rocket," said Phil. "It doesn't exist anymore. After his first flight, he rebuilt it completely using a lot of old parts. I understand he did this several times. For historic purposes, it would have been great if he'd kept it intact. But from a practical point of view, he saved himself hours of extra work by reusing the original parts."



A major part of Tozeski's work is teaching courses in basic machine tool operation, welding, forging and metal casting. He and his partner John "Joe" Gale also do maintenance on college equipment between classes. Gale was his principal helper on the rocket project. Several students also worked with him.

"I like working with the students," said Phil. "They really appreciate the help I give them and I find that I'm learning from them all the time, too. It's really a pleasure to get up every morning and come in to the college."

In his spare time, Phil is a bit of an inventor. Faced with splitting a large pile of logs for his fireplace, he built a hydraulic log splitter which he called "Big Squeeze." He built it all from scrap parts. This device was featured in *Popular Mechanics* and he was deluged with requests for information on how he built it. He has built equipment for use in the college shop such as a metal roller, and a machine for changing truck tires. He loves the challenge of a mechanical problem.

If he'd been born 50 years earlier, he might have been one of Robert Goddard's helpers. It was just this sort of versatile mechanic who could do anything with metal who found a place on those early Goddard teams.

The 50th anniversary celebration was held March 16, with programs at Pakachoag Hill in Auburn, the site of Goddard's rocket's 41-foot flight, and in Harrington Auditorium on campus. The featured guest speaker at both programs was Navy Captain Eugene A. Cernan, the astronaut who in 1972 commanded Apollo 17, the last American manned mission to the moon. Cernan was the last astronaut to leave the moon's surface.

Capt. Cernan's participation in the commemoration was an ironic reminder of a 1929 *Boston Globe* headline referring to Goddard's efforts: "Moon Rocket Misses Target by 238,799 1/2 Miles."

WPI



# 8 oars and 1 flying



# Discusser; to Canada, please

by Ruth Trask

**Y**OU GET OUT OF LIFE exactly what you put into it. If there is any truth in that old saying, then four recent WPI graduates and one undergraduate will soon be due for some pretty impressive dividends. Rising as early as 4:30 a.m. each day, they undertake painfully rigorous rounds of weight-lifting (over 250,000 pounds a week!), running, discus-throwing, and rowing, all to one end—to make it to and through the Olympic trials this spring and on to the summer Olympic Games in Canada.

“Montreal is where I hope to be in July,” says Mark Dupuis, '72, the current New England discus champion. And that's exactly where Philadelphia-based discus throwers Jim Raslavsky, '68, Bob Raslavsky, '77, Edward 'Alba, '73, and John Mathews, '74, hope to be, too.

The price of a berth on the U.S. Olympic team is not cheap. Having extraordinary athletic ability is only the beginning. Athletic skills amount to little or nothing without the determination, discipline, and continued education necessary to develop them. Continuous training and athletic competition involve so much singleness of purpose that careers, education, and family life, although not entirely abandoned, fall of necessity, into holding patterns. Self-sacrifice becomes an accepted way of life.

**M**ARK DUPUIS has been dreaming of participating in the Olympics since he was 17. Last year he gave up an excellent managerial position with Procter & Gamble to take a job which cut his income by approximately two-thirds.

“I needed more time to build myself up and perfect my skills with the discus,” he explains. “P&G wasn't able to give me enough time off for training. I decided to look for a teaching job at a private school where I could take advantage of the long vacations.”

Currently an instructor at the Winchendon (Mass.) School, Dupuis feels that he has found an adequate, if not ideal, solution to his problem. His wife, Karen, agrees. “It's really working out well for us here,” she says, “even though some of our friends thought we were crazy to make such a radical change. While our present income can't compare with our former one, the school does provide for our living arrangements and food. Being a close-knit family, one bonus is that we still live near our parents. Another plus is that Bridget (the baby) and I get to see a lot more of Mark. Besides, he is fulfilling his Olympic goal now, and when Mark is happy, so are we.”

Home for the Dupuis family now is a cozy apartment in Merrell Hall at the Winchendon School, a far cry from the \$40,000 home they had to sell at a loss when he left P&G. But nobody complains about the change.

His schedule at Winchendon leaves him plenty of time for training, although he is responsible around the clock for the welfare of the 16 boys in his section of Merrell. From 11:45 until 3 the students have a sports break, and during this period Mark trains in weight lifting, running, and throwing. He gets in extra workout time on Wednesday and Friday afternoons, which are free time from noon on. And, of course, there are weekends and long vacations, which are almost entirely devoted to training.

Training and competing have become second nature to Dupuis since he was in high school. At WPI Mark broke a school record by hurling the discus 153'9". While at P&G he met coach Carl Wallin of Dartmouth College, who encouraged him to reach his potential in the discus. At that point in his life, Dupuis wanted to stay on at P&G and also pursue his goal with the discus, but he discovered that his career and athletic goals were incompatible. There weren't enough hours to get everything in, so he and P&G came to an amicable parting.

“I will probably get back into business,” he says, “but right now the Olympics are something I just can't pass up.”

He became associated with the Pembroke-based Bob Backus Olympic Health Club in 1972. Bob helped him with travel expenses to various AAU meets. Later, Jack

*Mark Dupuis's training involves scores of practice discus throws each day.*



McDonald of the Greater Track Club approached him at a meet and asked him to join his club, which Mark did in 1974. The club offers no financial assistance but does set up meets and plans travel and team effort.

"Since Tech I have been financially on my own with the discus," Dupuis reveals. "At a minimum I've spent \$3,000 of my own money. A discus costs \$80 and a pair of track shoes \$35. The money goes fast, especially when it comes to special equipment and travel expenses."

But Dupuis keeps on forging ahead in spite of financial problems and a lack of adequate places to train. "Only Boston College has an official discus circle in New England," he reports. "Most colleges and athletic clubs in the area don't know how to build a recessed circle with concrete, which gives the thrower a toe-board effect, as in the shot put."

The New England weather has been no asset to his training either. He has to train indoors much of the year, which he feels gives the edge to his west coast competitors who train outdoors all year. Also, the 20 to 25 mile per hour winds common in the west are more favorable to throwing. Generally the winds in the northeast are minimal. A favorable wind can make as much difference as 15 feet to a throw.

"If I were training on the west coast, by now I would have already qualified for the Olympic trials," Dupuis states flatly.

Western discus men can practice "sweaty and loose," usually in ideal 80 degree temperature. That's a decided advantage, says Dupuis, in a sport which is heavily affected by the whims of Mother Nature. On a rainy day a 200-foot throw could win the Olympics, while on a warm, windy day it might take a 225-footer, he explains.

In spite of the vagaries of the New England weather, Dupuis is confident that he'll do well in the trials and eventually in the Olympics. "Ludvik Danek, the Czech discus champion, won a gold medal in the 1972 Olympics and he comes from a similar climate. If Danek can do it, Dupuis can do it."

Mark's weight coach, Joe Donahue of Northeastern University, is confident that he'll qualify for the Olympic trials in Eugene, Oregon, come June 10th. Last year, as New England discus champion, Dupuis threw for his best distance to date, 182'3"—a record breaker.

"In order to make the Olympic trials, I have to throw 196'10" [60 meters] in an official AAU meet by May 31st," he says. "Since I'm usually at my throwing peak during the middle of each month, I hope to qualify two weeks prior to the deadline."

Once the 196'10" mark is met, the AAU will pay his expenses for the first day of the Oregon trials. "That first day of the trials I'll have to hurl 196'10" again. The next day the top three hurlers make the Olympic team. And if I'm one of them, I'll go nuts," he exclaims.

Dupuis believes that if he can turn in a 210' throw, he'll make the Olympic team. "But a competitor will probably have to hit between 212' to 224' to win a medal," he says. "As usual, a lot depends on the wind and rain factor."







In order to get himself ready for the time trials, Dupuis follows a rigid three-part training program. The first part consists of three hours of running and weight-lifting daily to help build strength and body weight. "The heavier the discus man, the more power he has to propel the discus," he says. So far he's increased his weight appreciably during the past year and is fast approaching his goal of 255 pounds. "Gaining weight is quite a trick," he admits, "when you work out as much as I do." (His wife Karen laughs and says, "He manages, though. He eats a lot!")

When forced to train indoors, Mark tapes a two kilogram discus to his hand and practices his footwork on a concrete floor. He also uses a "secret weapon" he has devised to strengthen his midsection. The "weapon" is an eight-foot-long Olympic bar equipped with 300 pounds of weights which he rotates 360 degrees from side to side.

Part two of his program is concerned with power lifting. "This was an area which needed improvement," he confides. So far he has competed in a number of weight-lifting meets and built himself up to a 500 pound official squat, 370 pound bench press, and a deadlift of 600 pounds.

The third part of his training program involves continued power lifting and the introduction of running, throwing, and the explosive Olympic lifts.

What, if in spite of all the training and preparation, Dupuis should injure himself prior to the Olympic trials? What would his attitude be then?

"I've thought about this occasionally," he says "and decided that if God wants me to make the Olympics, I will. If I should become injured, I'll still have done the best I'm capable of doing. There will be no regrets."

Dupuis feels that the long hours of agonizing training have given him a valuable learning experience. He has acquired better techniques and gotten into the physics of the discus—how to improve its flight, acceleration, and explosion. "When it comes right down to it," he explains, "discus throwing is a very technical event. It is also a great challenge to the mind and body and has brought me closer to God."

Although he believes that God has been guiding him in his Olympic aspirations, he also believes in his own abilities and his personal capacity to endure. "I am not like Hercules holding up his magic ring to receive a lightning bolt of power from the heavens," he says. "God guides and I follow, but I know what I, myself, have to do to compete and win."

If the worst happens, however, and he does get hurt, he reports that he'd have to think twice before he'd consider trying out for the next Olympics. "It took me four years to get my weight up from 198 to 255. With a bad injury, all that I've accomplished would be lost. It would take another four years for me to get back where I am right now. Could I ask myself or my family to go through all this again?"

Still, weight men don't peak until age 32, and Dupuis is only 25. If for some reason he doesn't make it to the Olympics in 1976, Moscow and 1980 are coming up.



**W**HILE DUPUIS is anticipating participating in his first Olympic trials, **Jim Raslavsky** '68, has started out along his second tortuous trail to the Olympics and says he hasn't ruled out 1980 either. Back in 1968, his first time around, he was hampered by an injured back and arm and lost out in the rowing quarter-finals held in Long Beach, California.

But this time his prospects look considerably brighter. In top physical condition and with a string of recent wins under his belt, the world class heavyweight elite single sculler has Montreal firmly in his sights.

It was at St. John's High School in Shrewsbury, Mass. that Raslavsky discovered rowing and the first seeds of the Olympic dream took root. Pete Johnson, a national lightweight champion sculler was training at Lake Quinsigamond, where the St. John's crew rows, and invited Jim to work along with him. Before long the young heavyweight was outdistancing his teacher.

After graduating from St. John's, where he had competed in numerous sculling events, he entered WPI, which had no crew team at all. He quickly remedied that situation by *starting* a team. Four years later his eight-oared crew *won* the New England Small College Championship!

Since graduating from WPI, Jim has married, become the father of two daughters, built a house, and recently moved to Philadelphia where he is supervisor of pewter sculpture production at the Franklin Mint. In spite of a demanding job (especially in this bicentennial year), and a full family life, Jim's Olympic goals have not diminished. His schedule is mind boggling.

Every morning from March through November he gets up at 4:30 a.m. and drives from his apartment in suburban Philadelphia to the Undine Barge Club on the Schuylkill River. There, in the sometimes sub-freezing weather, he launches his 27-foot long, 34-pound single shell into the choppy waters and starts his practice session. It is a time for perfecting techniques, for building stamina, for battling pain.

An hour later he leaves the river and drives the 16 miles to the mint where his working day starts at 7:45. (The mint has agreed to give Jim a leave of absence should he make the Olympics.) At 4:30, his work day over, he drives back to the Undine Barge Club for two more hours of sculling under the supervision of Jim Barker, one of the country's top coaches.

During the off-season from November to May, Jim runs four to six miles each morning from his home in Newtown Square, Pa. Then there's the hill work, which Jim explains with a broad smile on his rugged face: "You look for the steepest hill you can find, then run up and down it as fast as you can. You do this five or six times until your legs refuse to carry you any farther."

Athletic Club, a training center for Philadelphia oarsmen. There, under the watchful eye of weight-lifting coach Al Nino, Jim lifts a total of up to 154,000 pounds during his workout.



Afterwards he tackles the "monster," a giant rowing machine made of pipes, pulleys, cables, and weights that can simulate the immense physical strain of a 2000-meter sculling race. Grasping the rowing bar, his face becomes a mask of intense concentration, every muscle tense, every movement part of a powerful rhythm. After 40 strokes his face contorts in pain. His temples throb and perspiration slicks his forehead. He passes 100 strokes, 200, 300. His eyes are glazed and he gulps for air. After 350 strokes, he leaves the "monster" and silently, trembling with fatigue, he walks away, leaving the machine for his teammates.

Is the pain and the agony worth it? Is the prospect of winning an Olympic gold medal worth the almost superhuman effort involved to get it?

"Yes," Raslavsky says in his soft-spoken manner. "And there are good reasons why we train as rigorously as we do. Sculling is the most exhausting sport there is. In a 2000-meter race a good sculler will burn up more energy in seven minutes than a pro football player uses in a 60-minute game. We have to work hard to build up our heart and lung capacity."

Strenuous workouts have slowed his normal pulse rate to an incredible 42 beats per minute and have really begun to pay off for him all around. Last year he took first place in the Middle States Regatta in Philadelphia and first place at the Head of the Connecticut Regatta in Middletown. Against several former national champions and top representatives of the Pan American team, he placed a respectable third in Boston's prestigious Head of the Charles Regatta last October. Such wins can't help but bolster his confidence as he looks ahead to the time trials and to Montreal. Beyond the agony of effort lies victory.

**J**IM'S BROTHER, BOB, '77, is his partner in pain. Bob and Jim, sons of Albert J. Raslavsky, '39, a star WPI athlete, both got their sculling starts at St. John's in Shrewsbury. Jim also took the time to teach his younger brother all that he knew about rowing during long afternoons on Lake Quinsigamond. Later Bob followed Jim to WPI.

Now Bob has transferred from WPI for a semester (to Villanova) so that he can be in Philadelphia to train for the Olympic trials with Jim. The trials are slated for June on Carnegie Lake near Princeton, N.J.

"I've been away from serious training for quite a while," Bob says. "But working out with Jim makes it easier. He even has a special weight-lifting room right in his apartment building."



*Left: Jim Raslavsky enmeshed in the "Monster" rowing trainer, while club-mates wait their turns.*

*Right: Along on the Schuylkill, Jim rows his single shell for hours every day.*





Bob, who also belongs to the Undine Barge Club, was a star schoolboy sculler at St. John's. He won the New England Singles High School Championship in 1969, just 20 minutes after he'd competed in the eight! The finish was so big that *Sports Illustrated* featured Bob in its "Faces in the Crowd" section. The magazine also awarded him a silver trophy.

In 1970 he was a member of the U.S. Youth Rowing Team and took part in the Junior World Championships held in Greece. While still at St. John's he came in second in the 1971 National High School Championships at Syracuse. In 1972 and 1973 he captained the freshman rowing team at Boston University and was awarded a special plaque for his contributions to freshman rowing.

After a year at Norton Company, he entered WPI and became a member of the crew team. His most recent official race was last year's Head of the Charles Regatta, which was coached by David Ploss, '70, former WPI coxswain.

Bob now follows essentially the same training program as Jim. He is also working toward achieving the world class heavyweight elite single classification that his brother holds.

**E**D D'ALBA, '73, has the April date of the Princeton pre-trial races inked in on his schedule. "And in June I'll try out for any spot I can get," he declares. "Singles, doubles, quads, whatever. There are only seven slots open on the U.S. Olympic sculling team, and I'm busting myself to qualify for one of them."

D'Alba is a top oarsman and former captain of the WPI crew and, like Jim Raslavsky, has to work around a full-time job to train for the trials. Currently he is a project engineer at Philadelphia International Airport on assignment from Urban Engineers, but he manages to budget his free time to train and compete.

"The amazing thing about this year's pre-Olympic crew competition is the large number of aspiring athletes from small colleges such as WPI," he says. "The usual big name colleges like Harvard will be represented, but they will not dominate the squad as they have in the past. WPI has, perhaps, more Olympic hopefuls training in Philadelphia (the rowing capital of the U.S.) than any other college or university. Training together with the hope that one or all of us will make the team provides added psych which is so necessary to get us through our workouts. A WPI oarsman on the Olympic squad would be a plus both for Tech and the WPI rowing program," he emphasizes.

At the end of his senior year at WPI, when Ed's team won a number of races, the thought of a berth on the Olympic team began to emerge. The thought now looks like more of a reality as the rewards of his intensive training have become apparent. For example during the last race of the season, D'Alba won both the singles and doubles races at the Frost Bite Regatta.

Earlier, he teamed up with PKT fraternity brother Jim Raslavsky for the Undine Barge Club. They entered several doubles races, including the Middle States Regatta, where they finished several lengths ahead of the nearest rival, only to find that they had been disqualified for passing under the wrong bridge arch. Several weeks later, with no disqualifications, they placed second in a field of sixteen in the Head of the Schuylkill and fourth out of forty in the Head of the Charles.

"We never trained in the double—we just got in on race day and beat a lot of people," D'Alba reports. "Jim and I could really make the boat click. There's still a long road ahead of us before Montreal," he adds. "But we're giving it all we've got."

left: Bob Raslavsky straining his way toward the hoped-for Olympic berth. Right: Ed D'Alba holds down John Mathews' legs during a workout.



**J**OHN MATHEWS, '74 recently gave up his civil engineering job and is already living on his own resources as he globe trots from one regatta to another posting remarkable results.

Affiliated with the Philadelphia Vesper Boat Club, Mathews made his most important win to date when he rowed with Ed D'Alba and helped capture a gold medal for the U.S. in the eight-man shell-with-coxswain event at the Pan American Games in Mexico City on October 19th.

The December issue of *The Oarsman* magazine reported that prior to the all-important preliminary heat on Oct. 15th, Mathews said, "Let's not mess around. Let's just go kill 'em'". . . and then proceeded to do exactly that. The Vesper boat spurred into the lead over Uruguay, and Mexico in the semi-final, and was able to reach in the first 500. Rowing a solid 30-31 strokes per minute through the middle 1000 and increasing the rating slightly in the last quarter, the U.S. crew pulled ever further in front, besting second place Uruguay by 21 seconds. The win put the Vesper team in the lead on Sunday when they rowed past the Canadian crew and brought the U.S. its first gold at the regatta.

The victory was doubly sweet for the former co-captain of the WPI crew. It made Montreal look like more of a sure thing, and it helped erase, or at least temper, the memories of Nottingham, England, and the disastrous 1975 World Rowing Championships.

Actually, Mathews and his teammate Darrell Reugdenhil of Seattle (coxed pairs) were a couple of brighter lights for the U.S. at Nottingham last August. They started out on a positive note and had a little bit of luck in the Sept. 1 event. The September 8 issue of *Sports Illustrated* reported: "In the whole day's rowing only the 'Monster' and his teammate placed." Mathews, at 6'4" and 225 pounds, amiably invites people to call him "Monster," although at WPI and Phi Gamma Kappa, he was dubbed "Tree.")

Describing his effort involved in the event, "Tree" said, directly following the race, "I've never dug down so deep. I'm still all pain from the thighs down. When we were coming up from fifth place on Yugoslavia, just like it says in the stories, everything went black in front of me."

Exhausted but euphoric over the third place semi-final photo finish, Mathews walked into the boathouse. The next day at the finals, the rains came, and the winds, and Mathews and his teammate only managed a fifth. Said a dejected John Mathews, "It wasn't my day."

It wasn't a day for the U.S. either. For the first time in rowing history the U.S. did not appear at the medals table at the championships.

In June at Henley-on-the-Thames, England, Mathews and his Vesper teammates had fared considerably better snaring a second place in the straight four event. Later in the season he won two gold medals at the U.S. Nationals rowing the coxed-pair and coxed-four events. At the Head of the Charles Regatta in October rowing for Vesper he copped two firsts in the 8-man elite and elite four-oared shells and cox, simultaneously winning the Boston Globe Trophy and the Schaefer Trophy. This summer John will try for the U.S. team by competing in the U.S. coxed-pair trials.

**T**HE ROAD to Montreal for all of WPI's athletes will be paved with similar victories and defeats. It will be paved with sweat, exhaustion, humiliation, determination, and immeasurable self-sacrifice. But, most of all, it will be paved with pain.

Every WPI Olympic hopeful knows that somewhere a Russian or a Norwegian athlete is straining every muscle, every nerve, to its utmost, and blinding himself to the agony. As Jim Raslavsky says, "It's the man who can stand the pain the longest who will win the Olympics."

**WPI**





*The data on which these class notes are based had all been received by the Alumni Association before March 15, when it was compiled for publication. Information received after that date will be used in succeeding issues of the WPI Journal.*

## 1914

**R. H. Dufault** and his wife, Chris, have moved from their Spencer home and joined forces with their daughter, Mrs. Claire D. Wilson at 32 Pine St., Wellesley Hills, Mass. 02181.

## 1916

**Mrs. Robert E. Lamb** broke her hip and leg last winter but is making good progress in her recovery and hopes to attend the 60th class reunion with Bob in June.

## 1925

**Robert E. Quinlan** has retired. He was a regional representative for Equity Funding Securities Corp. in Albuquerque, N.M.

## 1926

**Warren P. Gleason** currently serves as a trustee and a member of the planning board of the Maine Coast Memorial Hospital in Ellsworth, Me. He is also chairman of the utility committee in Winter Harbor.

## 1927

**Charles MacLennan** continues with the Canadian Executive Service Overseas and is still located with his host Brazilian family in Florianopolis. He writes that as an advisor in the electrical development in the area, he has experienced more personal satisfaction than at "any time during my previous working career." Recently he vacationed in Florida, Illinois, Nova Scotia, and England. He and his wife, Audrey, are building a house in River John, Nova Scotia.

## 1929

**Paris Fletcher**, an emeritus WPI trustee, and his wife, Marion, were recent visitors at the home of the **Arthur W. Knights** in Lower Waterford, Vt. . . . **Harold P. Richmond** became a Life Member of the Institute of Electrical and Electronics Engineers last fall. The status is reserved for those who have had a great deal of experience in the profession and a long association with IEEE.

## 1930

The **Carl Backstroms** toured six Central American countries and discovered that winter in Guatemala at 5000' is like spring in New England.

## 1931

The former corporate director of the contract management division at Collins Radio Co., Cedar Rapids, Iowa, **William Graham**, has retired. . . . A memorial communion table and linens were dedicated in memory of the Rev. **Walker T. Hawley** at Middlebury (Vt.) Congregational Church last December. Rev. Hawley, who had been pastor at the church from 1947 to 1968, died in 1974. . . . **H. Edwin Hosmer**, who was with Monsanto in Springfield, Mass., retired recently. . . . **Robert S. Williamson**, an industrial engineer who had been with Union Carbide Co., Cleveland for many years, has retired.

## 1932

**Emile R. Dube** is retired. He had been quality assurance manager for Swift & Company in Kearny, N.J. . . . **Elliot E. Jones** retired as a consultant for U.S. Steel last May.

## 1933

**Arthur H. Dixon** has retired. For many years he was with the U.S. Bureau of Reclamation in Denver, Colo. . . . **John J. Dwyer** has retired after serving 38 years as a teacher and director of Worcester Vocational Trade High School. He and his wife now expect to spend much of the time living on their new 36-foot cabin cruiser. Dwyer, who is the past president of the Massachusetts Association of Vocational Administrators, also plans to remain active with the association. . . . Also on the retired list is **Paul G. Guernsey**. He was sales manager of the credit card department at Mobil Oil Corp., New York City. . . . **Anthony Kapinos**, who was with Studebaker Worthington, Inc., of Springfield, Mass., for many years, has retired.

**Richard T. Merrell** retired from U.S. Steel on August 1, 1975 after 42 years of service. During his last assignment he was superintendent of Cyclone Fence in Oakland, Calif. . . . Recently retired are **Francis C. Moore** from the Water Resources Board of the State of New Hampshire in Concord and **John C. Spence** from Newark Caster & Truck Corp. in Newark, N.J. . . . **Philip Tripoli** is on the retired list. He was with Norair, a division of Northrop Corp., Hawthorne, Calif. . . . **Jeremiah H. Vail**, manager of equal employment opportunity for U.S. Steel in Pittsburgh, retired at the end of December.

## 1934

**Dwight J. Dwinell**, who retired in 1973 as manager of equipment design at GTE Sylvania's equipment development plant in Salem, Mass., was recently named a recipient of the Leslie H. Warner Technical Achievement Award for his part in the development of new equipment for the production of Magicubes. The award is designed to provide both recognition and substantial cash to employees whose outstanding technical achievements make important contributions to the growth and profitability of General Telephone & Electronics Corporation. Mr. Dwinell joined GTE Sylvania in Salem in 1936 as an assistant production supervisor. Later he served as an equipment designer and supervisor of equipment design. He holds 10 U.S. patents.

**Edward R. Markert** has retired. He had been chief of the factory branch at Springfield (Mass.) Armory. . . . Also retired is **Frederick G. Webber**. He was the former assistant to the vice president of engineering at General Instrument Corp., Chicopee, Mass.

## 1935

**Edward J. Cove** retired as a local test foreman for New England Telephone & Telegraph Co. in February. . . . **C. Marshall Dann**, U.S. Commissioner of Patents and Trademarks, spoke before the Los Angeles Area Chamber of Commerce in January. He explained how businessmen and exporters may benefit from patent and trademark protection. Last November the U.S. became the first country having major patent activity to ratify the "Patent Cooperative Treaty", a major advance which will help Americans gain patent protection, Dann said. . . . **Weslye L. Martin**, a self-employed professional engineer, is located in Bennington, Vt.

## 1936

Retiring after 20 years of federal service as a civilian employe, **George E. Rocheford** was honored at a reception given by fellow employees of the New England Division of the U.S. Army Corps of Engineers, Waltham in January. He had been assistant chief of the structural section in the engineering division at Corps headquarters.

f. **Ray Linsley**, executive head of the civil engineering department at Stanford University, has retired.

rently **Jack Germain** serves as vice president of sales for New Britain (Conn.) Machinery, a division of Lucas Machine.

**ward J. Blanchard** is with Willamette Steel in Richmond, Calif. . . . **Bryant Under Corporation**, a unit of Ex-Cell-O Corp., has announced the appointment of **E. Ice Crabtree** as general sales manager for grinding equipment. He will be responsible for all domestic and foreign sales. Prior to joining Bryant Grinder, he was director of marketing for Erickson Tool Co.

**emie LaFrance, Jr.** is a design engineer at Martin Marietta Corp. in Baltimore, Md. **Gerald Lainer** holds the post of president at Telesco International Corp., Newbury, N.Y. . . . **Richard F. Scharmann** has retired. For many years he was a scientist in the branch superintendent with U.S. Naval Development in Warminster, Pa. . . . **ry Terkanian** currently serves as principal engineer at Raytheon Co. in Bedford, Mass.

**ard H. White** has been elected a director of the Mechanics National Bank in Worcester. He is president and treasurer of White Construction Co., Inc., Auburn. He is president and director of the Milford Water Co. and the Whitinsville Water Co. An incorporator of Hahnemann Hospital, he is past president of the Auburn Rotary; a member of NSPE; American Water Works Association; New England Water Works Association; Massachusetts and New Hampshire Water Works associations; and New England Water Works Association.

**Donald D. Alden** works for Beringer Co., Inc., Marblehead, Mass. . . . **E. Curtis Ambler**, chief engineer in technical services at the Stanley Works, recently received the Jaycee Public Service Award in Newington, Conn. He is a town councilman, leader of the Republican minority, and has served as the town's representative to the Central Connecticut Refuse Authority. For eight years he was on the town plan and zoning commission. A cofounder and president of Newington Antique Fire Apparatus, Inc., he is also a member of the volunteer fire department. He is a director of the Newington Children's Hospital and the first lay moderator in the 246-year history of the local Congregational Church. He is a charter member and past master of Sequin Lodge 140 A.F. & A.M. and a retired lieutenant commander in the Naval Reserve.

**Prof. Roy Bourgault** of WPI's mechanical engineering department was coauthor of the article "Teaching Failure Analysis: Two Approaches", which appeared in the January edition of *Engineering Education*. . . . **Paul C. Disario, Jr.** is now vice president of Burns and Roe Industrial Services Corp. in Paramus, N.J. . . . **Edward A. Hebditch** serves as principal at E.A. Hebditch Assoc. in Pittsburgh.

**Robert W. Alexander** is with the Marine Plastics Division of Northern Petro-chemical Co. in Clinton, Mass. . . . **Jackson L. Durkee** has left Bethlehem Steel Corporation after a 28-year bridge building career in the firm's fabricated steel construction division, which is now being closed. Currently he is visiting professor of civil engineering at Cornell University. While with Bethlehem, he had been the company's chief bridge engineer since 1965 and was responsible for the structural integrity of major bridgework. . . . **Galpin M. Etherington** is employed by Birmingham (Ala.) Stove & Range Co. . . . **Robert A. Painter**, president of the Electronic Instrument & Specialty Corporation, Stoneham, Mass., was recently elected to the board of directors of the Smaller Business Association of New England (SBANE), Waltham. SBANE is a private non-profit association of over 1,200 smaller businesses in New England. . . . **Frank Szel** is now with the engineering and construction services division of Dow Chemical in Cleveland, Ohio.

**Irving James Donahue, Jr.**, president of Donahue Industries, Inc., Shrewsbury, Mass., has been elected a trustee of Memorial Hospital, Worcester. He is a WPI trustee, Shrewsbury Finance Committee chairman, and director of the Massachusetts Association of Finance Committees. A past director of the Worcester Area Chamber of Commerce, he is also past president and director of the Central Massachusetts Directors of Engineers Association.

**Anson C. Fyler** has resigned from Arrow-Hart as president to become the new president and chief executive officer of the Superior Electric Co., Bristol, Conn. Since 1946 he has been associated with the electrical industry, becoming the president of Arrow-Hart, Inc. in 1966. He was named chairman of the board in 1970. He is also a director of Crouse-Hinds which merged with Arrow-Hart last year. Presently he serves as a director of the Connecticut Bank & Trust Co., Phoenix Mutual Life Insurance Co., and Veeder Industries, Inc., and as a WPI trustee. . . . **Charles C. Shattuck** holds the post of director of manufacturing for Standard Electric Time in Springfield, Mass.

**Married: Robert D. Bartlett** and Elva Grigsby on December 27, 1975. The Bartletts reside in Shawnee, Kansas.

**Francis L. Bliven** is an extrusion superintendent at Lloyd Mfg. Co., Inc., Warren, R.I. . . . **Lionel B. Brooks**, chairman of the board and chief executive officer of Eastco, New England distributors for Whirlpool, RCA, Lloyds, Monarch Carpets, and Congoleum, has been elected president of the Electric Institute, the electric industry association serving Eastern Massachusetts. He joined Eastco in 1946. . . . **Robert B. Charlton** is with Wallace McRoy & Assoc., Birmingham, Ala. . . . **Rudolf L. Hirss** is employed by Giroux Screen Print in Burlington, Vt.

**Carlton G. Lutts, Jr.** owns the Cabot Market Letter in Salem, Mass. . . . **James L. Sullivan** has joined Inland Ryerson Construction Products Co. in Milwaukee, Wis. . . . **Robert C. Taylor** works for Thermoplastics Co., Inc., Leicester, Mass. . . . **Miczyzlaw J. Waclawek** is now with Lely Multipower and resides in Temple, Texas.

**Lawrence T. Garnett** works for Statham Instruments, Inc., Oxnard, Calif. . . . Presently **John G. Hambor** is with Galileo Electro Optics in Eatontown, N.J. . . . **James J. Hierl** is employed in the magnetic peripherals division at Control Data Corp. in Oklahoma City, Okla. . . . **Stephen Koval** is with the Department of Youth Authority in Paso Robles, Calif. . . . **Paul D. O'Donnell**, division general manager of Westinghouse Electric Corporation in Tampa, Fla., has been elected as a member of the board of directors at the Exchange Bank of Westshore. Listed in *Who's Who*, he is also a director of IEM, Mexico City, one of the largest manufacturing concerns in Mexico and a past president of AIEE. He is on the board of governors of the Greater Tampa Chamber of Commerce and serves on the board of directors of Florida Gulf Coast Symphony, and Junior Achievement of Greater Tampa.



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The Bell System invests more than \$750 million a year in research and development.

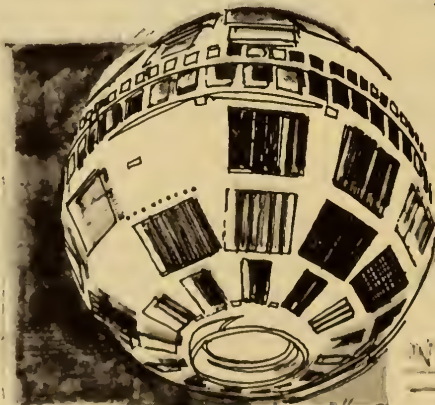
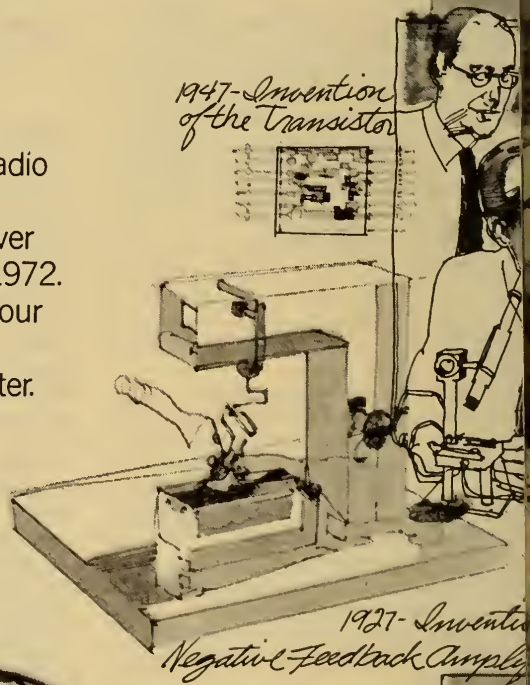
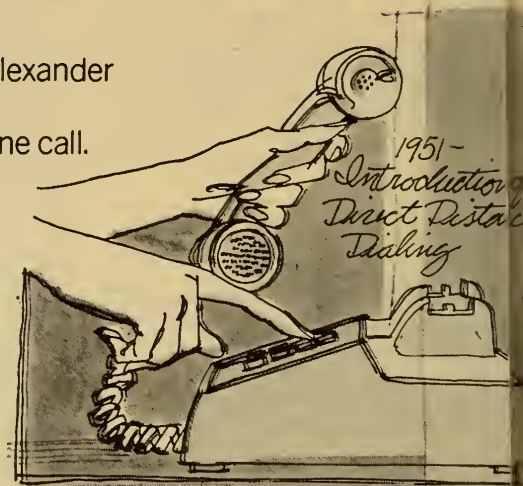
As an outgrowth, we receive an average of more than two patents every working day. And nearly half the things Western Electric will make this year didn't even exist four years ago.

In the next 10 years, we plan to expand the capacity of the telephone network as much as we have in the past 100 years.

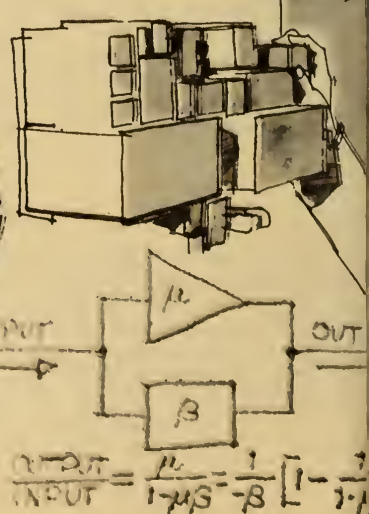
To keep this network operating and growing takes the innovative teamwork of Bell Labs and Western Electric.

The kind of innovative teamwork that makes us say:

One Bell System. It works.

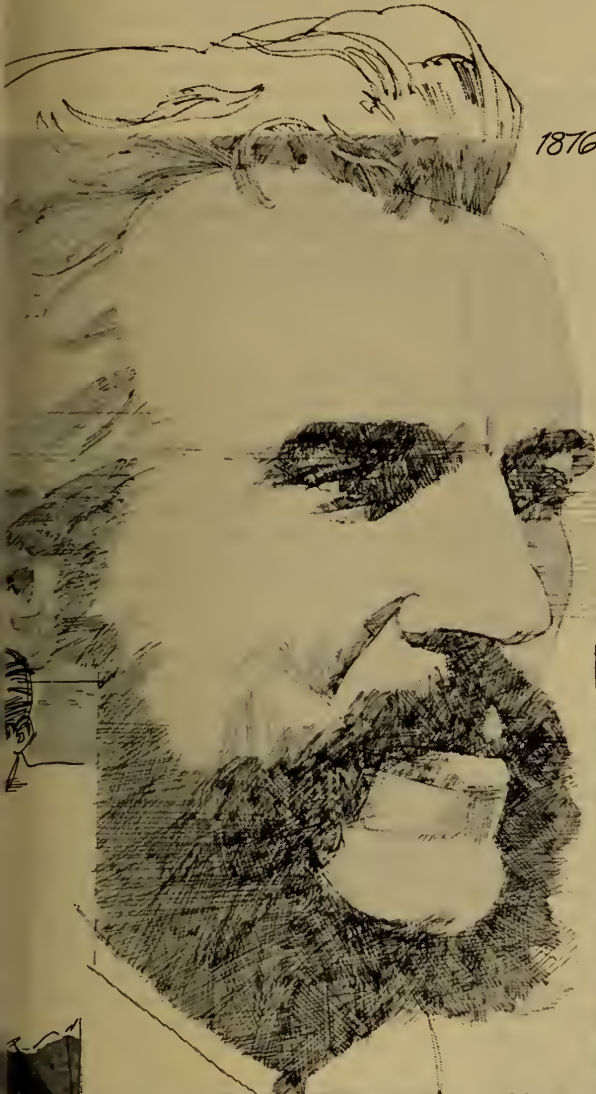


1962 - Launch of Telstar™ Communications Satellite

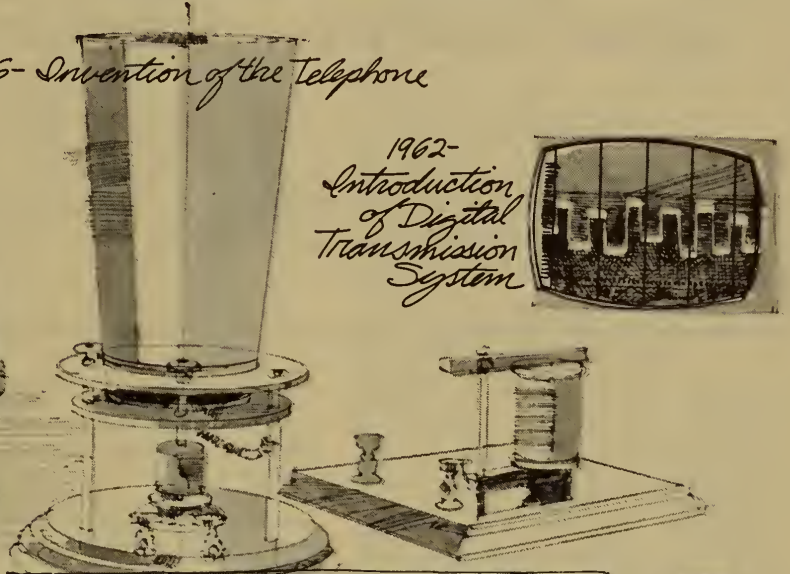




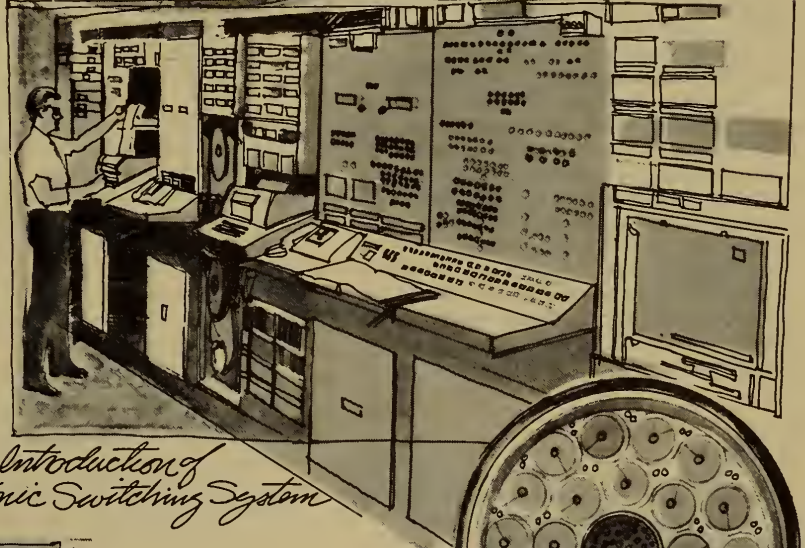
# OUR NEXT PHONE CALL



1876- Invention of the Telephone

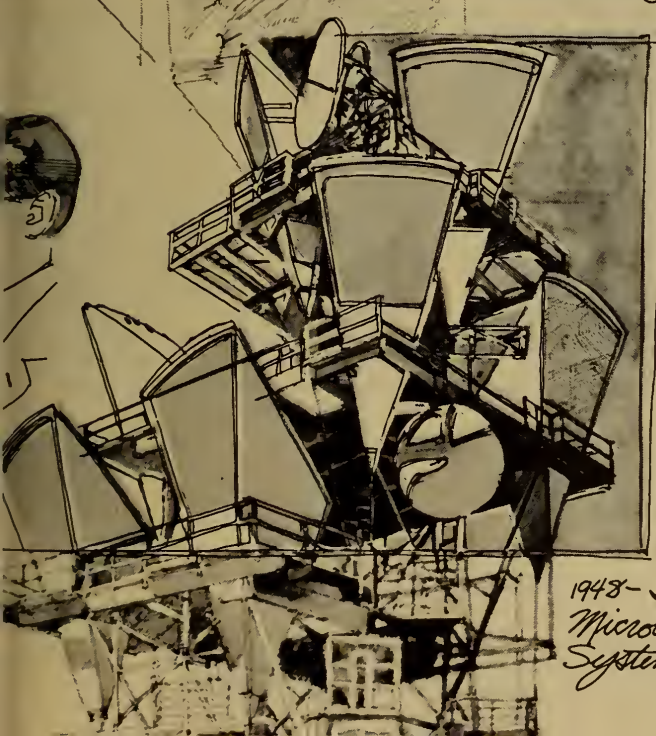


1962-  
Introduction  
of Digital  
Transmission  
System



1960-Introduction of  
Electronic Switching System

1929-Development  
of Coaxial Cable  
Carrier System



1948- Introduction of  
Microwave Transmission  
System



**Bell Labs  
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## 1948

**Norman L. Diegoli** received a 25-year Award of Merit from the American Association of State Highway and Transportation Officials in January. He serves as deputy chief engineer of maintenance with the Massachusetts Department of Public Works. . . . **John G. FitzPatrick** holds the position of assistant vice president of manufacturing at Lenox China, Linwood, N.J. . . . **Dr. Myron E. Lunchick** owns SEACO in Bethesda, Md. . . . **Albert J. Merlini** has been appointed an associate professor in the math and science department at Vocational-Technical College in Laconia, N.H. Previously he taught in the electrical engineering department at UNH. He has also served as staff supervisor to the director of engineering at AVCO Systems Division, Wilmington, Mass. . . . **Wesson C. Miller** is a general agent at Provident Life & Accident Insurance Co. in West Hartford, Conn.

## 1949

**Dean P. Amidon** and **Francis W. Holden** recently received 25-year Awards of Merit from the American Association of State Highway and Transportation Officials. Amidon is a highway engineer in District I (Pittsfield) of the Massachusetts Department of Public Works. Holden is a research and materials engineer with the DPW. . . . **Maurice Nirenstein** works for Ebasco Services in New York City. . . . **Claude F. Veraa** has joined Pallace, Inc., Silver Spring, Md.

## 1950

**Edward L. Ahlstrom** has joined Stone & Webster, Boston. . . . **John F. Gallagher** was recently awarded a 25-year Award of Merit by the American Association of State Highway and Transportation Officials. He is a project development engineer with the Massachusetts Department of Public Works.

. . . **William C. Griggs** is president of W.C. Griggs, Inc., Lakewood, Colorado. . . . **Richard F. Johnson, Jr.** serves as senior product engineer at Terry Steam Turbine in Windsor, Conn. . . . **James W. Marston** works for the State of New Hampshire Air Pollution Control Division in Campton, N.H. . . .

## 1951

**Carl E. Johansson** has been employed by Rachele Laboratories, Long Beach, Calif. . . . **Thomas M. June** was recently named manager of the building materials department of the organic materials division of Koppers Company, Inc., Pittsburgh, Pa. He will supervise sales and marketing of built-up roofing and roof maintenance materials for building and architectural applications. In 1951 he joined the firm as a cadet engineer and later held several management positions in the division. Prior to his latest promotion he was chemical group production manager. He is a member of the American Wood Preservers' Association and the Professional Engineers Society of West Virginia. . . . **Duncan W. Munro**, superintendent of Mount Auburn Cemetery, Cambridge, Mass., has been elected first vice president of the American Cemetery Association. The post includes membership on the executive committee. Munro has served as director, secretary and second vice president of ACA and has written many articles for technical journals. . . . **Vartkes K. Sohigian** is now director of industrial relations for the Simonds Cutting Tool Division of Wallace Murray Corp. in Fitchburg, Mass. He will be responsible for planning, developing and coordinating programs to meet the division's personnel goals and objectives of improving organization results. Sohigian, who began at Simonds in 1971, will be involved with career planning, labor relations, and communications. . . . **Joseph S. Vitalis, Jr.** is with the U.S. Environmental Protection Agency in Washington, D.C. From 1972 to 1974 he served as mayor of Crestwood, Missouri.

## 1952

**Prof. Robert Goff** has been named associate dean of the College of Engineering at the University of Rhode Island. Since 1953 he has been a member of the department of mechanical engineering and applied mechanics. In 1967 he was promoted to associate professor. . . . Currently **Robert A. Meyer** is a senior manufacturing engineer at Martin Marietta Corp. in New Orleans, La. "Buzz" **Moore** recently formed his own sales representation company, Castle Moore Associates, Inc., in Ridgewood, N.J. His firm serves the process equipment industry.

## 1953

**Richard R. Carlson** is a project engineer at Dresser Industries, Inc., Westboro, Mass. He also holds the post of vice chairman of the Worcester Chapter of the American Society for Metals. . . . **Robert Eisenberg** is a self-employed computer consultant in West Paterson, N.J. . . . **Charles Horne** has been named needle bearing group quality control manager at Torrington, (Conn.) Co. In 1953 he joined the company as a bearing designer and became application engineer in 1969. Subsequently he was named chief application engineer. . . . Simplatrol Products Corp., a subsidiary of Formsprag Company, has moved from Auburn (Mass.) to Webster. **Herbert S. Peterson** holds the post of president at the firm. . . . **David T. VanCovern** left Exxon after 21 years to become corporate vice president of Rowe Corporation in Charlotte, N.C. His firm is a holding company with member companies operating in several different construction and manufacturing fields. . . . **S.M. Versh** is director of finance in the foam and plastic division at Tenneco Chemicals Co., Paramus, N.J.

## 1954

**Lee W. Catineau** is with Reynolds Securities, Inc., in Boston. . . . **William H. Hills**, president of Hills Research & Development, Inc., Melbourne, Fla., also serves as president of Cryo-Line, Inc., which manufactures Dam-it pipe freezing tool. . . . **George H. Kay, Jr.** works for GTE Sylvan in Needham Heights, Mass. . . . **Harry L. Mirick** has been named vice president for operations at Time Computer, Inc., Lancaster, Pa. Previously he was with Hamilton Watch Co. and IBM. . . . **Wilfred F. Taylor**, who is self-employed at Crowell & Taylor Corp., Yarmouthport, Mass., writes that his oldest son, Robert, is now attending WPI. . . . **Richard H. Wheelock** is sales manager at Topaz Electronics, a subsidiary of Intermark, Inc., San Diego, Calif.

**bert L. Chang** is with the Aernutronic p., a subsidiary of Ford Motor Co. in Palo Alto, Calif. . . . **Lawrence F. Dennis** presently serves as a deputy director of duct assurance at Fort Monmouth, N.J. **Brian J. Kelly** holds the position of sion operations manager at Bell Telephone in Pittsburgh. . . . **Richard J. . . .** They works for Teredyne, Inc., Boston. . . . **win F. Nesman** is an electronic engineer MIT. . . . Currently **Martin A. Rafferty** is for engineering supervisor for Esso Standard Libya, Inc., Tripoli, Libya. . . . **ald F. Zwiers** serves as chief engineer at lite Corp. in Joliet, Ill.

**bert R. Baer**, who was recently in management and marketing services on the East Coast, has completed his postgraduate management program at UCLA. He is moving forward to the prospect of returning to the East Coast and a long-term assignment in marketing, sales, or training.

**urray A. Cappers, Jr.** works as a consultant for Allied Chemical in Morristown, Tenn. . . . **Seymour L. Friedman** owns Tri-K Industries, Westwood, N.J. . . . **David W. . . .** skinson was recently named vice president of operations at United Illuminating in New Haven, Conn. (He succeeds his former associate **Leon Morgan**, who was promoted to executive vice president.) He joined the firm in 1957 and was later appointed superintendent of Steel Point Division. He was vice chairman of the New England Chapter of ASME and is a director of the Quinnipiac Council, BSA. He is also past president of the Hamden Youth Hockey Association and the Connecticut Hockey Association. **arl J. Kennen**, SIM, has been appointed superintendent of the Coes Knife Co., Worcester. He has been with the company for 30 years. . . . **Richard F. Moore** is chief engineer at FAG Bearings Corp., Stamford, Conn. . . . **Leon A. Morgan** now holds the position of executive vice president of operations engineering and customer services at United Illuminating, New Haven, Conn. He began work at UI in 1957 as an assistant engineer and rose to vice president of operations in 1973. A registered professional engineer, he is also a member of the American Management Association. He has been affiliated with the North Branford (Conn.) Economic Development Foundation, Jaycees, and BSA, which he serves as director. . . . **Charles M. Stasey** holds the post of director of engineering at Advanced Metals Research in Bedford, Mass.

**Gary C. Blodgett** was recently appointed manager of igniter products for Norton Company's Industrial Ceramics Division. He will be responsible for the manufacture and marketing of the division's new silicon carbide igniter, part of a direct electrical ignition system used to replace pilot lights in gas appliances. Since joining Norton in 1959, he has held several engineering and management positions. He holds an MBA from Clark. . . . **Charles B. Cushman** is with Pedersen Golf, New Haven, Conn. . . . **David B. Denniston** is marketing manager of customer service at Digital Equipment Corp. in Maynard, Mass. . . . **Anthony J. DiGiovanni** serves as general superintendent at Boston Gas Co. . . . **Jasper Freese** of Freese Engineering is located in Greeley, Colo. . . . **Robert Jacobson** currently serves as a market representative for IBM in Hamden, Conn.

**James J. Johnson** continues with New Jersey Bell Telephone in Camden, N.J. where he is presently area plant manager. . . . **John H. Porter** is with AMS Associates in Darien, Conn. . . . **Stewart L. Staples** of Staples Building & Development, Inc., is located in Tucson, Ariz. . . . **George F. Walker**, SIM, has been promoted to vice president of administration at Johnson Steel and Wire, Inc., Worcester. He will be responsible for industrial relations, purchasing, traffic and engineering. Previously he had been production manager, production superintendent, and director of industrial relations and personnel. . . . **Robert F. Wolff** holds the post of manager of the systems operations department at Consolidated Edison in New York City.

**Anthony E. Engstrom** is manager at Fox & Carskadon in San Rafael, Calif. . . . **Dr. David A. Evensen**, who recently left TRW, is now employed by J.H. Wiggins Co., Redondo Beach, Calif. He has written over 40 technical papers, the most recent being "Vibration Analysis of Multisymmetric Structures" which will appear in an upcoming issue of the *AIAA Journal*. The Evensens reside in Torrance, Calif. . . . **Oscar H. Hawley** serves as principal at Sayre School, Lexington, Ky. . . . **William R. Schnitzler** works for U.S. Surgical in Stamford, Conn. . . . **Edwin D. Tenney** is a product manager in the Buell Emission Control Division of Envirotech Corp., Lebanon, Pa. . . . **William C. Whitehead** is employed by Harris Corp. in Palm Bay, Fla. . . . **Ernest F. Woodtli** has joined GE in Valley Forge, Pa.

**Robert W. Jebens** is with RCA Lab., Princeton, N.J. . . . **John F. Kirkpatrick** is a system consultant with System Resources, Inc. in Salt Lake City, Utah. . . . **Alexander J. Kowalewski** holds the post of engineering manager at Hooker Chemical Corp., Burlington, N.J. . . . Formerly chief engineer of the Mattabassett District (New Britain, Conn. area), **Stanley L. Kubas** is now director of plant operations and maintenance for Camp Dresser & McKee, Inc., Boston. He will be responsible for scheduling operations, staffing, operational start-up, and maintenance services for multimillion dollar water and waste water facilities. . . . **Peter A. Lajoie** serves as sales manager of the Trump-Ross Division of Datametrix, a subsidiary of ITE Imperial in North Billerica, Mass. . . . **Donald MacMillan** is with Instrumentation Lab., Lexington, Mass., and **Bruce A. MacPhetres** is an inventory and cost engineer in economic studies for New England Telephone in Boston. . . . **Dr. Ronald J. Richard**, assistant professor of physics at Benedictine College, received his PhD in astronomy from UCLA in December. He earned his MA in astronomy at UCLA and his MS in aeronautics and astronautics from the University of Michigan. Prior to joining Benedictine in 1970, he was with Clevite Transistor Corp., Cambridge, Mass. Later he helped design spacecraft trajectories for the Ranger, Surveyor and Mariner missions, while he was at the Jet Propulsion Lab. in Pasadena, Calif. **Dr. Richard** won a NASA traineeship to work on his doctorate. He has written numerous published reports and articles. . . . Presently **Bernard L. Tetreault** holds the post of executive director of the Housing Opportunities Commission of Montgomery County, Silver Spring, Md.

**Born:** to Mr. and Mrs. **Henry P. Alessio**, their first son, Henry Paul, on August 12, 1975. The Alessios also have two daughters. Hank is with William E. Hill & Co., Inc., New York City.

**John Buckley** of Buckley & Co., Wellesley Hills, Mass., conducted a seminar, "New Product-Service Planning and Development" at Bentley College in Waltham in January. The seminar was the first of a series of 14 one-day programs sponsored by the Smaller Business Association of New England, Inc. . . . **Dr. Jack Gabarro**, who teaches in the MBA program at Harvard Business School, is also head of the faculty group teaching Human Behavior in Organizations. Recently he has been serving as a director of Town and Country Jewelry Manufacturing, acting as an adviser to the NSF's outside evaluation team on the WPI Plan, and doing consulting work. He, his wife, Marilyn, and daughter, Jana, live in Cambridge. . . . **Charles R. Mixer** is engineering sections head for Sperry Systems Management in Great Neck, N.Y. . . . **Herbert S. Moores** serves as town engineer in Newburgh, N.Y.



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Is programming difficult? Absolutely not. It's really no more than a calculator's capability to: Learn what you teach it. Remember what you want it to. And automatically execute the series of steps, or respond to the decisions you put into it.

Most of the important decision-making functions found on computers are available on TI programmables: Looping. Branching. Flags. Sub-routines. Yet there's no special language to learn. TI's full Algebraic Operating System (AOS) is natural—left-to-right. It's easy to use, and so flexible that you can apply it to your own personal problem solving techniques.

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Offers twice the capability of the only other programmable in its class—at half the price.†

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Literally teach the SR-52 your own calculating methods. Key in your program directly from the keyboard. If you wish, record your program on a magnetic card to use again and again. Used manually, the SR-52 is one of the most powerful handheld, slide rule calculators available today.

A Basic Library of 16 programs comes with the SR-52. Optional

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## SR-56. Super slide rule with key programming. \$179.95\*

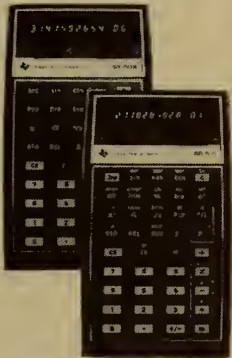
The ideal student programmable. No programmable is easier to master. Use up to 100 programming steps with 10 user memories, nine levels of parentheses, plus an eight-register stack that handles up to seven pending operations. Add, subtract, multiply, divide within a register without affecting the calculation in progress.

Two unique features. A special test register permits comparison with the displayed value at any point in a calculation—without interfering with what's in progress. A pause key keeps the display visible for ½-second during program execution. It also lets you go through a problem one step at a time.

Supply the input data, then execute the solution of a stored sequence automatically. Get answers without the tedium of remembering and pressing keys repetitively. Three unconditional branches and six conditional branches—which includes four levels of subroutine and two loop control instructions—give the SR-56 great decision making power.

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† Based on suggested retail prices of models at the time of this printing.





Moussit Noradoukian has joined Timeplex, Inc. in Hackensack, N.J. . . . Paul E. Nordborg is with Management Recruiters in Nashua, N.H. . . . Dr. Erik W. Pottala, an electrical engineering lecturer at the University of Maryland and staff engineer with the Laboratory of Applied Studies, has constructed a working model of the human nerve cell, the neuron. The model, stimulated by messages transmitted by tiny computers, reacts exactly as a human (animal) neuron would react in sensing and initiating muscular movements of the body. It is expected that the model will be invaluable in the research of the human nervous system and its diseases. . . . John A. Quagliaroli, president of F.L. Mannix & Company, Inc., Wellesley, Mass., recently graduated from Harvard Business School's Program for Management Development. . . . Joseph W. Simonis has been promoted to engineering and construction manager for the northern division of General Telephone Co. of Ohio. After graduating from West Point and serving as a captain in Vietnam, he joined General Telephone in 1970. He is a professional engineer. . . . Robert Zimmerman works for Acme Plumbing in Hartford, Conn.

## 1962

Dr. Charles F. Belanger has been granted courtesy staff privileges in pediatrics and family practice at Worcester's Hahnemann Hospital. He is a member of the University of Massachusetts School of Medicine faculty. . . . Arthur E. Dobreski now holds the position of manager of plant engineering and maintenance at West End Brewing Co., Utica, N.Y. The Dobreskis and their three children, Michael, 12, Kathleen, 9, and Maureen, 5, have moved into a 100-year-old house in Clinton, N.Y. . . . Presently Richard W. Frost serves as assistant district supervisor for Massachusetts Electric in Lowell. . . . Robert A. Hansen has joined Northrop Corp. in Norwood, Mass. . . . Joseph D. LeBlanc is director of technical services at Central Maine Power Co. in Augusta.

Continuing with Gillette Safety Razor Co., Boston, Howard L. McGill, Jr. currently holds the post of production manager. . . . Edmund B. Pyle III is manager of preclinical and biostatistics data systems at Smith Kline Corp. in Philadelphia. . . . William J. Shepherd is a sales representative for Rapidata, Inc. in New York City. . . . Stephen M. Wells continues with ITT where he is now manager of organization planning for the firm in New York City. He was recently transferred from St. Louis. . . . Stanley M. Wilbur is vice president at Webster-Martin, Inc., South Burlington, Vt.

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## 1963

Donald L. Chaffee has joined Litton Industries in Van Nuys, Calif. . . . Alberto D. DeLima works for Crescent Construction in West Caldwell, N.J. . . . Stephen D. Donahue, Jr. still with Procter & Gamble, is presently plant industrial engineer at the firm's detergent factory at Mataro (Barcelona) Spain. . . . Henry A. Dowgielewicz is employed by Virginia Electric & Power Co. in Richmond. . . . Francis Dusza, SIM, has been named manager of manufacturing processing at Russell Harrington Cutlery Co. in Southbridge, Mass. He has been with the firm for 34 years. . . . Formerly a systems analyst for Blue Cross-Blue Shield, Lawrence N. Escott now holds the same position at Lane Bryant, Inc., New York City. . . . Dr. Robert H. Gowdy is an assistant professor in the department of physics and astronomy at the University of Maryland. . . . Major Herbert W. Head, U.S. Army, is currently located in Alexandria, Va. . . . Edward J. Kalinowski is manager of European requirements and planning for the Elizabeth Arden division of Eli Lilly International Corp. in London, England.

James D. Keating serves as a senior marketing representative for IBM in Hamden, Conn. The Keatings have four daughters, from 5 to 11 years of age. . . . Following the receipt of his PhD from Boston University, Dr. Joseph R. Mancuso has been promoted to the rank of associate professor of management engineering at WPI. Recently he was elected a member of the board of directors of ARP Instruments, Newton, Mass., Polyform Industries, Westboro, and the Frank E. Sessions Company of Worcester. . . . Continuing with Chevron Oil Company, Roger C. McGee is now staff analyst for the firm in Denver, Colo. . . . Joseph J. Mielinski, Jr., projects director at WPI, has been named business manager at Alden Labs. The new post is a part-time position and he will continue as projects director. . . . A. Edward Scherer has been promoted to manager of licensing for nuclear power systems in the power systems group of Combustion Engineering, Inc., Windsor, Conn. He will direct the efforts required to

gain government regulatory licenses, authorizations and permits for all nuclear steam supply systems and fuel ordered from the firm. Scherer joined C-E in 1968 and has held reactor design and project engineering positions, most recently serving as supervisor of licensing standards. A registered professional engineer, he belongs to the American Nuclear Society, ASME, and Sigma Xi. . . . Dennis E. Snay was recently appointed division marketing manager in Worcester for Massachusetts Electric Co. He started with the utility in 1963 in Malden and has been district marketing manager in Marlboro. He is a registered professional engineer.

## 1964

Arthur R. Bodwell has joined Samuel S. Graham Co., Hanover, N.J. . . . Richard C. DeLong, SIM, is now manager of product engineering at Bay State Abrasives, Dresse Industries, Inc., Westboro, Mass. He started with the company as a product engineering trainee in 1952 and is a registered professional engineer. . . . David A. Dimo serves as an electronics engineer with the U.S. Postal Service in Rockville, Md. . . . Currently William Dowd holds the post of vice president of the grocery products group at Heublein (food and alcoholic beverages) Hartford, Conn. . . . Charles Ennis has been promoted to associate professor at Thames Valley State Technical College in Norwich, Conn. A registered professional engineer, he was an electrical and project engineer for the Rogers Corp. prior to joining the college in 1968. . . . Stephen J. McCabe, SIM, was recently appointed director of manufacturing for Norton Company's coated abrasive division. He will direct the start-up aspects and line management for the division's new coated abrasive plant in Brownsville, Texas and for all coated abrasive division conversion operations. He joined Norton in 1957 as a manufacturing control engineer.

Stephen G. O'Brian holds the position of senior engineer at Analytics, Inc. in McLean, Va. . . . **Michael P. Penti**, project manager at NPS Construction Co., Craig, Colo., is involved in construction of two 500 MW oil-fired power plants. . . . **Brian Sinder** works for Picker Corp. in New Haven, Conn. . . . **Camp Dresser & McKee, Inc.**, Boston, has promoted **Peter J. Tancredi** from project manager to project director. His responsibilities include the design of more than 32.5 miles of sanitary intercepting and storm sewers for the city and county of Denver, Colo. The estimated cost of the project is \$23 million. Tancredi joined the firm's Boston office in 1970 and was transferred as a project manager to Denver in 1974. He belongs to ASCE and the Rocky Mountain Section of the Water Pollution Control Association. . . . **Dr. Elliot F. Wyner** is a physicist for GTE Sylvania, Inc. in Woburn, Mass.

## 1965

**Philip G. Baker** was recently promoted to principal engineer in the product engineering division at Polaroid Corporation, Cambridge, Mass. . . . **Walter Chang** has joined General Electric Co., Lynn, Mass., as project engineer in the aircraft engine group. His responsibility involves the flight test program for the F-18 Navy fighter plane engine. . . . **Ray G. Cornelius, Jr.** was appointed director of support services in the Newton Division of public schools. Previously he was a senior supervising estimator at Stone & Webster, Boston, where he was in charge of estimating for several nuclear power plants. In 1974 he received his MBA from Boston University. . . . **Leonard G. Feldman**, who heads the Construction Products Division of R. Grace & Co. in Cambridge, Mass. as a quality assurance engineer in 1974, has been promoted to quality control manager for its piping and horticultural product lines. Earlier he was a chemist with Itek Corp., Lexington, and a quality control engineer for Precision Control Products in Waltham. He is active in the American Society for Testing and Materials and the American Society for Quality Control.

**Philip D. Giantris** is manager of environmental engineering at Metcalf & Eddy, Inc., Des Plaines, Ill. . . . **Russell Koelsch**, who was with Gilbert Associates, Inc., in Reading, Pa., for 5½ years, is looking forward to his new position as a senior engineer for the power division of C.F. Braun Co. in Alhambra, Calif. . . . **James F. Mills** works for Foster Grant Co. in Manchester, N.H. . . . **Dr. Thomas Moriarty** is associate professor in the school of architecture at the University of Tennessee in Knoxville. . . . **Robert Sargent, SIM**, has been elected controller and assistant treasurer of Morgan Construction Co., Worcester. He has been with Morgan for 18 years. He is a director of Friendly House and a member of the National Executives Institute and the Risk Management Insurance Society. . . . **Anthony A. Smalarz** works for Kratos in Pasadena, Calif. . . . **Eugene G. Sweeney**, who is a senior applications engineer at Hydraulic Research & Mfg. Co., a division of Emerson in Richmond, Va. . . . **Jeffrey W. Wing** is employed by the Federal Highway Administration in Washington, D.C.

## 1966

**William R. Bond, Jr.** serves as plant engineer at Chesapeake Finish Metals in Baltimore, Md. . . . **Christopher G. Bradbury** has been promoted to manager of development engineering at Cumberland Engineering in Providence, R.I. In his new position he will be responsible for research and development of new products to expand the Cumberland product line. He joined the company in 1972. Currently he is completing his MBA at Boston University. . . . **Thomas P. Brasiskis** is with Balco, Inc., Newton, Mass. . . . **John H. Carosella** serves as a senior engineer at Eastman Kodak in Rochester, N.Y. . . . **Robert J. Coates** works as a sales representative for the Torrington (Conn.) Co.

**Capt. Eugene R. Dionne**, manager of launch vehicle systems for the Defense Meteorological Satellite Program at the Air Force Space and Missile Systems Organization, El Segundo, Calif., recently received the Roland R. Obenland Junior Officer Engineering Award in ceremonies at El Segundo. The \$100 honorarium and citation is given annually to recognize an outstanding contribution by a young officer to an engineering development effort. Capt. Dionne was honored for his role in designing integration of second and third stages of a launch vehicle with a new, advanced military weather satellite. The design allows this new larger satellite to be used on the same low cost launch vehicle previously used for weather satellites.

Formerly with the California Division of Highways, **Albert J. DiPietro** is now a quality control engineer for Bechtel Power Corp. in Sanatoga, Pa. . . . **Steven J. Erhard** is a member of the technical staff at GTE Laboratories in Waltham, Mass. . . . **Donald Morse, MNS**, has been named director of the Claremont extension evening program at Nathaniel Hawthorne College of Antrim, N.H. He has had 23 years experience in teaching and school administration and has done graduate work at Harvard, Purdue, LSU and UVM. . . . **Oleg V. Nedzelitsky, Jr.** currently is a graduate student at Carnegie-Mellon University in Pittsburgh. . . . **Stewart W. Nelson** has become the principal of Nelson Scribner Associates, South Hamilton, Mass. The firm has served New England as an engineering and sales representative organization in the field of electric heating and control since 1964.

**Raymond G. O'Connell, Jr.**, a development engineer for Hewlett-Packard, was a member of an electronics engineering team which was cited by *Industrial Research* magazine for designing a new medical instrument, the HP oximeter, described as "one of the best product designs of the year." The oximeter continuously measures oxygen saturation in a patient's blood while connected to him only by an earprobe. The instrument is expected to be valuable in respiratory care with special application in the diagnosis, care, and rehabilitation of patients with chronic lung disease. . . . **Raymond J. Pavlosky** is employed by the Department of Defense in Ft. Meade, Md. . . . **Melvyn L. Sack** has been promoted to assistant vice president for new products and electronic funds transfer systems marketing at First National City Bank in New York City. . . .

**Ronald A. Seskevich** is with the Navy Department in Arlington, Va. . . . **Donald G. Simpson** owns S & S Distributors, Inc., Keene, N.H. . . . **Bruce Sturtevant** serves as an analytical chemist at TRW, Inc., Philadelphia. . . . **Dr. Paul C.C. Ting** is on leave as a professor of electrical engineering from the University of New Brunswick in Fredericton, N.B., Canada.

## 1967

**Capt. Herbert R. Brown III** has received his master's degree at the Air Force Institute of Technology. An honor graduate of the aeronautical engineering course, he is remaining at Wright-Patterson AFB for duty with a unit of the Air Force Systems Command. . . . **Dr. William E. Cobb** is senior resident and instructor in medicine at the University of Connecticut Health Center in Farmington. In July he will be a fellow in clinical endocrinology at Tufts University New England Medical Center, Boston. . . . **Joseph L. Ferrantino** continues at Monsanto, Springfield (Mass.), where he is senior research engineer. . . . Currently **Lawrence R. Gooch**, who is with Farrel Co., holds the posts of resident engineer and project manager on a processing line installation at Chemetron in Stockertown, Pa. . . . **Richard G. Jewell** serves as product engineering group leader at Analog Devices Semiconductor in Wilmington, Mass.

**Anthony F. Kunsaitis, Jr.** is an assistant computer analyst for the U.S. Army at Fort Monmouth, N.J. . . . **Russell A. Lukes** works as a computer system sales engineer at Hewlett-Packard Co. in Lexington, Mass. . . . **Joseph J. Maggi** holds the position of senior tax accountant at Arthur Andersen & Co. in Hartford, Conn. . . . **Mukundray N. Patel** has been appointed project manager in the project operations department of Power Systems Services at Combustion Engineering, Inc., Windsor, Conn. He will be responsible for managing selected project contracts. Since joining the firm in 1967, he has held various positions in the construction services department, most recently as senior construction engineer. . . . **William F. Pratt** is now with South Central Bell Telephone in Hattiesburg, Miss. . . . **Dr. John E. Sonne** serves as a veterinarian in Syracuse, N.Y.

## 1968

**Married:** **Arnold J. Antak** and Miss Paula M. McGillicuddy on December 6, 1975 in Wollaston, Massachusetts. Ken Gminski was best man. Mrs. Antak graduated from the Chandler School for Women and is employed by State Street Research and Management Co., Boston. Her husband, who received his master's degree from the University of Rhode Island, is with Howard, Needles, Tammen & Bergendoff. . . . **David P. Crockett** to Miss Joan M. Balzarini in Rocky River, Ohio on November 29, 1975. The bride graduated from John Carroll University, Cleveland, and is a commercial account executive for Allstate Insurance Co. The groom is a sales representative for Buffalo Sales of Cleveland.



... **John W. Elphinstone** and Miss **Tillie Martinez** last August. The groom holds the post of office manager at L'eggs Products, Inc. in Mesilla Park, N.M. ... **Robert J. Horansky** and Miss **Katherine Truslow** on October 11, 1975 in New Britain, Connecticut. Mrs. Horansky graduated from New Britain High School. Her husband is with Northeast Utilities in Berlin, Conn.

... **Mark Hubelbank** to Miss **Jeanne C. Henderson** on a 35-foot sailboat under sail near Boston Harbor on September 27, 1975. The bride received her BA from Cedar Crest College, Allentown, Pa. and her master's from BU. She is a research assistant at Harvard Medical School for Community Health. Her husband, who has his doctor of science degree from MIT, recently took part in a seminar on ultrasonics in Rotterdam, Holland.

*Born:* to Mr. and Mrs. **Phillip LaRoe** a son, **Christian Otto**, on September 18, 1975. Phil is the chairman of the science department at Boys Town High School, Boys Town, Neb. In addition to his duties as chairman, he has added two new courses, one in astronomy and one in environment to the department's curriculum. Phil, his wife, **Kathy**, and their two sons (**Lincoln** is 3), reside in Wahoo, Neb. ... to Mr. and Mrs. **Geoffrey P. Tamulonis** a son, **Phillip**, on July 14, 1975. Currently Tamulonis is a system engineer on assignment in Jordan for ITT Space Communications of Ramsey, N.J.

**George W. Cumming, Jr.** is a project engineer for Missouri Valley Inc. in Amarillo, Texas, where a power plant is under construction. ... **Robert D. Hickey** presently serves as a senior systems analyst for Honeywell in McLean, Va. Last year he received his MSEE from Arizona State University. Recently he was married to Miss **Charlotte Daum** of Glendale, Arizona. ... **Larry Johnson** is with Honeywell Information Systems in Cambridge, Mass. ... **Thomas M. Kiely** works for Philadelphia Suburban Water Co. in Bryn Mawr, Pa. ... **Richard Makohon**, who received his master's degree from the University of Alabama last year, is presently a graduate student at Oregon State University in Corvallis. ... **Robert Meader** is with the U.S. Army Corps of Engineers in Mobile, Ala. ... **John J. Orciuch** is employed by Ionics, Inc. in Watertown, Mass. ... **Barrie M. Peterson** works for the Birchwood Organization, Inc., Centreville, Va. ... Dr. **Louis H. Strong**, who received his PhD in biophysics from the University of Michigan last year, is now at Harvard Medical School and Boston Biomedical Institute.

## 1969

*Born:* to Mr. and Mrs. **Daniel A. Lipcan** their first child, **Daniel Patrick**, on October 4, 1975. Lipcan is a plant superintendent at Boston Insulated Wire & Cable in Boston.

**William A. Chudzik** is a graduate student at the University of Massachusetts in Amherst. ... **Roger E. Dennison** of Burlington, Mass. is a self-employed consultant. ... **Richard C. Furman** serves as a staff researcher for the New England Energy Policy Council in Boston. ... **Mark S. Gerber**, who received his PhD last year from Ohio State University in the nuclear

engineering field, continues a Ph.D. dissertation in a research position. His work involves many areas, the main research area being the development of the instrumentation for a clinical gamma ray camera for use in nuclear medicine imaging. This work has led to a number of publications including his dissertation. Gerber writes: "I am enjoying the academic life as a non-student and hope to stay in this environment for many years to come."

Currently **Lawrence Katzman** holds the post of principal engineer at Walden Research Division of Abcor, Inc., Cambridge, Mass. ... **Robert A. Orenberg** is a programmer analyst at Data Terminal Systems in Maynard, Mass. ... **Alvin B. Pauly** works for Michelin Tire Corp., Greenville, S.C. ... Continuing with DuPont, **Donald F. Rapp** is now assistant department engineer for the firm in Wilmington, Del. He is married and has a son. ... **Michael J. Scelzo** is employed by Panametrics, Inc. in Waltham, Mass. ... **Raymond B. Stanley** works for the Electric Boat Division of General Dynamics in Groton, Conn. ... **Stewart T. Stocking** is with Feroni Heating and Plumbing Co. in Springfield, Mass. ... **Robert S. Templin**, who is registered to practice before the U.S. Patent Office, is now engaged in the general practice of law at Stokes and Himmelein Roads in Medford, N.J. ... **Harold S. Wyzansky** is a mathematician at the U.S. Naval Air Station in Lakehurst, N.J. He is also a part-time graduate student in computer science at the University of Pennsylvania.

## 1970

*Married:* **Craig C. Chase** and Miss **Patricia C. Theile** on November 29, 1975 in Livingston, New Jersey. Mrs. Chase graduated from Katharine Gibbs School in Montclair. Both she and her husband are employed by Porter and Ripa Associates, Inc., Morristown, N.J. ... **Kenneth H. Morgan, Jr.** and Miss **Carol Ann Stepp** in Waltham, Massachusetts on October 4, 1975. The bride graduated from Massachusetts Bay College and is a private secretary at Raytheon. Her husband is a senior engineer with the Massachusetts Department of Health.

*Born:* to Mr. and Mrs. **Clark Knickerbocker** their first child, **Steven Joseph**, on September 18, 1975. Clark is an account manager at Hooker Chemical in Niagara Falls, N.Y.

**James F. Bagaglio** is with the department of laboratory medicine at the University of Massachusetts Medical School Hospital in Worcester. ... **Peter G. Bladen** is a resident service engineer at Riley Stoker Corp. in Madison Heights, Mich. ... **Alan S. Breitman** serves as an actuarial assistant for Boston Mutual Life Insurance Co. in Canton, Mass. ... **Joseph M. Chwalek, Jr.** works for CEEIA in Fort Ritchie, Md. ... In May **Lawrence B. Cohen** will join Union Carbide, Sistersville, West Va., where he will serve as a research chemist. ... **William F. Dudzik** is a civil service operations research analyst at the Washington (D.C.) Navy Yard.

**Roger P. Henze** has just started his transportation planner with the Capital District Transportation Committee and is working out of the Albany (N.Y.) County Planning Board. His job entails the coordination of all transportation planning activities and federal funds for transportation improvements. His wife, **Judy**, plans to enter graduate school. ... **Neil M. Hodes** is construction manager at McKee, Berger, Mansueto in Washington, D.C. ... **Jerry Johnson**, a fourth year graduate student at Dartmouth College, was recently awarded an annual \$4,200 fellowship in chemistry endowed by the Goodyear Tire and Rubber Company Educational Fund. In 1974 he was research assistant working on a National Institute of Health grant awarded to his superior, Prof. Gordon W. Gribble. He was Dartmouth Fellow in 1972 and 1973. ... **Robert C. Keenan** works for Centronics Data Computer Corp. in Hudson, N.H. **Robert J. Mulcahy** serves as a planning staff supervisor at New England Telephone in Boston. ... Dr. **Alexander Murdoch**, who received his PhD from Purdue recently, is now an application engineer at GE in Schenectady, N.Y. ... **John A. Pelli** holds the post of sales manager at Berkshire Trade Air Conditioning in Springfield, Mass. ... **Barry W. Soden** is an assistant engineer in the City of Chicopee (Mass.). ... Presently **John O. Tarpinian** works as a research assistant at MIT's National Magnet Labs in Boston.

## 1971

*Married:* **Robert E. Jolda** and Miss **Nancy McKee** in Oakland, California on November 29, 1975. Mrs. Jolda graduated from the University of California at Berkeley and did graduate work at Holy Names College, Oakland. She teaches high school in San Bruno, Calif. The groom graduated from Stanford University and is an economist with the U.S. government in San Francisco. ... **Robert P. Mills, Jr.** to Miss **Sheila Logan** August 23, 1975 in Morningdale, Massachusetts. The bride attended Quinsigamond Community College and San Mateo (Calif.) Junior College. She is a marketing research assistant at State Mutual Life Assurance Co. The bridegroom is an actuary at State Mutual, Worcester. ... **Paul Popinchalk** and Miss **Nancy E. Wood**, '71 in the state of Washington on February 14, 1976. The bride is with Westinghouse Hanford Co. and the groom is with Bovee Crail, Richland, Wash. ... **Noel Totti III** to Miss **Margarita Vizcarrondo** in Mayaguez, Puerto Rico on December 20, 1975. Starting in July the groom will be an intern in intern medicine at UPR's University District Hospital.

**Robert C. Blaisdell** serves as an economist at NE Power Planning, West Springfield, Mass. ... **Ellen L. Brueck** is a teacher and department chairman at Westchester Academy in High Point, N.C. ... **Barry L. Chesebro** is a graduate student at Lowell Tech. ... **Thomas R. Copp** works for Montrose Products Co., Inc. in Auburn, Mass. ... **Scott M. Dineen** is employed as sales engineer at American Heat Reclaiming

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Corp. in New York City. . . . **Donald G. Fogg, Jr.** holds the post of quality control manager at Procter & Gamble (Folger's Coffee) in New Orleans, La. . . . Presently **Dr. Paul S. Furcinitti** serves as a research associate in the physics department at WPI. . . . **John A. Giordano** has been elected assistant planning officer at Worcester Bancorp, Inc. He joined the firm as a planning assistant in 1973 after receiving his MBA from the University of Rhode Island.

**Kenneth R. Perkins** is a captain with the U.S. Army at Ft. Riley, Kansas. . . . **Ralph H. Reddick** is a graduate student at the University of Connecticut. . . . Currently **Peter Salis** serves as assistant superintendent of engineering at the National Starch & Chemical Corp. in Indianapolis, Ind. . . . **Anthony Schepis** works as a sales engineer for DeLaval Separator Co. in Hyde Park, Mass. . . . **Joseph J. Spezeski** is a doctoral candidate at the University of Arizona in Tucson. . . . **Robert Stein**, an electrical engineer who has participated in the long-range power supply planning of the New England regional electric system, has joined the staff of the Massachusetts Municipal Wholesale Electric Co. in Littleton, Mass. His major responsibility, when he was with the planning arm of the New England Power Pool, was the study of load flow and stability and the analysis of major new generation and transmission facilities proposed by member utility companies as additions to the regional electric system.

**Thomas Weil** works for Bechtel Corp. in San Francisco. . . . **A.E. "Tony" Yankauskas** has been promoted to assistant director of financial reporting in the corporate financial reporting section of the comptrollers' department at Continental Can Company, Inc., New York City. His most recent position was manager of special analyses in the department. Tony, who holds an MBA from Northeastern, joined Continental in 1973 as a finance trainee. . . . **Steven C. Watson** is at Harvard Business School and is social chairman of the Rugby Club. . . . **Ronald L. Zarrella** was recently promoted to manager of production planning and material control at Clairol. In addition to his production planning and material control duties, he is responsible for all raw material warehousing operations. Ron joined Clairol in 1971. Prior to his most recent promotion, he was department head of materials management. . . . **Michael P. Zarrilli** has been elected as assistant secretary in the Manufacturers Hanover Trust Company's national division western district. He will represent the bank in southern California, Montana, and Utah.

## 1972

*Born:* to **Jeffrey A. Petry** and **Mary Bellino Petry**, '74, a son, Anthony "Tony" James, on October 29, 1975. Tony has a brother, Jeff, Jr., 14 months old. Jeff is with the Torrington Co. as a district sales engineer for the Indianapolis office.

**Robert S. Ames** is a programmer with IBM in Boca Raton, Fla. . . . **Charles H. Bacon, Jr.** teaches at Massachusetts Vocational Technical School in Fitchburg, Mass. . . . **Gregory S. Blood** is a sales unit superintendent at Swift Fresh Meats Co. in

Rutland, Vt. . . . **William H. Degutis** works as a manufacturing engineer at Norton Co., Worcester. . . . **Jean Fraser** currently serves as town planner in the Department of Planning and Transportation, Greater London Council (the metropolitan government of London, England). Most of her work is on improving derelict canals and carrying out environmental improvements of various kinds in the East End of London. She expects to be qualified as a planner in the United Kingdom in October. . . . **James L. Jardine** holds the post of construction coordinator at Camp Dresser & McKee, Boston. . . . **William E. Kamb** serves as assistant superintendent for Turner Construction of Cleveland, Ohio.

**Roy N. Lampinski** is a self-employed medical equipment salesman in Valley Park, Mo. . . . **Douglas W. Mach** works for Motorola, Inc. in Schaumburg, Ill. . . . **Pramod D. Nayate** is with Raymond Control System in St. Charles, Ill. . . . **Robert I. Parry** is with Stone & Webster, Boston. . . . **Randy Partridge** has been awarded a three-year fellowship for his PhD from Mobil Oil Company. In the company-wide competition he received the only fellowship granted. Recently he spent several months in Moscow on a U.S.—U.S.S.R. research exchange program which WPI's Prof. Alvin H. Weiss coordinated for this country. . . . **Pratim Patel** has started his own business manufacturing coated and finely ground fillers for industry in Bombay, India. His wife, Nilima, whom he married in December, graduated from the University of Manitoba in Winnipeg, Canada. . . . **Paul C. Potvin** teaches in Putnam, Conn. and also lectures in physics at Annhurst College in South Woodstock. . . . Lt. **Marcello A. Ranalli** is with the U.S. Navy in Guam. . . . Formerly placement director, **Thomas A. Reynolds** is now an associate at Scientific Placement, Inc., Houston, Texas. . . . **Donald A. Taft** has been awarded first-year honors at Harvard Business School. He is presently in the second year of Harvard's MBA program. . . . **Thomas L. Terkanian** works as a construction engineer for George Macomber Co., and is located in Lexington, Mass. . . . **John (Jack) Zorabedian, Jr.** has joined Sweetheart Plastics in Wilmington, Mass.

## 1973

*Married:* **Mark P. Housman** to Miss Rhonda S. Lushan on December 21, 1975 in Boston, Massachusetts. The bride attended Skidmore College and is currently studying at the School of Public Communications, Boston University. The groom, who received his MBA from Boston University, is with Coopers & Lybrand. . . . **Thomas E. Radican** and Miss Kathie L. Birman on November 29, 1975 in Cranston, Rhode Island. Mrs. Radican attended the University of Oregon. Her husband is plant manager for Savage Industries in Camden, N.J. . . . **Joseph J. Staszowski** to Miss Jane Ann Caron on September 6, 1975 in Nashua, New Hampshire. The bride, who works for the N.H. Bureau of Dental Public Health, graduated with dental hygiene degrees from New Hampshire Technical Institute and the University of Bridgeport (Conn.) Currently her husband is working for his master's degree at

Northeastern University. . . . **James A. Viveiros** and Miss Denise M. Roussel on November 29, 1975 in Fall River, Massachusetts. Mrs. Viveiros, a graduate of Southeastern Massachusetts University, is employed by the Worcester County Institution for Savings. The bridegroom is with Alden Research Labs. in Holden.

**Bruce J. Baker** is a project engineer at Holland Co., Inc. in Adams, Mass. . . . **David C. Bedard** is with the U.S. Army at Fort Bliss in El Paso, Texas. . . . **Tom Bileski** serves as a field sales engineer at Electro-Heat, Inc., Bloomfield, Conn. . . . **Richard Birkenshaw** is with Chas. T. Main, Boston. . . . **Leo Buchakjian**, continuing with GE, currently located in Evendale, Ohio. . . . **Philip N. Ciarlo** is unit level manager for shop operations in the D.C. Motor and Generator Dept. at GE in Erie, Pa. . . . **Clarence J. Dunnrowicz** works for Raytheon Research in Waltham, Mass. . . . **Granger Dyett III** is self-employed as president of his own firm in Needham Heights, Mass. . . . **Will Elliott** continues his globe-wide duties with GETSCO-DSOI. Recently he sent greetings from Brazil. He has served in Africa and expects to be in Taiwan this summer. The company headquarters are located in Salem, Va.

**Jon Franson** is a meteorologist in training with the U.S. Air Force. . . . **Thomas A. Gargiulo** works for Metcalf & Eddy, Inc. in New York City. . . . **John J. Gizienski** serves as a process control engineer at GE in Providence, R.I. . . . **Robert M. Laham** is a proposal engineer at Combustion Engineering, Inc., Windsor, Conn. . . . **Paul A. Lewis** is with Dittman and Greer, Middleton, Conn. . . . **Joseph J. Magri, Jr.** works for Sikorsky Aircraft in Stratford, Conn. . . . **Dr. R.N. Mathur**, an associate professor, teaches at Lock Haven (Pa.) State College. . . . **Barry Mendeloff** is a project engineer at Sundstrand Corp. in Rockford, Ill. . . . **Robert G. Nelson** is with Haestade Engineers in Waterbury, Conn. . . . **Bruce E. Nunn** is now a research engineer for the Beloit Corp., Jones Division, in Dalton, Mass. His wife, **Allison Huse Nunn**, works for the Chester (Mass.) Division of Bendix Abrasives.

**Bill Owen** and his father have opened a new Bill Owen Radio and TV Service store in Mansfield, Mass. . . . **Maryann Bagdis Pac** is a technical representative for National CSS, Inc., Philadelphia. Headquarters are in Stamford, Conn. . . . **James Risotti** is a processing supervisor at GE in Lynn, Mass. . . . **Gary K. Smolen** is doing graduate work at the University of Massachusetts. . . . **Richard F. Socha** is returning to WPI as a graduate student. . . . **John A. Taylor** serves as a design engineer at Shuster-Mettler Corp. in New Haven, Conn. . . . **Ralph J. Veenema** holds the post of development engineer in the central research department of Worthington Pump, Inc. and is located in Glen Rock, N.J. He received his MSME from UMass last June. . . . Having earned his MS at Yale, **David C. Wason** is currently a programmer with Associated Catholic Hospitals Computer Center in Brighton, Mass. . . . **Karl S. Williams** serves as a boiler design engineer at Rileystoker, Worcester. . . . **Robert A. Yesukevich** is a design group leader at Universal Oil Products in Riverside, Ill.



ed: **James D. Perrone** and Miss Karen Anus in Worcester on November 8, 1975. The bride graduated from Becker. Her father is a health inspector for the Worcester Department of Public Health. . . . **David D. Ventre** to Miss Elaine S. Dyott in Dallas, Texas on February 14, 1976. **Steve Adams** was best man. Mrs. Ventre graduated from Trinity University in San Antonio, Texas, receiving a BS in business administration. Presently she is with the Hartford Insurance Company in Dallas. The groom is employed in the plastics department of DuPont at the New River Works near Orange, Texas. . . . **Max A. Wendell** and Miss Mary Nadolny on January 11, 1976 in Webster, Massachusetts. Mrs. Wendell graduated from Boston College and is a graphics designer for the office of Millbury and editor of *Dairy World* magazine. Her husband is a development engineer with Hewlett-Packard Medical Electronics Group in Waltham.

**Edward Arsnow** works as a safety engineer at Travelers Insurance Co. in Reading, Pa. . . . **William M. Block** is a mechanical engineer for Environmental Builders in Worcester, Conn. . . . **Clayton E. Boyce** works as a materials engineer at Ebasco Services, Inc., Killona, La. . . . **Roger J. Coker, Jr.** works at Brown & Root, Inc. in Houston, Texas. . . . **Gerald G. Buzanoski** joined Griswold & Fuss, Inc., in Worcester, Conn. His wife, **Kara Hogan Buzanoski**, presently serves as an environmental engineer for the state of Connecticut in Hartford. . . . **Donald W. Campbell** is an analytical chemist at Liberty Research Center in Hopkinton, Mass. **Robert P. Cikatz** works as a quality control engineer at United Nuclear Corp. in Danville, Conn. . . . **George A. Clark** is a base operations specialist at Norton Co. in Worcester. . . . **Steven D. Dettman** is with Sanders Associates, Ocean Systems Division, Nashua, N.H. **Edward R. Dodd** serves as an assistant electrical nuclear engineer at Gibbs & Hill, New York City. . . . **Robert H. Dutson** works for Factory Insurance Association, Baltimore, Md. . . . Presently Lt. **Robert F. Gaffney** is a radar intercept officer in the Marine Corps. . . . **Joseph H. Gaffen** is employed as an instrumentation and controls engineer at UOP, an Air Correction division in Wrentham, Conn. . . . **Donald R. Gettner** is a professional golf pro at Stanford (Calif.) Golf Course. His wife, **Linda Fritz Gettner**, is a graduate student at Stanford University. . . . **Thomas Hattem** is building canals with the Marine Corps in Malaysia. . . . Currently **Barry Lyndy** holds the post of assistant quality control engineer at Stone & Webster in Charlottesville, Virginia. . . . **Ricardo** and **Gretchen Lobo** are associate professors at Universidad Autonoma Metropolitana in Mexico City. . . . 1/Lt. **James J. Martin**, who recently graduated from U.S. Air Force pilot training at Moody AFB, Ga., has received his wings. Presently he is at Reese AFB, Texas, where he is flying the T-38 Talon and working with a unit of the Air Training Command.

**David F. McGuigan** is a graduate student at the University of Rochester (N.Y.). . . . Lt. **David M. Nickless**, executive (Army) officer of Bravo Battery, directed the 21-gun salute given for President Ford at the first National Bicentennial Fair held in Oklahoma City. . . . **Paul Nordstrom** serves as a water quality control engineer for the state Water Resources Control Board in Sacramento, Calif. . . . **James T. O'Bray** is now a buyer for the Gillette Company in Andover, Mass. . . . **David A. Peterson** is a graduate student at Cornell University. . . . **Michael W. Pontbriand** is an office engineer at the Badger Company in Carville, La. . . . **Robert R. Rosander** holds the post of project manager at Brown & Williamson in Louisville, Ky. . . . Dr. **Alice A. Saylor** is an assistant professor of chemistry at Bloomfield (N.J.) College. . . . Presently **Dean F. Stratouly** is employed by Diamond Power Specialty Corp., a subsidiary of Babcock & Wilcox Co., in Lancaster, Ohio.

## 1975

*Married:* **Bruce D. Arey** and Miss Debra D. Dostler in Worcester on November 8, 1975. The bride graduated from Burncoat Senior High School and is employed at Outlet Co., Auburn, Mass. . . . **Michael E. Aspinwall** and Miss Patricia A. Calce in Worcester on August 10, 1975. Mrs. Aspinwall graduated from Worcester State College and received her MA in special education and learning disabilities from Assumption College. She was a speech therapist in the Webster public schools. The groom was a systems analyst at Bay State Abrasives, Westboro, Mass. and is currently studying for his MBA at the University of Chicago. . . . **John M. FitzPatrick** and Miss **Virginia A. Giordano** on October 19, 1975 in Pawtucket, Rhode Island. **Denise Gorski** was the honor attendant. The couple is employed by the Charmin Paper Products Co. in Mehoopany, Pa. The bride is an industrial engineer and the bridegroom a production engineer. . . . **Scott K. Nelson** and Miss Marilyn L. Janes on November 29, 1975 in Athol, Massachusetts. Mrs. Nelson graduated from Becker. Her husband is with Keyes Construction Corp., Providence, R.I. . . . **David S. Roland** and Miss Cynthia L. Bubon in Worcester on October 25, 1975. The bride graduated from Auburn High School. The groom is a student at Rochester Institute of Technology and works for Eastman Kodak in Rochester, N.Y. . . . **William C. Rutter** and Miss Phyllis E. Poole in Worcester on November 29, 1975. Mrs. Rutter graduated from the Worcester Art Museum School and was a paste-up artist with Heffernan Press, Inc. The bridegroom is a chemical engineer with Eastman Kodak Co. in Rochester.

**Bruce P. Altobelli** is a project engineer trainee at Alpine American Corp. in Natick, Mass. . . . **Mark R. Antonio** has been named an assistant scientist in the new products development physical pharmacy department in the professional products research and development division of Warner-Lambert's research institute in Morris Plains, N.J. . . . **Kent E. Berwick** is with GTE Sylvania in Needham Heights, Mass. . . .

**Bruce A. Chamberlin**, a field engineer for DuPont Co., Wilmington, Delaware, is presently working on a two-year assignment as a cost reduction consultant to Remington Arms Co. in Ilion, N.Y. The assignment is part of a six-year engineering management training program sponsored by DuPont's engineering services division. . . . **Mark M. Deming** has been employed as a junior engineer for the Metropolitan Area Planning Council in Boston. . . . **Mark J. Drown** is an occupational therapy assistant at Fernald State School in Waltham, Mass. . . . **Kenneth M. Dunn** serves as a technical representative for Betz Lab. in Chicago. He travels to check equipment in process plants.

**Katherine R. Fowler** is an electrical engineer at Digital Equipment Corp., Maynard, Mass. . . . **Martin Fugardi** works as a project engineer at Damon G. Douglas Co. in Newark, N.J. . . . **Denise Gorski** has been promoted to director of research in the Office of University Relations at WPI. . . . **Gary D. LaLiberty** is a process engineer at Hooker Chemical & Plastics, Niagara Falls, N.Y. . . . **Kimberley R. Mains** is employed as a computer programmer at Associated Catholic Hospitals Computer Center in Brighton, Mass. . . . **Martin Meyers** is a graduate teaching assistant at UMass, Amherst. . . . **John W. Murray** recently joined Unionmutual in Portland, Me. as an actuarial student. He has passed the first two parts of examinations leading to a fellowship in the Society of Actuaries. . . . **Judith B. Nitsch** is a project engineer with Schofield Brothers, Inc., in Framingham, Mass. . . . Presently **Michael S. Schultz** is at the U.S. Army Engineering Center in Fort Belvoir, Va. . . . **Hooshang Shamash** is a graduate student at UMass. . . . **Ralph F. Soucie** expects to begin graduate work in architecture at Arizona State University this fall. . . . **Wayne E. Stratton** is an electronics engineer at the Naval Surface Weapons Center in Silver Spring, Md. . . . **Jon C. Wyman** is at Naval Officer Candidate School at the Naval Educational and Training Center in Newport, R.I.

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**NOTE:** Because of the special nature of this double issue of the *Journal*, we have deferred "Completed Careers" until next issue.

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## TRUSTEE NOMINATIONS

Proposals for the consideration of alumni as alumni term members of WPI's Board of Trustees are currently being sought. Valid proposals are due on or before June 16, 1976. Details may be obtained by contacting the Trustee Search Committee, c/o Stephen J. Hebert, '66, Alumni Secretary, Worcester Polytechnic Institute, Worcester, MA 01609.



**Wyman-Gordon** is the country's outstanding producer of forged components for America's key industries. Wyman-Gordon has supplied forgings for virtually every aircraft in the skies today, as well as for the Saturn and other space boosters. Equally important is its production of vital components for nuclear and turbine power plants, sea and undersea vessels, trucks, tractors and construction equipment.

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in a seminar as their final activity, one or two students presenting papers each week for a general group discussion. A student's grade on the entire sufficiency requirement reflects his work in the final term of independent study or seminar participation.

One fact of educational life emerged after several years of sufficiency advising: most WPI students are not ("sufficiently") well-prepared to undertake a sufficiency. They lack many of the basic skills and methodologies needed for investigation in the humanities. To remedy this, the humanities department has designed four "concentration" courses to teach some of these practical skills and methods: literary analysis, analysis in philosophy, religion, ethics, historical analysis, and an introduction to the

That is the humanities sufficiency. But WPI students can major in English or history. They must develop sufficiency in one of the areas of science or engineering just the same way as other students work out their humanities sufficiencies. At least six courses are included, and they must be thematically related and lead to a final independent study in the student's chosen area of science or engineering.

**H**ow well has the sufficiency requirement worked as a part of the Plan? David Riesman of the NSF panel commented that, "I have been impressed by the degree to which WPI students have become more at home with the humanities, and even found arenas of contact which make the humanities more than a kind of gloss for prospective managers or for cocktail party conversation."

Brooke Hindle, director of the Smithsonian Institution's National Museum of History and Technology, had this observation to make: "This is a well-conceived effort to accomplish an objective which no engineering school so far has succeeded in attaining. It is being carried forward by a group, a primarily young group, of faculty members who are putting more into this effort than could ordinarily be expected from a faculty."

Reporting to the National Endowment for the Humanities, historian T.H. von Laue of Clark University recounted the following experience: "We asked the students if they would make the Humanities part of their degree requirement if they were free to legislate on the subject. The great majority raised their hands in the affirmative, with considerable enthusiasm for the present program."

And finally, in assessing the program, English professor Michael Wolff of the University of Massachusetts at Amherst had this to say: "WPI's Plan and the humanities program are, on paper, where they should be. We all need to share in the rediscovery of what an education in humanities ought to be. But surely the flexibility that will help students branch out in all sorts of humane endeavor while introducing them to the traditional bases of knowledge must be one way to go. Above all, you have committed yourselves against merely temporary effects and to the institutionalization of significant change . . . What I see is the opportunity for faculty and students together to reintroduce education and reality to each other as only a new but readily available vision of the humanities can do."







## Jay Gainsboro—

### Millionaire in the making?

Jay Gainsboro has set a goal for himself: he wants to be a millionaire by the time he is 35. He started off toward that goal by entering WPI to study electrical engineering in preparation for grad school and a career in business. But he very nearly flunked out. "My first year was characterized by a lot of fooling around, spending five or six hours a day in the computer center, things like that." When he began his second year, Jay was ready for EE, he thought. His first term he took three courses and physical education. He passed physical education.

"My parents weren't too impressed. They said, 'You've got the choice of producing, or you can leave school; we're not going to pay to have you fail three courses out of four.' It was a time to reevaluate my position. I realized that because I hadn't done too much studying my first year I didn't have the really good math background I needed for electrical engineering."

Jay went back to his original goals and decided to combine his business interests with engineering. He looked over the offerings and the faculty of the management engineering department and decided to make the switch. "At the time it really was a cop-out. Looking back on it now, I think it was a good decision. I think that if I had gone through WPI with my original plan, I would have come out with engineering but no business background at all. And had I done well in electrical engineering, I wouldn't be where I am now."

(Where he is now, at the time we interviewed Jay, he was trying to decide among four job offers, all of which he applied to.)

Once he had decided on management engineering, things took a decided turn for the better. Jay's grades pulled up, with about 50 percent distinctions, and he began putting some direction into his studies. Jay also realized that he worked better under pressure, and the normal load of three courses per term just wasn't supplying him with enough motivation to buckle down and study. So he registered for severe overloads, as many as six courses per term. He thrived under this kind of pressure, which would have submerged most other students. Although it was far out of the ordinary, it worked for Jay Gainsboro, and that's what counted.

Jay was no stranger to the ways of business. He started his first business, in fact, at about age fourteen. A skier himself; he and a friend made ski gaiters, cloth overboots to keep the snow out of one's socks. The two turned a profit of about \$500. During Jay's first year at WPI he got a concession selling jewelry in the WPI bookstore. His second year, working for a local bottler, he sold soft drinks. This third year he sold books.

After his third year at WPI, Jay took off nine months to start up a new company with his father. When he returned to WPI in term C, he had a new perspective on the courses he took. "I went through different stages. My initial reaction was that this was all a bunch of bull, that there was nothing to the theoretical. But then, thinking about it a little bit more, I realized that there was a definite need for it. Theory gives you a place, a basis to start from. The practical is all right, but having the theoretical background and the knowledge to draw on is very important."

Jay's major and interactive qualifying projects were both concerned with solar energy, though in very different ways. For his major project, Jay was part of a three-







person team that designed and built a practical solar heater for a swimming pool. One student designed and built the working prototype, another designed the manufacturing process necessary to produce it, and Jay conducted extensive market research to determine how the heater should be marketed. The students put together a twenty-five page business plan, complete with cash flow projections and the amount of capital that would have to be invested.

For his IQP, Jay decided to try and share some of his knowledge. He went back to his school in Wayland, Massachusetts, and offered to conduct a class in solar energy for interested students. After considerable red tape, the idea was approved. Then Jay spent a day talking to each science class to drum up interest. He hoped to sign up ten or fifteen students, but fifty enrolled at the beginning—nearly one-fourth of all the students he had talked to. Jay's class ended up with twenty-five students, who got very involved indeed. As Jay put it, "I had two top students doing things that were even a little bit beyond me. One was building a working model of a satellite solar power station which would generate electricity and transmit it over a distance of twenty-five feet. Another made a steam engine powered by the sun." Jay aims high with all his work. "My ultimate goal with this course was to have NBC Nightly News come in and do a little thing about us. But the major thrust was to let people know that solar energy is practical."

Jay was disappointed with the results of his competency examination. "I put in as much work as I possibly could. I had about fifty-five hours to work on it, and I got about six hours of sleep. I felt I did a very good job. My oral exam, though, concentrated on one aspect, finance, and my written paper had dealt also with personnel, operations, and marketing. The hardest part of the competency exam is waiting for the results. After twenty minutes, the faculty group came out and said I passed. I was very disappointed. I got an Acceptable and I wanted a Distinction."

The last degree requirement Jay fulfilled was his sufficiency. For this Jay chose to study a somewhat different area. "I chose philosophy, the ethical issues in business. I figure I'm going to be spending the rest of my life in business if my plans go the way I want, and I feel I should have a philosophical point of view on it." Jay read extensively in John Stuart Mill, Adam Smith, and other classical economic philosophers, then explored particular issues in modern society, such as price-fixing and the social responsibility of large corporations.

At this point Jay is off working on his first million. The thing he remembers best about WPI is the flexibility of the WPI Plan. "It gives you an opportunity to go off on your own and to do what you want. I don't think I could have been happier in any other school. Everything worked out perfectly for me. I wouldn't have said this during my second year when I failed three courses, but looking back on it now and being out in the real world and experiencing it, I feel that WPI has provided me with a great basis from which to go out and conquer all."

# How well the Plan is going



**E**veryone wants to know how well the Plan is working, and what people think of WPI these days. Probably the first place to start looking for some of those answers is on the campus itself. What do students and faculty—the people who live closest to the Plan—think, and how well does the Plan today compare with what they felt and expected a few years ago before the Plan became a reality?

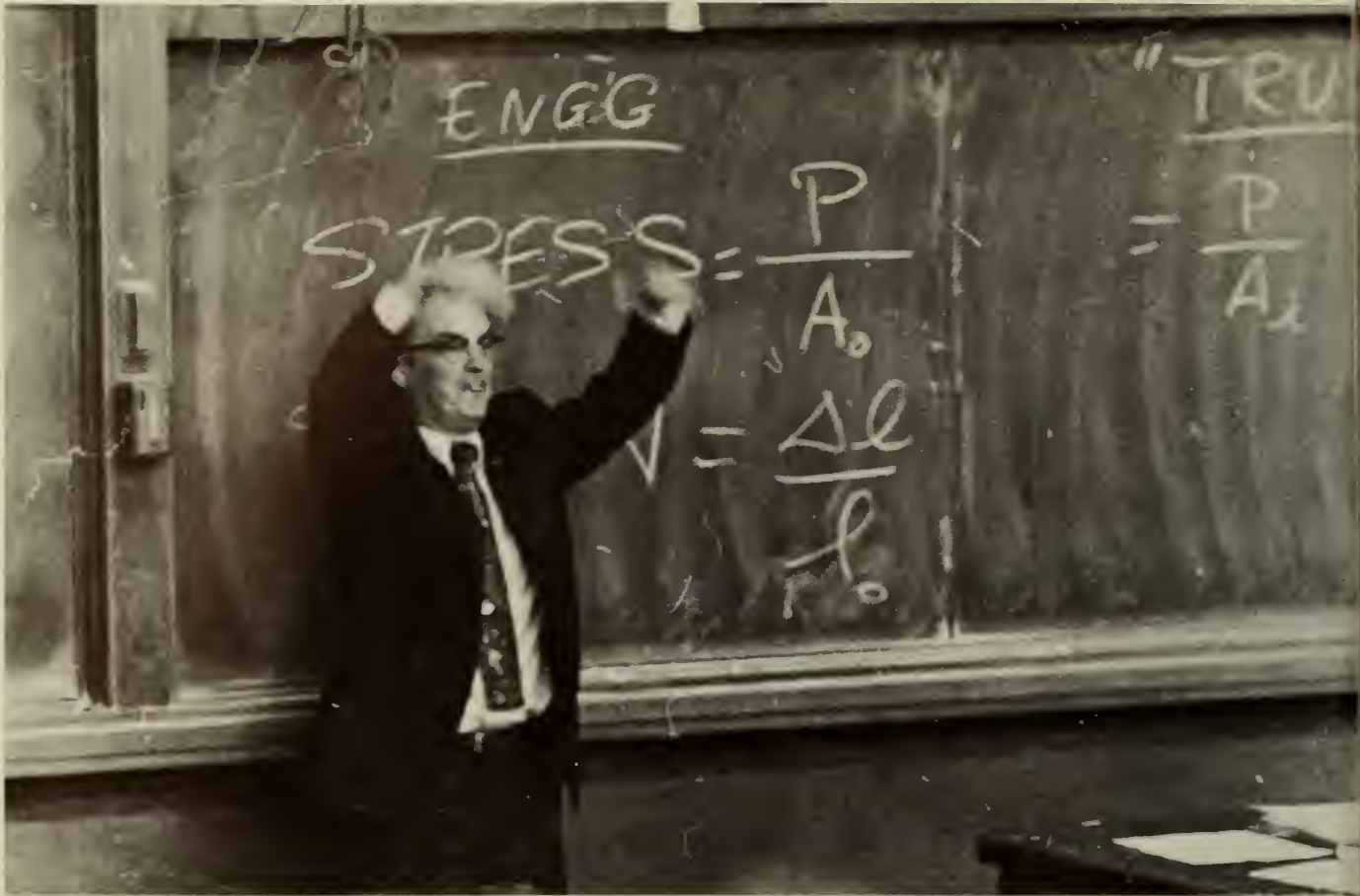
## Students

Those answers are readily available, because of two studies which have been carried out under the auspices of the National Science Foundation. The first, of students, has been conducted by Dr. Karen Cohen, an evaluator who is also affiliated with M.I.T. She was asked to evaluate the effects of the WPI Plan on the students. For three years she interviewed hundreds of students from all classes, and she also interviewed students at Clarkson College of Technology and at Stevens Institute of Technology, to provide a basis for comparison and to allow her to judge what observable differences were merely reflecting national trends. (Clarkson, which has a traditional program, was selected because it has about the same number of undergraduates as WPI . . . and they are remarkably similar in background. Stevens was picked because its faculty had recently undergone significant upheaval.)

Dr. Cohen's conclusions are reassuring. Plan students, she found, are by any available measure as competent as previous WPI students, if not more so. "Students at WPI spend more time on learning activities than those in comparison institutions, and the time spent in experiments and project work is greater than the amount of time spent in class. The WPI Plan is a feature that attracts students to the school more prominently than do the programs at comparison engineering schools. The program also attracts a more diverse group than used to come to WPI.

"Entering WPI students have higher educational goals in general. They value such things as the ability to work with ideas, the development of a capacity for life-long learning, being an interesting individual, being of service to others, and changing the world for the better more strongly than do students at the other engineering schools.





"Those in the program perform exceedingly well in job-oriented projects, both as rated by project industrial sponsors and by the students themselves. Furthermore, the quality of their academic work under the Plan is equivalent or slightly better overall than before the institution of this new system, as are their EIT scores, an external index of competency in engineering."

## Faculty

During the turbulent three years of Plan implementation, faculty attitudes and actions were studied by Dr. Frank Baker, of the State University of New York at Buffalo, and Dr. John Babarro, '59 of Harvard University.

As has been indicated in other articles, demands on the faculty have been—and are—much higher than at other colleges. One faculty member put it this way: "Everyone is working much harder with longer hours. I never get a free evening because I have students in my office so much of the time."

And with all this extra load, what do the faculty think about the WPI Plan? To quote Baker and Gabarro,

"Nearly four-fifths of the faculty indicate they believe that the WPI Plan has been a successful experiment in educational reform. Comparing it to older patterns of engineering education, nearly two-thirds of the faculty indicate that they believe the Plan offers a science and engineering education which is superior to

the traditional approach. Regarding the costs of the Plan, almost two-thirds of the faculty indicate a belief that the benefits derived from the WPI Plan justify its high costs in terms of their own workload and professional development.

". . . In assessing the success of the Plan, . . . almost two-thirds agree that the level of competence of WPI graduates is increasing as a result of the Plan."

Baker and Gabarro summarized their findings with this praise: "Even with the hardships and overextension the faculty experienced in implementing the Plan, more faculty now understand and support the Plan than did at its inception, and a new sense of confidence is developing among the faculty as a whole. . . ."

"As external observers we have witnessed a substantial maturing within the faculty beyond that present in most institutions. It has manifested itself in the faculty's gradually developing confidence and ability to address bold and significant changes with an increasing sense of calmness and determination. In the same vein, the faculty has developed a tolerance for opposition and criticism which it did not possess three years earlier. . . . This consequence is an important effect of the Plan on the faculty. But it is also reflective of the quality of the faculty and its leadership. It may very well be, as several of the NSF panelists reported, that few other engineering faculties exist with the qualities necessary to implement a 'WPI Plan.'"

## Recent alumni

Perhaps more important than the attitudes of students is the experience of those who *were* students under the Plan, graduates from the classes of 1972 through 1975.

The *Journal* interviewed several of them to find out just how they feel about WPI and the Plan now that they can look back on it with some perspective. We were particularly interested in their perceptions of how all WPI prepared them for their present jobs.

**William Elliott, '73**, an electrical engineering major, works as a field supervisor engineer with GETSCO, a division of General Electric, in Salem, Virginia.

"I didn't take as many technical courses as my colleagues at work, but my WPI education was more than adequate to take care of what I know and use in the technical area," Will said. "I am a firm supporter of the Plan. It has gone much farther and progressed much more than I anticipated." Will feels that the WPI Plan offers "a better education, better facts, and it's a character builder."

Will has especially fond memories of the faculty at WPI. "The personal contact with faculty members brings out the whole spirit of why one is learning something, and why a person is doing this work to begin with."

**Barbara Bain, '74**, majored in life sciences at WPI. She is currently a data systems analyst, part of a design team building a new data center for Southern New England Telephone Company in New Haven, Connecticut. "I think WPI education is far superior. The whole Plan—the competency and the projects—gives you working experience. When I'm working on a problem, my co-workers often ask, 'How did you get that answer?' And I can answer that it's because I did projects like this at school." Barbara changed from the traditional program to the Plan during her sophomore year. If she had it to do over again, she'd prefer to spend all four years on the Plan. Other comments: "When I took my competency exam, it was the only time I realized just how much knowledge I had actually stored up in four years of education."

**John Chipman, '74**, is another EE graduate. Currently an electronic instrumentation engineer for GE-Sylvania in Needham, Massachusetts, John rates his WPI education "better than the education at the average school. Projects give a student a chance to do realistic things. They prepare you most for the kind of work you do in engineering." Although he wishes he had a better background in engineering economics—"being aware of engineering costs when you design something"—and he feels this has handicapped him in his job, he has nevertheless progressed more quickly than his co-workers. Dave Hatch, John's supervisor at GE, observed that he "was very much impressed by John's maturity in engineering. I felt he was much better prepared. John is way ahead of himself compared to graduates from other schools." Hatch also commented that WPI seems to offer a more wide open set of choices in school, that it is not so restrictive as other colleges, and that a really noticeable difference is the projects the students must do.



**John Barnes, '74**, is a mechanical engineer and director of the power systems group at Combustion Engineering Corporation in Windsor, Connecticut. John also feels that his WPI preparation was better than that of his colleagues from other schools. "It's very much better," he said, "in that it was much more rounded. I'm in a technical atmosphere, and no one here seems to have had much exposure to anything other than technical areas. I feel I have an advantage over my colleagues because of my well-rounded education."

"The Plan put the burden of my education on myself. It allowed me the freedom to get myself educated. And that in itself, over four years, leaves a remarkable imprint."



# What outsiders see in the WPI Plan

Perhaps more important in the long run than what students and faculty think of the WPI Plan are the opinions of the outside world—particularly business and industry, the ultimate judges of how well most of WPI's graduates perform.

One recent indicator involved the class of 1975 (which was half Plan and half non-Plan) and their performance on the Engineer-In-Training examination last spring. In all of Massachusetts, 88 percent of those who took the examination passed it. 86 percent of WPI non-Plan students passed, while 93 percent of Plan students passed. Furthermore, the distribution of scores was quite distinctive: Plan students received higher scores than did the group of non-Plan students who took the exam at the same time. Although this index is only one indication of actual engineering competence, and many other factors must be taken into account, many professionals in the field regard the EIT test scores as significant and "hard" data which indicates the value of a person as an engineer.

## The NSF Visiting Committee

Mention has been made throughout this publication of the National Science Foundation Visiting Committee. This group was established in 1972, under the terms of WPI's record grant from NSF, as an independent committee of outside educators and industry people, who would "monitor" the development of the WPI Plan, be as feedback to NSF and to WPI. The group was a blue ribbon panel, including:

- Dr. Lee Harrisberger, dean of science and engineering, University of Texas at Permian Basin
- Dr. Bruce Mazlish, head of the department of humanities, Massachusetts Institute of Technology
- Dr. George Pake, vice president, Xerox Corporation, Palo Alto Research Center
- Dr. Kenneth Picha, dean of the school of engineering, University of Massachusetts
- Dr. Eugene Reed, executive director, Bell Telephone Laboratories
- Dr. David Riesman, Henry Ford II Professor of social sciences, Harvard University
- Dr. John Whinnery, professor of electrical engineering, University of California—Berkeley

The group visited the WPI campus twice a year for three years. The scope of their visits is described by George Pake: "A typical meeting comprised two days of both structured and unstructured sessions with student, faculty, and administrators, as well as executive sessions of the Panel. Panelists were given access to any data or individuals they asked to see: all of WPI became an open book which we were free to pursue or study in depth as we wished. The Panel involvement extended to attendance of faculty meetings, meeting with such committees as the faculty committee on tenure, visiting with professors in their homes, lunching with students, and one-on-one interviews with student, faculty, and administrative personnel. A few panelists made additional visits on their own to talk with faculty and students, to attend classes, etc. *It is quite possible that some academic members of the Panel have a better overview of WPI than they do of their home institutions.*" (italics added)

After three years of watching the WPI Plan progress from concept to reality, the NSF panel was in a unique position to judge WPI's accomplishments. The panel started off skeptical: "I frankly did not think the Plan would last as long as the three years of our panel, but all before that a crisis would occur which could not be avoided," said David Riesman, echoing the feelings of the other panelists.

But in those three years, the panel's skepticism turned to belief that WPI might be able to pull it off after all, and finally to enthusiasm at our achievement.

**Bruce Mazlish:** "How can I sum up except to say that a plan that seemed impossible of implementation three years ago is now moving along briskly and well."

**David Riesman:** "In the dawn's early light, the Plan is still there, still in major part uncompromised and relentless in its demands on faculty energies and student talents. And it seems clear that for the best students, WPI has provided a better education than they would have received at the comparison colleges, and that the faculty themselves have learned more than they would have, even at engineering schools of higher reputation and a greater national visibility prior to the Plan."

**Kenneth Picha:** "The faculty and administration are to be commended for the excellent progress in implementing the innovative WPI Plan."

**George Pake:** "My conclusion after three years of seeing which I have seen the first class of graduates who have been fully under the WPI Plan: *It is the most successful experiment in educational reform with which I am familiar.*"

**Lee Harrisberger:** "This is one of the best administered projects I have seen, and it has met its objectives for the three-year period exceedingly well. Problems of implementation were met and solved with very little compromise of objectives. The Plan is essentially operational, and the problems that remain can be solved in the same competent manner as all in the past."



**John Whinnery:** "There is a spirit, pride, and justified self-confidence among the graduates and other students we met that signals success in achieving the most important objective of the program. . . I have not seen a more ambitious undertaking in any project for educational innovation, nor one at any level carried out better."

**Eugene Reed:** "With the graduation of the first generation of Plan students, an important milestone has been reached and the results of WPI's institutional transformation are beginning to emerge. We met with six seniors selected at random. . . They were an impressive group: articulate, self-confident, mature, knowledgeable in their fields, and wholly sold on the Plan. . . This group of young men and women are a credit to WPI. They will go out into the world, including top graduate schools, as living advertisements of the Plan."



## In the harsh light of business and industry

Perhaps the most important judges of the WPI Plan, particularly for students, are the people who have to hire and work with Plan graduates, who have to compare WPI's end product with the students from other colleges.

In these economic times, jobs are an especially sensitive area. And ultimately the success of the WPI Plan will rest on whether WPI graduates can get at least as good and as many jobs as graduates from other schools. And what does the business world think?

"Interviewing your students calls for a slightly different but much more enjoyable, approach than that used at other colleges. Thanks to their project work, I found the typical candidate to be more outgoing in describing his Worcester Polytechnic Institute experiences; more practical in his attitudes toward a career; and really, much more "at home" with himself in terms of confidence in his abilities. It's very much akin to interviewing a student who has participated in a cooperative education program throughout his college years—having applied his engineering knowledge to some extent, the candidate has already made a partial mental transition from student to industrial/business worker.

". . . Like other industrial representatives, I had some initial concern about whether or not the Plan would graduate fully qualified chemical, mechanical engineers, etc. Based upon this past visit, I'm no longer worried and hope instead that the concept spreads to other, more rigid engineering curricula around the country."

—R.C. Hawkins, Manager, Selection & Placement, Koppers Company, Inc., Pittsburgh

"A short while ago our personnel representative held interviews at various colleges in the New York and Boston metropolitan areas as well as at Worcester Polytechnic Institute.

"In making a verbal report, he commented that, of all students interviewed, Worcester was the standout for responsiveness, knowledgeability, appearance, and type.

"Further, the head of our Process Department added the important point that, based on his experience, the Worcester B.S. graduate today belongs at the top of the undergraduate league . . . I should mention that he is an M.I.T. man."

—J.M. Driscoll, senior vice president, Stone & Webster Engineering Corporation, New York City



"I was recruiting at Tech last month for the Center. I was very impressed with the quality of the students this year. My last visit was three years ago when the Center was in its infancy—what a difference now! The exposure to real world problems is putting your students ahead of those from other colleges in coping with real life situations. They are much more conversant, self-assured, and accustomed to solving problems for which answers are yet unknown. I was very impressed. Keep up the good work."

*Christopher G. Foster, "Naval Underwater Systems Center, New London, Connecticut*

"MPI Plan graduates are coming out just as good engineers as our older grads, but they are much more aware of the society in which they are doing engineering."

*L.S.S. Ribeiro, '58, treasurer, Jamesbury Corporation, Worcester.*

## And on to graduate school

Not all students are ready to begin a career after four years at WPI. What about those who want to go on to graduate or professional schools? From the Class of 1982, 22 percent of Plan students and 16 percent of non-Plan students went on to grad school. It would appear that Plan students tended to go to grad school farther away from WPI than did non-Plan students, and we could make a good case that, by and large, Plan students went to more prestigious graduate schools than non-Plan alumni. But see for yourself. Here's where they went:

School	No. Plan students	No. Non-Plan students
Boston College		1
Boston University	1	
Brandeis University	1	
Cornell University	1	
Case Western Reserve University	1	
Colorado School of Mines		1
Cornell University		4
Dartmouth	2	1
Lehigh Dickinson University		1
Georgia Tech	1	
Harvard University	1	
Mass. College of Optometry	1	
N.Y.U.	2	2
Ohio State University	1	
Pennsylvania State University	1	1
Stanford University	3	
SUNY at Stony Brook		1
Tufts University	1	
University of California at Berkeley	1	
University of Colorado	2	
U. of Connecticut Med School	1	
University of New Hampshire		1
University of Illinois		1
University of Massachusetts	2	1
University of Pennsylvania	2	
University of Rochester	2	1
University of Wisconsin	1	
Virginia Polytechnic Institute	1	
WPI	4	7
Yale University	2	





# Dollars and cents support

The WPI Plan has been expensive. The amount of time and effort involved in changing an institution's entire curriculum can hardly be guessed at . . . but it's a lot. New facilities and new resources had to be added, too, and none of this came during times of economic plenty. As the size of the undergraduate student body grew from 1,600 to 2,100—as new programs and new departments had to be developed—as rising costs quickly outstripped rising income—all the while the traditional WPI educational program had to be maintained, salaries paid, buildings maintained and in some cases renovated.

And the WPI Plan itself is not a cheaper form of education. Quite the contrary. According to Eugene Reed of Bell Labs, "The major problem is cost. The Plan represents education inherently more expensive than the traditional format. I don't know how much more expensive—my estimate: 30% to 50%—nor do I know how WPI will pay for it."

That seems like a gloomy picture. How could WPI possibly have created the WPI Plan—much less be able to maintain it—under those circumstances without incurring crippling budget deficits?

The answer lies in large part with special financial support given to WPI specifically because of the Plan. In fact, a list of foundations and corporations that have made major grants to the WPI Plan—not to buildings or endowment—reads like a Who's Who of the major supporters of higher education in this country. Here are some of them:



- April 1970 **The Alfred P. Sloan Foundation, \$200,000:** to fund the Environmental Systems Study Program, a prototype of project work under the Plan.
- June 1971 **Carnegie Corporation of New York, \$188,000:** to fund the remodeling of courses and "design" work leading to the Plan's beginning.
- October 1972 **National Science Foundation, \$733,400:** A three year grant, the largest ever given by NSF under its College Science Improvement Program, to fund implementation of the Plan.
- February 1973 **The Kresge Foundation, \$150,000:** to provide, by renovation, a technical support and service center for project work located in the old Foundry.
- January 1974 **National Endowment for the Humanities, \$180,000:** to promote the teaching of humanities in a technical school by developing the WPI Plan sufficiency.
- April 1974 **The Alfred P. Sloan Foundation, \$350,000:** to strengthen social science competence of both faculty and student by supporting interactive project activity and special summer programs for training faculty.
- July 1974 **The Ford Foundation, \$180,000:** in recognition of WPI's achievement and innovation, a Venture Fund grant to encourage and support other improvement in undergraduate education, to be used at the discretion of the institution.
- October 1974 **The Andrew W. Mellon Foundation, \$150,000:** to support faculty development in the humanities.
- June 1975 **The Alfred P. Sloan Foundation, \$85,000:** to aid in developing audio-visual programs and instructional methods.
- June 1975 **National Science Foundation, \$430,100:** to continue with Plan implementation, in recognition of WPI's position as a national leader in engineering education.
- October 1975 **National Foundation for Arts and Humanities, \$82,500:** to further the use and development of audio-visual aids to instruction.
- March 1976 **Lilly Endowment, \$123,000:** to support and develop social science faculty and programs.

# The WPI Plan . . . What it isn't

One of the problems in talking about the WPI Plan is that people tend to fasten onto a number of highly visible changes that have been made in the academic structure, saying "These are part of the WPI Plan"—or even, "These *are* the WPI Plan." A significant number of those changes are *not* part of the Plan; they just happen to have been instituted at the same time as the Plan. They help the Plan, but they are not essential to the concept.

Three of these interesting but nonessential elements have been widely publicized: Intersession, videotaped individually paced teaching techniques, and WPI's cotiated admissions program. Two others, the 7-week semesters and the changed grading system, have been the focal points of considerable on-campus controversy though this has been little publicized off campus.

To complete an understanding of the WPI Plan, these other elements must also be understood. They play an important role in shaping academic life on campus.

## Intersession

Two or three weeks in January devoted to a different kind of academic enterprise: this is the basic recipe for intersession, which is modeled after January programs found at scores of colleges. At WPI the ingredients generally include 150 or so short courses, running from an evening to ten days. Technical subjects are covered, but many other courses are far afield of the usual WPI coursework: gourmet cooking, teaching contract bridge, winter mountaineering trips, bartending, pipe-organ instruction, and the list goes on.

Why? The fundamental reason for beginning the intersession program was to help break down the rigid structure that had the faculty member engaged in teaching and research, but seeing his students in almost no other situation. Intersession was designed to draw out faculty members and students to discover common interests, to meet each other as people and not as adversaries in a classroom situation. In the words of David

Riesman, NSF panel member, "It is rewarding for students to discover that their feared professor of physics is teaching them how to build harpsichords, or that a chemical engineer is giving an Intersession course on Chinese cooking, or that a professor of history is taking them to Florida to do oral history among the remaining indigenous residents of the Florida Keys. Faculty and students discover each other in new ways, increase the range of mutually shared interests, break the routines of formal relationships—which are particularly striking at WPI because of the near total lack of any non-classroom residential contact between students and faculty."

Thus the intent of Intersession was to build bridges of communication between students and faculty, to help foster a sense of community on campus. In five years, though, Intersession's impact has changed somewhat. In the beginning, the hoped-for goals were indeed achieved. But student participation has dropped somewhat each year, leveling off at about 50 percent each year. One thing that has happened is that students have learned to use Intersession for other purposes, for special projects of their own, and as a period in which to help organize or wrap up projects and sufficiencies.

Intersession has played a large role in helping faculty and students get to understand each other better, and that has been an important factor in the success of the sweeping changes that have been going on in other areas.



Under the WPI Plan, three basic grades exist: *Acceptable*, *Acceptable with Distinction*, (*AD*) and *No Record* (*NR* which means that no record is made on the transcript of the student's having taken that particular course). A grade of *Not Acceptable* is recorded only for project work or independent study.

This change from the traditional A-B-C-D-F was made to help break away from the tyranny of a quality point average, with a view to letting students worry more about studying their subject to understand it than about getting a good enough grade to raise their QPA to a certain amount. The *AD* grade still allowed recognition of superior performance, while the *NR* would hopefully encourage students to venture into areas with which they might not be too familiar because there was no stigma attached to failure, no permanent brand on the record.

All grading systems have their pluses and minuses. At WPI, it seemed there were—and are—some students for whom the grading system is inadequate. If they have no hope of distinction, then there is no intermediate grade to help spur them on to make an effort greater than that required simply to get by. Although this affected only a minority of the students, it is a real problem nonetheless. About the only answer to it, though, is that another grading system will also work to the disadvantage of certain students. Changing the grading system would only shift the burden to a different group.

Along with the recorded grades, a student's transcript also contains written descriptions of his or her work in projects and independent study. By detailing a student's accomplishments and performance in these self-motivated areas, the Plan transcript actually gives a better and clearer picture of that student's real achievement at WPI.

Whenever you change a grading system, it seems, you are stuck with the task of teaching outsiders how to use and interpret the new system. Industrial recruiters balked at first at the Plan grades: without a QPA, how could they adequately judge a student's record? It was a case of unfamiliarity breeding contempt—or at least caution. But most of them soon learned that descriptions and evaluations of degree-qualifying projects gave them a much better indicator—one more relevant to their own job-filling requirements—of a student's potential and performance than a simple succession of letter grades could ever do.

The one remaining bastion of required QPAs, it appears, is for admission to certain types of professional school—notably medicine and law. Such institutions may have 40 people applying for every available opening and many of them feel, rightly or wrongly, that they simply don't have to be bothered looking at a student's record unless there is a number attached to it. This has created a problem for some WPI students, and for these cases (and *only* in these cases) a compromise with the grading system is made, computing an "artificial" QPA which is accompanied by a disclaimer to the effect that Plan grades are *not* translatable into numerical averages. The "number" is just to help those students get past the initial screening—it is, in fact, exactly what many of these professional schools do themselves anyway.

## 7-week terms

The first visible aspect of the WPI Plan changes came about in 1972 when 7-week terms hit the campus. Discussing the initial reaction of many that 7-week terms had been a mistake, David Riesman says, "I thought instead it was a stroke of genius. It made clear that the Plan was a revolution, that it required rethinking one's subject matter and stripping it to its essentials, and altering one's relations to students so as to put them on their own."

There were several reasons for making the change. First, it was designed to enable students to devote an entire term to working on a project, perhaps off campus, and made the formation of project groups possible. Second, the 7-week terms were designed to make the overall academic calendar more flexible, by enabling students to enter and leave the college at different times in the year, to take a term off with relatively little disruption in their careers. Third, the workload would remain the same, but students would study only three courses at a time, instead of the former five or six during a 14-week semester. By doing this, it was hoped that students could more thoroughly immerse themselves in their coursework, learning more efficiently.

Of course, things never work out in practice quite the way their designers intended. After an intensive two-summer-long effort, financed in part by a grant from the Carnegie Corporation and in part by faculty members donating two weeks their time, the college's course offerings were completely revamped. When classes opened in September 1972, though, the snags in the design soon became apparent. The rapid pace of learning proved a hardship on returning students, who were simply unprepared for the change it would require in their studying and learning habits. Faculty, too, couldn't adapt overnight. Many tried to teach their material in the same old ways, just twice as fast, and that often didn't work. In some subject areas—mathematics and the humanities, for example—the newly required pace was simply too fast. It didn't allow the time needed for concepts and insights to develop and mature. It seemed to threaten the basic process of understanding in those areas.

But solutions were found. Experience taught many faculty how to deal with the new time frame. For a few areas, the faculty decided to ignore the 7-week term, running a course for 14 weeks at its previous rate of teaching. With occasional modification, the 7-week terms have proved effective. The WPI Plan could be operated with 7- or 10- or 14-week terms, once the college's structure of courses has been designed to accommodate the interval. Though not essential to the Plan, the 7-week terms have helped to signal the sort of drastic change that the Plan embodies, telling students, faculty, and outsiders alike that something different is indeed happening in Worcester.

## Television teaching and setting your own pace

It was apparent right from the beginning that WPI faculty were going to be utterly overloaded if they tried just to add on project supervision, advising, and competency tests to their regular teaching load. With this in mind, WPI has made a big commitment to the use of television and videotape as a medium of instruction. When a professor can record his lectures once, perhaps doing several of them in one day, he is freed of an enormous burden. The second time around, particularly, he has more time available to meet with students on an individual basis and to advise project groups. Updating a course becomes a simple matter of redoing only those things which need changing.

A second benefit of putting instruction on videotape, which is then available at the library, is that a student can study at his own speed, and according to his own schedule. If 10 p.m. is convenient for him, then it is convenient for the videotape. And if the student wants to go through four lectures at a sitting, he can. The videotape removes the possibility of a student interrupting to ask a question and have it answered immediately, it also adds the possibility of viewing the lecture or parts of it two or more times.

A number of courses are offered in a completely self-paced version (called IPI, for individually prescribed instruction) using programmed-learning texts, videos, tests, and periodic tests, or "assessments," which must be mastered before the student can go on to the next unit of instruction. There are also regular conference sessions where students can get help on trouble spots. The IPI system puts a great deal of responsibility on the student: there is nothing but the calendar to force the pace, and if the student goofs off and doesn't get going, there is no one else to do it for him. But for the student who can handle it, IPI offers a marvelous bonus. Because the student must master one unit before moving on, he can't get in over his head because he missed out on a vital background area. It may take the student three weeks to finish a course, or it may take him twelve, but when he is through he has demonstrated a grasp of the subject.

Because so much of the WPI Plan depends on the student's own initiative and participation in the educational process, IPI is especially suited to WPI. It is not applicable to every subject, but it offers significant benefits to students, faculty, and the college. While not a central part of the Plan, IPI has been a very important factor in making it succeed.

## Negotiated admissions

WPI's negotiated admissions process is unlike the other things discussed in this article. It wasn't instituted along with the Plan; it came later.

Basically, the negotiated admissions process involves a very heavy counseling role by the admissions staff with each prospective applicant. The interested candidate is exposed to a wide variety of WPI experiences and literature, including interviews, tours, taped presentations, perhaps sitting in on a class. Then, providing only that the prospect meets the minimal requirements of four years of high school math, three of science, and four of English (this requirement, in itself, will weed out perhaps 90 percent of high school students), the decision to admit is made by the applicant himself or herself, not by the admissions office.

Because of the high self-motivation required of students under the WPI Plan, it seemed only logical that the admissions process should reflect the need for participation. The student is told about WPI and shown what will be expected; told how his or her test scores relate to those of current students; and finally asked to assess his or her own chances. It happens occasionally that a student opts to admit himself, even though the admissions staff are convinced that the student probably won't be able to make it through. In this case, the student is given the opportunity to withdraw, with his deposit returned. But if the student has enough confidence in himself, despite the warnings, then WPI will give him a chance to try.

"There's no way we can measure a student's motivation," says Admissions Director John Brandon. "It's not a matter of test scores or class rank. And motivation is really important under the WPI Plan, more so than at most schools. So if a student is willing to bet on himself, we're not going to tell him no."

When negotiated admissions was first adopted in 1972, there was some fear that this meant a lowering of standards and would result in ill-prepared students. This was in spite of the fact that, just prior to the new system, WPI was accepting 1200 of its 1300 applicants. In practice, there has been little change in the student body which can be attributed to negotiated admissions. It appears that there are slightly more "superstars" and slightly more students at the bottom end of the scale. But this may also reflect differences in the type of student who is attracted by the Plan.



# Genesis— The birth of the WPI Plan

by Andreas de Rhoda

Perhaps the most striking thing about the WPI Plan is that it was designed not from the top down but from the bottom up. Its creators didn't start by changing academic courses, the usual route of college reform. They weren't even content to stop at the next and far more basic stage, rebalancing the distribution of requirements, the mix of educational courses and programs which is rarely changed, especially in colleges of science and engineering. Instead, these "radicals" went right to the foundation of the college's educational goals.

The overall goal of WPI, like that of most of its sister institutions, has remained the same since its founding: to educate professional engineers and scientists. In the more modest language of WPI's 1865 motto, *Lehr und Kunst*, it reads, "to combine theoretical knowledge with practical learning."

To the people who designed the WPI Plan, this statement was no longer sufficient for the world in which higher education exists today. And so they reconceived that goal completely.

What made these quiet, nonideological professors throw away the known recipes for academic reform and start from scratch? Were they naive idealists who knew so little about the myriad of things that could go wrong in such a basically new and complex program? Were they opportunists who sensed more quickly than others the new wind blowing through the halls of ivy, and who responded with an effective public relations device?

Such suggestions overlook the most obvious explanation. Most of the designers of the WPI Plan were engineers. They tackled the educational problem before them in much the same way any engineer would tackle a technological problem. They began with a set of basic "specifications" that needed to be achieved, and then they translated them into a basic new design.

The faculty members who planned WPI's future had not only to create the design but also to set the specifications. They recognized the rapidly growing need to direct the development of technology more wisely, more sanely, and more efficiently. They realized that to graduate people capable of doing this would require an entirely new educational process.

Yet this birth of a new educational concept could hardly have happened at a less likely place. In 1865, Worcester Tech was a fairly stodgy little school dozing in the sunlight of its past achievements. Founded in 1865, it had been one of the country's first three independent technical schools—schools that had pioneered undergraduate education in science and engineering. Worcester Tech, along with others, had graduated the men who built the railroads, the steamships, the oil refineries, the assembly lines, the highways, and the computers—in short, the economic base of our modern technological American society.

While these pioneering days were long gone, it was difficult for the school to resist the temptation to assume that the outlook and methods that had been effective for a century would continue to serve for at least another decade.

Some of the faculty, though, saw the situation differently. They saw that the momentum of growth in engineering schools—triggered largely by the post-Wor War II GI Bill and a wave of governmental research grants—had largely passed the old college by. They saw that the acceleration of change in technology was obsoleting for seniors much of what they learned as freshmen. These faculty members realized that the mushrooming of state-operated, low-tuition, tax-supported colleges threatened the very survival of privately controlled and financed colleges such as Worcester Tech. They understood that a new social conscience had been born out of the growing realization of the impact of technology on human values and ways of life.

In their eyes, the school had missed the boat of the post-war research boom and was about to miss the next one which they saw ahead—the massive reorientation of science and engineering resulting from the new social and environmental ethic. To them, the school was also cultural wasteland. The curriculum contained eight courses in English and six in history.

Finally, the faculty looked at their own role in the situation. Decision-making and academic planning were completely monopolized by an executive committee composed of the powerful entrenched heads of the academic departments. "Faculty meetings here were twice or three times a year," recalls electrical engineering professor Romeo Moruzzi. "No more were held. We simply marched in, listened to the decisions that had been made, and then marched out again." When Weininger, chemistry, said: "This place was like a federation of baronial fiefs. Between them, the barons ruled this place by a kind of gentle interdepartmental logging. The peasants gave the barons their due and in return were granted unwritten economic security."

In spite of these sobering assessments of the state of WPI, many of the faculty realized that if there was ever to be a basic change in undergraduate science and engineering instruction, it would have to be done at a college very much like this one—an institution small enough to make overall change effective, and sophisticated enough to not resist change effectively. Harvard sociologist David Riesman later put it, "WPI provides a marvelous illustration which I think can be generalized: namely, that some of the best chances for reform lie in institutions with a loyalist faculty, with no other opportunities elsewhere, who care about the institution's survival in part out of loyalty and idealism, and in part because it is the only source of their academic survival.")

The academic earthquake that took place at the college between 1968 and 1970 was preceded by two smaller tremors: a drive for faculty tenure, and a curriculum reform.

Tenure, the formal recognition of permanent faculty positions, is generally viewed as the economic basis of academic freedom in higher education. Before 1968 there had been a kind of quasi-tenure at WPI. Faculty members who had been at the college for more than ten years were tacitly assumed to be there for good. It was not a specific right. A group of faculty who began their academic careers at other institutions joined a local chapter of the American Association of University Professors, which called on the faculty to establish a formal tenure system. The faculty appointed a committee to study the problem. The committee also called for a tenure system, and so the faculty voted it in. Tenure was the first significant act initiated by the faculty in the entire history of this college," says professor Moruzzi, who chaired the tenure study committee.

After this first act of independence, a group of faculty members in electrical engineering called for modernization of the freshman curriculum, which they regarded as hopelessly outdated. "This curriculum would drive a modern Atwater Kent from this school," protested Professor William R. Grogan, a WPI graduate who became one of the top leaders of the reform movement. (Atwater Kent, one of the pioneers of mass manufacturing in the first part of the century, had been kicked out of Worcester Tech for failing to pass certain required courses.)

WPI President Harry Storke, who had been aware of the need for change, moved to keep the department heads from dominating the reform process. He asked each department head to nominate three of his faculty for a curriculum committee. Storke and Dean of Faculty M. Lawrence Price picked one from each department, then named Grogan chairman.

The group produced sweeping recommendations for a new freshman-sophomore curriculum. It called for elective courses in the very first year, and for minor programs in English, history, and humanities and technology, a new program concept. Later the committee proposed establishing degree programs in economics, business, humanities and technology, and interdisciplinary studies, another new program.

The resulting faculty debate over the new curriculum was heated. In the end it revolved around a single technical question: should "graphics" (technical drawing) remain compulsory? The reformers thought graphics should not be required for every student; the traditionalists insisted it was a key to technical education. The vote was close—54 to 48. One dissident committee member, in protest, resigned from the panel and from the college.

The rapidly growing dissatisfaction of the faculty with the established way of doing things was one crucial factor for change. The other was President Storke himself. A retired Army general with virtually no background as an educator, Storke seemed a most unlikely reformer. Yet soon after taking office in 1962, he had recognized that something was wrong. He had asked the department heads to draw up a long-range plan to assure the college's financial survival in an age of increasing competition from public institutions. The department heads' response struck him as indifferent and meaningless. He decided that if there was to be any substantial improvement at all, he would have to look for support somewhere else. The success of the curriculum reform convinced him he would find his allies in the rank and file of the faculty.

Storke's opportunity to move came in the wake of a faculty meeting held on June 14, 1968. At that session, chemical engineering professor C. William Shipman stood up, took the everpresent pipe from his mouth, and addressed his faculty colleagues in his laconic and gently ironic way. One of his Sunday School pupils, a brilliant high school student, Shipman recounted, had recently asked him what engineering college he would recommend.

"I was about to say 'Worcester Tech, of course,' but then I stopped right in my tracks. It suddenly dawned on me that I could not cite one convincing reason. I couldn't think of one good argument why this promising young fellow should join the school where I teach." Shipman became passionate in his quiet way. The college, he charged, was drifting without any definite academic purpose except the one phrased a hundred years earlier. Wasn't it about time to redefine that purpose?





Storke

Two others, mathematics professor John P. van Alstyne and electrical engineering professor William R. Roadstrum, rose in support of Shipman.

Shortly afterwards, President Storke dropped in on Shipman. "If I appoint a planning committee," he said, "will you chair it?"

"If I get the support I need from you, I will," replied Shipman.

"You've got it."

Storke, Shipman, and van Alstyne drew up a list of prospective committee members, making sure no department was represented more than once. They asked for and got acceptances from John Boyd (mechanical engineering), Charles R. Heventhal (English), Roadstrum and Weininger, who at 32 was the youngest committee member.

Before the momentous decision was announced, several committee members talked with key faculty to reassure them that they weren't "selling out."

"We were in an awkward position," Weininger says. "Several of us had just helped fight to win the faculty a voice in academic matters, and here we found ourselves suddenly on a planning group named by presidential fiat. We told our colleagues that this new committee would be the only one besides Grogan's that wasn't dominated by the department heads. If anything significant were to be achieved, it would have to be done through this group."

Storke approved the membership. On December 12, 1968, he called the department heads to a special meeting and announced what he had done. A five-minute recess had to be ordered so that everyone present could regain his composure.



Roadstrum

**T**he next day the President's Planning Group met for the first time. The task given them by Storke was to draw up a plan for long-range development, which included possible academic change but stressed sound financing. At this very first session, the six men realized they could not do their job adequately without reviewing everything about the college, right down to its basic educational philosophy.

"We felt we were touching the latch of a window on the future that was about to open to us," says Weininger. "Everything depended on Storke's approval of this much wider goal." Shipman went to Storke and told him. Storke said to go ahead.

One of the central motivations behind the group's decision to take the widest possible approach, Weininger believes, was an article by mechanical engineering professor Charles Feldman published the previous year in the *Journal*. In it, Dr. Feldman called for basic academic reform by cold-bloodedly arguing institutional survival.

The enormous expansion of tax-supported public colleges and universities, he warned, was certain to bury the "privates" in a decade—unless the privates found something special to offer students and became the best that special field. Feldman called for unstructured study, project work, self-paced learning, a value-oriented humanities program, and an end to compulsory classes and grading. This would have been a radical proposal for any engineering school; for WPI it was dizzying.

The President's Planning Group began its work by assessing the college's current academic assets and by collecting any and all ideas for "alternative futures." Adstrum suggested that each alternative should be researched and argued as if it were the only one in existence, even if it meant turning the argument around to win it. This they did. Each member wrote a proposal, and the others talked it to shreds and rewrote it even more persuasively. This technique proved one of the most helpful moves in the entire study.

The group came up with twelve possible alternative futures:

- To become a research-oriented graduate center in engineering and science.
- To become a "middle college."
- To provide a classical education in engineering and science in the Oxford-Cambridge manner.
- To provide high quality pre-graduate education in engineering and science.
- To educate for leadership and decision-making in a technological society.
- To specialize in educating the underprivileged.
- To train students for a bachelor of science degree in technology.
- To promote invention and entrepreneurship.
- To transform WPI into a general university.
- To join the state university.
- To maintain the status quo.
- To create an appropriate combination of any or all of these possibilities.

Although all six group members were teaching full class loads during this period, they came up with a report in March 1969, just three months after their formation. Entitled *The Future of Two Towers*, the report included a preliminary planning schedule, a partial analysis of the school's current status, a list of the twelve alternative futures with arguments for four, and summaries of the results of questionnaires that had been sent out to the college community.

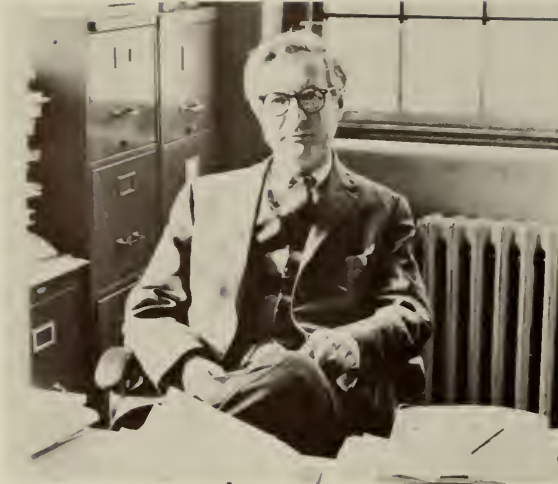


Shipman

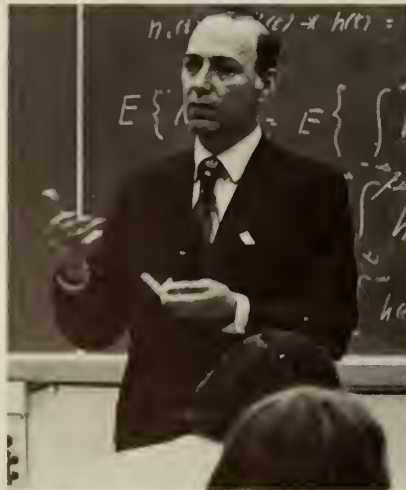


van Alstyne





Boyd



President Storke sent the report to faculty, the Board of Trustees, staff, and selected students and alumni. Then the group mailed another questionnaire to those who had received the report. On April 16, 1969, classes were canceled and everyone on campus was invited to join in discussing WPI's future. Some 150 students—10 percent of the total population—and 130 faculty—80 percent—took part in a number of small group sessions.

"It was the healthiest day we ever had here," van Alstyne recalls enthusiastically. "For the first time in our history, we honestly faced up to the problems before us and talked about them freely. And this was done with extraordinarily broad participation."

By June 30, the group had published *Two Towers II*, including essays on the remaining futures, a summary of the answers received to the last questionnaire, conclusions drawn from Planning Day, and the completion of their analysis of the college's current status, mostly from the financial standpoint.

**R**ight into this process of rapidly accelerating discussion and planning fell a critical event. General Storke had decided to retire for personal reasons, and a new college president had to be selected.

A presidential search committee had come up with two prime candidates. One was an industrial engineer and dean of the engineering school at a large state university. The other was a physicist and vice chancellor of Washington University in St. Louis.

The department heads wanted the industrial engineer. The President's Planning Group, which had managed to meet with the Washington University man informally for half an hour, strongly preferred him. When Storke saw who was backing whom, he adroitly threw his support behind the choice of the six planners. The Trustees offered the job to him, and he accepted. Thus George W. Hazzard became president of Worcester Polytechnic Institute and the man who would have to bring the WPI Plan into being.

Dr. Hazzard admitted to an interviewer that at first Worcester Tech did not interest him very much. What changed his mind was that half-hour meeting with the Plan Group. It convinced him that the old college had an unusual opportunity to create something entirely new in education.

Meanwhile, the President's Planning Group had been named as a committee. They urged the faculty to form a successor panel. "The ball had been set rolling," van Alstyne explains. "If it was to keep on going, the faculty as a body would have to be responsible and in control from then on."

Impressed with the swift motion of events, the faculty established a Faculty Planning Committee to continue the work. Four of the six planners were elected to the new committee—van Alstyne, Boyd, Heventhal, and Shipman—along with Moruzzi, who had headed the first drive, and Grogan, who had led the curriculum reform. Thus the two preceding movements for change, in a sense, merged with the third and most recent into a single, forwardgoing drive.

The new group began its work July 1. Shipman, the elected chairman, asked each member to write a statement of goals for the college.

"The papers were remarkably similar," he recalls. "Turning each of those twelve future possibilities over and in our minds, in trying to look at the positive side of each, we had in effect been forcing out into the open our own innermost thoughts and feelings about what a liberal educational program ought to be."

John van Alstyne put it this way: "At this point, the process of having evaluated and seriously argued each of the various alternative futures became fully apparent. We now realized that while none of these alternatives presented an exclusive description of the future that it would describe, each would have seriously put forth, all did contain essential and common threads of educational philosophy which went into the genesis of the model that finally emerged." A striking synthesis—conscious, unconscious, both—had taken place.

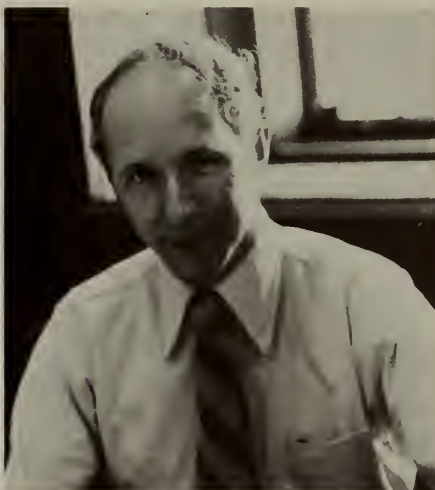
The faculty committee spent the summer of 1969 working on *Two Towers III*, the definitive design for the future of WPI. It was published in mid-September at the beginning of the fall semester. This report surprised and shocked many members of the faculty.

"I think this was because of the timing," Dr. Shipman later told the student yearbook. "We had done our work during the summer. Most of the faculty were on vacation and had not read the second report. To return in the fall and discover that we had produced something that much different, something that threatened the organizational structure of the college which had been done without most of the faculty being on campus—and certainly very few of the students—caused a bit of shock. I think that if we had presented it in a different way, there would have been less of an upset."

*Two Towers III* called for setting up nine committees, each dealing with various aspects of the proposal. Ultimately, some 90 students and 74 faculty members sat on these panels.



Grogan



Heventhal



Weininger



Then Planning Day II was held in October to discuss the plan. Committee members went all over the campus talking to faculty and students, explaining the proposals. The sharpest debates took place over the proposed elimination of academic departments. Reformers saw this as one of the keys to the success of the new program, at the heart of which would be interdisciplinary cooperation; they felt that academic compartmentalization had to go. Opponents saw this as an invitation to institutional chaos. Because of strong opposition, this part of the plan had to be dropped.

On December 17, 1969, the faculty adopted a statement which summed up the new overall goal of the college in a few paragraphs. In January and February, the reports issued by the nine subcommittees were distributed, unedited and without comment.

Now the six planning committee members put together their final report, *Two Towers IV: A Plan,*

which was published in March 1970. The plan—now the WPI Plan—was presented to the faculty for approval in June 1970. During those final discussions, it was modified in two places: physical education was retained as a requirement, and an amendment by Dr. Wilmer L. Kranich, head of chemical engineering, required students to complete the equivalent of 12 units of work before being allowed to take the competency examination.

By a two-to-one majority, the faculty adopted the proposal. Two years of hard work by the faculty had brought into being a new educational program and a new future for WPI. Conception, labor pains, and the trauma of birth were now over for the WPI Plan. What remained ahead, however, was an even harder task: over a seven-year period the infant WPI Plan had to be nurtured, trained, and made into a functioning and productive member of educational society.

And now it is.

# A FRESHPERSON GUIDE TO WPI



**Editor's Note:** On the next few pages are excerpts from "A Freshperson Guide to WPI," a 32-page booklet introducing the WPI Plan to incoming students. It was written and edited by Rob Granger, '75, John Zimmerman, '77, and Marion Bishop, '76, as part of a degree qualifying project.



All of you who have decided to enter WPI have more than a casual interest in science and technology or you would have considered a different kind of college. I don't have to debate here the importance of technology, for good or ill, in our lives. You recognize these impacts or you wouldn't be here. I would like to make some points about technical education at WPI that may not be so obvious, leading to a plea for you to experiment and grow by designing a creative educational program for yourself. I'll get to that in a bit.

To start, do you realize the potential for educational flexibility that exists here? Almost every school and college says, for example, that grades in courses are not important but that it's what you learn that counts; while you know that in reality grades are the most important thing. After all, let's face it, that's how you get the degree. We are trying here to get around this little Catch 22 by not having courses and grade accumulation be the degree requirement. The degree at WPI is based upon your ability to perform competently in projects in your fields of interest. This means that grades in courses at WPI are to help you evaluate your own understanding of the course material and are not the certification for your degree, which is as it should be. This also means that instead of the faculty and the students being adversaries in grade grubbing, they can be on the same side of the learning fence -- and cooperate. Even better, we don't have a failing grade here, so you can experiment without punishment. This type of curriculum is really very unusual if you compare it to those of most other colleges, and it provides a potential for achieving greatness, we think, for us as a college and you as a person.

Notice that I used the word "potential" twice in the last paragraph. This is because we are still in a state of development at WPI. There are internal and external pressures to gradually revert to a more traditional educational system. We have already faced most of the external pressures, grad schools for example, and we pretty well have them licked. The internal pressures are where you come in. As Walt Kelley's Pogo used to say, "We have met the enemy and they is us." Our PLAN is very different from the formal education of our own faculty and the high school backgrounds of most of our students. The flexibility of the PLAN carries with it a lot of responsibility, for it means that you (with advice) have to learn how to make decisions on which courses and projects you are going to undertake. Some faculty and students find this too scary or too fuzzy. You students are the ones that have to show that you can learn to use this freedom to deepen your intellectual grasp and to broaden your emotional horizons. Your success, however you choose to measure it, is our success.

But what does all this have to do with creativity? Lots of Engineers and scientists study, build, and play with things to create new stuff. You see, to create is at the center of it. Yet traditional technical training tends to stifle the urge to create by an endless sequence of passive "course sitting." At WPI we urge you to do projects and to create -- right from the start. We want to combine the languages of science, mathematics, social science and the humanities in a creative stretching of your mind.

That last sentence is pretty heavy, and to lighten it, I like the essay by George Nelson about the difference between art and design that I've excerpted below. It is pretty long, but, I think, worth reading.

"For a number of reasons -- good and bad -- design is a confusing subject. Among the good reasons is the elusiveness of definition: a person who does a line of dresses for a couturier house and someone who draws a plan for a jet engine are both called designers. It is hard to see what they have in common.

What both people share, I think, is the process: each starts with a problem, one related to the female figure and the other related to propulsion. Each arrives at solutions within a context: money limitations, materials available, skills and tools at hand, existing state of the art, competition, the nature of the art, competition, the nature of the



"When a student is absent without previous excuse, he shall present two excuses, one for the absence and one for failure to secure permission to be absent."

--WPI Rule, 1874



J. Himpan and R. Reichel prepared calculations and designs for a 50-ton moon rocket. It was shown "possible with very great expenditure of labor, materials, and money, to send a payload of 10 kg to the moon. (And we have) demonstrated that it is not possible in principle to improve on this very low ratio of payload to total weight as long as chemical propellants are used. It was further deduced that a rocket capable of carrying a man to the moon and back would need to be of fantastic size and weight -- so large indeed, that the project could be classed as impossible . . . The dream of human beings to fly to the stars must, as far as we can see, remain a dream." (J. Himpan and R. Reichel, "Can We Fly to the Moon?" *American Journal of Physics*, May, 1949, 262-263.)



dress has to enhance the wearer; the engine has to drive the plane.

A design may be very beautiful, but it is not art; a design has to do something. The artist works to make a kind of visual statement that has, for him, some important connection with reality as he perceives it. The designer needs a client to present a problem, and a factory to make his design in quantity.

The scientist believes that problems can be solved with his intellectual equipment plus instruments. His answers are always quantifiable. The designer goes along with this to a great extent, but he also relies on the evidence of his senses and his intuition. So his work falls somewhere between art and science.

A very bad reason for the confusion about design is the prevailing notion that it is a kind of frosting, an aesthetic overlay that makes humdrum objects more appetizing. No responsible designer believes this. In nature, organic designs (our best models) never show decoration that isn't functional, never show the slightest concern for aesthetics, and always try to match the organism with its environment so that it will survive.

Misconceptions about design also arise because modern technology isolates so many people from the processes of designing and making. Considering how little we are taught about such things, autos and stereo sets might just as well grow on trees. Technological society has created the visual illiterate, a new barbarian who thinks people have eyes so that they can tell when traffic lights turn red or green, and who lacks the faintest idea of how his complex environment is put together.

One way to learn something about design is to dust off your old college text for Biology I and read about the way the forms, structures, and colors of organisms relate to what they do. Another is to look around and ask questions:

Why do perfectly good metal station wagons have panels of fake wood?

If you went through the house looking for honest designs, would you find more in the kitchen or the living room?

Why are so many big TV sets encased in phony antique credenzas? If you have one, why did you buy it?

How do you feel about "Louis XV" chairs of injection - molded plastic, or supersonic steam irons?

If you were offered the choice of a free trip to London, Paris, Zurich, Venice, and Rome, or a tour of the twelve biggest shopping centers in the U.S., which would you choose? Why?

Designs have a curious quality, one that practically nobody knows anything about. They can be "read," just like a magazine, and they never lie. When the Victorian nouveau riche built a suburban mansion that looked like a castle on the Rhine, the neighbors knew he was not a German feudal lord but just a guy scrambling up the social ladder. It is worthwhile to learn to decode the messages in objects -- they are full of information about the state of the society.

If you start reading the objects in your environment, whether buildings or strip developments or manhole covers or consumer items, and the result makes you feel slightly ill, don't worry. It just means that you are well on the way to visual literacy."

I think that Mr. Nelson has a lot to say to us at WPI. Good design is based on sound methodology (courses), but good design integrates and transcends the methodology to achieve a new whole. Anyway, we want to get more of the creative dimension into our project work here. That doesn't mean that scientific principles can be ignored. Some beautiful creative technology, clipper ships of the past and some jet airplanes of today, are certainly examples of beautiful creative solutions. But their beauty is in good part because of the need to satisfy scientific and tech-

THE O'NEILL SCALE\*

Do not fear. You are not about to be exposed to a dissertation on the values of different grading systems. What follows is a grading system, but it will not be defended or criticized. It is included for two reasons. First, it seems like a reasonable possibility. Second, it's kind of cute.

It is a remarkable simple system. Everything is ranked with a number from one to five. And that's it.

If the Score is:	It means that the person evaluated:
5	demonstrates mastery
4	demonstrates competence
3	suggests competence
2	suggests incompetence
1	demonstrates incompetence
0	died.

THINK ABOUT IT, YOU MIGHT LIKE IT!

Thanks to Professor O'Neill, Physics

I think union with Polytech (WPI) would be a good thing, but it isn't worth going to Worcester for."

--Spokesman for MIT, 1910

If you stay with a problem long enough you will get the answer. It may not be the one you expected, but chances are it will be the truth. If you really want to learn anything from an experiment, change only one condition at a time.

Never hesitate to try a hunch. If it turns out OK, the theoretical chap will tell you why. In practice and theory don't agree, investigate the theory."

--Observations of Prof. Charles Allen, WPI



...a bit hungry for what they've got to offer. You might want to try the Pub some Friday afternoon. It's amazing the people that turn up there.

Once you find out what you want to do, the rest is easy. I'm not saying that you won't have doubts, but the hard part will be over. Then when you start to get guilt feelings about the money you're spending here, you'll at least be pretty sure you're doing something worthwhile, something that's important to you.

If when you get out of here you feel as if you could have learned it all on your own, then you have mastered the fine art of self-learning. Practice learning on your own; it'll give you confidence. Don't hesitate to expose yourself to new ideas. Look through professional journals in your field and others. You may not understand a whole lot at first, but you can keep an eye on what the real world is doing. Independent studies are a nice way to round out your experience. It can really build up your confidence because so often you'll do something you never thought you could. A graduation class was once told: "A degree from even the best of universities is not an inside track to success; it is just a hunting license to go out and find the kind of career satisfaction you are willing to earn." So, keep your eyes open!

Technical expertise will only take you so far. Engineers aren't shuf-

a lot of group effort, and you have to get along with people. The way to get along with other people is to get along with yourself, do that you have to know yourself. Socrates said that an unexamined life is no life at all. Again, expose yourself (not indecently)! Paraphrasing can be done in your humanities sufficiency, but it shouldn't stop by any means. If you expose yourself to new ideas, even if you don't agree with them, you've opened new windows into the world. You are a form of freedom. If you've been exposed to new ideas, you have a choice of adopting them, or just accepting them as someone else's philosophy, or you can reject them completely. But at least you have a choice, which is what freedom is all about. If you never heard of that outlook you have no choice. One book I am pretty impressed with is, *How I Found Freedom In An Unfree World*, by Harry Browne. It has some strange ideas; they're not right for everyone. But if you read his book you can reject him as a fool, say, okay, that's fine for him, but you can adopt some of his ideas. If you've read it you have the choice.

This college has a lot to offer, you just have to take it. Personally, I think the school motto should be changed to "the more you put into it the more you'll get out of it." I wonder how that would translate in Latin. Excuse me . . .

### RATE YOUR ADVISOR

	Far Exceeds Requirements	Exceeds Requirements	Meets Requirements	Needs Some Improvement	Doesn't Meet Minimum Requirements
Communication	You have a telepathic link	You know his home phone number	You can find him in his office	Hasn't been in his office for three weeks	Calls you Joe when your name is Lois
Personal Problems	Pays for a Psychiatrist in Boston	Sends you to a Psychiatric Clinic in Worcester	Sends you to WPI counselor	Sends you to your RA	Tells you that you're a pervert
Sufficiency Topic -- Mystic Influences in Modern Literature	Gets in touch with Carlos Castaneda for you	Watches Star-Trek with you	Offers to advise although he doesn't know much about the subject	Laughs when you suggest subject	Thinks mystic phenomena is some kind of masking tape
Competency Exam	Convinces your board you are so good that you can skip it	Brings you three home-cooked hot meals a day during competency	Advises you what he feels you need to pass it and helps you learn it	Prepares you by making sure you take courses in 1965 curriculum	Tells you that you'll never pass it and suggests 30 more courses
Projects	Helps you to publish your project report in prestige journal	Visits you at G.E. in Schnectady during your MQP project work there	Suggests a challenging problem and gives you ideas when you get stuck	Sends you on a project at DEC and doesn't see you again until you hand in your report	When you find an ingenious but simple way to do MQP he decides that project now isn't challenging enough for MQP

# REUNION



# 76

## JUNE 3-6

Reunion Classes: 1916, 1921, 1926, 1931, 1936, 1941, 1946, 1951, 1956, 1961  
All these classes have received detailed schedule and reservation information through their class mailings.

## SCHEDULE:

Friday, June 4 "Good Old Days Get-together" at the Goat's Head Pub (Sanford Riley), 9 pm - 1 am. Banjo Band, draught beer, wine & peanuts.

Saturday, June 5 Reunion Luncheon and Awards Presentation on the lawn of the Higgins House.

All through the weekend Campus tours, Worcester Art Museum tour, class parties and dinners, access to the gym, pool and tennis courts.

Inexpensive campus housing available  
Call or write the Alumni Office with reservations or questions.





■ August 1976

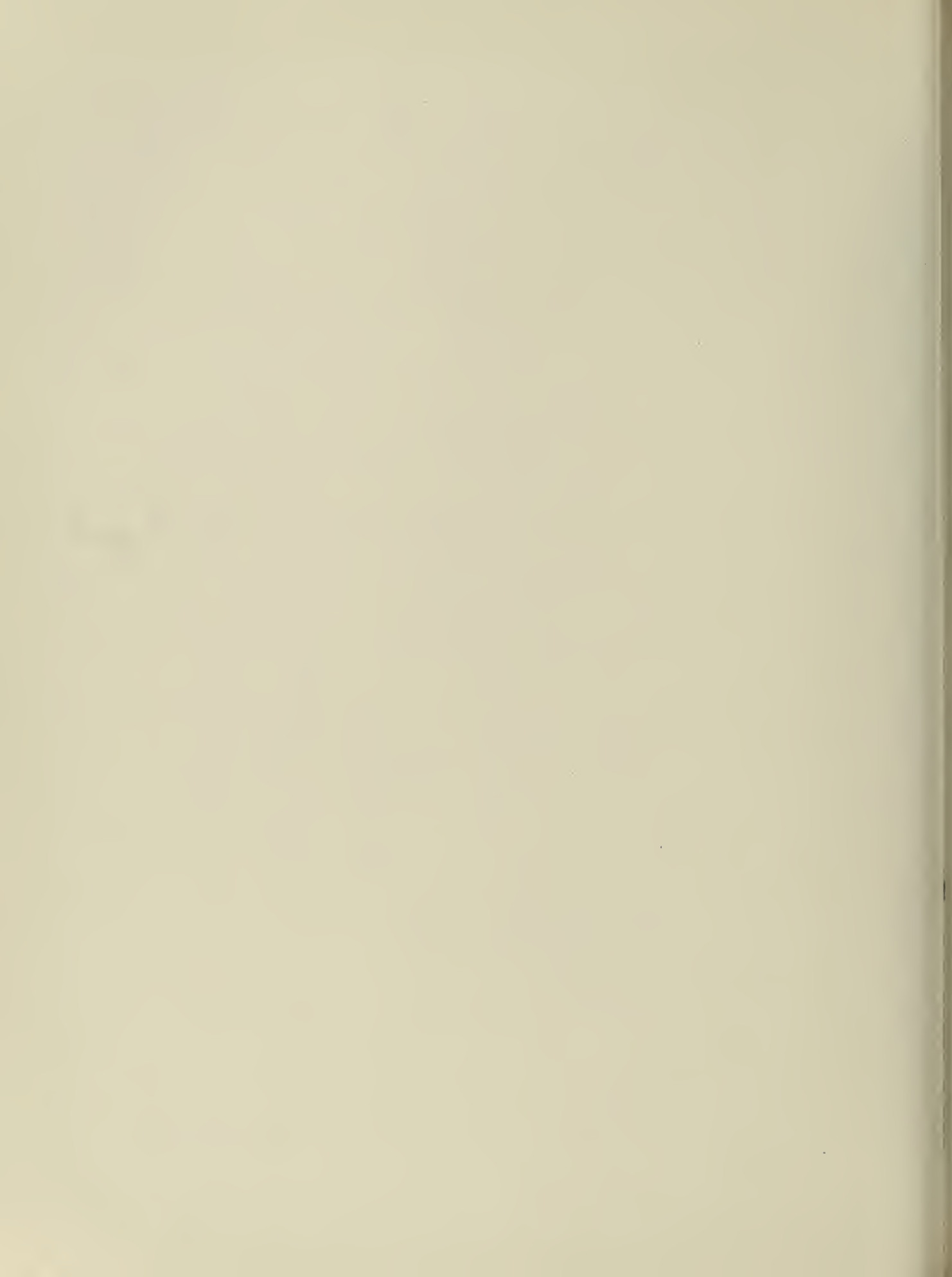
# WPI Journal

U.S.A.

## WPI's Forgotten Millionaire







# WPI Journal

Vol. 80, No. 1

August 1976

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New England weather was never like this!
  - 6    **I love Paris in the springtime . . .**
  - 8    **Reunion**  
One definition of this annual event
  - 14    **Atwater Kent, WPI's forgotten millionaire**  
John Wolkonowicz, '73, tells the story of this early giant  
of the radio industry.
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HIGGINS LABORATORIES  
METROPOLITAN POLICE DEPT





# On the Hill

by the editor

## udent project analyzes immy Carter

as far back as last November,"  
d senior Stann Chanofsky, "I  
d a feeling Jimmy Carter would  
the Democratic candidate in  
"

Stann and his partners Peter  
lvihill, '78, and David Wolfe,  
, built their interactive degree-  
qualifying project around the Demo-  
tic primary campaigns in New  
gland during the last year.

"We started out to determine if  
how the various candidates might  
nge their positions as the pri-  
ry campaign went on over several  
nths," explained Stann. "We  
eotaped their speeches and press  
ferences, we collected their  
ature and kept the press clip-  
gs.

"Very early on in the project, we  
an to zero in on Carter, who was  
tively unknown a year ago. His  
paign people were able to pro-  
e more background information  
n most. We obtained copies of  
osition papers last October,  
ch we felt disproved many of the  
rges that he was 'fuzzy' on the  
es. We also got a great deal of  
ght into what Carter is really like  
m his autobiography.

"Carter is a very ambitious man  
o's willing to work twice as hard  
most people. He does his home-  
rk. He's a good organizer. His  
paign strategy has been to  
italize on his assets. He under-  
nds the mood of the people who  
l vote in November, and he has  
red his campaign to the concerns  
feels are uppermost in the minds  
the voters.

"I really got excited about politics  
during this project, and I guess  
from now on I'll always have a  
strong interest in campaigns. I'll cer-  
tainly be following this fall's ac-  
tivities with special interest," said  
Stann. "And I'll probably be out  
there working for Jimmy Carter."

## A moving experience

Between the completion of the Salis-  
bury Labs renovation and the begin-  
ning of the administration's exodus  
from Boynton Hall, the summer of  
'76 has been a busy one on campus.  
Thousands of cardboard boxes were  
filled, transported, emptied, refilled,  
transported across campus once  
again, emptied. . . . Moving vans  
criss-crossed the campus, working  
according to a complex schedule  
that coordinated the vacating of  
each office with its subsequent re-  
occupation. Plus figuring in the  
completion of the Salisbury work,  
some necessary changes in the con-  
figurations of the various office  
spaces, plus some new construction.

Shown below, humanities pro-  
fessor David McKay typifies the  
summer's major activity as he un-  
packs his books into his new Salis-  
bury office.

Moving, somehow, is never very  
much fun. It involves a lot of dis-  
ruption, countless decisions of the  
"keep or throw?" variety, and a  
heap of work. The best part of  
moving, though, is one your editor  
can sympathize with. As far as I'm  
concerned, at least, it's now *over*.  
Until Boynton is finished.



## The Russians are coming . . . again

Professor Alvin H. Weiss, WPI's  
globetrotting chemical engineer who  
has been to the Soviet Union and  
Israel (on business) in recent years,  
played host to four Soviet scientists  
this June. The guests were Weiss's  
Russian counterparts in a joint US-  
USSR space research project. (Weiss  
is the US coordinator.) The group is  
developing chemical techniques  
using catalysis to recycle the exhaled  
breath of astronauts into edible  
sugars to save weight on long space  
voyages.

Shown touring the WPI campus,  
above, are, from left, Dr. Valentin  
A. Golodov of the Institute of Or-  
ganic Catalysis and Electrochemistry  
at the Academy of Sciences; Prof.  
Michael M. Sakharov, project coor-  
dinator of Life Support Systems at  
the Institute of Chemical Physics;  
Dr. Weiss; Prof. Alexander E.  
Shilov, project coordinator for  
Catalysis by Coordinating Com-  
plexes and Organometallic Com-  
pounds at the Institute of Chemical  
Physics; and Dr. Yuriy G. Borodko  
of the Institute of Chemical Physics.

Dr. Golodov and Dr. Borodko  
are prospective participants in the  
program, which will involve  
residence at WPI for several months  
under the terms of the international  
project agreement. Dr. Weiss recent-  
ly received an additional \$35,000  
grant from the National Science  
Foundation to continue the project.



# The Odyssey of Jim Aceto

## Part I: 60 below zero

**“Wanted:** Civil engineers to work on Alaskan pipeline, 10 hours a day, 7 days a week. Three hours of daylight daily. Temperature approximately 60 degrees below zero. Trailer accommodations and meals provided.”

James D. Aceto, '75 didn't actually find this classified in his local newspaper, but he and nine other recent WPI graduates did hear about similar civil engineering positions which were open in Alaska last fall, and in view of the spotty job market in New England, decided to take a chance.

“The office of graduate and career plans gave us the details,” says Aceto. “We were hired. And (surprise) we're not sorry!”

Aceto, home on a long Christmas break, looks remarkably warm in his short-sleeved cotton shirt as the mid-winter Massachusetts wind whips up a 60-mile-per-hour gale outside the picture window in back of him. The outdoor thermometer shudders around 0.

“Almost like spring,” he quips with a grin as the window threatens to shatter. “Where we work, this wind would be a breeze. But I'm not complaining. We like Alaska. It's quite an adventure.”

Aceto, Robert J. Ankstius, Peter J. Arcoma, Steven H. Coes, Robert J. Donle, Karl E. Hansen, Michael S. Schultz, James C. Sweeney and Alexander V. Vogt, who graduated last year, and Scott R. Blackney, '73 have been working as soils engineers with Alaskan Resource Science Corp. of Fairbanks.

“But except for Donle, we don't work in Fairbanks,” Aceto quickly explains. “Vogt, Arcoma and I are based at Camp Dietrich about 300 miles north of Fairbanks on the south side of the Brooks Mountain Range. The others are based at other camps along the pipeline. As field engineers, however, we all have basically the same job.”

Their main duty is to take soil samples for the above-ground section of the pipeline, under what most laymen would consider awesome conditions.

“We work 10 hours a day, 7 days a week,” Aceto reports. “The temperature generally fluctuates between 43 and 65 degrees below zero. Also, there are only three daylight hours during our work period, since in Alaska there are about 21 hours of darkness daily in winter. The wind blows all the time.”

What about snow?

“Oh, it's too cold to snow,” he replies. “We get on about a foot up there.”

Because of the almost constant darkness and inclement weather, special generators have been built beside the pipeline to provide adequate lighting.

“We have to keep ourselves warm, though,” Aceto reveals. “Most of us wear long johns, corduroy and down pants, and down jackets and parkas. Also, face masks which cover up everything except the eyes. Boots are very important. I have special Air Force boots which keep my feet warm at 65 below zero with just one pair of socks. I bought them in North Conway, N.H., for \$40 before I left home,” he continues. “Good thing, too. The same pair costs \$100 in Fairbanks!”

The engineers are also responsible for keeping their pickup trucks warm. “We have to keep them running at the time we're working,” says Aceto. “If we don't, they freeze up, sometimes in just a few minutes. This can mean real trouble since we usually work about 40 miles away from camp and the trucks are our only means of transportation.”

In spite of such extraordinary working conditions, Aceto hastens to confide that his Alaskan experience has been far from bad.

“The company has been generous,” he admits. “It flies us home and back and has provided a comfortable unitized trailer complex for us at Camp Dietrich. We have two-room trailer units which adjoin the main hall. On our time off we enjoy the latest movies, a recreation hall, gym, and computerized game machines, all of which are free. We have a closed-circuit TV room where we are able to view taped commercial shows, as well as camp radio station. The food is really good. Steak, three or four times a week. Our only problem is that on our days off, if we've been sleeping, it's so dark out we can't tell if it's breakfast time or dinner time until we get to the table!”

The closest town to camp is Wiseman, fifteen miles away. About fifteen people live there in log cabins. So the men and women of Dietrich have to provide their own entertainment. There simply isn't any close by.

Occasionally, after flights to Alaska from home, the engineers get a few days off in Fairbanks. “An expensive, wide open city,” comments Aceto. “Sort of like the old gold rush towns, I hear.”



What he remembers most about Fairbanks, though, is the impenetrable "ice fog", a blanket of suspended ice particles, which besets the city when the temperature rises above 30 degrees below zero. "It's caused by the exhausts of so many cars," Aceto reports. "You can't see a thing through it. I walked four miles from a movie through one of those Fairbanks fogs once, and at the end I was numb all over."

For a moment Jim Aceto's bare arms look slightly goosebumpy as he remembers.

Then he smiles, "Still got a couple more weeks of vacation left before I go back," he announces suddenly.

Naturally, anyone on leave from Alaska would be heading for sunny climes. Fort Lauderdale or Bermuda, perhaps. To catch a few of the rays. To get that frozen Fairbanks fog out of his nostrils. Naturally.

"Yeah," Aceto muses aloud. "Going to get some sun and blue sky." (Naturally!) "Going skiing!"

## Part II: 10,000 miles away and 160 degrees warmer

Since Part I was written, Jim Aceto has jumped out of the freezer and into the fire, or, to be more explicit, from Alaska to Saudi Arabia. And the spring transfer hardly caused him to bat an eyelash, in spite of the fact that his blood must have thinned a mite rapidly!

Now, minus his long underwear and insulated boots, he serves in the searing sun of Saudi Arabia as a civil engineer for Holmes & Narver, Inc. The company, headquartered in Dhahran, is building a construction camp to house some 7000 people (6000 bachelors and 1000 families). The site covers about 220 acres. Jim's function is to supervise all earth work on the site.

"Mainly I give directions to the contractor and help him solve problems," Jim reports. "I also supervise the pouring of all the concrete foundations for the modular buildings. Once they start the sewer and water lines, I'll have to keep an eye on that, too."

Jim and the crew are on the job 10 hours a day, six days a week. They work for four months and then get a two-week vacation plus a plane ticket from Dhahran to London and back. "Not bad," he writes. "All in all it's a pretty good deal."

There are a few local peculiarities that Jim has to get used to. He, the other Americans, and the British are housed in the Aramco Complex about 55 miles southwest of Dhahran in the Saudi Arabian town of Abqaiq.

"Within the complex itself, it is much like a town in the U.S.," he says. "There are tennis courts, a movie theater, softball field, grade school, commissary, and post office. Outside of the complex, it's a different story."

Liquor is frowned on under Muslim rule and not sold in Abqaiq, although inside the complex it is somewhat easier to come by. To alleviate the situation, Jim has even been making wine in his room.



"It's a lot safer than going outside of the complex for it," he reveals. "In town you can get arrested pretty easily for liquor violations. You can also get killed just crossing the street!"

Not that Abqaiq is necessarily undergoing a crime wave. Generally it is a rather slow-moving place where goats and sheep are sold in the streets, bread is baked in large stone ovens, and women wear black veils while out for a walk.

The problem, according to Jim, is that the motorists, who are more familiar with driving camels, "don't usually stop at red lights and constantly keep their feet on the gas pedal and their hands on the horn. It's really amazing!"

Aceto, however, appears to be thriving and has not yet come out second best at an Abqaiq intersection. His current intention is to stay in Saudi Arabia until 1978. After that, who knows what exotic port may call him?



# "I love Paris in the springtime . . ."

Actually, it was summertime.

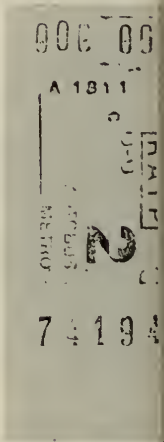
For several years the Alumni Association has been running group tours for alumni at bargain prices. This June the destination was Paris—a sort of bi-centennial "Lafayette, we are here!"

Peter Blackford, '70, and his wife Sandy were among the 115 alumni and family who left Boston on June 16. They spent six days enjoying the sights of the French capital, and they even found time for a special side trip to the 24-hour endurance road race at Le Mans.

They took the pictures on this page especially for the *Journal*, to share some of their experiences with those who couldn't make the trip.

P.S. The editor chose not to run a picture of the Eiffel Tower. You already know what it looks like, right?

P.P.S. Pete and Sandy were sorry to leave Paris—but at least leaving gave them a chance to catch up on lost sleep. You'd be amazed how much activity you can pack into a week if you try!



Top left: The group bus leaves Harrington Auditorium, first leg of the trip.

Right: A genuine reproduction of a Paris Metro (subway) ticket

Bottom left: A scene in the gardens of the Musee Rodin.

Right: Napoleon's tomb.

HO  
HO

COMING  
HOMECOMING

Friday, October 8

Night Club, Harrington Auditorium

ME

Saturday, October 9

Homecoming Registration - Baseball Field

10 am to 4 pm

Soccer, WPI vs Clark

11:30 am

Tailgate Picnic and Barbecue\*

11:30 am to 1:30 pm

Cross Country, WPI vs Bates

12 noon

Football, WPI vs Bowdoin

1:30 pm

Rope Pull - Institute Park

4:15 pm

Happy Hour for Alumni and Friends - Higgins House

4:15 pm

Dinners and Parties at Fraternities

Evening

Judy Collins in Concert - Harrington Auditorium

8:30 pm

HOMECOMING

MECOMING  
YOU COMING?



**re•un•ion** (re-yoon'yen) n. **1.** The act of reuniting. **2.** The state of being reunited. **3.** A gathering of the members of a group who have been separated.

For 1976, Reunion was a special sort of event. Maybe the bicentennial year had something to do with it. Maybe it was the spectacular weather. Maybe it was the fact that more reunion classes than ever were housed on campus in the Ellsworth, Fuller, and Stoddard residences, where they could have their own hospitality suites. Maybe it was the fun-loving spirit of the Class of '26, back for their 50th. Maybe it was having the annual luncheon *al fresco*, on the spacious lawn of the Higgins House, instead of in the gymnasium atmosphere of Harrington.

Maybe it wasn't any of those things. Maybe it was all of them and more besides.

But it seemed apparent that everyone was really relaxed this year, and enjoying themselves even more than usual. Nearly 500 people returned to WPI this June. The weekend was kicked off by '26's 50th reception and dinner at President Hazzard's home and the Higgins House, respectively, on Thursday. Fully 50 percent of the living members of the class made it back for the occasion. The "Good Old Days Get-Together," held on Friday night for the fourth straight year, was a smashing success in its new home in the Sanford-Riley Pub. The weather and activities on Saturday were a fitting climax to the weekend.

Reunion is many things, but primarily it is a time for celebration: celebration of old friends and old friendships, of the familiar places on campus, of the old memories that renew and keep alive for each graduate his or her WPI experience.

It is also a time to celebrate and recognize the efforts of others, and the annual awards of the Alumni Association are an important part of the weekend. This year the Herbert F. Taylor Award, for service to WPI and the Association, went to Robert E. Higgs, '40, a past president of the WPI Alumni Association, and Lincoln Thompson, '21, a past vice president of the Association and a WPI Trustee Emeritus. The Robert H. Goddard Award, for outstanding professional achievement, was presented to Leslie J. Hooper, '24, retired director of WPI's Alden Research Labs, and Donald Taylor, '49, currently vice president of Rexnord, Inc., and president and general manager of Rexnord's Nordberg Division in Milwaukee.

A very special honor, the WPI Award, was given for the first time. It was presented to Milton P. Higgins, chairman of the WPI Board of Trustees, on the 25th anniversary of his election to the Board, in recognition of the support, concern, and steady leadership he has provided WPI.

All in all, it was one fine weekend.



Top, left: Ted Coe, '31, in a happy moment. Center: Milt Berglund, being congratulated and thanked by President Hazzard for the largest class gift ever announced at Reunion—\$180,150, including a bequest of \$125,000 from the estate of Wallace H. Tucker. Right: Of two alumni talking together, the one at right, according to his name tag, is "Ra Ra '51." Actually, he's Bob Wolff, who was gift chairman for the class, and who presented \$28,867 to the college. Bottom, left: Memories to take back, of the Class of '16. Right: Rev. Winthrop Hall, '02, who gave the luncheon invocation, prays for a moment on the Higgins House garden steps.







**Top, left:** Harold Baines, '26, enjoys the festivities. **Right:** Bill Cunningham '77, shows a group of alumni and faculty one of the physics labs in Olin Hall.

**Middle, left:** Carl Backstrom, '30, Larry Larson, '22, and Walter Denner '18, take a conversation break.

**Right:** Stan Miller, reunion chairman of the class of '51, hams it up for the cameras and his friends.

**Below:** Members of the Class of '31 at their 40th reunion. Earlier in the day George Rocheford, class gift chairman, had presented the class's gift of \$24,400 to WPI.

**Opposite page:** Two members of Class of '16 relax in Daniels Hall.



AND TO HIS FUTURE  
FOR THEIR SENSE OF COMMUNITY AND SERVICE  
WORCESTER POLYTECHNIC INSTITUTE  
JUNE 4 1968







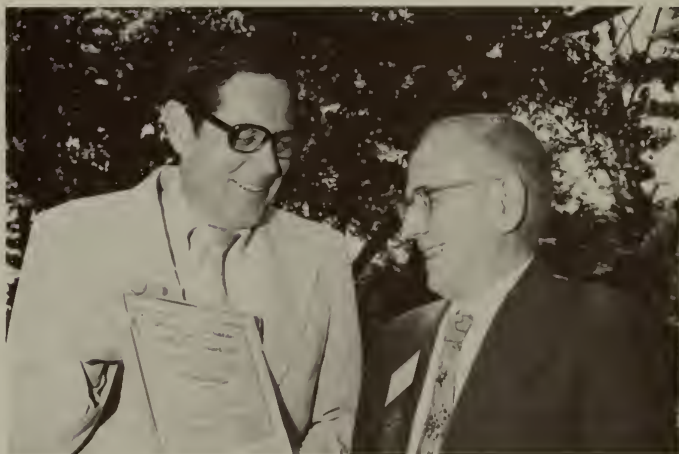


**Opposite page:** Two views of the Reunion luncheon on the Higgins lawn.

**Left:** Carl Backstrom, '30, chairman of the Citations Committee, with 1976 Taylor Award winners Bob Higgs, '40 (left), and Lincoln Thompson, '21 (right).

**Middle:** ME Prof. Ken Scott, '48, shows off the new TV classroom in his audiovisual center in Higgins Lab.

**Bottom, left:** Bernie Danti, '56 (center), class reunion chairman, greets a classmate with obvious delight. **Right:** Don Taylor, '49, and Les Hooper, '24, 1976 recipients of the Goddard Award.







# ATWATER KENT

## WPI's Forgotten Millionaire

by John P. Wolkonowicz, '73

*... Kent, of the Kent Electric Co., sojourned with us for the space of one term, during which time he held the purse of the class. Either the duties and cares of this office were too burdensome, or his outside electrical work too engrossing, for he failed to appear at recitations after the mid-year exams. More self-confident than ever in his ability to bluff, he entered the Class of 1900 in the following year; and, of course, his relations with us became more or less indirect. His bluffs worked well for a time (as might be expected in a class of bluffers) but they didn't "score points"*

*... on the exams, and now Arthur devotes the most of his time to the affairs of his company. A good natured fellow with a pleasant smile. May be seen at his best Sunday evenings at Piedmont Church receiving the offering and (he fondly imagines) the admiration of the young ladies.*

*—from the 1899 Aftermath*

*Kent was one of the men who were bequeathed to us by the class of '99, but he did not like our class any better, and left after a short stay.*

*—from the 1900 Aftermath*

In June 1926, Arthur Atwater Kent returned to WPI. The campus had changed considerably since he left Worcester in 1900; but then Mr. Kent had aged quite a bit too. When he left WPI in the spring of 1897, he was told that without a diploma from WPI he would never amount to anything. Yet now he is the sole owner of the world's largest radio manufacturing company and had returned to WPI to receive the Institute's first honorary doctorates.

His name was a household word in 1926, but in the intervening years he has slipped into obscurity. Let's look more closely into the life of this man, still probably one of the most famous people ever to have attended WPI.

Arthur Atwater Kent was born on December 3, 1873, in Burlington, Vermont, son of Prentiss J. and Mary E. (née Atwater) Kent. Young Arthur showed his mechanical inclination at an early age by taking apart his mother's sewing machine. No doubt the fact that his father was a machinist\* also helped sway his interest towards mechanics and the relatively new field of electricity.

The Kent family moved to Worcester around 1881 and lived in four different locations, the longest stay being at 54 Illinois Street. Considering young Arthur's mechanical inclination, it came as no surprise that he entered WPI's freshman mechanical engineering class in the fall of 1895. Arthur was elected treasurer of the Class of '99, but he held this position for only one semester since he did not show up for recitations after the mid-year exams in January 1896. Although he excelled in elementary mechanics, and drawing, he was rather weak in chemistry, algebra, and language, and, furthermore, these subjects held little attraction for him. He was already running a small business on the side, and his time was at a premium.

Sometime in 1895 he founded the Kent Electric Manufacturing Co., on Hermon Street in Worcester. Advertisements from this era indicate that his first products were small electric motors and generators. The limited reference sources available on this period of his life seem to imply that this first manufacturing venture was located in the back room of his father's machine shop.

Arthur Atwater Kent and his staff outside his Bel Air, California, home in 1926. Photo by Martha Holmes, Time-Life Picture Agency, © Time Inc.

In later years, when submitting his biography to *Who's Who*, Mr. Kent listed his father's occupation as "physician." The Worcester city directories between 1882 and 1901, however, list the occupation of Prentiss J. Kent as "machinist."

John P. Wolkonowicz, a member of the Class of 1973, has been collecting antique radios and related items for ten years. His collection presently includes 20 Atwater Kents and numerous other receivers. He is a member of the Antique Wireless Association and hopes eventually to acquire a complete collection of Atwater Kent receivers.



Arthur returned to WPI in the fall of 1896 to join the Class of 1900. He fared somewhat better this time, being elected class president and successfully completing the first semester. During the second semester, though, final exams again brought him down in the areas of mathematics and language, so he was asked to withdraw. At this time, he was told he could continue on as a special student if he would promise to devote more time to his studies and spend less time tinkering with his experiments. This proposition held little appeal for Arthur, however, so he left WPI to devote all of his time to his business. (The WPI Plan came exactly 75 years too late!)

In 1900 he moved to Lebanon, New Hampshire, to supervise manufacture of Kent motors for Kendrick & Davis, makers of motors and watch tools, but left shortly thereafter to sell electrical equipment for a firm in Brookline, Massachusetts. While on a business trip to Philadelphia, Kent decided again to start his own company. Philadelphia looked like an ideal location for this venture.

Thus in 1902 he founded his second company, the Atwater Kent Manufacturing Works, in the loft of a rented building at 6th and Arch Streets. Here he manufactured batteries, battery testers, and intercommunicating telephone systems. Legend has it that he never had to sweep the floor at this location because of the wide cracks between the boards.

In 1905 Mr. Kent felt prosperous enough to purchase his first one-cylinder automobile, as he put it, "not being married and not having to conserve cash." The troubles he encountered with this automobile were the beginnings of his rise to fame and fortune. By the end of 1905 he was manufacturing automobile timers, trigger ignition systems, and switches. This necessitated a move to larger quarters on Arch Street.

Within a few months, Mr. Kent hit upon his first real invention, the Unisparker, an improved automobile ignition system which integrated the usual series of weak sparks into a single hot spark for ignition. The AK Unisparker combined contact points, condenser, centrifugal advance mechanism, and distributor into one compact unit to be used in conjunction with an ignition coil. This was basically the same type of ignition system used in most cars until the recent adoption of electronic ignition. For this achievement, Kent was awarded the John Scott Legacy Medal and Premium by the Franklin Institute in 1914.



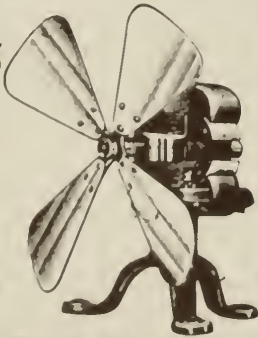
By 1912, the success of the Unisparker forced him to move again, this time to a much larger facility on Stenton Avenue in Philadelphia. Soon, self-starters and lighting systems were added to the Atwater Kent line of automotive products. By World War I, the Atwater Kent Manufacturing Works was large enough to land a government contract for the manufacture of fuse setters, clinometers, and panoramic sights for machine guns.

Above: 1902 Monoplex telephone (photo by Alan S. Douglas).  
Below: Advertisements from 1898 (left) and 1907.  
Opposite: An Atwater Kent ad from 1912.

KENT DRUM ARMATURE. BATTERY FAN MOTORS

No Rattling  
of  
Armature.

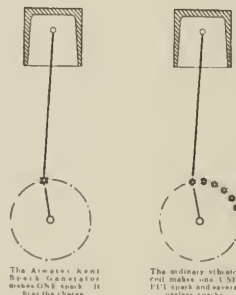
Nickel  
Trimmings.



Gives strong,  
steady  
Breeze,  
10 in. Fan.

Price, \$6.00

KENT ELECTRIC MFG. CO., 16 HERMON ST., Worcester, Mass.



## What Do the Other Sparks Do?

The Atwater Kent Spark Generator makes ONE spark for each ignition. The conventional spark coil makes from three to six or eight sparks, according to the speed of the engine and of the trembler. The time between sparks is roughly from 1-300 to 1-360 of a second, representing a 900 r. p. m. crank angles of 27 and 15 degrees respectively.

The first spark fires the charge. Before the second spark can occur, still less the sixth or eighth, the flame has spread through the mixture, and the spark plug is surrounded by hot but perfectly dead gas.

What, indeed, DO the other sparks do?

The Atwater Kent Spark Generator doesn't make any "other sparks." And the one spark—hot and vigorous—which it DOES make is produced by a snap contact so quick that the eye cannot follow it—the equivalent of a single contact of a coil trembler in action. It SAVES the current wasted by the vibrator coil.

**Atwater Kent Manufacturing Works**  
48 NORTH SIXTH STREET, PHILADELPHIA, PA.



# The Atwater Kent Ignition System

Not only distinctive from other ignition equipment in appearance, but it is **advantageously different** from all others in many respects.

Other ignition equipment have the distinction **with the difference**.

The Atwater Kent System is **different** in embodying the best features of both magneto and battery. In fact, it gives magneto results with a battery system, without the weaknesses of either, at less than one-half cost of a good magneto.

It is ideal for use in connection with lighting and starting equipment, as it produces a hot dynamic spark, perfectly timed, regardless of the engine speed.

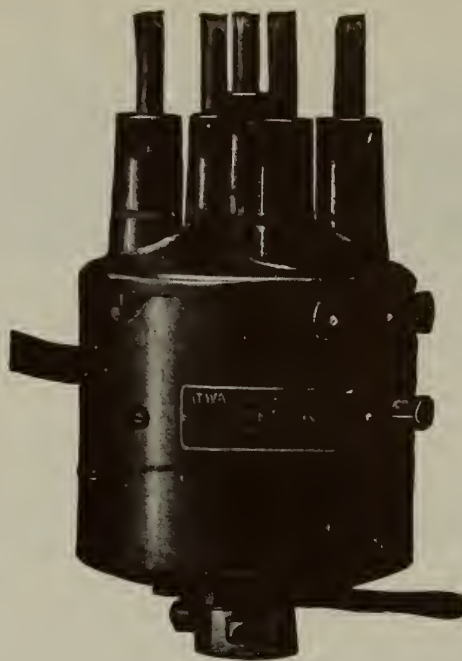
Just a few of the many good features of the Atwater Kent System are—

Its simplicity of mechanism—no vibrators, relays or commutator—just one contact point regardless of the number of cylinders and only three moving parts, two of which are subject to excessive wear.

Its single adjustment easily and quickly made and seldom requiring attention.

Its adaptability and easy installation on any stand—make of motor, new or old.

There are now two types of Atwater Kent Ignition System—standard Type F and the new Type K, the latter having the automatic spark control and insulated primary circuit features.



## PRICES OF THE TYPE F SYSTEM

	Standard Coil	Kick Switch Coil
1 cylinder . . . . .	\$17.00	....
2 cylinder opposed . . . . .	18.00	....
2 cylinder distributor type . . . . .	22.00	\$24.00
3 cylinder distributor type . . . . .	25.00	27.00
4 cylinder distributor type . . . . .	25.00	27.00
5 cylinder distributor type . . . . .	27.00	29.00

## PRICES OF THE TYPE K SYSTEM

	Standard Coil	Kick Switch Coil
2 cylinder . . . . .	\$32.00	\$35.00
3 cylinder . . . . .	35.00	38.00
4 cylinder . . . . .	35.00	38.00
6 cylinder . . . . .	37.00	40.00

In substituting the Atwater Kent System for the magneto, or for driving it from any horizontal shaft or gear, we furnish a special magneto gear mounting, the additional price of which is \$5.00.

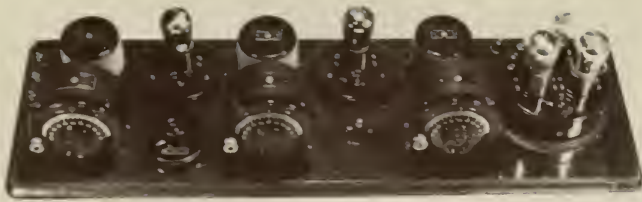
*Perhaps your present car needs only an Atwater Kent—"the different", system of ignition to enable it to give you perfect service. Anyhow you should have a copy of our booklet C—it's interesting and it's free.*

## ATWATER KENT MFG. WORKS

4936 Stenton Ave.

Philadelphia, Pa.





After the war, a nationwide economic slump affected many businesses. The Atwater Kent Mfg. Co. was no exception. In an effort to offset this slump, Atwater Kent entered the newly emerging field of radio by starting the manufacture of headphones in 1919. At this time his staff numbered about 125 people. This headphone venture proved so successful that the company introduced in 1922 a more complete line of radio components, including transformers, variometers, variocouplers, switches, tube sockets, and sealed amplifier units. This new line of radio apparatus embodied the same quality and craftsmanship which had made the name Atwater Kent so respected in the field of automotive electrical equipment.



**M**r. Kent made his first complete radio receiver in the attic of his home in early 1922. By January 1923, "completely wired radio receiving sets" made up of standard AK components mounted on mahogany boards were being advertised. In September 1923, Kent manufactured a limited number of special receivers for distribution to his ignition system wholesalers. This was the famous and (now) highly sought after Model 5 which contained two stages of untuned radio-frequency amplification, a detector and two stages of audio frequency amplification in a single container about 8 inches in diameter. This self contained unit was then mounted on a mahogany board along with a Type 11 tuner. The Model 5 never really got into volume production however, since a five tube tuned radio frequency receiver of superior performance, the Model 10, was introduced at about the same time. Evidently Kent was undecided as to whether the public wanted an easy to use, broad-tuning receiver (the single-dial Model 5) or a more complex, but selective receiver (the three-dial Model 10). He therefore introduced both receivers but quickly shifted production entirely to the superior Model 10.

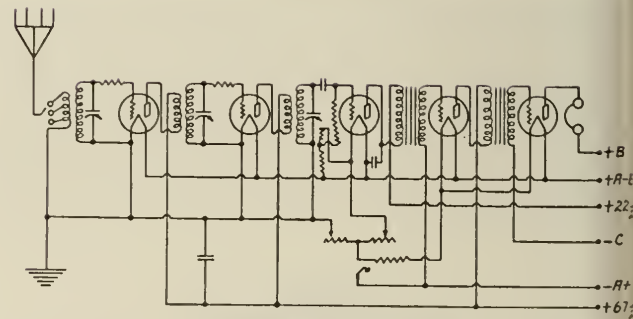


FIG. 18. SCHEMATIC WIRING DIAGRAM OF MODEL 20 COMPACT SET.



*Top left:* The 1923 Model 10 receiver.  
*Right, top to bottom:* Atwater Kent's 1924 Model 12; the 1924 Model 20, shown with the Model H loudspeaker; a schematic circuit diagram of the Model 20 Compact; chassis of the Model 20 Compact, dating from 1925  
*Opposite page:* An advertisement from the Literary Digest in 1924.

# ATWATER KENT LOUD SPEAKERS



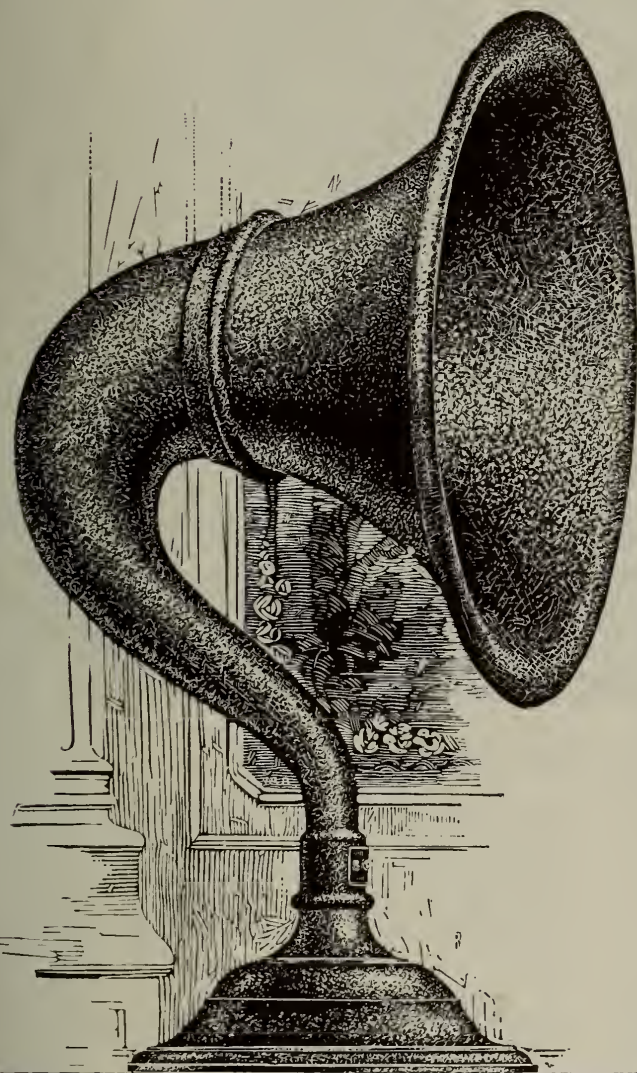
## Complete Radio Enjoyment

THERE is a delightful surprise in store for you—an added fascination in radio—when you take home an ATWATER KENT Loud Speaker.

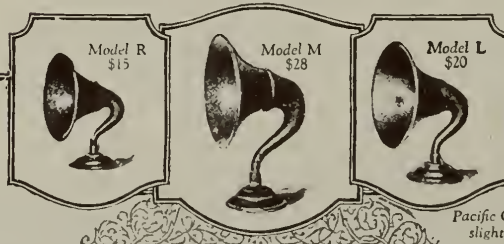
Your radio receiver provides a new and always interesting form of entertainment—but you will find that the last full measure of radio enjoyment comes with the use of an ATWATER KENT Loud Speaker. It re-creates each broadcast into rich and natural tones and in ample volume thus making your radio the generous family entertainer you want it to be.

Pure in tone, the ATWATER KENT Loud Speaker has no peer in the reproduction of broadcasts. Its design, correct in every detail, is the result of skilled engineering research. Its quality, characteristic of all ATWATER KENT products, is the reward of work well done plus the finest materials that money can buy. Your dealer has three models. Take one home today.

ATWATER KENT MANUFACTURING COMPANY  
4704 Wissahickon Ave., Philadelphia, Pa.



Bring Out the Best  
from Any Set



Pacific Coast prices  
slightly higher



# ATWATER KENT RADIO



## To own an Atwater Kent ~

WHAT a wonderful, delightful difference it makes—just think what it means—in one evening the thrills of a lifetime are crowded into a few short hours.

Set its dials and the melodies of a famous orchestra flood your home; another touch and you hear a lecture from miles away—turn again and you have the news of the day or the sweet voice of a renowned singer generously

broadcasting for your entertainment.

Choose whatever program you will, with an ATWATER KENT you are master of the air.

There is an ATWATER KENT well within your means: it combines every feature that assures radio satisfaction for years to come—Any ATWATER KENT dealer will help you in your selection. Interesting literature on request.

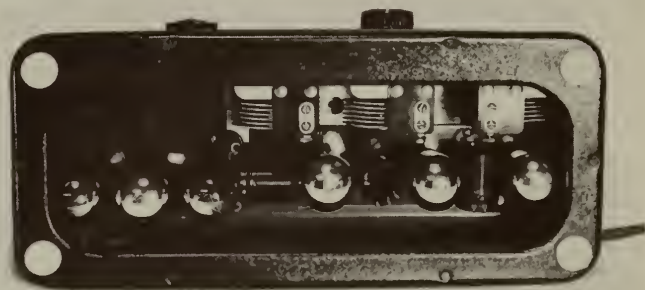
ATWATER KENT MANUFACTURING COMPANY, 4704 Wissahickon Ave., Philadelphia, Pa.

THINK WHAT IS BACK OF IT

the Model 10, originally called the Radiodyne, was first completely wired Atwater Kent receiving set to each volume production. Like its predecessors it too was made up of standard AK components mounted dashboard style on a polished mahogany board. This receiver proved so popular that it remained in production through 1925 and exists in countless variations. By July 1924 the radio line was expanded to include the five-tube Model 9, the six-tube Model 12, and various phonograph attachments and horn-type loudspeakers. Mid-1924 saw the Atwater Kent Manufacturing Company so far behind in its orders that ground was broken for a new manufacturing plant covering eleven acres on Wissahickon Avenue in Philadelphia's Germantown section. Many modern innovations were included in this million dollar plant. Good lighting was provided throughout, and offices were set up so that supervisors could keep a close watch on the lower echelons of employees. For himself, Kent provided a complete suite of facilities including a dressing room, kitchen, and dining room.

Soon production of the "Atwater Kent Scientific Ignition" system was relegated to Stenton Avenue, with all radio manufacturing concentrated at 4700 Wissahickon Avenue. Always with his eye out to the future, Mr. Kent bought up much of the land surrounding his new factory to permit expansion at a future date. And amidst all this activity, Kent did not forget his employees. In 1925 he personally financed a Welfare Fund to tide over workers who were temporarily laid off during demand fluctuations. This was nearly a decade before Social Security! During the mid-1920s, the radio art was developing at a feverish pace. New models and circuits were introduced almost weekly by the more than 200 manufacturers who had entered this seemingly lucrative field. It was not unusual for a receiver purchased at this time to become obsolete within six months. Radio stations sprang up all over the country, and everyone was bitten by the "radio bug." From a modest start of two commercial broadcasting stations in 1920 (Westinghouse's KDKA, East Pittsburgh, and the *Detroit News's* WWJ), the station tally grew to over 500 by 1925. Newspapers devoted several pages each evening to "Radiophone broadcasting," with most papers having program listings for stations from coast to coast. The *Worcester Evening Gazette*, for example, had regular listings for station KFI in Los Angeles.

In a situation like this, the inferior product gets pushed out rapidly. Not surprisingly, the name Atwater Kent forged to the front of the industry. Between the years of 1926 and 1929, Atwater Kent was the world's largest manufacturer of radio receivers, outselling even the giant Radio Corporation of America. There was good reason for this leadership, though, for Atwater Kent always seemed to be offering just what the public wanted. The name "Atwater Kent



osite: Advertisement dating from 1925.  
 page, top to bottom: Kent's Wissahickon Avenue (Philadelphia) (this photograph taken from a 1925 WPI *Journal* article); the 1926 Model 32, with the Model H loudspeaker; the Model 35, also dating from the year 1926, shown with the Model L loudspeaker; an interior view of the Model 35.





Radio quickly became associated with a precision-made product at a fair price. AK receivers of the twenties were seldom ornate, probably a reflection of their maker's New England upbringing. Their simplicity, however, gave them the appearance of fine scientific apparatus. Lacquered polished brass and shiny brown bakelite components helped reinforce the Atwater Kent aura of precision. Enclosed receivers were housed in simple but tasteful cabinets highlighted by a 14-karat gold-plated Atwater Kent nameplate, sometimes in the form of a full-rigged sailing ship. Visitors to the factory watched in awe as solid gold bars were dissolved in acid to supply plating for these nameplates. The AK guide would explain simply, "Mr. Kent ordered it."

For the Christmas season of 1924, Atwater Kent's first enclosed receiver the Model 20, was introduced. This was basically the Model 10 redesigned to fit into a cabinet 26½ inches wide, 9 inches high, and 8½ inches deep. As popular as this set was, Mr. Kent was never quite satisfied with it. He felt that a radio receiver should be as unobtrusive as possible in the room in which it was placed. Thus in 1925 he introduced the Model 20 Compact, a receiver electrically identical to the large Model 20 but housed in a cabinet only 19 inches wide, 6 inches high, and 6 inches deep. This model proved such a success that it remained in production through 1927 and paved the way for the compact receivers of today.

Simplicity, in the form of single-dial tuning, was the next problem Atwater Kent chose to tackle. Prior to 1926 it was necessary to adjust three dials in order to tune in a station on the average five-tube TRF receiver. Atwater Kent solved this problem by connecting the three (or four) tuning condensers together with a pulley and drive belt arrangement. The Model 30, an improved Model 20 Compact, was one of the first AK receivers to incorporate this feature.

1927 saw the introduction of the first AC-powered Atwater Kent, the Model 36. Prior to this date, most receivers operated on bulky and expensive batteries. (The vacuum tubes which made AC operation possible, however, were developed by RCA.) The metal-enclosed Model 37 AC receiver followed the 36 in late 1927. Its 1928 revision, the Model 40, was probably the most common radio receiver produced in the 1920s; more than 2,000,000 were manufactured in 1928 and 1929. Such popularity is not surprising; the Model 40 offered \$150 performance for \$77, and it had the Atwater Kent reputation.

**B**y 1929 the Atwater Kent Manufacturing Company was at its peak. Nearly one million sets were turned out that year, worth more than \$60 million. Atwater Kent's payroll now topped 12,000 employees, and the future looked so bright that a giant addition was begun on the Wissahickon Avenue plant. Production began in this new addition even before the cornerstone was placed.

At the June 1929 Radio Manufacturers Association Trade Show in New York, the company introduced a new line of receivers containing the most sweeping changes in AK history. Gone were the polished brass and gleaming brown bakelite. In their place were brushed



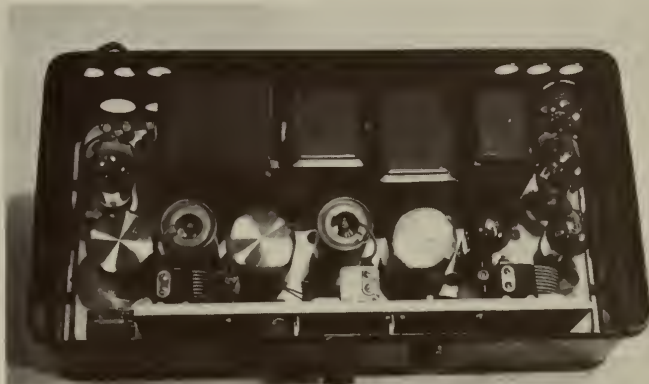
aluminum shielding cans on a modern punched-steel chassis. Screen-grid tubes, full shielding, push-pull output, and an electrodynamic loudspeaker were only a few of the advanced features found on the new Model 55. For the first time, a complete line of consoles was also available. After buying the Model 55 chassis the purchaser could then select from a wide array of highboy, lowboy, table, and desk-type cabinets of contemporary period design to make his new Atwater Kent the focal point of the living room. Orders poured in, and the forecasts for 1929 looked brighter than ever. Until October 29, 1929.



The stock market crash ended Atwater Kent's halcyon era quite abruptly. Orders placed a few weeks earlier were quickly cancelled. New orders became increasingly scarce. In hopes of stimulating business, a new model was readied for the 1930 trade show. "The Radio with the Golden Voice" (Model 70) debuted in June 1930, while moderately popular, could not stimulate sales back to their earlier levels. The years 1931-36 saw a succession of new models (including automobile radios), each with that year's latest advances and all with the additional Atwater Kent quality.



The election of Franklin D. Roosevelt in November 1932 came as a sharp blow to A. Atwater Kent. A staunch Republican, Kent viewed Roosevelt's New Deal politics with considerable disdain. He had built his empire single-handedly, and he resented efforts to lessen his control of it. In 1933, labor unions attempted to organize the Wissahickon Avenue plant. The dispute was settled with a 10 percent pay increase, and the organizers were told sternly by Mr. Kent to leave and not come back. Legend has it he threatened that any further attempt to unionize his company would cause him to close down the plant for good. The unions returned in June 1936 and, true to his word, Arthur Atwater Kent ceased production of radio receivers.



*Opposite page, top to bottom:* The gold-plated full-rigged sailing ship emblem on a Model 35 Atwater Kent receiver; Model 30 (1927) with Model L horn loudspeaker; Model 36 receiver (also from 1927) shown with the Type Y power supply; the Model 40, from 1928, with Type E-3 speaker.

*This page, left:* Model 44 (1928) with Type E speaker.

*Right, top to bottom:* Interior view of the Model 44; 1929's Model 49 with E-3 loudspeaker; Model 55 (1929) with the Type F-4 electrodynamic loudspeaker; interior view of the Model 55.





Left: 1931 Model 84. Right: 1932 Model 812.

The Atwater Kent closing sent a shock wave through the industry. Speculation ran rampant as to the reason for the closing. There may have been other reasons besides Kent's dissatisfaction with the New Deal that caused the shutdown. At the time of the plant's closing there were only 800 employees, many on call when jobs were available. A contemporary article in *Radio Weekly* indicated that "Mr. Kent is known to view the possibility of profitable operation in radio very dubiously." Shortly after Mr. Kent's announcement, twenty of his managers pleaded with him to sell them the company. He steadfastly refused, however, and the Wissahickon Avenue plant remained vacant until the Bendix Corporation occupied half the facility in 1939. No doubt Kent's large personal fortune was also a major factor in his trading of the active business for a life of leisure—what he once called "the simple life on a grand scale."

**D**uring the years of the rise and decline of his business, the affable Kent did not neglect his personal life. In 1906 he married Mabel Lucas, a Philadelphia socialite. Four children kept his home life busy, as did his summer mansion in Bar Harbor, Maine, and his winter retreat in Palm Beach, Florida. His \$4 million estate in Ardmore, Pennsylvania, was a local showplace, with garages large enough to hold a dozen cars. At one time he owned twenty-five automobiles and could frequently be found tinkering with them (the mark of a true Techie!). His explanation for this extravagance was that he didn't like to drive the same car two days in a row!

In addition to the automobiles, he owned a fleet of motorboats, and he was once fired upon by a revenue cutter whose crew mistook him for a rum-runner.

Mr. Kent's parties were famous in the circles of Philadelphia society. Most memorable was the debut of his two daughters. Kent gave not one but two parties: one on shore, the other on his personal yacht, with the guests shuffled back and forth on flowered launches.

By the mid-1920s, Kent began to devote more of his time to personal interests. He amassed a large collection of antique automobiles and grandfather clocks. In 1925 he established the Atwater Kent Hour, later aired on the NBC-Red and the CBS networks. By 1927 it was estimated that Kent was paying \$10,000 per week to support

this highly acclaimed operatic program. His philanthropic interests continued. He donated countless radio receivers to various institutions, including several to WPI for use in Sanford Riley Hall. Large contributions were made to the Perkins School for the Blind. He donated \$220,000 to Philadelphia's Franklin Museum for the construction of a graphic arts museum. In 1937 he donated the Atwater Kent Museum to the city of Philadelphia. Rather than containing electrical equipment, as one would expect, the museum housed Kent's personal collection of Philadelphia artifacts. Kent even paid for the restoration of the Betsy Ross House. His generous contributions to WPI established a scholarship for promising students from Philadelphia. He received one of WPI's first six honorary doctorates on June 18, 1926, and served on the WPI Board of Directors from 1926 to 1931.

After quitting the radio industry in 1936, Kent established a real-estate business in Florida, and then moved to Bel Air, California, where he constructed a palatial 32-room Italian style mansion, Cappel di Monti. As its name suggests, Cappel di Monti was built on top of the highest hill in Los Angeles. Here he became known as "Mr. Host" and was famous for his extravagant parties and general hospitality. His home was open to nearly everyone, and his regular guest list numbered over 800! His parties became such a social event by 1946 that *Life* magazine ran a well-illustrated article on them. Mr. Kent would invite scores of Hollywood luminaries, and he would frequently dress as the Mad Hatter (from Alice in Wonderland) while he fed them choice foods and wine. He would mingle with his guests for a few hours and then go up to bed while the party continued. Kent never dined with his guests since he was a vegetarian.

**B**y late 1948, however, Atwater Kent began to slow down his active life. Shortly thereafter he fell ill. On March 4, 1949, he died in his home from "complications of a malignant condition."

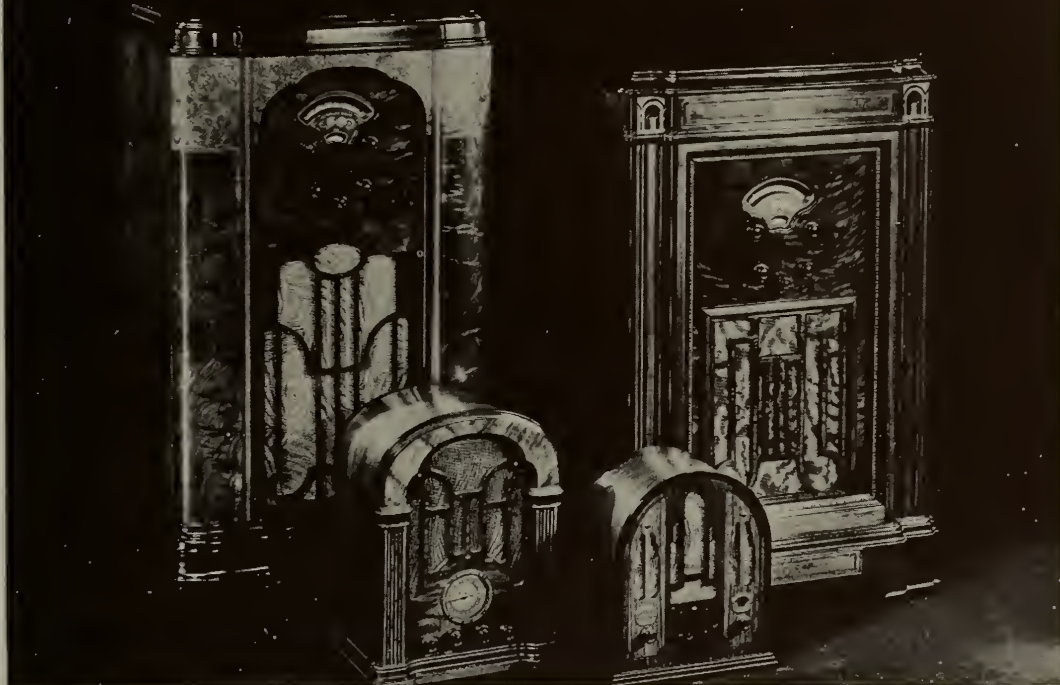
His estate totaled \$8.5 million and his will remembered WPI very generously. On June 10, 1949, the decision was made to name WPI's electrical engineering building "The Atwater Kent Laboratories." Although the EE building was completed in 1907 and holds the distinction of being the first college building in the United States constructed specifically as an electrical engineering laboratory, it had not, as of 1949, ever received an official name. (How many readers know that the plan view of this building traces out the letter E?) How appropriate that such a building should be named after Arthur Atwater Kent.

Although the name Atwater Kent is no longer a household word, this obscurity is fading quickly. Every day Atwater Kent radios are being "discovered" in attics and basements by a new generation of radio collectors. More often than not, even after 40 years of storage, an Atwater Kent will operate perfectly at the first click of the switch. Once again the Atwater Kent is becoming the focal point of some living rooms across the United States, and the AK reputation for quality is being recognized anew. It would have made Arthur Atwater Kent proud.

# ATWATER KENT

*announces 1935 world-wave*

## RADIO



**IT IS ONE THING  
to get...FOREIGN  
STATIONS...AND  
ANOTHER TO enjoy  
THEIR PROGRAMS**

is known to radio science—at prices that make each set an outstanding value. Your dealer will show you others: DC models, sets for battery or 32-volt power, AC-DC radio, Motor-car radio, and the marvelous new invention, Atwater Kent Tune-O-Matic Radio—prices range from \$22.50 to \$190.00 (subject to change without notice).

**FOR SHORT-WAVE RECEPTION, THE NEW ATWATER KENT  
DOUBLET ANTENNA GREATLY REDUCES BACKGROUND  
NOISE AND INCREASES VOLUME ON DISTANT STATIONS.**

**S**HORT WAVE broadcasting in foreign countries adds a thrill to radio that you don't want to miss. But you want more than that thrill when you buy your new radio. You want a radio that lets you enjoy foreign programs. You want an Atwater Kent Radio.

In the 27 new sets for 1935—four of which are shown on this page—Atwater Kent gives you every proved improvement that

**ALL-WAVE—Model 112S** (directly above)—by scientific tests for fidelity throughout entire range of musical sound, this 12-tube superbeterodyne is the finest radio Atwater Kent ever built. And we know of no other radio that is its equal at ANY price.

**\$180.00** f.o.b. factory

**ALL-WAVE—Model 559N** (at left above)—A revelation to even the most technically-minded buyer, this radio offers complete world-wide, all-wave reception through 4 tuning hands, 540 kilocycles to 18 megacycles, 9 tubes, 2-speed tuning, visual shadow tuning, 6-gang condenser, 11-inch speaker.

**\$119.50** f.o.b. factory

**FOREIGN SHORT-WAVE and BROADCAST—Model 206** (in front at left)—6-tube superbeterodyne, hears foreign stations, police, amateur, airplane, and all American broadcasting. Remarkably free from background noises.

**\$49.90** f.o.b. factory

**STANDARD BROADCAST—Model 944** (in front at right)—4-tube superbeterodyne receives all regular broadcasting and police band. 8-inch electro-dynamic speaker and precision construction give it excellent tone quality.

**\$22.50** f.o.b. factory

ATWATER KENT MANUFACTURING COMPANY . *A. Atwater Kent, President* . PHILADELPHIA, PA.





## 1902

Dr. Winthrop G. Hall was honored at a celebration marking his 25th anniversary as an ordained minister of Christ last spring at Pakachoag Community Church in Auburn, Mass. Dr. Hall, the church's Pastor Emeritus, never attended a seminary, but was a lay leader until his ordination in 1951. He retired as minister of the church in 1956. He is still active in church affairs, however, and is also associated with Homestead Hall and Goddard House in Worcester.

## 1922

Larry Larson is justly proud of his two grandsons, both students at the University of Vermont. Tom, a 6'2" freshman, made the varsity basketball team which had a good season, including a victory over Dartmouth. Chris, a sophomore, will be taking his junior year abroad at the University of Edinburgh.

## 1926

In April, Rudy Danstedt, assistant to the president of the National Council of Senior Citizens, Washington, D. C., participated in *Project: Knowledge 2000*, a bicentennial program exploring the country's knowledge needs for the next 25 years. He attended the forum held at the Xerox International Center for Training and Management Development in Leesburg, Va. Some 350 leaders in various fields in the U.S. and other countries took part in the project, which was sponsored by the NSF, the American Revolution Bicentennial Administration, and Xerox Corporation.

## 1928

Currently Francis H. King holds the post of president of the Massachusetts Municipal Wholesale Electric Co., a public power corporation set up by the state legislature, which is making plans to build 400 MW of generating capacity at Westover Field. King also continues as general manager of Holyoke Gas and Electric Department, chairman of the Defense Electric Power Industry Advisory Committee of the U.S. Dept. of Interior, and as a registered professional engineer in Massachusetts, Connecticut, and Vermont. He is brigadier general of the Massachusetts Air National Guard and member of the Ancient & Honorable Artillery Company of Massachusetts. Last May he served as the Memorial Day program speaker in Holyoke.

## 1929

Laurence F. Cleveland, a retired Northeastern University professor of electrical engineering, recently received the first Laurence F. Cleveland Award from the Boston Chapter of the Power Engineering Society. Prof. Cleveland, who retired from Northeastern in 1973 after 44 years of service, was chosen as the award's first recipient because of his dedication and contribution to the electrical engineering profession. For many years he directed the Electrical Power Program at Northeastern and was responsible for its growth. In honor of his accomplishments at the university, students of Aeta Kappa Nu dedicated the Cleveland Laboratory for Power Engineering in Hayden Hall.

## 1931

Trescott B. Larchar has retired. He was formerly a senior research chemist at Olin Corp., New Haven, Conn. . . . Charles E. Woodward is also retired. He had served as assistant project chemist at Pratt & Whitney in East Hartford, Conn.

## 1932

Dr. Fred A. Bickford, a consultant for Corning (NY) Glass Works, received national recognition in the ceramic field when he was made a Fellow of the American Ceramic Society in a ceremony at the Society's 78th annual meeting held in Cincinnati, Ohio last May. After receiving his MS and PhD from MIT, he started at Corning as a research chemist in 1936. He was named manager of refractory materials research in 1972 and ceramics consultant in 1974. His work on tin oxide, cordierite, and alumina has resulted in the perfection of numerous products. Dr. Bickford holds four U.S. patents and is a member of the American Ceramic Society's Glass Division. . . . William F. Reardon has been elected a senior Elfun representative, Oneida Chapter. He joined General Electric in 1948 after service with A.J. Daniels

Construction, TVA, and the U.S. Navy. His last GE position before his retirement in 1973 was as manager of advanced facilities planning in the real estate and construction operation. Currently he is a member of the Hospital Board of Managers. . . . Leon C. Skuopat, who had been with GE in Brazil from 1935 until his recent retirement, is now located in Sao Paulo.

## 1933

On the retired list is Harvey F. Lorenzen, who had been with Cragin, Lang, Free & Smyth in Cleveland, Ohio.

## 1935

C. Marshall Dann, U.S. Commissioner of Patents and Trademarks, received the Jefferson Medal from the New Jersey Patent Law Association in June. The award is considered to be the most prestigious in the patent field. Dann was honored for his outstanding contributions to the patent system and effective and progressive administration of the Patent and Trademark Office.

## 1936

When Allen Chase's company, Chase Precast Corp., was founded in 1958, it turned out burial vaults exclusively. Today the North Brookfield (Mass.) firm also makes a big line of building products, including non-slip paving blocks, septic tanks, and bulkhead units. Specialty products, such as six-ton median barriers, manhole units, and light pole bases for use along interstate highways are now being built, too.

"Currently we have contracts for about nine miles of median barriers for the new Route I-190 and for the upgrading of Route 495," Chase reports.

Always seeking a broader market, the company is developing for farmers a new precast concrete trench silo, a type of horizontal bin for the storage of silage.

## 1937

Morton S. Fine, who was awarded a distinguished service certificate by the National Council of Engineering Examiners (NCEE) last year, has been appointed executive director of the council at its headquarters in Seneca, South Carolina. A professional engineer, land surveyor, landscape architect and planner, he previously owned and operated Morton S. Fine & Associates, Inc., in Bloomfield, Conn. He is class gift chairman for the WPI Class of 1937.

noted expert on Morgan and Peace dollar varieties, **A. George Mallis**, was a recent speaker for the Adelphi University course, "The Investment Potential in Numismatics." Mallis is the author of "List of Die Varieties of Morgan Dollars" and a coauthor of a new book, *A Comprehensive Catalogue and Encyclopedia of United States Silver Morgan and Peace Dollars*, which will be published this summer. In 1962 he was appointed by President Kennedy to the U.S. Assay Commission. . . . **Earle R. Vickery, Jr.** has retired after serving 25 years as town moderator in Princeton, Mass. He received a medal and standing ovation at the last meeting at which he presided in May.

939

**Jason W. Jewett** is a flight instructor in flight learning to fly helicopters for training tests at Braniff-Hynes Helicopter, Frederick, Oklahoma.

941

**Robert B. Brautigam** serves as production manager at Hooker Plastics & Resins Division, Canadian Occidental Petroleum, in Fort Erie, Ontario. . . . **James H. Man** spoke about the operations at the Bedford Division of Revere Copper and Products, Inc., before the Rhode Island chapter of the American Society of Metals in May. He is assistant manager for research and development at Revere and gave his introductory talk prior to a tour of the plant of the ASM group. . . . **Hilliard W. Paige** is presently with International Energy Associates, Ltd., in Washington, D.C.

1942

Presently **Robert E. Allen** holds the post of manager of engineered pump operations at Cameron Pump, a division of Ingersoll-Rand Co. in Phillipsburg, N.J.

**Wilbur Day** writes that he recently returned home after a ten-month assignment with Singer in Sussex, England. He helped develop a sophisticated flight simulator which was delivered to British Aircraft Corp. (BAC) for the Concorde supersonic transport. The simulator, which faithfully reproduces all flight, engine, and systems training cues, is being used as a training device by BAC to help senior flight crews make the transition from conventional aircrafts.

During the course of the development of the simulator, Day went on a training flight in the Concorde which covered the complete flight profile. For 54 minutes of the two-hour flight, the aircraft was supersonic, being above Mach 2 for 34 minutes. To Day, the most significant aspect of the flight was the supersonic climb acceleration from Mach .93 at 25,000 feet to Mach 2.0 at 51,000 feet during which "we averaged better than 12,000 feet per minute, and the turnaround at Mach 2.0 with a turning radius of more than 200 miles—just fantastic!" He also says the flight was glassy smooth, surprisingly quiet, and that the aircraft was a technical marvel.

1943

**William W. Tunncliffe** has been appointed as a program director for the Graphic Communications Computer Association, Printing Industry of America. He has had extensive experience in the application of information handling and computerized typesetting systems. In his new position he will be responsible for all GCCA research and seminar activity in text processing, composition, facimile transmission and

related fields of application. Previously he served as president of Tunncliffe Associates, Inc., president of Graphic Services, and vice president of the Courier Citizen Co., Lowell, Mass.

1944

**Irving James Donahue, Jr.**, retired July 1 as chairman of the finance committee in Shrewsbury, Mass. He had served nine years on the finance committee. His retirement followed 24 years of service to the town. For 15 years he was a selectman, 13 of those years holding the post of chairman. He is president and owner of Donahue Industries, Inc., Shrewsbury, and a WPI trustee.

1945

*Married:* **Robert M. Ederly** and Mrs. Gertrud L. Walsh on April 17, 1976 in Plainview, New York.

**William P. Densmore**, vice president and general manager of the Grinding Wheel Division of Norton Co., Worcester, has been named the recipient of WPI's Albert J. Schweiger Award for Outstanding Achievement. The presentation was made at the 27th annual School of Industrial Management banquet held in February. Densmore received the award in recognition of his educational achievements. He is a director of Friends of Worcester Public Schools, a trustee of Dynamy, Inc., a member of the state Board of Education and founder of the Central Massachusetts Citizens Involved in Education.

1946

*Married:* **Harrison W. Fuller** to Mrs. Carroll S. Bottino in Lexington, Massachusetts recently. Mrs. Fuller graduated from Boston University College of Fine Arts and is an educational consultant in private practice. Dr. Fuller is employed at Sanders Associates, Inc., Nashua, N.H.

**Robert L. Ballard** serves as president of his own business, Design Associates, in Belle Mead, N.J. The engineering and management consulting firm concentrates in the areas of automation design, manufacturing management and systems, and industrial robot applications. . . . **Bernard L. Beisecker** holds the post of vice president and general manager at Central Screw in Frankfort, Ky. . . . **Regis E. Breault** is plant superintendent at Boston Insulated Wire & Cable Co. in North Dighton, Mass. . . . **William R. Grogan**, dean of undergraduate studies at WPI, was a panel member on a parochial school reorganization program aired on Worcester's channel 27 in March. . . . **Orville T. Ranger** is an attorney with Ranger, McTeague & Higbee in Brunswick, Me.

## National recognition for two '37 classmates

**Chapin Cutler** and **Ray K. Linsley**, both members of the Class of 1937, have recently been recognized nationally for their professional achievements. Cutler, director of the Bell Electronic and Computer Systems Research Laboratory in Holmdel, N.J., has been elected a member of the National Academy of Sciences in recognition of his distinguished and continuing achievements in original research." The Academy lists as an official adviser to the federal government, upon request, on matters of science and technology. Cutler joined Bell in 1937. Presently he is responsible for research work

on picture processing for communications, digital signal processing, computer applications, and switching systems. He holds over 70 patents and was awarded an honorary doctor of engineering degree from WPI in 1975.

Prof. Ray K. Linsley has been elected to the National Academy of Engineering. He was chosen as a member because of his leadership in hydrology and water resource planning through teaching, research, and practice. The retired executive head of civil engineering department at Stanford University, he is currently associated with Hydrocomp, Inc., Palo Alto, Calif.



## 1948

Dr. Donald C. Eteson has been promoted to professor of electrical engineering at WPI. . . . **Irwin T. Vanderhoof** presently serves as a vice president of the Equitable Life Assurance Society of the United States in New York City. He recently had two papers published in *Transactions*, a publication of the Society of Actuaries. He is planning to present a paper on "Inflation, Interest Rates, Benefits, and Expenses" at the International Congress of Actuaries in Tokyo this fall. He has written chapters on life insurance investment and accounting in two books which will be published later this year. He is also an adjunct associate professor at the Graduate School of the College of Insurance in New York City.

## 1949

**John H. Beckwith**, division manager for Exxon Research & Engineering, is temporarily assigned to Esso Europe for a couple of years on a North Sea project. He is residing in London. . . . **Robert A. Rowse**, vice president for operations and research for the Abrasive Materials Division of Norton Co., Worcester, was recently awarded the Abrasive Engineering Society's (AES) annual award. A special plaque recognizing Rowse as the industry "Man of the Year" was presented to him at the 1976 Technical Conference of the AES in Grand Rapids, Mich. His 1975 patent of zirconia alumina abrasive grain and grinding tools is viewed by the industry as one of the most significant advances in abrasives in decades. Employed by Norton Co. since 1949, he also has developed six other patents on abrasives. He graduated from the School of Industrial Management at WPI and took the Advanced Management Program at Harvard. He is director of the Abrasive Grain Association and a member of ACS.

## 1950

**George Barna** serves as a manager for the Spacecraft Group at RCA in Princeton, N.J. . . . **Everett S. Child, Jr.**, is executive vice president for the N.H. Association of Realtors in Concord, N.H. . . . Col. **Frank W. Harding III** is a member of the B-1 System Program Office which has earned the Air Force Organizational Excellence Award. Honored for exceptionally meritorious service, the group is credited with helping make possible the successful development and flight tests of the new B-1 strategic bomber. Col. Harding is chief of procurement at Wright-Patterson AFB, Ohio. . . . **Philip J. Nyquist** serves as an expert in work simplification for the United Nations in Bandung, Indonesia. . . . Currently **Paul M.A. Schonning** is a project engineer at Norton Co., Worcester.

## 1951

**John A. Dillon** holds the post of director of material management at Purex Corp., Ltd., in Carson, Calif. . . . **Harvey L. Howell** serves as president of Manchaug Corp. in Manchaug, Mass. . . . **Roy H. Olson** writes that he has just passed his tenth anniversary at the Torrington (Conn.) Company. Both of his sons are now through college, the younger, Paul, having graduated June 5th. David has a degree in police administration and is currently working in that field. . . . **Ramsey U. Sheikh** is vice president at B.C. Wagner, Inc. in Reading, Pa.

## 1952

**Donald H. Adams** has been elected group vice president of regional operations by Allendale Insurance, the world's largest insurer of industrial property. Prior to his promotion, he was vice president and field manager of the firm's Canadian operations. In his new post, he assumes responsibility for the company's southern and midwest regions, the international and northeast region, as well as the Canadian operations. Adams, who joined Allendale in 1954, is now with company headquarters in Johnston, Rhode Island. . . . Dr. **Robert E. Baker**, an avid skier still racing on the Veteran's Circuit and a race official, is proud of his 17-year-old daughter, Laurie, who is seriously pursuing skiing at Burke Mountain Academy in East Burke, Vermont. The academy stresses skiing and offers both a high school and college level program. Laurie, a high school senior, won the giant slalom and the slalom at the Junior Easters last winter. . . . **Richard G. Bennett** serves as an account executive at Reynolds Securities, Inc. in Boca Raton, Fla. . . . **Robert L. Favreau** was recently elected second vice president of the Greater Pottsville (Pa.) Area Chamber of Commerce. He is manager of the Exxon plant in Minersville. For five years he served as director of the Chamber of Commerce. He is a past president of the Manufacturers Association of Schuylkill County.

## 1953

**Vyto L. Andreliunas** recently received a commendation for outstanding performance from the U.S. Army Corps of Engineers, New England Division. This was the sixth award for Andreliunas, who as chief of operations for the division, is responsible for the maintenance and operation of 36 federal flood storage reservoirs and the Cape Cod Canal. He is chairman of the Westford (Mass.) Planning Board and served eight years on the Development and Industrial Commission. . . . **J. Donald Frey** is now with Bausch & Lomb in Rochester, N.Y. . . . **Walter E. Levine** holds the post of manager of product planning at Improvecon in Port Huron, Mich.

## 1954

**Joachim Herz** is with Siemens Semiconductors in Stamford, Conn. . . . **Milton Meckler** has been named president of the Energy Group, a subsidiary of Welton Becket Associates, in Los Angeles, Calif. The group will emphasize the design of building automation and utility systems and energy management programs for new and existing building projects and engineered facilities. A registered professional engineer, Meckler also teaches a course on "Guidelines for Energy Conservation in Industrial Processes" at UCLA. Last winter his article, "Heat Reclamation Techniques for On-Site Energy Systems," appeared in the publication, *Western Building Design*. . . . **Wilfred F. Taylor**, former town engineer in Barnstable, Mass., has joined the staff of Dale E. Caruthers Co., consulting engineers, in Gorham, Me. He has a 20-year background in public works and engineering. From 1966 to 1975 he also owned and operated Crowl and Taylor Corp., a civil engineering consulting and surveying firm in the Cape Cod area. Among his projects were design work and field engineering for New Bedford Industrial Park and layout engineering at the Air Force Base for Page Electronics Co. He is a registered professional engineer and land surveyor in Massachusetts and a member of ASCE.

## 1955

**Peter H. Horstmann**, vice president of engineering at Coppus Engineering Corp., Worcester, was voted "Boss of the Year" at the American Business Women's Association Boss Night banquet held in Worcester last June. . . . **Frederick J. Ogozalek** is studying at Springfield (Mass.) Technical Community College.

## 1956

After leaving World-Wide Construction Services, Inc., in March, **Robert S. Allen** formed Allen Associates, a chemical engineering consulting firm located in Wichita, Kansas. Presently he is designing and building a PVC plant in Haifa, Israel for Electrochemical Industries (Fruarom) Ltd. . . . **Richard V. Basil, Jr.**, serves as a senior scientist at Hughes Aircraft in Los Angeles, Calif. . . . **Albert D. Blakeslee** is with Maui Surf Hotel at Kaanapali, Maui, Hawaii. . . . **Bernard R. Danti** serves as vice president of Millipore Corp. in Bedford, Mass. . . . **Lawrence B. Horrigan, Jr.** is construction superintendent at EBASCO Services, Inc., Jensen Beach, Fla. **William A. Johnson** works as senior consultant at Sobotka & Co., Inc., Stamford, Conn. . . . **Edwin J. Leonard** is the owner and president of Monarch Marketing Systems in Sao Paulo, Brazil. . . . **John H. Rogers** is the author of "Tedlar PVF Film . . . New Applications for a Mature Product," which appeared in a recent issue of *Du Pont's College Supplement*. He is special representative in the Plastic Products and

Department at Du Pont in Wilmington, Delaware. . . . **Anthony V. Ncella** holds the position of assistant plant manager at Du Pont's F&F plant in Newark, N.J. . . . **Harold F. Smith** is now director of international sales operations at Du Pont Power and Marine Systems, a subsidiary of United Technologies Corp. . . . **F. Stone** was recently elected to a three-year term on the school committee in North Attleboro, Mass. As treasurer of Auburn Regional High School, he has worked to improve bidding procedures of the school committee. Stone is vice president and general manager of Colonial Data Systems, Inc., located in North Attleboro, Mass. His wife was elected to the Charter Revision Commission.

## 1957

**W. Adams** holds the post of project manager at Wilbur Smith & Associates in Norfolk, Va. . . . **Robert L. Brass** has been named director of market planning and marketing for Xerox Corporation with headquarters in Stamford, Conn. He has shared staff responsibility for market planning and research and market and economic forecasting. He joined Xerox in 1957 and since 1973 has served as manager of product planning. . . . **John D. Daly** is secretary and general counsel at Columbia Gas Transmission Corp., one of the nation's largest gas pipeline companies. He is currently located in Charleston, W. Va., where he has been working for Columbia in 1957 as an engineer and saw service with the firm in Cleveland, Ohio and New York City. After earning his law degree in 1967, he switched to the company's legal department. Prior to his recent promotion to the top legal position at the firm, he was senior attorney at Columbia Transmission and secretary of three Columbia System supply subsidiaries. . . . **Edward J. Ferguson** is a senior systems engineer at IBM Corp. in Lexington, Ky.

## 1958

During the WPI trustees approved tenure of **James S. Demetry**, associate professor of electrical engineering. . . . **Sam H. Hopf** has joined Walworth Company (industrial valve manufacturer) as vice president of engineering. He heads the rate engineering, which is a part of Walworth's new Customer Service Center in operation at Valley Forge, Pa. Previously he had been with Irvington-Moore, Waterbury Corp., and General Electric. He has been active with the Manufacturers' Standardization Society of the Valve & Fittings Industry, the American National Standards Institute, and the American Chemical Institute.

## 1959

**Dr. Mohammad Amin** is an associate professor in Arya Mehr Technological University's engineering department, Tehran, Iran. . . . **Dr. Joseph D. Bronzino**, professor of engineering at Trinity College, Hartford, Conn., was coauthor of a paper which won second prize in a national award program sponsored by the Association for the Advancement of Medical Instrumentation. Titled "Application of a Minicomputer-Based System in Measuring Intraocular Fluid Dynamics," the paper describes work he and others have performed in measuring capillary blood flow in the anterior segment of the eye. The chapter, "Experimental Studies of Sleep in Animals," will appear in Volume 3 of *Methods of Psychology* to be published this year by Academic Press. . . . **George B. Constantine** is currently manager of market development for combined cycle sales at General Electric International in New York City. . . . **Frederick J. Costello** serves as director of sales for chemicals and plastics at Union Carbide Corp. in Moorestown, N.J.

**Andrew P. Cueroni** was recently elected a member of the board of directors of Suburban Credit Union in Framingham, Mass. He is involved in the industrial and commercial construction business and belongs to ASCE and the American Concrete Institute. He is chairman of the board of trustees of the Central Massachusetts Carpenter's Training Fund; the Bricklayer's Pension Fund, and trustee of the Central Massachusetts Carpenters' Health and Welfare Fund. . . . **Wilbur S. Ekman, Jr.** is a radical tire compounder for Armstrong Rubber in West Hartford, Conn. . . . **Philip H. Puddington** has been named vice president and general manager of Rice's, Inc., an independent tire and car care marketer serving both commercial and retail customers. Headquarters are in Manchester, N.H., with a manufacturing facility and warehouse in Bow and six store locations around the state. Previously Puddington was general manager of the aerosol division at Scovill Manufacturing in Manchester.

## 1960

**David R. Geoffroy** is project manager at Riley Stoker in Worcester. . . . **Robert F. Kelley**, MNS, associate professor in the Worcester State College Department of Natural Science and Physics, was recently named the recipient of the annual Outstanding Science Educator Award by the New England Section of the Association of Educators of Teachers of Science, and the Massachusetts Association of Science Supervisors. . . . **Arthur J. LoVetere** has been appointed chief operating officer at MacDermid, Inc., Waterbury, Conn. He will be responsible for all day-to-day operations except research. Prior to his appointment, he had had responsibilities as technical sales representative, regional sales manager, and marketing manager for the firm. He has been with MacDermid since 1957 and is a trustee of the Metal Finishing Suppliers Association.

. . . **John T. Mancherer** is manager of systems order processing services at Foxboro (Mass.) Co. He directs three departments in the Digital Systems Division. . . . **Norton S. Remmer**, a former plans examiner in the Worcester City Office of Public Buildings and technical director for the state Building Code Commission, has been named Worcester's first commissioner of code inspection. He will supervise the new Code Inspection Department.

## 1961

**Lee P. Hackett** holds the post of vice president of the industrial division at the American Appraisal Co., Inc. in Milwaukee, Wis. . . . **Bradley E. Hosmer** was recently named vice president of special products at Branson Sonic Power Company, Danbury, Conn. He will be responsible for all Branson's non-plastics product lines, including ultrasonic metal welding and machining. He will also direct the company's advertising, training, and marketing research departments. Prior to joining Branson in 1972, he had been with Marketing Action Group, Inc., and Booz-Allen and Hamilton in New York. . . . **Mel G. Keegan** is a senior mechanical engineer at Fluor Engineers & Constructors, Los Angeles, Calif. . . . **Richard O'Shea** works as a senior engineer at Raytheon Company in Wayland, Mass. . . . **Dr. Gordon M. Parker** has been appointed laboratory director at the Apollo Chemical Corp. in Whippany, N.J. He received his PhD from Polytechnic Institute of Brooklyn and did postdoctoral study at Kyoto University in Japan. . . . **Svend E. Pelch** is director of long range planning for Bristol Myers International, New York City. . . . **Edward A. Sundburg** has been appointed superintendent of ceramic components for Norton Company's Industrial Ceramics Division in Worcester. He began work at Norton's in 1964 as a product engineer for the division's armor and spectramic products.

## 1962

**Richard O. Allen** is supervisor of computer services at Photographic Science Corp., Webster, N.Y. . . . **David L. Goodman** continues with Beaudreau Electric, Inc., Waterford, Conn., where he holds the post of president. . . . **Bryce A. Norwood** was recently promoted to the position of director of planning for the northeast region of Friendly Ice Cream Corporation, Wilbraham, Mass. He had served as manager of planning and engineering. In his new post he will supervise the engineering requirements during new construction for the firm. He will also oversee maintenance needs for all the shops located in the northeast. A noted authority on energy conservation, he has lectured to numerous groups on the subject. . . . The Rev. **Andrew D. Terwilliger** now serves as associate traffic engineer for the Lexington (Ky.) Fayette Urban County Government.



# Dreams . . . of teaching

Dreams may not always be answered, but that doesn't necessarily mean that there can't be happy endings. Lots of youngsters dream of growing up to be firemen or Supermen, but, instead, make perfectly happy pharmacists or insurance executives. In the maturing process, goals may change. Besides, Fate plays out her hand from a hidden deck, and no one can be certain what tomorrow may bring.

**John Bayer, '45** and **Philip Baker, '65** both dreamed of going into teaching. Several members of Bayer's family are teachers. His brother John is a professor of sociology at Florida State University in Tallahassee. His sister-in-law teaches in the Dudley (Mass.) school system, and his wife Barbara teaches arts and crafts. Bayer himself caught the teaching bug when he returned for graduate work at WPI following World War II. "I really enjoyed teaching physics to underclassmen," he says "and seriously considered taking up teaching as a profession." But his father became incapacitated and he had to reassess his goals.

Phil Baker, who earned his BS in physics at WPI in 1965, and then went on to Yale for his master's degree on a fellowship, had an experience similar to Bayer's. He taught an undergraduate course in astronomy and liked it.

"I thought I might go into teaching after graduation," he recalls. Instead, he read an ad in the *New York Times* which changed his plans.

Today, John Bayer sells Cadillacs and Phil Baker is principal engineer at Polaroid. Both seem satisfied with their respective careers, although they lay outside of the teaching profession.

Bayer's career, especially, has had a number of unexpected twists and turns. Why is the man who loves teaching, and who developed the formula for Gleem toothpaste, selling Cadillacs in Dudley, Mass.? Ask him and he gives a candid answer.

"The standard of living that the car business provided when I was asked to help manage the family business in 1949, was hard to duplicate anywhere else," he replies.

Prior to helping his ailing father with the business, Bayer had received his BSCHE from WPI in 1945 and then gone directly into the Navy. He became associated with the Aghostia D.C. Naval Research Laboratory of the U.S. Navy Office of Research & Invention and was assigned to the Manhattan Project where he worked on the isotope separation of the uranium which was used in the initial testing of the atomic bomb.

Once out of the service, he returned to WPI, became interested in teaching, and received his MSCHE in 1947. For a short time he was with Procter & Gamble Co. in Cincinnati, Ohio where he developed the formula for Gleem toothpaste. In 1949 he returned to Dudley to help his father. He's been a successful Cadillac dealer ever since.

Bayer does maintain an active interest in education, however. A resident of Thompson, Conn., he has served on the town school board for eight years, four of them as chairman.

Phil Baker, fresh out of grad school at Yale, followed up an ad in the *New York Times* which propelled him into the challenging world of optics and away from his earlier goal of a career in education.

The time was 1967 and Baker decided that if he was turning to industry, he would like to work for a company making consumer products, rather than a defense oriented industry. The Polaroid ad provided the answer for him. "Cameras are a popular consumer product most often associated with happy occasions," he says. "Instant pictures speak a language all their own, breaking barriers that may exist between strangers."

Working at Polaroid, one of the largest and best known photographic companies in the world, has been a challenging experience for Baker, who serves as principal engineer at the Cambridge headquarters.

"We have a unique product," explains. "Instant cameras are one of the few inventions created in the United States and never successfully copied in any other country. Still the photographic industry is a very competitive field, and it pays to be step ahead of the competition, and also looking towards the latest technological developments."

For example, Polaroid's newest product, the Pronto, contains the latest in integrated circuitry to provide foolproof logic so that all the photographer needs to do is to touch a button and let the camera take over.

Baker has been involved with the development of the color pack cameras, the SX-70 camera, instant movies, and the Pronto. Before products reach the market, much testing, analysis, and evaluation is carried out. Baker's group in the product engineering division works from a few months to two years prior to introduction, testing products for their photographic, photometric, and optical performance.

His duties include managing the Polaroid laboratories and providing technical assistance to all of Polaroid's domestic and international manufacturing facilities. He also is a Polaroid representative on several ANSI committees. Like Bayer, however, he still keeps a warm spot in his heart for education. Four times a year he teaches an optics course for Polaroid.

Teaching as a full-time vocation for John Bayer and Phil Baker, may be a dream long gone. But it certainly is not forgotten.

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Research is a hallmark of Wyman-Gordon; its research and development teams have long been recognized as industry leaders in the development of new techniques for advanced materials such as titanium and other space-age alloys.

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**Allen H. Hoffman** of WPI's mechanical engineering department was the author of "The Worcester Water Quality Study: A Joint Venture in Community Service" which appeared in a recent issue of *Practical Engineering*. Last winter the WPI trustees approved tenure for Dr. Hoffman. **Daniel Kagan** is a psychologist in the Personnel Department of Boulder (Colo.) Personnel Department.

**Edward Hedlund** has been appointed plant manager of Borden Foods manufacturing plant in Van Wert, Ohio. Previously he was manager of Standard Brands' Chicago dry products plant and the Pennsauken, N.J. margarine plant. The Hedlunds have a 12-year-old son, Jason. . . . Another appointment is that of **David E. Monks**, who is now a coordinator of product development in the Kodak Apparatus Division (KAD) at Rochester, N.Y. In coordinating this function, he will be responsible for development of conventional still camera programs. He became associated with KAD in 1964. Prior to his latest promotion, he was on the assistant superintendent's staff in the parts manufacturing area. . . . Currently **Dr. Eino E. Niemi, Jr.** is an assistant professor at the University of Lowell (Mass.). **James Tasillo, Jr.** works for New England Gas & Electric Association in Northbridge, Mass.

**R. Berendes** is now associated with Hill Lynch, Pierce, Fenner & Smith, Inc., Providence, R.I. . . . **Robert H. Cahill** has become marketing and sales manager for Homalite in Wilmington, Delaware. . . . **John L. Cloues** is a student at the Western Baptist Theological Seminary in Fort Worth, Texas. . . . **Harry S. Forrest** serves as a senior process engineer at FMC, Princeton, N.J. He transferred from the chemical division in January. Continuing with Motorola, **William D. Hensch** presently holds the post of senior mid-Atlantic area engineering manager. He is located in Arnold, Md. . . . **John Kelley** is a senior project manager at General Electric Corp., Augusta, Me. . . . Last month **Peter B. Kirschmann** was promoted to manager of operational planning in the power transformer department in Northfield, Mass. He was transferred from the plant in Mack, N.H. **Robert D. Klauber**, a teacher of transcendental meditation, will be an instructor in physics at Maharishi International University, Fairfield, Iowa, starting in September. Bob writes, ". . . it is a newly new school with an innovative, scientific, and evolutionary approach which just might revolutionize our educational system."

. . . **Ronald A. Lange** was recently named group leader in the Infrared and Electro-Optics Department at Cutler-Hammer's AIL Division in Melville, N.Y. He joined AIL in 1965 in the Applied Electronics Division. In his new position he will be responsible for the infrared applications program. Earlier he had served as project engineer on major programs, including one covering a monopulse tracking receiver for use with CO2 laser radars. He is an avid racing sailor and participates in both local and national competitions.

**B.S. Ramprasad** serves as a senior scientific officer at the Indian Institute of Science, Chamrajpet, Bangalore, India. He is engaged in teaching and research and development in optical engineering, vacuum technology, and thin films. His research interests are in lasers and holography. As a hobby he writes poetry, some of which has been published in America. . . . **Francis "Buddy" Watson** works as assistant head of the acquisition department at LANTNAVFACENGCOM in Norfolk, Va. . . . **Dr. John T. Wilson**, vice president and chief design engineer for Paul J. Ford & Co., structural engineers, Columbus, Ohio, has been named as the 1975 "Young Engineer of the Year" by the Ohio Society of Professional Engineers. Currently Wilson is president-elect of the O.S.P.E. Franklin County Chapter. . . . **Arthur M. Zweil, Jr.** has been awarded the "Salesperson of the Year" Award for the second year running at Barbara Goldberg Associates, Inc., Beverly, Mass. The award is given to the broker who has the highest volume of sales in residential and commercial real estate. He has been president, treasurer, and director of the Greater Georgetown Jaycees and is currently treasurer of the Epsilon Building Association of Theta Chi Fraternity at WPI. He also serves as an adviser for two Junior Achievement companies in Georgetown.

### 1966

**Dr. John H. Lauterbach** is a section leader at National Starch & Chemical Corp., Bridgewater, N.J. . . . **Paul Malnati** now serves as manager of design engineering at All Systems in Moorestown, N.J. . . . Currently **Donald Mugnai** is associated with E.G.G. Hydrospace-Challenger Group in Rockville, Md. . . . Continuing with Pratt & Whitney Aircraft, East Hartford, Conn., **Guenther Pollnow** is now senior engineering cost analyst. The Pollnows have two children, Tanya Ann, 4 and Mathew Jacob, 2½. . . . **Dr. Joseph E. Whalen** works as associate program director at Operations Research, Inc. in Silver Spring, Md. . . . **Eugene B. Wilusz**, who teaches chemistry at New Bedford (Mass.) High School, has been awarded a doctor of philosophy degree in polymer science and engineering from UMass, Amherst. His dissertation was entitled "Studies in Polymer Compatibility." He has presented papers on his research at the Calorimetry Conference and at the national meeting of the American Chemical Society. . . . **John K. Wright** presently holds the post of business manager, Food Phosphates of the Food Ingredients Division at Stauffer Chemical Company, Westport, Conn.

**Dr. Stephen R. Alpert** has been promoted to associate professor of computer science at WPI. . . . **Richard H. Court, Jr.** is employed as a senior quality assurance engineer in the quality assurance department, Instrument Division, at Perkin-Elmer Corp. in Norwalk, Conn. . . . **Thomas A. Keenan** was recently appointed controller of the Torin Corp., Torrington, Conn. In 1969 he joined the company as a development engineer with the Connecticut air moving division and was appointed divisional accounting manager for North American division in 1974. . . . **Leonard E. Odell** has been elected an actuary of the Hartford Life Insurance Company and Hartford Life and Accident Insurance Company. He will be responsible for the development of new individual life insurance products. In 1973 he became associated with the firm as associate actuary, following five years' experience with Aetna Life and Casualty. . . . **Stan Pietrewicz** is a senior associate at Analytics, Inc., McLean, Va.

# 1968

*Married:* **Frank H. Corbiere** and Miss Margie Pianki of Hamden, Connecticut on June 14, 1975. The bride and groom are missionaries working with the Literature Crusades in Cartagena, Colombia, South America. Corbiere is planning to enroll in the Gordon-Conwell Theological Seminary graduate program in South Hamilton, Mass. . . . **Gregory C. Cox** and Pauline J. Carmean in Arlington, Virginia on April 24, 1976. Mrs. Cox, who is from Meriden, Conn., is employed as a loan officer at Fand M National Bank in Arlington. The groom is working at the Naval Ordnance Station, Indian Head, Md., where he is a project engineer in the Amines Fuels Program. **Michael C. Annon** an instrument and control engineer for Gilbert/Commonwealth in Reading, Pa. . . . **Ken Gminski** was recently promoted to senior engineer status in addition to his residency status (field engineer) of New Hampshire for Factory Mutual Engineering. His job consists of visiting the industrial plants that FM insures throughout the state, providing a loss prevention service for fire and other perils covered in their insurance policies. Ken has also started studying for his MBA degree evenings at Rivier College, Nashua. He and his wife, Ruthanne, reside in Windham. . . . **Dr. Mark Hubelbank** holds the post of chief of computer research at Electronics for Medicine in Sudbury, Mass. He is also a research affiliate at MIT. **Steven Medoff**, who received his MBA from Harvard last year, is now a business consultant at Tree Associates in Lexington, Mass. . . . **William Nordstrom** works as a project engineer for Mass. Oxygen Equipment Co., Inc., Westboro, Mass. . . . **Stephen J. Stadnicki** is currently employed at Chevron Research, Richmond, Calif. . . . **Edward M. Zakrzewski** is a technical service engineer at Cincinnati Milacron in Batavia, Ohio.



# 1969

**Married:** James T. Rodier and Miss Deborah McLaughlin on May 8, 1976 in Durham, New Hampshire. Mrs. Rodier graduated from Simmons College and the Newton-Wellesley Hospital School of Nursing. She is a registered nurse with the Orentreich Medical Group in New York City. Her husband, a graduate of Suffolk University Law School, is associated with National Economic Research Associates, Inc., New York City. He is a member of the Massachusetts Bar Association.

**Born:** to Mr. and Mrs. Charles E. Trent, a daughter, Christine Lynne, on May 5, 1976. The Trents also have a son, Brian, who is three.

James A. Alford has joined Stone & Webster in Boston. . . . Bruce L. Carlson works for Northeast Utilities in Hartford, Conn. . . . Charles T. Doe has been promoted to senior actuarial associate in the actuarial organization at State Mutual Life Assurance Company of America in Worcester. He received his MS from Northeastern in 1973 and joined State Mutual in 1969. Two years ago he was named actuarial associate. . . . Currently J.B. Flynn serves as product manager of GE's Taiwan operation in Taipei. . . . Mark H. LePain works as a sales engineer for Westinghouse in Towson, Md. . . . Continuing with Du Pont, Stephen O. Rogers is presently senior supervisor for the firm in Gibbstown, N.J. . . . Dr. Donald W. Rule is a research associate for the National Research Council at Goddard Space Flight Center, Greenbelt, Md. . . . Robert Stessel owns Danversport Marine Electronics in Danvers, Mass. He resides on the research vessel "Kelpie" on the Porter River in Danversport. . . . Peter R. Walsh holds the post of district manager at the Bussman Mfg. Division of McGraw-Edison Co., St. Louis, Missouri.

# 1970

Daniel K. Breen is a technical specialist for New England Recruiters in Worcester. . . . Domenic J. Forcella, Jr. has been appointed a member and chairperson of the Council on Environmental Quality by Connecticut Governor Ella Grasso. Previously he was chairperson of the Plainville Inland Wetlands Commission and a consultant for an environmental studies program at Central Connecticut State College in New Britain. Currently he is Democratic town chairman and Justice of the Peace in Plainville. . . . Sister Mildred Marengo S.S.J., was recently appointed assistant principal at Cathedral High School in Springfield, Mass. She has taught science at the school since 1959 and served as chairman of the science department. . . . Edward Mason works as plant manager at Amoco Plastic Products Co., Seymour, Indiana. The plant has 150 employees. . . . Raymond T. Pajer is an electrical engineer at Smith-Corona Research and Development Laboratory in Danbury,

Conn. . . . Bruce E. Samuelson now works for R.K. Chase Co., Inc., Albany, N.Y. . . . Christopher A. Spencer continues with Factory Mutual Engineering, Assoc., Norwood, Mass., where he is presently a staff engineer.

# 1971

**Married:** Daniel J. Dunleavy to Miss Ann L. Robinson of Scotia, New York on May 8, 1976. The bride graduated from Western College for Women, Oxford, Ohio and Suffolk University. The groom, who received his MBA from Boston University, is a sales engineer for Berg, DiMare & Berg, Boston. . . . Dr. Richard P. SanAntonio to Dr. Pamela J. Pratt on May 22, 1976 in St. Louis, Missouri. The bride and groom are both graduates of Washington University School of Medicine. They began their residencies at Walter Reed Medical Center in Washington, D.C. in July. She is in pediatrics and he is in internal medicine. . . . Robert M. Sinicrope and Miss Dianne Lair in Milton, Massachusetts on June 12, 1976. Mrs. Sinicrope is originally from Corpus Christi, Texas and owns and operates a dog-grooming business. The groom teaches math and music at Milton Academy.

Robert Anderson is a process engineer at Michigan Chemical in Ann Arbor. The Andersons have two daughters, Sharon, 3½ and Heather, almost a year old. . . . Jeffrey Askanazi is a resident in surgery at Columbia Presbyterian Hospital in New York City. . . . Barry F. Belanger and his wife are self-employed jewelry designer-craftsmen in Kingston, Ark. They are building up their rural homestead and gardens and are working on energy conservation. They use solar energy for heating. . . . Formerly located in Boston, Paul J. Bienick is now with Stone & Webster in Mineral, Va. He is currently working on nuclear power plants at Lake

Anna for the Virginia Electric Power Company. . . . 2/Lt. Richard Brunet has completed weapon systems officer training at MacDill AFB, Fla. in the F-4 Phantom fighter bomber. He is being assigned to Torrejon Air Base, Spain for duty with a unit of the U.S. Air Force in Europe.

Dr. Thomas C. Coleman is with the power department at United Engineers & Constructors in Boston. . . . Gordon E. Govalet is employed by Bechtel Power in Gaithersburg, Md. . . . Steen Hannib has become associated with Medicotek Laboratories in Copenhagen, Denmark. . . . Ken R. Perkins works at Singer Librascope in Glendale, Calif. . . . Lawrence E. Rainville works with Raytheon Data Systems in Norwood, Mass. . . . Donald Tanana serves as office manager at Bristol Myers Co. in La Mirada, Calif. . . . Robert A. Woollacott is administrative manager of purchasing at Curtis 1000, Inc., Smyrna, Georgia.

# 1972

**Married:** Dennis J. Lipka and Miss Linda Prouty on February 14, 1976 in Holden, Massachusetts. The bride graduated from Worcester State College and is a kindergarten teacher. The groom is a coordinator of parental-involvement programs for the special programs office of the Central Falls (R.I.) public school department.

**Born:** to Mr. and Mrs. Alfred J. LeBel, daughter, Anne Laureen, on February 4, 1976. LeBel is an actuarial analyst at Travelers Insurance Co., Hartford, Conn.

Peter Bertasi is a chemical sales representative for Olin Corporation in Charlotte, N.C. . . . Joseph D. Bianca serves as superintendent of modeling and component research at Combustion Engineering, Inc., Windsor, Conn. The Biancas have a two-year-old daughter and baby son. . . . Michael J. Emery is a project

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in GE's plastics department in  
field, Mass. The Emerys have a three-  
-old son, Jamie. . . . Currently Roy A.  
blad is a graduate student at Case  
tern Reserve University School of Dental  
icine in Cleveland, Ohio. . . . Continuing  
Filterite Corporation, **Thomas O.**  
rphy now holds the post of production  
ager. He is located in Timonium, Md.  
**G. Perkins** holds the position of chief  
rammer at Adams-Smith, Inc. in  
boro, Mass. . . . 1/Lt. **John D. Powers,**  
wife, Betzi, and 1½ year-old son, Jay,  
returned to the U.S. after a three-year  
in Germany. Currently Powers is a  
onnel officer with the Engineer School  
ade at Ft. Belvoir, Va. . . . **Loren B.**  
th continues as a scientist at the Bettis  
ic Power Labs for Westinghouse and is  
ted in West Mifflin, Pa. . . . Presently  
ard **A. Sojka** is department head of raw  
erial receiving and outside warehousing at  
ol, Inc., Stamford, Conn. . . . **Kenneth**  
adland has completed all course  
irements and examinations and has been  
ed a candidate for the degree of doctor  
hilosophy in mathematics at the  
ersity of New Hampshire. He has been  
ded a Summer Fellowship to begin  
ing his dissertation on "quasi-similarity of  
ices over bounded analytic functions."

973

to Mr. and Mrs. **Steven W. Brennan**  
first child, Aaron William, on December  
1975. Presently Brennan is a chemical  
near for the department of the Navy at  
Naval Ordnance Station in Indian Head,  
Recently he participated in a crash pilot  
ram to develop a new production  
od to produce a critical Air Force  
ellant. . . . to **Richard L. Sargent** and  
ne Lamberto Sargent '75, a son, Peter,  
ntly. Peter has a two-year-old sister,  
. Sargent is a project engineer at Sala  
netics, Inc., Cambridge, Mass.  
**James W. Davis** is a district  
representative at Nalco Chemical Co. in Oak  
rk, Ill. . . . **Michael S. Gipps** works as a  
arch engineer at Dow Chemical in  
burg, Calif. . . . **Andrew Langdon** is a  
ent at Wharton School, University of  
sylvania, in Philadelphia. . . . **Robert F.**  
serves as district sales manager at  
er Transicold Co. in Syracuse, N.Y. . . .  
**ert A. Manes**, who received his MA in  
ish from Purdue University last year, will  
eaching English composition and an  
disciplinary humanities seminar for  
men at Lander College, Greenwood,  
starting this fall.  
**Phillip C. Mazzie** has been promoted to  
enant in the U.S. Air Force. He is a  
phone equipment installer at Wright-  
erson AFB, Ohio with a unit of the Air  
e Communications Service. . . . **Richard**  
**Hage** is a senior construction engineer at  
She & Webster in Boston. . . . **Thomas M.**  
**Sage** serves as a production engineer in  
plastics division at GE in Selkirk, N.Y. . . .  
**ren F. Smith** is an engineer in building  
aterials research at GAF Corp., South  
nd Brook, N.J. . . . **Harvey A. Vigneault**  
s the post of senior engineer at C.F.  
B in Alhambra, Calif.

1974

*Married:* Ens. **James M. Asaro** and Miss  
Belinda C. Jackson of Pensacola, Florida on  
February 14, 1976. The groom was  
designated a naval aviator and received his  
Navy wings on January 23. Currently he is  
stationed in Jacksonville. . . . **Gary Golnik** to  
Miss Mary E. St. Martin of Northbridge,  
Massachusetts recently. The bridegroom  
received his master's degree in optics from  
the University of Rochester (NY) in  
December. He is employed as an  
experimental engineer in the laser  
development group at Pratt & Whitney  
Aircraft in West Palm Beach, Fla. . . . **Paul E.**  
**Nordstrom** and Miss Suzanne M. Nadeau in  
Woonsocket, Rhode Island on May 31, 1976.  
Mrs. Nordstrom, a registered nurse at New  
England Baptist Hospital, Boston, graduated  
from St. Vincent Hospital School of Nursing  
in Worcester. Her husband is a quality  
control engineer for the California State  
Water Resources Control Board in  
Sacramento. . . . **Michael W. Szeliga** and  
Miss Theresa Ann Cahill on February 21, 1976  
in Fall River, Massachusetts. Mrs. Szeliga  
graduated from Durfee High School and is a  
bookkeeper at Appel's Tire Co. The  
bridegroom is with Monsanto in Indian  
Orchard, Mass.

*Born:* to Mr. and Mrs. **Dan Brunell** a son,  
Steven Andrew, on February 5, 1976. Brunell  
is an industrial engineer with Louis Lefkowitz  
& Bros., Milltown, N.J.

"Without **Bill Delphos**," states a recent  
issue of *Buzzword*, a publication prepared by  
the Graduate School of Management (GSM)  
at Northwestern University, "there could be  
no Careers '76 program. The planning,  
scheduling, promoting, and executing of the  
many sessions was all Bill's work." (The  
program is regarded as valuable in helping  
the graduate students plan their careers.) Bill  
was also cited for his guiding influence in the  
Marketing Group and the Fall Management  
Conference. The article sums up his efforts  
saying, "If ever someone deserved an award  
for contributions to GSM, above and beyond  
the call of duty, Bill Delphos does."

**Donald W. Gross** has been commissioned  
a second lieutenant in the U.S. Air Force  
upon graduation from Officer Training  
School at Lackland AFB, Texas. He is now at  
Mather AFB, Calif., for navigator training. . . .  
**James F. Ingraham**, a project engineer for  
Polaroid Corp., New Bedford, Mass., is in  
charge of engineering in the area of silver  
emulsions. . . . **Alan Judd** serves as a  
manufacturing management trainee at GE in  
Schenectady, N.Y. . . . **Carlos L. Kassel** has  
been promoted to assistant manager in  
charge of all government loans at First  
National City Bank in Mexico City. Earlier he  
served as a credit analyst. He joined the bank  
following graduation. . . . **Peter W.**  
**Kotilainen** was recently named  
administrative and technical assistant to the  
department of cardiology at St. Vincent  
Hospital, Worcester. Presently he is a  
doctoral candidate at WPI. In his new  
assignment he will be in charge of  
administrative matters and will provide  
technical assistance for the cardiology  
department. Also, he will supervise the  
hospital's critical care team.

2/Lt. **Harvey B. Neilson**, USAF, is  
stationed at Robins AFB in Georgia. . . . **Gary**  
**G. Pontbriand** is a production engineer at  
New Jersey Zinc Co., Palmerton, Pa. . . .  
**Chandrakant Shah** holds the post of senior  
engineer at C.F. Braun & Co., Alhambra,  
Calif. Previously he was with Procon, Inc. in  
Des Plaines, Ill. . . . **Charles M. Waldron** and  
**Irene Jordan Waldron** are self-employed  
agricultural engineers in Hollis, Me. . . . **Steve**  
**Williams** is a foreman at the GE plant in  
Lynn, Mass.

1975

*Married:* **Joel F. Angelico** and Miss Janet A.  
Gravel on May 29, 1976 in West Springfield,  
Massachusetts. The bride, a teaching  
assistant at Willie Ross School for the Deaf,  
Longmeadow, graduated from Anna Maria  
College, Paxton. The bridegroom is  
production supervisor for Estee Lauder Co.,  
Melville, N.Y. . . . **Robert M. Aubrey** and  
Miss Mary Beth Tucker on January 3, 1976 in  
Sterling, Massachusetts. Mrs. Aubrey  
graduated from UMass and is studying for  
her master's at Syracuse (N.Y.) University.  
The groom is employed by Mutual of Omaha,  
Syracuse. . . . **Michael J. Dolan** and Miss  
Deborah M. Elworthy on May 22, 1976 in  
Shrewsbury, Massachusetts. The bride  
attended Worcester State College and is  
presently a student at Elmhurst (Ill.) College.  
Her husband, who is with Universal Oil  
Products, Chicago, is also a graduate student  
at Loyola University.

*Married:* **Robert E. Horner** to Miss  
Suzanne Hughes on September 6, 1975. The  
groom is assistant director of Sure Aire Ltd.,  
New York City. . . . **Jeffrey Hudson** and  
Miss **Danielle M. Chouinard**, '74 in  
Franconia, New Hampshire on March 27,  
1976. The bride, who also did graduate work  
at WPI, is a civil engineer. Her husband is a  
chemical engineer. . . . **James F. Lane** and  
Miss **Celeste M. Tetrault** in Worcester on  
June 28, 1975. . . . **Steven F. Manzi** to Miss  
Joanne H. Bey on May 31, 1976 in Holyoke,  
Massachusetts. Mrs. Manzi graduated from  
Providence Hospital School of Radiology and  
Holyoke Community College. She is a  
registered radiologic technician. The groom is  
a research assistant working for his master's  
degree at MIT.

**K. Sohraby Anaraky** is a teaching fellow  
at Brooklyn Polytechnic Institute of New  
York. . . . **Jon T. Anderson** is a student at  
Yale Law School, New Haven, Conn. . . .  
**Karen Arbige** serves as a software  
programmer at Index Systems, Inc.,  
Cambridge, Mass. . . . **Richard C. Aseltine,**  
Jr., a graduate student at WPI, recently  
returned from the 11th Annual Association  
for the Advancement of Medical  
Instrumentation Conference in Atlanta, Ga.  
His undergraduate project and current  
master's thesis entitled "Feedback Control of  
Heart Rate During Exercise" was presented  
at the conference. The idea and device  
designed by him may be used in the  
rehabilitation of patients with cardiac  
diseases. . . . **Alan R. Bergstrom** works as a  
technical assistant for the University of  
Massachusetts department of biochemistry in  
Worcester.



David R. Chevalier has been appointed manager of the carpeting department at Chevalier Furniture and Carpeting in Worcester. . . . Paul J. Ciesla, who is with the U.S. Environmental Protection Agency, is currently located in Pacifica, Calif. . . . Harry F. Danberg is a process engineer at FMC Corp.'s coke plant in Kemmerer, Wyoming. . . . Michael J. Dudas holds the post of vice president at Electrodes, Inc. in Roselle Park, N.J. Presently he is in engineering sales throughout Pennsylvania, New York, and New Jersey. . . . Jay L. Gainsboro serves as a self-employed district sales manager for Opus, Inc., in Wheeling, Illinois. . . . Richard J. Orsini works as a manufacturing engineer for General Electric Co. in Fitchburg, Mass. . . . Elizabeth A. Pennington has joined Equitable Life Assurance Society of the U.S. in New York City.

Richard A. Perreault is a sales engineer for General Electric Medical Systems in Whippany, N.J. . . . Dr. Robert R. Rittenhouse teaches at Pine Tree Academy in Freeport, Me. . . . James F. Roberts is doing graduate work at Anna Maria College in Paxton, Mass. . . . Gary Rodgers serves as a captain with the U.S. Army and will be stationed in Korea until October. . . . Paul M. Stein is studying for his doctorate at the University of North Dakota Medical School in the Department of Physiology and Pharmacology. He is graduate teaching and research assistant. . . . Mark W. Stewart holds the post of quality engineer at Combustion Engineering. He and his wife, Carolyn, reside in Hartford, Conn. . . . Margaret St. John works as an electron microscopy technician at St. Vincent Hospital in Worcester. . . . Ens. Michael Sundberg (USN) is currently stationed in Alaska. . . . James I. Watts is a project engineer at Crosby Valve & Gauge Co. in Wrentham, Mass. . . . Mark P. Youngstrom has been employed as an environmental engineer at Pickard & Anderson in Auburn, N.Y. . . . Johnny Yuk is studying for his MS at Ohio State University in Columbus.



**Frank W. Grant**, former physical education instructor and swimming coach at WPI, died on January 19, 1976 in Holden, Massachusetts. He was 74.

He was born in Pittsburgh, Pa. and served at WPI from 1929 to 1968. He started as a swimming coach and became a physical education instructor in 1952. In 1968 he retired as instructor emeritus in physical education and athletics.

At WPI he developed a number of record holders including Robert Rounds, '64 (sprints), while students Joe Rogers, '29 became a swim coach at the University of Massachusetts, Amherst and Johnny Tinker, '32 a coach in Gardner.

In 1923 Grant set a record for the senior 50-yard free-style competition sponsored by the New England Amateur Athletic Union, a record which stood until shortly before his retirement. At 22 he won the Pacific Northwest AAU 50-yard dash crown. In 1924 he tried out for the Olympic team with Johnny Weismuller.

**Ellery B. Paine, '97**, former head of the University of Illinois electrical engineering department for 31 years, died on February 28, 1976 in Urbana, Illinois. He was 100 years old.

Prof. Paine was born in Willington, Conn. on October 9, 1875 and was graduated from WPI in 1897 as an electrical engineer. He received his master's degree from WPI in 1898. In 1907 he began teaching at the University of Illinois, becoming department head in 1913 and retiring in 1944. During his career, sound-on-film movies were developed at the university, and in the first public demonstration on June 9, 1922, Prof. Paine was the first man to appear in talking movies. He recited the Gettysburg Address.

Recalling the controversy following his talking-movie debut, Paine reported that movie producers claimed that sound would ruin the industry because the public was only interested in pantomime. One producer declared, "I wouldn't give 10 cents for the discovery."

Prof. Paine was an eminent member of Eta Kappa Nu and also belonged to Tau Beta Pi, Sigma Xi, ASEE, the American Society for Engineering Education, and Western Society of Engineers.

**Percy M. Hall, '07** a retired plant supervisor in the long lines department for American Telephone & Telegraph Co., New York City, passed away on February 23, 1976. He was 90.

A native of Fall River, Mass., he was born on February 20, 1886. After graduating from WPI with a BSEE, he joined AT&T in 1907 and remained with the company until he retired in 1946. He belonged to Theta Chi, Telephone Pioneers of America and the Masons.

**Wilbur C. Searle, '07** died on December 1975 in Worcester at the age of 93.

A mechanical engineer, he had worked for Heald Machine Co., Norton Co., Worcester Machine Screw Co., Reed & Prince Mfg. Co. and Leland Gifford Co. as sales engineer, metallurgist and tool designer. He retired in 1958 but remained active in his profession until 1966.

Mr. Searle was a native of New Britain, Conn. and belonged to ASME, American Society for Metals, and the Worcester Engineering Society. He was a registered professional engineer and a member of the Tatnuck Club and Tech Old Timers. He was a former officer in the Worcester chapter Alumni Association.

**Herbert M. Carleton, '08** a retired insurance broker, passed away on February 13, 1976 in Worcester at the age of 89.

A native of Plymouth, Mass., he was born on March 12, 1886. In 1908 he graduated as a civil engineer from WPI. He had been with the Boston & Albany Railroad, American Steel & Wire, and Economic Machinery Co. in Worcester. In 1972 he retired after 57 years as a broker for Connecticut General Life Insurance Co.

Mr. Carleton was a past president of the Tech Old Timers and belonged to Sigma Epsilon.

**Frank E. Hawkes, '09** of Menlo Park, California passed away on May 4, 1976 at a short illness. He was 89.

He was born on Oct. 25, 1886 in Framingham, Mass. and graduated from WPI as a chemist. During his career he was associated with Du Pont; Dennison Mfg. Co. Hydrocarbon Co. (owner-president); and California Ink Co. In 1960 he retired after 25 years as a consultant to the paint and varnish industry. He belonged to Theta Chi and had served as vice president of the Northern California chapter of the Alumni Association.

**Harold J. Riley '09** of Winnipeg, Manitoba, Canada, died on July 7, 1975.

He was born on November 29, 1887 in Winnipeg. In 1909 he graduated as a mechanical engineer from WPI. He received his BA from Manitoba University in 1910.

During his career he was with F.W. Bliss, Son, Walpole, Mass.; studied law, and was partner in the firm of Fillmore, Riley & Fillmore, barristers and solicitors in Winnipeg. He was wounded in World War I and received the Distinguished Service Order. Later he was appointed general officer commanding military district No. 10 in Winnipeg.

ve in community affairs, he was a member of the Community Chest, an officer with the Manitoba Red Cross and president of the Manitoba Bar Association. He belonged to Sigma Phi Epsilon and Sigma

**yle A. Atherton, '10** former honorary secretary of the International Commission on Invention, died on April 24, 1976 in Winchester, New Hampshire, after a long illness. He was 88.

After graduating with his BSEE from WPI, he was associated with Westinghouse, Pittsburgh, Pa.; Bergmann Electric, Berlin, Germany; British Westinghouse Co.; Goodyear Tire, Akron, Ohio; General Electric, Cleveland; and General Electric S.A. in Switzerland, a company known for the incandescent lamp market outside of America. He also worked for Consolidated Lamp, Lynn, Mass.; and Westinghouse International.

Mr. Atherton, who wrote a book about technical advertising, belonged to Theta Chi, Sigma Xi, and was a fellow of the American Engineering Society. He was born on June 3, 1887 in Worcester. During World War I he served in the U.S. Navy.

**les E. Barney, '10** former class secretary, passed away on November 21, 1975 in Holyoke, Massachusetts. He was 88 years old.

He was born on September 9, 1887 in South Berwick, N.H., he later graduated from WPI as a civil engineer. He was associated with Sawyer Landscape Construction Co., Boston; George A. Fuller Construction Co., Boston; and P.J. Kennedy Contractors of Holyoke. For many years he was superintendent of public works in South Berwick, Mass., a position from which he retired in 1957.

Mr. Barney, a member of Sigma Phi Epsilon, was prominent for 30 years in engineering and was the recipient of the Silver Service Award. He was a past president of the Middlesex County Highway Superintendents' Association, past president of the Lions Club, past president of the South Hadley Center for the Deaf Club and Past Noble Grand of the Iona Chapter of Odd Fellows. In 1959 he was named South Hadley's Outstanding Citizen of the Year.

**ward P. Chace, '11** of Worcester passed away recently.

He was born on October 25, 1890 in Providence, R.I. and graduated as a mechanical engineer from WPI in 1911. Between 1911 and 1955 he was with Norton Company, Worcester. He was a former program chairman for Tech Old Timers and a member of Montacute Lodge, Worcester.

**h P. Cronin, '11** of Winchester, Massachusetts, died on October 29, 1975. After attending high school in Worcester, he graduated from WPI. He served as assistant to the president of the Boston and Maine Railroad and became office engineer in Boston. He was also a designer-engineer for the Boston & A Railroad and maintenance supervisor for the Middlesex County National

**Charles F. Goodrich, '11** of West Roxbury, Massachusetts died on November 15, 1975 at the age of 87.

A co-founder of Andrews and Goodrich, Inc., a textile machinery company in Dorchester, he was president of the firm until his retirement in 1949. He came out of retirement in 1962 to serve as engineering and financial consultant to the Goodrich Engineering Co. of Rockland, where he remained until his final retirement in 1972.

Mr. Goodrich was born in Portsmouth, N.H., later studying at WPI. He was a member of Phi Gamma Delta and a World War I Army veteran.

**George I. Gilchrest, '12** a former engineering manager at Westinghouse in Derry, Pa., passed away in Mesa, Arizona on October 17, 1975.

He was born on November 13, 1890 in Lunenburg, Mass. After graduating from WPI as an electrical engineer in 1912, he joined Westinghouse and remained with the company until his retirement 43 years later. He belonged to Phi Sigma Kappa, Tau Beta Pi, Sigma Xi and was an associate member of AIEE.

**Arthur C. Burleigh, '13**, the former president and treasurer of the Nedco Company, Waltham, Massachusetts, died suddenly on May 22, 1976 at Cape Cod Hospital, Hyannis. He was 85 years old.

A native of Franklin, N.H., he graduated as an electrical engineer from WPI. For several years he worked for Ritter and Connolly in Pittsburgh, Pa. He then joined Nedco and remained with the company until his retirement a few years ago. Nedco marketed sanding and polishing machines which Mr. Burleigh had invented and patented.

He belonged to Theta Chi and Skull and Bones and was a 50-year veteran of the Scottish Rite bodies, as well as a former officer of the Newton Savings Bank.

**J. Arthur Kenneally, '13** of Hamilton, Massachusetts, a retired secretary to Salem school superintendents and school committees for 40 years, died at the age of 85 on December 26, 1975.

After studying at WPI, he worked four years for the state highway department. While he served the city of Salem, he was responsible for the efficient administration of the city's public schools. He retired in 1959 and was a Navy veteran of World War I.

**William H. Evans, '14** died of heart disease on January 5, 1976 at the home of his daughter in St. Louis, Missouri.

He was a vice president of the Firth-Sterling Carbide Co., a mining equipment manufacturer, until his retirement in 1957. After retirement he served as a consultant to a number of firms. He held several patents on mining equipment.

Mr. Evans was born on Sept. 2, 1891 and later he became a student at WPI. He belonged to Phi Gamma Delta and was a descendant of William Hooper of North Carolina, a signer of the Declaration of Independence.

**Arthur L. Thurston, '14** passed away recently in Ormond Beach, Florida. He was 82.

He was born in Portland, Maine. In 1914 he received his BSME from WPI. He built one of the first wind tunnels in the U.S. and was responsible for many advancements in electronic weighing. From 1938 to 1959 he was vice president of Cox and Stevens Aircraft. He belonged to Theta Chi and Tau Beta Pi.

**Harold L. Tilton, '14** passed away at his home in Wilmette, Illinois on January 12, 1976.

A native of Fitchburg, Mass. he was born there on Sept. 16, 1891. He received his BSCE from WPI in 1914. After five years with the Massachusetts Highway Department, he joined the Vermont Highway Department. He was then associated with Shell Oil Company. On Dec. 31, 1954 he retired as manager of the asphalt sales departments in Chicago, Detroit and Minneapolis following 12 years of service.

Mr. Tilton, a registered professional engineer in Vermont and Illinois, also served as an engineer for the Illinois Division of Highways. He was a member of American Road Builders, Asphalt Paving Technologists, Vermont Society of Engineers, Illinois Society of Highway Engineers, Tau Beta Pi, Sigma Xi and Alpha Tau Omega. In 1962 he was presented with a life membership in the Illinois section of ASCE.

**Herbert H. Wentworth, '14** of Los Angeles, California, died on January 14, 1975. He was 82 years old.

A native of Fryeburg, Me., he studied at WPI and graduated with a BSEE in 1914. During his lifetime he was associated with Westinghouse Electric and the Navy Experimental Station in New London, Conn. After World War I, he again joined Westinghouse as a design engineer. Later he became a district transportation engineer for the company. He retired in 1957.

A member of Theta Chi, Tau Beta Pi, Skull, and Sigma Xi, Mr. Wentworth also belonged to AIEE and was a 32nd degree Mason.

**G. Gerald Desy, '15**, a retired research chemist from North Guilford, Connecticut, died on January 24, 1976 at the age of 83.

He was born in Stanstead, Quebec, Canada on April 24, 1892 and graduated as a chemist from WPI in 1915. During his lifetime he was associated with Hooker Chemical, ALCOA, Koppers Co., and American Cyanamid Co., Stamford, Conn., where he retired in 1957 after twenty years of service. He belonged to ACS and the Association of Retired Persons.

**Harrison W. Hosmer, '15** died on January 16, 1976 in Hyannis, Massachusetts. He was 84.

He was born in Westfield, Mass. on Sept. 10, 1891. In 1915 he was graduated as a mechanical engineer from WPI. From 1921 to 1956 he was with Arthur D. Little, Inc. Cambridge, Mass. He belonged to Alpha Tau Omega.



**E. Munroe Bates, '17** retired assistant vice president of the Provident Loan Society of New York, died on November 6, 1975 in Winter Park, Florida.

He was born on February 23, 1894 in Westboro, Mass. After graduating as a civil engineer from WPI in 1917, he joined the U.S. Army Infantry where he was promoted to captain. From 1919 until 1928 he was with the Pennsylvania Department of Highways. He served as assistant vice president of the Provident Loan Society of New York from 1928 to 1953.

Mr. Bates, a member of Phi Sigma Kappa, was chairman of the board of appeals for the Village of Great Neck Plaza, N.Y. for many years. He contributed background information for the book, *God Bless Pawnbrokers* by Peter Schwed which was recently published by Dodd, Mead. His name is mentioned in the foreword.

**Wentworth P. Doolittle, '17**, who had been a supervisor in the wheel division at Norton Co. for many years, died in Hyannis, Massachusetts on February 17, 1976.

After studying mechanical engineering at WPI, he joined Norton Co. and remained with the firm until his retirement in 1959. He was born on October 22, 1894 in Princeton, Mass., and was a World War I veteran. He belonged to Sigma Phi Epsilon, the Masons, and was a former vice president of the Doolittles of America.

**Harold B. Ellis, '17** formerly of Worcester, died on March 21, 1976 at Berwyn, Illinois.

He was born on October 6, 1895 in Worcester, later studying at Mercersburg Academy and WPI. In 1960 he retired after forty years of service with the New England Power Service Company where he was a right-of-way agent. He belonged to SAE, was a past master of Athelstan Lodge, A.F. & A.M., and an Army veteran of World War I.

**John A. Carpenter Warner, '17** former executive with the Society of Automotive Engineers, passed away on December 21, 1975 in Philadelphia, Pennsylvania. He was 82.

A native of Putnam, Conn., he was born on July 12, 1893. He graduated from WPI in 1917 as a mechanical engineer. Following graduation he joined the National Bureau of Standards testing aircraft structural materials. He was to become a physicist and executive officer and chief of the Bureau's Aeronautic Instruments Section. In recognition of his special talents, he was appointed scientific representative of the U.S. government to several European countries for continued study of aeronautical instruments.

Later, as an assistant research engineer with Studebaker Corporation, he made outstanding contributions in design, management and marketing. Because of his vast experience, he was named secretary and general manager of the Society of Automotive Engineers, an organization which includes members with the most inventive brains in the country. His dynamic 30-year leadership tripled the membership of the society.

**Mr. Warner** belonged to Tau Beta Pi, Sigma Xi, Societe des Ingenieurs de l'automobile, Paris, and the Society of Automotive Engineers of Japan. He was decorated with the Japanese Order of the Rising Sun in 1968 and was awarded the Automotive Old Timers Distinguished Service Citation in 1954. In 1950 he received an honorary doctor of engineering degree from WPI.

**Osborne T. Everett, '18** passed away on February 23, 1976. He was a resident of Hampden, Massachusetts.

He was born on September 20, 1895 in Bolton, Mass. and later studied civil engineering at WPI. For over forty years he was with the American Telephone & Telegraph Co., where he was equipment supervisor. He belonged to the American Legion, IOOF, and the Telephone Pioneers of America.

**Iver G. Schmidt, '18** died in Akron, Ohio last November. He was 80 years old.

He was born on October 15, 1895 in Worcester. After graduating as a civil engineer from WPI in 1918, he started out as a draftsman for the city of Akron. Forty-six years later he retired as manager of the engineering bureau, the city's top engineering post. He belonged to Skull, Sigma Alpha Epsilon, and the National (and Ohio) Society of Professional Engineers.

**Bruce X. Somers, '18** passed away in White River Junction, Vermont on March 14, 1976 following an extended illness.

He was born on September 11, 1893 in West Barnet, Vermont. Later he attended WPI and Middlebury College. During World War I he served with the Navy as a commander of a submarine chaser. Mr. Somers designed and engineered machine tools. He also served as a branch examiner in a major insurance company and a real estate and mortgage supervisor in a large New York bank. He retired from Sears, Roebuck and Co., St. Johnsbury, Vt. in 1958.

**Ernest W. Whitlock, '18** a leading water engineer, died on January 29, 1976 in Hackensack, New Jersey. He was 80 years old.

He was a senior partner of Malcolm Pirnie, Inc., a large environmental engineering concern active here and abroad. As an authority on water supply, water treatment and distribution, he established a national reputation. He helped develop water supplies that serve 15 percent of the people in the U.S. For his work in the development of concrete pressure pipe standards, he received the Diven Medal of the American Water Works Association.

After serving in World War I and attending WPI, Mr. Whitlock worked for Fuller McClintock designing waste treatment plants. In 1939 he joined the Pirnie organization.

He was an honorary member of the American Water Works Association, a life fellow of ASCE, and of the American Consulting Engineers Council. He was also a diplomate of the American Academy of Environmental Engineers.

**W. Orrell Davis, '20** of Woonsocket, R. Island died on May 23, 1976.

He was born on November 12, 1896 in Woonsocket and became a student at V. During World War I he served in the U.S. Army. He had been employed by Blacks Valley Gas & Electric Co. and in the brick construction section of the State Highway Department in Providence.

**George P. Condit '21** of Mesa, Arizona on January 14, 1976.

He was born on June 24, 1899 in Waterbury, Conn. He received his BSM from WPI in 1921 and was a member of Sigma Kappa and Tau Beta Pi. From 1921 until 1961 he was with the New York Telephone Company. After serving in New York and Buffalo, he was appointed Albany district manager in 1941 and commercial results supervisor in 1943. Later he was promoted to general sales supervisor.

**Philip K. Davis, '21** of Carmel, California passed away recently.

He was born on January 27, 1899 at S. Lake City, Utah. In 1921 he received his BSCE from WPI. During his career he served in a number of capacities at the Austin Company, Cleveland, Ohio, where he retired as vice president in 1964. He had been a district superintendent, assistant to the president, and project manager for the company. Between 1933 and 1935 he was staff engineer engaged in government work.

Mr. Davis, a registered engineer in 50 states, belonged to ASCE, ACI, NSPE, and the Cleveland Engineering Society. He was also a member of Theta Chi and Skull. In 1933 he received his MS from the University of California.

**Forest M. (Jeff) Douglass, '21** died in Connecticut on January 9, 1976. He was 82.

Born in Norwood, Mass., on Dec. 11, 1893, he later attended WPI and graduated from Norwich University in 1922. He became associated with General Electric, New Haven, Conn., Farrel Birmingham Co., Ansonia; and Armstrong Rubber Co., West Haven, Conn. For several years prior to his retirement, he was with United Aircraft. He belonged to Alpha Tau Omega fraternity.

**B. Clark Shaw, '21** of Dedham, Massachusetts, died of cancer on March 6, 1976.

He was born on August 4, 1899 in Fall River, Mass. Following his graduation as an electrical engineer from WPI, he became an apartment house owner and operator. Later he was associated with Granite Clay, Bradford Durfee Textile School, Firestone Rubber, Westinghouse, and Norwich University. From 1941 until his retirement in 1965, he was a senior degaussing engineer at Boston Naval Shipyard. He belonged to Sigma Phi Epsilon fraternity and received his MS from WPI in 1934.

**Herbert P. Cushing, '22** of South Portland, Me., died on December 29, 1975 following a long illness. He was 76.

A native of Long Island, Me., he attended WPI and for several years was the proprietor of the Casco Bay House on Long Island.

For he was fire chief at the U.S. Naval Fuel Station on Long Island.

World War I army veteran, he was also a member of Ancient Landmark Lodge, A.F. & A.M., and the American Legion.

**James L. Marston, '22** died on February 7, 1975 in Worcester at the age of 76.

He was a native of North Hampton, N.H. After graduating as a mechanical engineer, he worked for Technical Advisory Corp. in New York. Later he was with American Steel & Wire, Worcester; taught high school in Westchester, R.I.; and was employed by Norton in Worcester. From 1932 until his retirement in 1960 he taught science and math at South High School in Worcester.

Mr. Marston, who was active in the Worcester Chapter of the Appalachian Mt. Club and the Green Mountain Club, wrote a column for the *Evening Gazette* called "The Highest Mountains" in 1949. He was a scoutmaster and with the Explorer Scouts led the Marston Trail which is on the North side of the peak of the Katadin Massif in Maine. He belonged to ASME, Tech Old Timers, and was the brother of Winthrop Marston, '26.

**Herbert P. Hayden, '23** former application engineer for American Steel & Wire Co., died on April 18, 1976 at his home in East Haven, Connecticut.

After graduating as a civil engineer from WPI, he worked many years for American Steel & Wire. At the New Haven and Westchester plants he served as superintendent of wire rope and rope products. In Cleveland he became assistant staff engineer of development and engineering, and an application engineer.

Mr. Hayden, a member of Theta Chi, was born on Feb. 1, 1901 in Worcester. He belonged to the Masons and the New Haven Country Club.

**John C. Pierce, '23** of North Palm Beach, Fla. died on October 4, 1975 at the age of 76.

He was born on December 11, 1901 in Westford, Conn. In 1923 he graduated as a mechanical engineer from WPI. During his career he was with General Electric, Stone & Webster and New England Butt Co. When he retired in 1966 he was chief draftsman for Pratt & Whitney Aircraft in West Palm Beach, Fla. He belonged to A.F. & A.M., the Methodist Church, and North Palm Beach Country Club.

**John L. Denault, '24** who was with Westinghouse Electric Corp. for over 40 years, died on December 5, 1975 in Ft. Lauderdale, Florida.

A native of Springfield, Mass., he was born on September 24, 1899. After graduating as an electrical engineer, he worked for Westinghouse in 1924. At his retirement he was an advisory engineer for Westinghouse in Sharon, Pa. Mr. Denault belonged to AIEE, NSPE, and Sigma Xi.

**James C. Irish, '25** retired Vermont Printing Company executive, died in Mexico City on May 29, 1976.

A native of Northfield, Mass., he was born on July 31, 1903. He joined Vermont Printing Co. as assistant to the president following his graduation from WPI as an electrical engineer. He was named manager in 1937 and president in 1944. In 1967 he retired.

He belonged to SAE, Tau Beta Pi, National Small Business Association and the Printing Industry of America. Active in civic affairs, he was Republican town committeeman, and served as a trustee for Brattleboro (Vt.) Free Library; Brattleboro Friends of Retarded Children; and Brattleboro Home for Aged and Disabled. He was a director of Brattleboro Mutual Aid Association, Inc., American Building, Inc., and Vermont National Bank, as well as past president of the Lions Club and Chamber of Commerce.

**Henry L. Mellen, '25**, of St. Petersburg, Florida, retired district sales manager for Hercules Inc., died on December 14, 1975.

He was born on February 6, 1904 in Brookfield, Mass., later graduating as a chemist from WPI. From 1939 until his retirement in 1969 he was associated with Hercules Powder Co., Holyoke, Mass. He joined the company as a technical service engineer. As district sales manager, he was responsible for sales promotion and technical services to paper mills in the New England states and New York.

Mr. Mellen belonged to Sigma Phi Epsilon, the Chemical Club of New England, the University of Maine Pulp and Paper Foundation, and the Newcomen Society of America. He was past a secretary of the New England section of TAPPI and had served as vice president of the Connecticut Valley chapter of the Alumni Association.

**Otis S. Sawn, '25** of Englewood, Florida passed away on March 5, 1975.

Born in Springfield, Mass. on Sept. 16, 1901, he later became a student at WPI. He graduated with a BSME in 1925. He had been with Schmitt Metal Works and John Hancock Mutual Life Insurance Co., Newark, N.J.

**William W. Young, '25** died on November 15, 1975 in Concord, Massachusetts.

A native of Lawrence, Mass., he was born there on May 4, 1903, and later studied mechanical engineering at WPI. For 38 years he worked as a sales engineer for Pratt & Whitney Division (Niles, Bement & Pond Co.), in West Hartford, Conn. About ten years ago he started his own firm, the William W. Young Co., manufacturer's representative, in Needham, Mass.

A registered professional engineer in Massachusetts, he belonged to the American Ordnance Assoc., American Society of Tool & Manufacturing Engineers, Carbide Engineers Society, and the Professional Engineers Society. He was a member of Sigma Phi Epsilon.

**Leonard C. Calder, '26** of Catonsville, Maryland passed away recently.

He was born on April 9, 1902 in South Somerset, Mass. and graduated from WPI in 1926 with a BSEE. For many years he was with General Electric Co. At his retirement he was manager of engineering and was located in Baltimore. He belonged to Alpha Tau Omega and Skull.

**Carl H. Nordstrom, '26** of Bedford, Massachusetts, retired staff director of facilities planning and control at AVCO Corp., and a former vice president at RAD Associates, passed away in May.

Born in Worcester on May 2, 1904, he graduated from WPI with a degree in general science. Later he earned his MA in mathematics at Lehigh and taught at Tabor Academy, Michigan State, and Dartmouth. In 1945 he left this country to teach science at Biarritz University in France.

Mr. Nordstrom was chief of the scientific research division of the U.S. military government in Berlin until 1952, when he joined the Air Development Center at Rome, N.Y. Later he became associated with AVCO at the Wilmington plant. He belonged to Theta Chi, Tau Beta Pi, and Sigma Xi. Also, he served as permanent chairman of the Massachusetts Business Task Force for School Management, Inc.

**Chester Haitsma, '27** passed away on December 7, 1975 in Fairlawn, New Jersey. He was 69.

He was born in Marlboro, Mass. on May 26, 1906 and received his BSME from WPI in 1927. For 41 years, prior to his retirement in 1974, he was a supervising engineer for Public Service Electric and Gas Co. in Paterson, N.J. Earlier he had been employed by Consolidated Edison and R.H. Baker Co. of New York, as well as Coppus Engineering Co., Worcester.

Mr. Haitsma had been a member of the Executives' and Foremen's Club of Paterson, N.J.

**Charles F. Monnier, '27**, former executive vice president of the Kansas City (Mo.) Power & Light Co., died on March 4, 1976 in Syracuse, New York.

Following his graduation as an electrical engineer from WPI, he joined Niagara Mohawk Power Corp., where he was employed until 1956. His last position with Mohawk was as operating vice president. In 1956 he joined Kansas City Power & Light Co. as executive vice president. Later he was with Commonwealth Associates, San Francisco. In 1971 he retired.

Mr. Monnier was a former president of the Saddle and Siroloin Club and director of the United Fund and the Greater Kansas City Council on Alcoholism. He belonged to Sigma Phi Epsilon, Sigma Xi, the Engineers Club of Kansas City, and the Missouri Society of Professional Engineers. He was born on March 4, 1906 in Attleboro, Mass.



**Joseph F. Emonds, '28**, died at his home in Manchester, Connecticut on February 8, 1976 after a long illness.

He was born on September 16, 1904 in Harrington, Conn. In 1928 he received his BSCE from WPI. He was employed with the New York State Dept. of Public Works, and later with the U.S. Bureau of Indian Affairs from which he transferred to the U.S. Dept. of Commerce and the Bureau of Public Roads. He retired in 1967.

**A. Louis P. Jezyk, '29** of Glen Allen, Virginia, died on May 6, 1976.

He was born on Sept. 1, 1906 in Ware, Mass. After graduating as an electrical engineer from WPI, he joined New England Electric System, where he was employed for over 40 years. He was a commercial and industrial sales representative for Massachusetts Electric Co. in Northampton. A member of SAE, he also belonged to the Illuminating Engineering Society.

**Harold J. Granger, '31** died at his home in St. Petersburg, Florida on November 20, 1975 at the age of 65.

He was born in Worcester on December 18, 1909 and graduated with a BSME from WPI in 1931. A retired teacher, he had taught in Bellingham, Mass., where he later served as assistant principal of the high school. For many years he was a mathematics teacher in the Pinellas County (Fla.) school system.

His brother, Raymond O. Granger, '35, is president and general manager of Granger Contracting Co., Inc., which is currently renovating Salisbury Labs.

**Herbert A. Stewart, '31**, a retired executive with R.E. Phelon Co., East Longmeadow Mass., died on January 15, 1976 in Oak Bluffs (Martha's Vineyard), Massachusetts. He was 67.

A native of Los Angeles, Calif. he received his BSME from WPI. After graduating he spent 21 years with Savage Arms Corp. serving as executive vice president and general manager of the Westfield and Utica plants. He then became president and chief executive officer of High Standard Manufacturing Corp., Hamden, Conn. Later he managed the Richmond (Ill.) plant of R.E. Phelon Co. and returned to the company's East Longmeadow plant where he served as vice president until his retirement in 1971.

Mr. Stewart was chairman of the West Tisbury (Mass.) board of assessors, vice president of the Chicopee Manufacturers Association and trustee of Chicopee Falls Savings Bank.

**Theodore A. Babbitt, '32** died on July 6, 1975.

He was born on November 10, 1908 in Worcester. After studying at WPI he became associated with Highland Engraving Co., Worcester and P.L. Polk & Co., Publishers, Boston, where he served as superintendent. He was a member of Alpha Tau Omega and had been associated with Parker Mfg. Co., Worcester.

**A. Elmer Pihl, '33** of South Yarmouth, Massachusetts passed away on April 5, 1976.

He was born on March 12, 1911 in Springfield, Mass. After receiving his BSEE he joined Leland-Gifford Co. in Worcester where he worked for over 35 years. He became manager of electrical engineering at the firm. Later he was associated with Packaging Industries, Inc., in Hyannis, Mass. He was a registered professional engineer and a member of Alpha Tau Omega and the Masons.

**Edward R. Begley, '34** died on April 17, 1976 in Natick, Massachusetts. He was 63.

He was born in Chicopee Falls, Mass. on Jan. 15, 1913. After attending WPI, he worked as a methods engineer for Westinghouse Corporation's Hyde Park office. For the past 25 years he was located in Natick.

**C. Merritt Lane, '34** assistant general counsel of the Phoenix Insurance Co., West Hartford, Connecticut, died on February 6, 1976.

Born in Springfield, Mass. on April 1, 1912, he later studied at WPI and graduated from the University of Connecticut School of Law. In World War II he served as a commander in the U.S. Navy. He belonged to Phi Gamma Delta.

**Alan J. Byll, '35** of Granada Hills, California, died on January 31, 1976.

A native of Toronto, Ontario, Canada, he was born on April 11, 1913. He graduated with a BSME from WPI and became a dynamicist for Fairbanks Morse. He was then with Atlas Imperial Diesel Co., Joshua Hendy Iron Works, Westinghouse, and Hiller Aircraft Corp. He was retired as a senior research and development engineer at Lockheed in Burbank, Calif.

**Harold S. Burr, '36** of Camillus, New York, died on January 6, 1976. He was 61 years old.

A Worcester native, he was born on July 3, 1914. He graduated as a chemist from WPI in 1936. After working at Seamless Rubber Co., New Haven, Conn., for a year, he worked for Sherwin Williams, Inc. of Newark, N.J. until 1943. Then he founded and became president of Strathmore Products, Inc., Syracuse.

Mr. Burr belonged to the American Chemical Society, the American Horse Show Association, the Professional Horsemen's Association, and Everson Museum. He was past president of the Limestone Creek Hunt Club, and a member of the Green Mountain Club and Kiwanis. Also, he was a deacon of the United Presbyterian Church, a past vice president of the Northern New Jersey chapter of the Alumni Association, and a member of Lambda Chi Alpha.

**Robert O. Alexander, '38** died on February 8, 1976 in Greenville, Rhode Island. He was 61.

For the past five years he was a plant manager for Union Wadding Co. in Pawtucket, R.I. Earlier he had been with

Kimball Co. in Walpole, Mass.; Elastic Threads, Inc., Rumford R.I.; Latex Products Corp., Manchester, N.H.; Thiokol Chemical Corp., Trenton, N.J. and U.S. Rubber Co., Providence.

He was born on January 18, 1915 in Leominster, Mass. In 1938 he graduated as a chemist from WPI.

**Perry F. Grenon, '38** of Natick, Massachusetts passed away recently.

He was born on November 2, 1914 in Worcester. A member of the class of 1938, he studied electrical engineering at WPI. He had been employed by Baxter D. Whitcomb Son, Winchendon, Mass. and Reece Co., Waltham.

**J. Adams Holbrook, '38** chief mechanical engineer in the wiredrawing machinery department of Morgan Construction Co., Worcester, died on February 6, 1976 at the age of 59.

A Boston native, he graduated with a BSME from WPI. He was an instructor at WPI, where he received his master's degree and also taught at Worcester Junior College. In 1946 he joined Morgan, becoming chief mechanical engineer in 1969.

Mr. Holbrook, a past president of the Worcester chapter of the Appalachian Mountain Club, was also on the state Science Fair board at MIT. He belonged to the Worcester Engineering Society, and ASME where he was past president of the Worcester section. He belonged to the Wire Association, Worcester Mechanics Association, Sigma Chi and Lambda Chi Alpha. For nine years he was director of the Worcester County Kiwanis Fair. A registered professional engineer, he held patents on power transmission for helicopter rotors, a wiredrawing machine, and an infrared micrometer mounting.

**John P. Molony, '39** retired instrument and ultrasonic engineer for Wyman-Gordon Co., Worcester, died January 23, 1976 in Woonsocket, Rhode Island. He was 57.

He was a native of Millville, Mass. and electrical engineer with the eastern division of Wyman-Gordon for 35 years. In 1972 he received a fellowship from the American Society for Testing Materials. A registered professional engineer, he specialized in ultrasonic testing of metals.

Mr. Molony belonged to the Society for Non-Destructive Testing Materials and the American Society for Quality Control. He was a proprietor of Uxbridge Savings Bank, a past director of the Central Mass. Police Association, and the Massachusetts and Worcester County Selectmen's Association. He served as chairman of the Blackstone-Millville Regional School Committee and was a former selectman and police chief in Millville. He was an accomplished pianist and a member of the Knights of Columbus.

**Sidney E. Scott, '40** died on October 31, 1975 in Wareham, Massachusetts.

A Worcester native, he was born on August 13, 1917. An electrical engineer, he was associated with Norton Co., Worcester; Allis Chalmers Mfg. Co., New York City; and Southwestern Petroleum Co. where he was

Later he joined Beneficial Standard Insurance Co. as a self-employed insurance agent.

He was also employed by New Bedford Edison Light Co., Cranberry Highway, and Trans-American Collections, Inc., where he was district manager, and Polux. He belonged to AIEE, Lambda Chi, and was a captain in the Air Force during World War II.

**Edward H. Stowe, '40** owner of Stowe Engineering Co., died on March 31, 1976 in Springfield, Massachusetts at the age of 57. He was born in Millbury, Mass., he graduated as an engineer from WPI, and served in the military during World War II. He was a lieutenant in the Civil Engineer Corps with the Army. After traveling across the country as a surveyor for several highway projects, he started his own business in 1956. Stowe was a member of the Connecticut Valley Association of Civil Engineers and Land Surveyors and was a past treasurer of the Connecticut Valley Chapter of the Alumni Association.

**John J. West, '41** of Bethel Park, Pennsylvania died on December 18, 1975. He was born on January 24, 1918 in West Chester and received his BSME from WPI in 1941. Except for three years in the U.S. Army during World War II, he was employed for most of his life by Bell Telephone, Pittsburgh, where during his career with Bell he served as a field engineer, plant supervisor, and administrative assistant. Later he became an employed income tax consultant. West belonged to the Institute of Professional Management, the National Association of Real Estate Boards, the American Society of Columbus, and ASME. He was a real estate broker in Pennsylvania and was president of the Pittsburgh Chapter of the Alumni Association. He was the father of John J. West, Jr. of the Class of 1965.

**John J. Tyner, '42** a general manager for Corning Corp., Alhambra, California, recently passed away. He was born on March 23, 1920 in Fall River, Mass. In 1942 he received his BSChE from WPI and in 1946 he became associated with Dow Corning as a salesman. Later he became a regional sales manager, marketing manager for Aerospace Materials, and manager of marketing for the overseas operations of Dow Corning International Ltd., and manager of International Marketing. He was a member of ATO.

**Joseph J. Scarpa, '43**, founder and president of Western Massachusetts Contracting Engineers, Inc., passed away on March 21, 1976 at his home in Lee, Massachusetts. He was 55 years old.

He was born in Lancaster, Mass., graduated from WPI with a BSCE, and attended MIT and Northeastern. With the Army in World War II, he worked in Alaska at the Tennessee Atomic Plant in Oak Ridge. In 1955 he founded Western Massachusetts Contracting Engineers, Inc. and later he owned Mandalay Resort in Lee.

**James J. Clerkin, Jr., '45**, a WPI trustee and former executive vice president of planning for General Telephone & Electronics Corporation, died November 20, 1975 in Stamford, Connecticut. He was 52.

Prior to becoming executive vice president at GTE in 1974, Mr. Clerkin had served since 1964 as executive vice president of the telephone operating group, with responsibility for the company's domestic and international telephone operations. Earlier he had been president of GTE International Incorporated, having rejoined the GTE organization in that position in 1961.

During his career he had also served as executive vice president and a director of Comptometer Corporation and held posts with Theodore Gary and Company and Continental Telephone which subsequently merged with General Telephone Corporation. A native of New Britain, Conn., he became assistant to the president of Automatic Electric (now, also with GTE) after graduation from Harvard Business School.

Mr. Clerkin, a member of Phi Kappa Theta was a former director of the United States Independent Telephone Association, GENESCO, Inc., and Allied Products Corporation. He was a member of the President's Advisory Council at WPI and had been secretary-treasurer of the Chicago chapter of the Alumni Association. In 1945 he graduated as a mechanical engineer from WPI. He received the Robert H. Goddard Award from the Alumni Association in 1968.

**John P. McCoy, '46** of Doylestown, Pennsylvania, passed away on January 4, 1976.

He was born on November 27, 1923 in Philadelphia, and later studied at WPI. For many years he had been employed by Baker, Weeks & Harder, and then at Hopper, Soliday, Brooke, Sheridan, Inc. in Philadelphia.

**Dr. Frederick W. Grant, '50**, associate research biochemist at Marcy (N.Y.) Psychiatric Center, died on November 9, 1975 in Clinton, New York.

He was born on June 26, 1926 in Milwaukee, Wis. and graduated from WPI as a chemist in 1950, later receiving his PhD from Yale. He had been employed by Johns Hopkins University, DuPont, and Olin Mathieson Chemical. From 1959 until 1963 he was a professor of organic chemistry at Hamilton College. Since 1963 he had been with the Marcy Psychiatric Center.

Dr. Grant belonged to Theta Chi, the Eastern Psychiatric Research Association, Society of Biological Psychiatry, ACS, Chemical Society of London, New York Academy of Sciences, American Association for the Advancement of Science, Sigma Xi, and the American Society for Photobiology.

**H. Norris Harris, Jr., '57** died in New London, Connecticut on March 9, 1976 after a short illness. He was 40.

Recently he retired after eight years as an electrical engineer at the Naval Underwater Sound Laboratory in New London. Previously he was with Rome (N.Y.) Air Development Center.

Mr. Harris was born on May 14, 1935 in New York City. In 1957 he received his BSEE from WPI. He belonged to AIEE, IRE, and the National Association of Retired Federal Employees. He was a past president of the Eastern Connecticut Chapter of the Alumni Association.

**Dr. Richard St. Onge, '63** of South Barnstead, New Hampshire, assistant physics professor at UNH, died on December 27, 1975 following an automobile accident.

He was born on February 15, 1936 in Worcester. After receiving his BS in physics from WPI in 1963, he entered UNH where he earned his master's degree and his doctorate. A nuclear physicist, he has a patent pending relative to his invention of a position sensitive X-ray detector. He was also employed by the National Institute of Health in Washington where he was working on an instrumental detection and cancer device. Dr. St. Onge was a veteran of the Marine Corps.

**Walter F. Roach, '64** was killed in an automobile accident in Manchester, New Hampshire on November 20, 1975. He was 32 years old.

A native of Winchester, Mass., he graduated from WPI in 1964 as a mechanical engineer. For the past 11 years he had been with Sylvania, Inc. in Manchester. He was a member of Theta Chi Fraternity.

**Frederick J. Dunn, '65 SIM** died at his home in Paxton, Massachusetts on January 13, 1976. He was 45 years old.

For the past three years he had been a computer consultant at Geo. A. Smith Co. Previously he was administrative data processing and systems manager at WPI. He was a former member of the board of directors of the Data Processing Management Association, Worcester chapter.

He graduated from the New England School of Accounting and the School of Industrial Management at WPI.

**Capt. John G. Zwyrner, '65 (U.S.A.F.)** of Danbury, Connecticut died recently.

He was born on June 22, 1943 in Danbury and graduated with his BSEE from WPI in 1965. During his career in the Air Force he had trained as a weather officer at Penn State where he received his BS, and had seen duty at Stewart AFB, Newburgh, N.Y.; Wright-Patterson AFB, Dayton, Ohio; and Hankway AFB, Bedford, Mass.

**George A. Desnoyers, '66** died at his home in White River Junction, Vermont on February 17, 1976.

He was born on May 21, 1943 in Hanover, N.H. He graduated from Bridgton (ME) Academy and then studied at WPI. He was a member of St. Anthony's Church.



# ATWATER KENT

*Philadelphia*

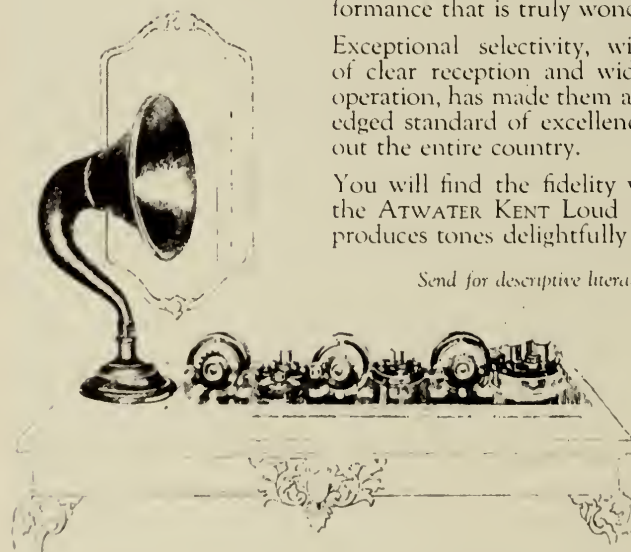
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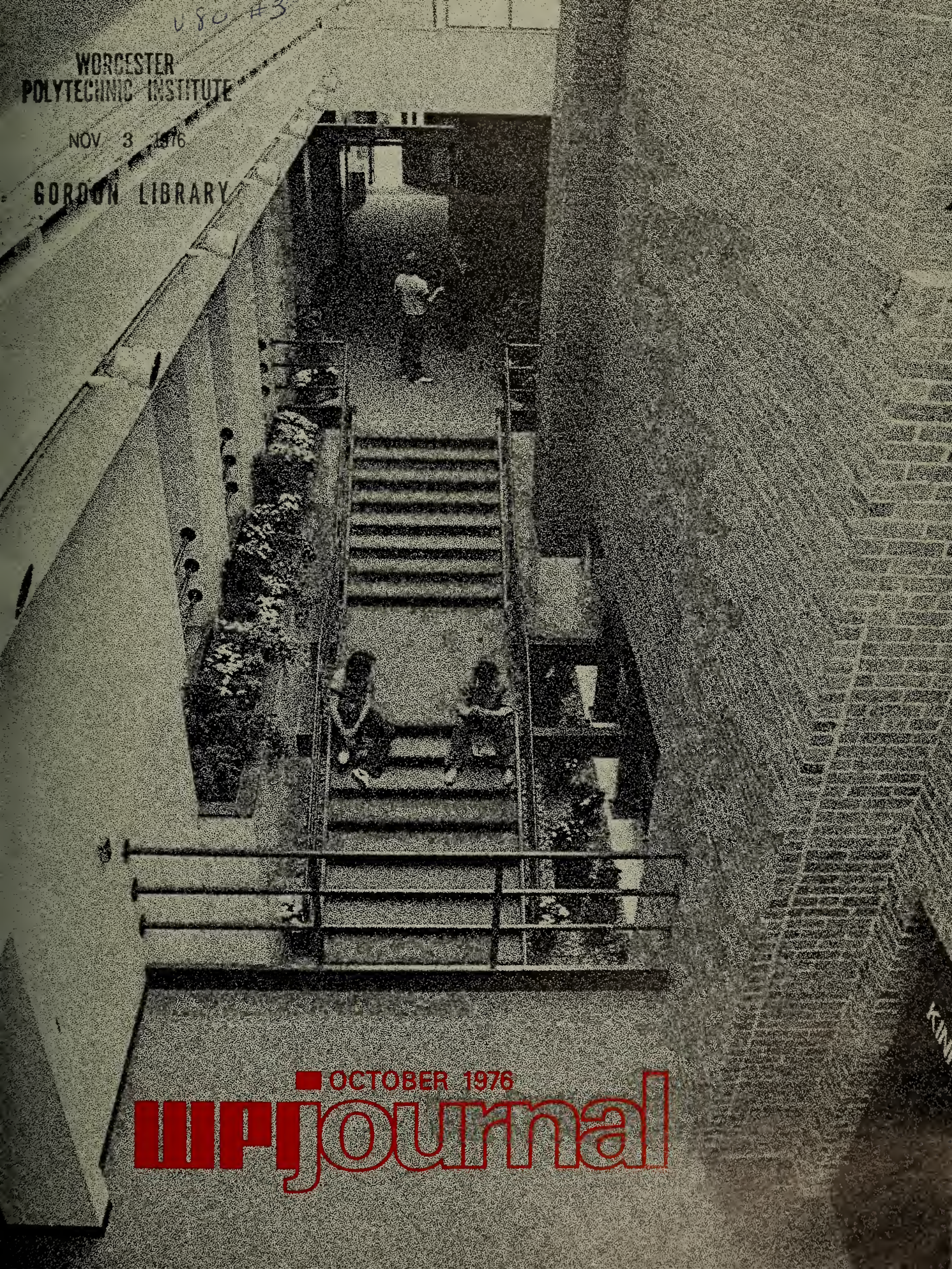
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**WPI** journal











by the editor

## Teaching/Learning

An effort to focus more on the process of education, WPI has established a new facility, the Center for Educational Research and Development (CERD). Dr. Karen C. Cohen, who has been conducting a long-term study of the effects of the WPI Plan on students, joins the faculty as an associate professor and the Center's director. Formerly with the Education Development Center, Dr. Cohen also holds a current appointment at M.I.T. In many ways, CERD is a direct result of putting the WPI Plan into effect. Because of the innovations and drastic changes engendered by the Plan, faculty at WPI have developed a significant concern for improving, on a continuing basis, the teaching and learning process at WPI.

The Center has three main areas of activity. First is the Laboratory for Studies and Innovations in Education, which provides a forum for discussion and a channel for experimentation with the educational process. This is a direct result of a program last year, the Teaching-Learning Workshops, where a continuing group of faculty and students met once a term for day-long programs with an outside speaker and discussion leader.

The second area of CERD activity is the continuation of the NSF-sponsored evaluation of the effects of the Plan. This study provides an on-going basis for comparison and yields much helpful information to aid policy decisions regarding future directions for the college.

The third area the Center works in involves a significant degree of community outreach. CERD conducts research and projects for off-campus organizations and agencies, bringing its expertise, the tools and methods of educational research and evaluation, to numerous problems facing social and educational organizations today.

The Center operates out of a corner of the IQP Center, Washburn 300. It is being funded, in part, by money from the Ford Foundation's Venture Grant to WPI.

In discussing the Center recently, President Hazzard said, "The exciting part to me is that this institutionalizes our concern for teaching process and will, hopefully, extend our present burst of educational innovation over the long haul."

## Faculty award nominations sought

WPI alumni, students, and faculty are invited to nominate faculty members to receive the 1976-77 Board of Trustees' Award for Outstanding Teaching. This award is made annually to a faculty member who has done a truly fine job as a teacher. Selection is made by a committee of students and faculty. You are encouraged to submit your nomination, together with supporting reasons, to Professor Ed Ma at WPI. Deadline for nominations is December 10.

## The arm and hammer saga, continued.

*(Reprinted from the student newspaper, Newspeak)*

It was a year ago that the Washburn Shops weathervane disappeared. The familiar arm and hammer known to every student since the first class entered in 1868 no longer swings easily to the changing breeze.

The loss was keenly felt by all, for the arm and hammer was a symbol. Perhaps taken for granted because it had always been there, its loss suddenly became a personal tragedy for WPI people everywhere.

What happened to it? Is it gone forever? Will it be replaced? *Newspeak* interviewed President Hazzard on the first anniversary of the loss.

**Newspeak:** Do you have any idea what happened to the weathervane?

**President:** From piecing together all the evidence at the time, we believe that the person responsible climbed through an upper floor window in Washburn to the roof. Then he swung a rope weighted with a flashlight up to the weathervane. With the rope thus snagged, he pulled until the rod on which the vane turned bent downward. The vane then slipped off onto the roof. It was then probably lowered to the ground and he retraced his steps through the building and then carried the vane off.

**Newspeak:** Do you have any idea who was responsible?

**President:** No. We believe it was a student. The plastic flashlight found on the roof after the theft was marked with the name of a student who had graduated the year before and was employed far from Worcester. He was not a suspect but members of his fraternity reported that the light had been left behind when he graduated. The investigation naturally concentrated on those who would normally have had access to this only piece of evidence. However, all leads proved fruitless.

**Newspeak:** Why do you think it was taken?

**President:** I think it began as a prank, an ill-conceived one but still a prank. When the thief saw what an uproar his act had caused, he must have realized that he had a "hot potato" on his hands. No one applauded his act. No one thought it was funny. There was just downright indignation all over campus.

**Newspeak:** Could he have taken it for profit?

**President:** The arm and hammer was too well known to have been sold. There was no real value in the material of which it was made. Its real value was sentimental.

**Newspeak:** Just what was it made of?

**President:** No one is sure. It has been on the Washburn Tower longer than anyone on campus can remember. We assume it was made of hammered copper, then gilded. It was probably regilded in 1938 after the great hurricane of that year damaged the Washburn Tower. Even though this event was relatively recent, no one seems to remember who might have worked on it then. However, in talking with people knowledgeable about century-old weathervanes, we have a good idea of its construction.

**Newspeak:** Do you have any idea that it's still in one piece with a possibility of ever being returned?

**President:** About two months after the theft, we received an anonymous note offering to return the arm and hammer in exchange for a sum of money. Enclosed with the note was a color print of the weathervane lying in the woods. It appeared to be in reasonably good condition although some dents from the fall were evident. Certainly it could be restored without difficulty. The instructions specified a time and place to leave the money. The postmark on the letter was imprinted on the afternoon of the day we were instructed to leave the money, a Friday. The letter was received the following Monday, so there was no way we could comply.



**Newspeak:** Would you have paid the ransom?

**President:** I don't really know. The sum requested was far less than the cost of replacement. It probably would have been the practical thing to do, even though it would have been very distasteful. However, we never had to make that decision.

**Newspeak:** Why do you think the thief waited so long to ask for ransom?

**President:** I think he really wanted to see it back on the tower again but after the furor, he realized that getting it back could be dangerous. Therefore he tried to make it look like a "kidnapping," with ransom the motive. I suspect he put a price on the return to compensate for the risk involved in returning it.

**Newspeak:** Did the note and the photograph yield any clues as to the thief?

**President:** Not really. The photograph showed the arm and hammer lying in woods, apparently in an oak grove judging by the leaves in the picture. Post Office officials informed us that the markings on the envelope indicated only that the letter had been mailed from one of the surrounding towns but cancelled in the main post office in Worcester, so there was no way of knowing from which town it was mailed. The note was hand lettered with a felt pen on ordinary paper with nothing to give us any clues. The words and the lettering suggested that the writer was a student who was familiar with hand lettering. This seemed to confirm our earlier feeling that the thief was a WPI student.

**Newspeak:** Since there has been no contact for the past ten months, has WPI made any plans to replace the arm and hammer?

**President:** Through Old Sturbridge Village we obtained the name of a craftsman who could make a replica of it. He would have to work from photographs. The cost would be approximately \$1500. About half the expense would be for hand carving wooden molds into which he'd have to hammer copper sheets to form the two halves which would later be joined together. The replica would no doubt be a fine piece of work, but it would never be the same as the original. Frankly, WPI just can't afford to use operating funds to replace it. We are reluctant to even suggest that anyone replace it as a gift to the college, since there are so many things far more urgently needed to meet our education needs. Gifts which are made to college should really be applied to other needs.

**Newspeak:** Will Washburn be left without a weathervane then?

**President:** Temporarily. We still hope that the original vane will come back to the campus. Once the student responsible has graduated, we think he'll let us know where it can be found. If it becomes clear that it's gone forever, we'll review the situation and see what we do then.

**Newspeak:** If you could talk to the person who took the arm and hammer, what would you say?

**President:** If I could talk directly with this person, I'd say, "whoever you are and wherever you are, I urge you to let us know where the arm and hammer weathervane can be found. Because we believe it was taken initially as a prank, we will not make an effort to learn your identity if you respond in good faith to this request. Frankly, I would prefer never to learn your name." I think I would tell him further that while taking the weathervane is considered to be an ill conceived prank, attempting to extort money for its return becomes a premeditated felony, perhaps even a federal offense. We can overlook the one attempt at this since from the timing of the mailing, we can charitably conclude that the thief didn't really expect us to comply but rather was trying to let us know the weathervane was safe. By returning the arm and hammer with no conditions attached, he'll find his conscience to be a more agreeable constant companion.



*Please feel free to write the Journal to express your opinions and views on WPI alumni matters. Those letters which are published may be edited for length or to concentrate on a specific topic. The Journal publishes nearly all letters received.*

### **Atwater Kent radios**

**Editor:** I read with interest your August 1976 *Journal* article "WPI's Forgotten Millionaire" by John P. Wolkonowicz and I would like to describe my own developing interest in and awareness of Atwater Kent, beginning in the late 1920's, when to me the name was no more than a trade name for one of the many battery-operated broadcast receivers battling for a share of the recently created but rapidly expanding radio receiver market.

I was raised in Worcester, and a few of my boyhood friends and I developed an early interest in radio starting in the last three years of grade school, first with constructors of standard broadcast receivers, later short wave receivers, subsequently some of us obtained amateur licenses.

With the introduction of complete battery-operated receivers in the early 1930s, battery-operated receivers were being rapidly discarded, and many of them ended up in the Salvation Army outlet store located off of Summer Street, in the vicinity of the old Worcester County Jail, and near Lincoln Square. These battery sets were the best and cheapest source of radio parts for our construction projects, and in those days they normally sold for from 50 cents to \$1.50. Atwater Kent sets were considered preferred items, particularly the model (or models?) having vernier dials with silver-white metal escutcheon plates framing the tuning scale, similar to the model 55 depicted in the *Journal* article.

Probably to the distress of the present-day collectors, we "guttered" these sets and utilized as many as necessary of (to quote the *Journal* description) "the brushed aluminum shielding cans,

ble steel chassis—etc.” to build  
le short wave receivers, usually  
sisting of a receiver detector,  
audio stage (for headphone  
ption), plug-in coils for the amateur  
ds, and occasionally we summoned  
gh ambition to add a stage of  
er tuned or untuned radio frequency  
lication. What our receivers lacked  
performance was compensated for by  
cosmetic effect of those beautiful  
s and panels, which tended to  
interact the generally messy  
pearance of the low-budget ham  
ons of the depression-plagued  
’s.

rangely, although we were  
rester natives we were unaware that  
Kent had been a resident of the  
and if we were at all curious  
cerning the origin of the name of his  
ment, we probably assumed that  
firm was a partnership consisting of  
persons named Atwater and Kent.  
r we learned that it was the name of  
ngle person, mainly due to the  
paper exposure given to his lavish  
ies, but we still were unaware of his  
rester origins.

ne next situation I encountered that  
e me think of Kent occurred some  
s later during my first half of my  
or year at Tech, when all EE’s took  
quired course in electronics. I might  
that at that time, since the  
artment head and a majority of the  
faculty were power-oriented,  
ronics was the poor stepchild of the  
artment, even superseded in  
ortance by courses in electrical  
mination. The prevailing philosophy  
ned to be that if one were so  
guided as to elect to major in  
ronics; he could have no better  
ground than a thorough grounding  
inciples of rotating electrical  
hysics and rotation of circuits and  
orks containing steady-state 60  
e currents (60 hertz for the benefit  
ne new engineering generation.).  
rofessor Newell conducted both the  
room work and lab sessions almost  
le-handed, and in retrospect I  
sider it amazing how much insight  
the principles of the electronic art  
that era he could infuse in us simply  
aving us plot the characteristics and  
dict the operating capabilities of the  
201-A vacuum tube. As I recall, Bill  
dsworth and Don Howe were  
uate instructors working on their  
ster’s degrees at the time, and they  
were among the faculty minority  
possessed an interest in electronics.  
Alumni Directory still lists them as  
ulty members.

The Electronics Laboratory was very  
primitive by modern standards, however  
some of the better items of lab  
equipment available had metal plates  
affixed to them, reading “Gift of  
Atwater Kent—1922.” This was the first  
time I became aware that Kent had  
attended Tech, and until I read the  
*Journal* article I assumed that he was in  
the Class of 1922.

I’m not sure if the practice is still  
continued, but in my time group  
pictures of graduating EE classes were  
displayed in the main corridor of the EE  
building, so out of curiosity I checked  
the 1922 class picture to see what he  
looked like in his student days.  
Naturally he was not included, but I did  
not consider this unusual since I learned  
shortly afterward that he did not  
graduate. Only when I read the *Journal*  
article did I learn that his short  
association with Tech was terminated  
more than 20 years earlier, so I would  
assume that 1922 was the year that the  
lab equipment was donated.

In any event, I thoroughly enjoyed  
the *Journal* article since I have long  
been interested in the man who  
inadvertently furnished me with many  
of the components for my earlier home-  
built receivers, and this interest was  
subsequently enhanced by the knowledge  
that, however briefly on Kent’s part, we  
both attended the same school.

**Jim Fernane, '42  
Amateur Radio W3YE  
Washington, D.C.**

### **Clearing up the Fairbanks fog**

**Editor:** The article in the August 1976  
issue, (“The Odyssey of Jim Aceto”)  
“Part I: 60 Below Zero,” was of  
interest because of the two years and  
most of three winters I spent in Alaska,  
but an inadvertent error occurred in the  
Aceto statement about the formation of  
ice fog. The latter besets the city of  
Fairbanks when the temperature *falls*  
*below* -30 to -35°F, not above that  
approximate temperature.

In late November 1950, shortly after  
my arrival in Fairbanks, I walked  
around the city when its temperature  
had initially dropped to -50°F to test my  
winter apparel. (The military issue boots  
at that time also were excellent. The  
upper portion was of felt, naturally  
white in color, and they were issued to  
all local USAF personnel, government  
civilian employees, and the locally based  
Battalion of the 4th Infantry Regiment.)

While auto exhaust moisture and  
particles are a prime source of the  
nuclei necessary for ice fog formation,  
an equal source is the effluents from  
chimneys.

Ice fog forms in supercooled,  
supersaturated air with minimal  
movement (less than 5 knots of wind  
speed), and requires some form of  
nuclei. Ice fog is composed mainly of  
the needle form of prismatic ice crystals.  
Fairbanks is the ideal spot for such fog  
formation because of its typically calm  
wind conditions, while Nome, which has  
a prevailing wind and shows a much  
lower wind chill factor, shows the  
blowing snow phenomenon but rarely  
has ice fog. The minute particles in  
chimney and auto exhaust, plus the  
associated water vapor, are sufficient to  
“sock in” Fairbanks for days—even  
weeks—at a time.

While piloting USAF aircraft to the  
north, over the Yukon Valley, then up  
beyond the Brooks Range and over the  
tundra, we could locate herds of caribou  
by the thin layer of ice fog that always  
lay among an animal herd (from  
exhalation moisture).

While I have overflowed Aceto’s base  
at Camp Dietrich and the nearby (15  
miles) village of Wiseman, I never had  
occasion to land at their airstrip.  
However, on one trip I took a USC&GS  
survey party by C-47 into the Bettles  
strip, 55 air miles to the southwest.

As implied by Aceto, Alaska, much  
larger than Texas, is a world of its own.  
The taxis in Fairbanks were operated 24  
hours a day to avoid shutdown and  
startup problems, and in spite of  
increased fuel and oil consumption.  
Those who departed in late summer and  
before the onset of cold weather, with  
or without a return in late spring, were  
labeled *Cheechakos* by those who stayed  
through the winter, after the small  
native bird that carries out the same  
procedure.

When you are there, you are on the  
“Inside.” Anyplace outside of Alaska’s  
boundary is known as “Outside.” The  
night we left Fairbanks’ Ladd AFB  
(since deactivated) it was -63°F on the  
airfield’s ramp and the engines on our  
C-54 transport plane were not shut  
down during cargo and passenger  
loading. It could not be said that we  
were sorry to leave such winter  
conditions, but the scenery, hunting,  
and fishing that remained behind were  
“out of this world.”

*P.S.* My assignment was dual—carry  
out synoptic and enroute weather  
forecasting from the AWS  
meteorological office on the second  
floor of Ladd’s Hanger #1, and “drive”  
USAF aircraft throughout most of  
Alaska and portions of the Yukon  
Territory.

**Robert H. Hodges, '42  
Pelham, N.Y.**



# Salisbury Laboratories Renewed and rededicated



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The mass exodus took place in December 1974. Faculty scattered in all directions to temporary quarters as Salisbury Laboratories, perhaps the single most-used building on campus, then the home of five departments, was emptied out. After 85 years of service, the building was to be renovated and modernized to meet the changed needs of a new era and to provide new and more appropriate facilities to support the educational process.

This past summer, just eighteen months later, people began to trickle back into Salisbury, department by department, moving around the workmen who were finishing up other areas of the building. Fully functioning as a school opened in September, Salisbury once more stands at the heart of WPI, both geographically and functionally. Where it started off in the nineteenth century housing engineering departments and the physical sciences, its occupants today are the life sciences and the "people" departments: humanities, social science and policy studies, and management.

*At left*, the striking new courtyard of Salisbury provides a warm and attractive invitation to the building.

*At right* is the brand-new skylight and staircase that link the Kinnicutt wing to the rest of Salisbury, and open up the basement level to the rest of the building.

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*Photographs by John Wellsman and Russell Kay*





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*At the top of this page are contrasted the new and old entrances to Salisbury. Below and at right are the student and computer lounge areas which are just inside the front entrance. At top right is the computer terminal room, open 24 hours a day.*



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der the goals of the WPI Plan, college seeks to educate scientists and engineers who are not merely a thorough grounding in their field but also a understanding of the applications of their technology on society and its needs. Thus the present occupants of Salisbury present a cross-section of the academic disciplines which lay the foundation for this broader understanding among WPI students.

Salisbury is, in fact, the third oldest building at Worcester Polytechnic Institute. Only Boynton Hall and Washburn Shops predate it. The school first opened its doors for students in 1868 with a then-unique concept of combining theoretical and practical instruction in the education of engineers. Soon, however, the college was attracting students from an expanded geographic area, and so the original name, Worcester County Free Institute of

Industrial Science, was dropped and the present name adopted. But success created serious overcrowding on campus. By 1887 it was apparent that a new building was needed, and this would represent a 50 percent expansion of the physical plant for a young school with a very modest endowment.

While the trustees deliberated on how to meet the urgent need for additional laboratory space, the problem was solved by a gift of \$100,000 from trustee Stephen Salisbury III as a memorial to his father, who had been one of the college's original trustees and major benefactors.

Salisbury Laboratories were planned by the faculty who would occupy the new structure. Professor George I. Alden designed the spaces for the rapidly growing department of mechanical engineering. Professor Alonzo Kimball determined the needs of the department of physics with its new program in electrical engineering, soon to grow into an academic department of its own. Professor Leonard P. Kinnicutt chose a portion of the first floor for chemistry, with laboratories on the top floor, "where the wind would have a chance to dissipate the odors."

The noted architect Stephen Earle, who had designed Boynton Hall twenty years earlier, was asked to design Salisbury Laboratories. He was charged that it was not to be built for looks but as a functional laboratory.

The cornerstone was laid in June 1888, and Salisbury Laboratories opened sixteen months later with no formal dedication. It housed, on the first floor, mechanical engineering, the testing laboratory, steam engineering laboratory, and the electro technical (sic) laboratory. On the second floor were the mechanical drawing room, mechanical museum, Professor Alden's study and recitation rooms, electrical laboratory for advanced work, two physics rooms, a dynamo, and electric storage batteries. One floor up, on the third, were physics rooms for calorimetry, photography, photometry, a spectrum room, reading room, general laboratory,



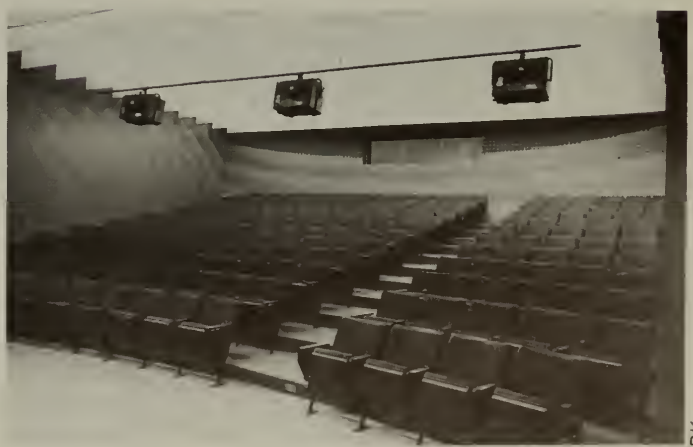


lecture room, apparatus room, and a laboratory for the study of elementary electricity. Chemistry laboratories and lecture rooms occupied the top floor.

Soon after the building opened, a fire of undetermined origin caused \$1,500 damage, destroying the contents of the chemical laboratory stock room and causing damage to adjacent areas. It seems probable that the top floor location enabled the wind to dissipate the odors from this chemical reaction quite well indeed.

Spacious as the new laboratories must have seemed to faculty and students when Salisbury was completed, the college continued to grow in both size and prestige. In 1894 the mechanical engineering department moved into the new Stratton Hall, which was to remain





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*Above*, one of the two small lecture halls, holding about 100 people.  
*At far left* is one of the normal classrooms.  
*At left and above*, views of the new Kinnicutt Hall, an outstanding small auditorium seating about 200.



the ME building until Higgins Laboratories was completed in 1942. In the summer of 1907 the young electrical engineering department took over its own new building, known today as Atwater Kent Laboratories. Then, for nearly half a century, physics and chemistry shared Salisbury.

Sixty years after the cornerstone was laid, the first addition to Salisbury was agreed upon. Briggs and Company, architects, and E.J. Cross Company, contractors, were chosen to build Kinnicutt Hall at a cost of \$74,000. The addition provided a 200-seat lecture hall and sorely needed additional office, laboratory, and classroom spaces.

As soon as the Kinnicutt Hall addition was dedicated, the trustees approved a second addition to Salisbury to house the chemical



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Above are parts of the biomedical engineering area in Salisbury: a small surgery, and a large instrumentation laboratory. At right is one of the many life sciences labs now housed in the renovated Salisbury.

engineering departments's unit operations laboratory, at a cost of \$41,000.

With the completion of Olin Hall of Physics in 1959, Salisbury Labs lost yet another tenant. The last original occupant, the department of chemical engineering and chemistry, moved into Goddard Hall in 1965 and became two separate academic departments.

While the ghosts of chemists and physicists past lingered on in the shadows, Salisbury was by no means a vacant, haunted house. The

vacated spaces became home to the departments of humanities; computer science; biomedical engineering; life sciences; economics, government, and business; military science; and management engineering. In fact, since it was originally built, Salisbury has been the home of every academic department except civil engineering and mathematics. Every WPI student since 1889 has probably taken at least one course in this building.

When the WPI Plan to Restore the Balance capital fund campaign was formulated in 1971, Salisbury Laboratories became one of the major objectives. After nearly ninety years of hard use, the basic structure was still sound but the interior spaces were musty Victorian, with antiquated facilities and inefficient space arrangements for its present uses. A matter of compelling concern was the condition of aging utilities services, some of them dating back to the building's original construction and others added on later.

After careful deliberation, WPI chose to renovate Salisbury rather than replace it with a completely new building. There were two reasons. First, this course offered the greatest value for the money. Second, it allowed the college to preserve an important link to its past and its founders.

As the campaign progressed and funds were secured, firm plans for complete renovation were approved. The architectural firm of Anselevicius/Rupe Associates accepted the challenging assignment of transforming Salisbury into a modern and attractive academic center. Granger Contracting Company, headed by Raymond Granger, '37, transformed the architect's designs into reality, completing the project ahead of schedule.

The time lag between planning and execution took its own toll. The originally planned-for cost of \$1.1 million went to over \$2 million, but the college has certainly gotten its money's worth. The changes have encompassed over 50,000 square feet of space, twenty-five laboratories, four classrooms, three lecture halls, four seminar and conference rooms, offices for 54 faculty members, and student and faculty lounges.

As you approach the outside of Salisbury, it doesn't look specially different. A courtyard around the main entrance (facing Ashburn) has been "landscaped" with red brick into attractive benches and planters, and this helps soften the stark functionality of the original structure, bringing Salisbury more into harmony with its neighbors. A new, sheltered entranceway guides you into the building.

And it's when you walk inside for the first time, remembering the dusty labness of the old Salisbury Labs, that the visual changes really strike home. The inside has been opened up into airy and appealing lounge areas for students and faculty. Locker space has been provided for commuters, so that Salisbury can be a convenient second home. Carpeting on the floor helps create a warm atmosphere, and keeps noise down too.

Just behind the lounge areas is a real delight for the eye, unquestionably the highlight of the new Salisbury. The roof has been stripped off the connecting link between the original building and Kinnicutt Hall. In its place is a high and sharply angled skylight that overlooks a broad, open stairwell down to the lower level. The brick wall of the Kinnicutt addition that faces this area has been sandblasted for fresh brightness.

And everywhere there is color! The brick walls have been painted white and yellow, and they are set off with large panels and dividers of light blue and green. Architect Kaselevicius has been rigorously faithful to the basic structure of the building, and he has treated the "mechanicals"—the plumbing, wiring, and ductwork—with refreshing honesty and imagination. Those things that can't reasonably be hidden are instead treated to bright, glossy colors, and they end up forming an attractive counterpoint to the solid and adorned walls.

Kinnicutt Hall, one of the college's two main lecture halls, is a real showpiece with its blue upholstered seating, indirect lighting, and kelly green side walls. It is also more functional than it has been in years. Full audio-visual support facilities are incorporated,







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Here are some of the departmental office areas in the renovated Salisbury. At top is the life sciences office, which overlooks the building's central stairway (middle) down to the humanities department (below). This view of the stairway and skylight has made the basement area an integral part of the building's visible space.

including a projection and camera booth at the rear and suspended television monitors for the benefit of the audience in the rear of the auditorium.

Two smaller lecture halls, each holding about 100 students, finally give adequate space for lectures as well as various types of meetings, presentations, and evening events.

Above the first floor, most of the open spaces vanish in favor of smaller offices, classrooms, and laboratories. It is, in one student's words, "like a rabbit warren, cut up into so many little spaces. It's a little hard to find your way around at first, but the space is so incredibly efficient and well organized."

But for all the astonishing changes apparent to the eye, there are equally important changes that

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one simply does not notice—the completely new electrical system, new heating and plumbing, and changes which allow ready access to Salisbury's academic spaces by the handicapped. In fact, over one-third of the cost of the renovation was involved with these unseen factors.

**I**t was one busy weekend as Salisbury Laboratories was rededicated on September 18. Friday evening, WPI hosted a reception and guided tours of the building for the major donors who made the renovation possible. All weekend long, beginning Friday night, the Alumni Association Council held its annual meeting (with time off for the other activities).

But to formally mark the significance of the occasion, President

Hazzard convened on Saturday a symposium on the subject, "People and Technology: A Humane Balance," with three nationally known speakers. They were Fletcher Byrom, chairman of the board of Oppers Company; Hazel Henderson, co-director of the Princeton Center for Alternative Futures; and Herman Kahn, founder and director of the Hudson Institute, and author of the recent best-seller, *The Next 100 Years: A Scenario for America and the World*. The symposium had been planned for the courtyard outside Salisbury, but heavy rains during the preceding week forced the proceedings indoors to Kinnicutt Hall. The three symposium participants spoke to an overflow audience (the overflow watching in nearby rooms via closed-circuit TV). While they all seemed pretty much agreed that the future of our world was optimistic and hopeful, they disagreed vehemently about what should be done to get there. The comments of the three will be published in the December issue of the *Journal*.

But the tone of the weekend was, for many, pretty well summed up by Byrom: "The rededication of Salisbury Laboratories focuses renewed attention upon the need to promote interfaces between science and the humanities if their various disciplines are to serve society. I was far from the campus, in time and distance, when I discovered how much I could learn from the philosophers, the anthropologists, the social scientists, the classic economists. I am still working hard to catch up. Your graduates—those technological humanists' described in a recent issue of *American Education*—leave here with a running start."

**SALISBURY LABORATORIES**

Named in honor of  
**STEPHEN SALISBURY II**  
a founder of the Institute and first chairman  
of its Board of Trustees, this building  
is the gift of his son, Stephen Salisbury III.

From 1865 to 1905, the Salisbury family provided  
WPI with exemplary leadership. Their generosity  
included a gift of the land for the campus.

Extensive interior renovations were made  
possible by the generous support of alumni  
and friends and a major grant from the  
George I. Alden Trust.

Professor Alden, a member of the original  
faculty, was a colleague of Stephen Salisbury II.  
Their dedicated and untiring efforts to advance  
the growth and development of the Institute  
are gratefully and permanently acknowledged.

Cornerstone Laid · 1888      Rededicated · 1976

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top, the plaque installed on the front face of the Kinnicutt wing.

middle, a view of the symposium that highlighted the building's rededication.

right, speakers at the rededication were (from left) Paul S. Morgan (WPI trustee and chairman of the WPI Plan to Restore the Balance), the Rev. Winthrop Hall, '02, who made the invocation and benediction, Robert Hess, a trustee of the George I. Alden Trust, and President George Hazzard.



# Reunion Wrapup

## CLASS OF 1926, 50th REUNION

Commencing in 1971, the committee chosen to prepare the 50th went to work with preliminary plans which culminated in a most successful weekend from Thursday the 3rd through Saturday the 5th of June. This committee was composed of Lawrence S. Peterson, Chairman, Emerson A. Wiggin, Archie J. Horne, and Charles B. Hardy. The class headquarters were at the Sheraton-Lincoln Inn where the Friday night banquet was well attended with lots of chatter getting reacquainted. Phil Delphos showed slides of past reunions which brought back a flood of happy memories to the class which furnished dialogue and sound effects.

Our own bus furnished transport from the Inn to events on the Hill, the first of which was a delightful reception on Thursday hosted by President and Mrs. George W. Hazzard at 1 Drury Lane. This was

a fine mixer and provided the springboard for the events which followed. Our host and hostess made the party a spectacular success.

Later Thursday evening we were guests at a very special dinner at the Higgins House as a Welcome Home, which it most certainly was. Our 50-year diplomas were presented following dinner and brought back memories of that grand day 50 years ago.

On Friday, the 4th, many of the class attended the special 1926 buffet luncheon at Morgan Hall. Tours of the campus and the nearby Worcester Art Museum were offered and well patronized. The dinner on Friday evening at the Sheraton-Lincoln was well organized and a memorable event. Letters and best wishes were read from several who could not attend. A moment of silent prayer was offered for those classmates who had passed away.

A very special welcome was given to Mrs. C. Sture Carlson and Mrs. Clyde W. Hubbard who attended most of the events.

Officers for the next five years were elected as follows:

President, Harold A. Baines  
Vice Pres., James A. Robertson  
Sec/Treas., Arthur C. Parsons  
Claims of a "railroad" election were ignored.

On Saturday, 1926 became freshmen again in the 50-Year Associates where we heard Bill Johnson, 1976 class president, describe undergraduate activities and President Hazzard related stories of

the management of the 2,000 student college and its future in a competitive field.

The picnic on the lawn at the Higgins House was the big event of Reunion Day with excellent weather and happy noisy alumni from all classes. It was at this luncheon that our gift chairman, Milt Berglund, presented the results of his committee's hard work over the past three years. It was a check for \$180,000 to the college and included a bequest of \$125,000 from the estate of Wallace H. Tucker who passed away recently. The gift will be used to fund the student lounge area in the remodeled Salisbury Hall. Awards were presented with fitting ceremonies and 1926 was awarded the attendance cup for the second time, a unique accomplishment.

Finally, the reunion broke up with farewell greetings all around and promises to return in 1981 for our 55th!

## 1926 CLASSMATES ATTENDING THE 50th REUNION

Archibald, Kenneth R. (Mr. and Mrs.)  
Baines, Harold A. (Mr. and Mrs.)  
Bennet, Walter R. (Mr. and Mrs.)  
Berglund, Milton E. (Mr. and Mrs.)  
Bjork, Raymond H. (Mr. and Mrs.)  
Borrner, Carl O. (Mr. and Mrs.)  
Brewster, Oliver H. (Mr. and Mrs.)  
Burns, Douglas S. (Mr.)  
Chinnock, Ormond J. (Mr. and Mrs.)  
Connolly, Raymond C. (Mr. and Mrs.)



elphos, Phillip R. (Mr. and Mrs.)  
 elder, Frederick D. (Mr. and  
 rs.)  
 ager, Donald L. (Mr. and Mrs.)  
 ardy, Charles B. (Mr. and Mrs.)  
 ealey, Charles M. Jr. (Mr.)  
 edin, Fred H. (Mr. and Mrs.)  
 orne, Archie J. (Mr. and Mrs.)  
 ohanson, Stanley F. (Mr. and Mrs.)  
 ones, Chandler W. (Mr. and Mrs.)  
 allander, O. Harold (Mr. and  
 rs.)  
 urkjian, Vahan B. (Mr.)  
 arston, Winthrop S. (Mr. and  
 rs.)  
 aylott, Carleton F. (Mr. and Mrs.)  
 ildrum, Henry G. (Mr. and Mrs.)  
 iller, John S. (Mr.)  
 oran, Charles M. (Mr. and Mrs.)  
 orse, John A. (Mr.)  
 rge, Linwood E. (Mr. and Mrs.)  
 rquette, Armand L. (Mr. and  
 rs.)  
 rsons, Arthur C. (Mr. and Mrs.)  
 erson, Lawrence S. (Mr. and  
 rs.)  
 Robertson, James A. (Mr. and  
 rs.)  
 issell, William A. (Mr. and Mrs.)  
 xton, Randall P. (Mr. and Mrs.)  
 hoonmaker, Theodore D. (Mr.)  
 ars, Donald F. (Mr. and Mrs.)  
 ow, Francis R. (Mr. and Mrs.)  
 eele, Mabbott B. (Mr.)  
 atton, Harry E. (Mr. and Mrs.)  
 omson, Howard B. (Mr. and  
 s.)  
 ompson, Charles J. (Mr. and  
 s.)  
 ade, Llewelin W. (Mr. and Mrs.)  
 ebster, Irvin S. (Mr. and Mrs.)  
 entworth, Warren T. (Mr.)  
 ggins, Emerson A. (Mr. and Mrs.)



Marvin Richmond

**CLASS OF 1936, 40th REUNION**

The fortieth reunion of the Class of 1936 was ideal in many ways. The weather was the best that New England offers, and the fourth and fifth of June were perfect.

The headquarters for the class was at the Fuller Residence on Institute Road right across from the dormitories. This was a very central location, very comfortable, and we were able to have a hospitality suite at the residence. The hospitality suite served as a focal point for the beginning and ending of each of the activities of the weekend.

About 30% of the living members of the class and their wives (where applicable) attended a reception given by President Hazzard and his wife at their home on Drury Lane. From there we went to a fine dinner at the Higgins House, which is now part of the campus. After the dinner and a few short speeches, we adjourned either to the hospitality room or to an "Old Timers" party in the dormitory.

The weather for Saturday's picnic on the lawn of the Higgins House was perfect. During the ceremonies following the picnic, George Rocheford presented a check for nearly \$30,000 from our class.

After the picnic it was either a campus tour or a gathering in the hospitality room. Then, in the evening, there was a dinner at the Sheraton-Lincoln.

By this time everyone knew each other well, and the singing and the conversation was loud and clear.

The following members of the Class of 1936 took part in activities of the weekend:

- Edward W. Armstrong
- Leo T. Benoit
- Carl F. Benson
- Walter F. Beth
- Jack R. Brand
- Roger W. Bruce
- Allen C. Chase
- George L. Chase
- Earl M. Curtis
- Walter G. Dahlstrom
- Alfred C. Ekberg
- George B. Estes
- Robert Fowler, Jr.
- Scott K. Goodwin
- Alexander L. Gordon
- Martin C. Gowdey
- A. Hamilton Gurnham
- Joseph R. Hastings Jr.
- Harold F. Henrickson
- L. Brewster Howard
- Leonard W. Johnson
- William J. Kosciak
- N. Robert Levine
- William C. Maine
- Foster McRell
- John A. Porter
- George E. Rocheford
- Jacob A. Sacks
- George A. Sherwin
- Joseph A. Stead
- J. Headen Thompson
- Abbott D. Wilcox
- George P. Wood

We look forward with eagerness to our next reunion and feel sure it will be as good as our fortieth.





### CLASS OF 1951, 25th REUNION

Congratulations to all who participated in one way or another in our 25th Reunion festivities. It was a huge success, and, as in all things in life, it was the people who made it what it was for each of us. We had a strong turnout for all activities, despite the rather low count of intentions and reservations made right up to Friday night.

The favorite activity was to watch the expressions of faint recognition—inquisitiveness—doubt—painful recollection retrieval—and final expressions of “Oh my god” recognition on many a face which, in itself, had changed slightly over the years . . . except for Herbie Haycs.

We started the weekend Friday night at the Morgan Hall “wedge” on campus with a good turnout of approximately 60 members and wives. Between the Ragtime Rowdies band and the Celtics playoff game, many a yarn of the old days was spun. Adjourning to our own private club area in the lounge of Stoddard dorm, a continuation of getting reacquainted and a catch-up of family news and 25 years of activities went on till the wee hours of the morning.

Saturday came too fast for most of us. Again a good turnout showed

up for the noon Reunion picnic on the beautiful grounds of the Higgins House on a beautiful sunny day which made for a most enjoyable event. Ra Ra Wolff made our class gift presentation of \$38,000.

Congratulations to all who made it possible. Louis DelSignore and family came down from New Hampshire to be with us, and our numbers began to swell. Enthusiasm ran high.

Later we retired to our Stoddard lounge area or toured the campus, and at 5:00 p.m. descended on the gracious household of President Hazzard, where we were cordially greeted by him and his wife and were royally treated to a fantastic happy hour. Again our numbers were swelled by new arrivals, and Bob and Jean Pritchard joined us, also.

Marching as an army we left President Hazzard’s house, walked across Park Avenue, and through the athletic field to the Higgins mansion and its palatial grounds where our picture was taken. Our reunion banquet was held there, too—a most elegant atmosphere.

Our fearless leader, Rich Ferrari, who had made a long drive with a bad back to be with us and help make the reunion the success it was, led us in a fun kind of business meeting where all former officers

were again railroaded into continuing their status. A new office was created by Rich, and the class of ’51 now has an illustrious PR man in the name of Walt Dennen. Walt provided everyone, on very short notice, with some humorous plaudits to various members of the class on their apparent accomplishments over the past 25 years, and most especially for their reunion contributions. Charlie McNulty, Joe Gale, and their wives joined us for these activities.

Again we retired to our Stoddard lounge area and until the wee hours of Sunday morning had a great time reuniting lasting friendships and bidding each other goodbye. We had many who had come a long way: Henry Taylor flying his own plane from Michigan, Ev Johnson from Florida, and Jack Dillon from California led the parade. Notes from Lee Bassett and Roy Olson, among others, showed that they were thinking of us. Missing from the ranks we expect to see at the next reunion were the Kolodncs, Baldwins, Gabarros, Kesslers, Hansens, Lovells, Lunds, Wyes, etc. Make your plans now for the 30th!

Many thanks to the administration and all who made possible a most enjoyable reunion weekend.



*data on which these class notes are based had all been received by the Alumni Association before September 15, when it was compiled for publication. Information received after that date will be used in succeeding issues of the WPI Journal.*

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**Brose Kennedy** retired in February following 41 years of service at IBM.

134

**Campbell** is editor of the newsletter that does computer documentation in the computer department at Temple University, Philadelphia.

135

**Sam R. Steur**, who received an honorary degree from WPI last spring, has retired as a partner and general manager of Sargent & Lundy, Chicago. He joined the firm in 1936. For four years he was with Peter F. Loftus, Pittsburgh, returning to the Sargent & Lundy mechanical engineering staff in 1945. He was named an associate of the firm in 1950 and a partner in 1962. Then he became manager of the mechanical department and director of engineering. In 1973 he was promoted to general manager. A registered professional engineer in 12 states, he is a member of ASME, the Western Society of Engineers, and the National Society of Professional Engineers.

141

**Keith McIntyre** has retired from A.T.&T. Presently he runs his own TV and hi fi business at his home in White Plains, N.Y.

143

**Edward Grazulis**, a professional engineer in the state of Ohio, is presently a senior development engineer at Diamond Shamrock in Cleveland.

1944

**Leslie Davis** holds the post of regional manager of mining chemicals at Cyanamid in Tucson, Arizona. . . . **Robert Maass** is a project director at Exxon Research & Engineering Co. in Florham Park, N.J.

1945

At the 44th annual meeting of the Northeastern Lumber Manufacturers Association in June, **Wilbur Hammond** was appointed representative to the American Lumber Standards Committee and director of the National Forest Products Association, Washington, D.C. Hammond is the owner of Thomas Hammond & Son, East Hiram, Me.

1946

**Walter Hatch** holds the post of senior engineering associate at Exxon Research & Engineering in Florham Park, N.J. . . . **Allan Johnson** was recently elected a vice president and director of American Protection Insurance Company, a Kemper Corporation subsidiary. He manages Kemper's Highly Protected (HPR) Department and is an HPR officer. He is also a senior vice president of another corporation subsidiary, the Kemper International Insurance Company. Earlier he had been with Factory Insurance Association in Hartford.

**Richard Anschutz** has been appointed vice president of advanced systems and programs in the government products division of Pratt & Whitney Aircraft Group, a subsidiary of United Technologies in West Palm Beach, Fla. The company is the world's principal manufacturer of aircraft engines. Anschutz joined Pratt & Whitney 29 years ago as a test engineer. Prior to his most recent promotion, he headed the management systems department. He directed the engine program for the F-16 fighter and was program manager for the RL10, the world's first hydrogen-fueled rocket engine.

**Charles Mitchell**, general partner of Mitchell, Hoilman & Associates in Boston, has been selected for membership in the Golden Scale Council. The council "recognizes, encourages, and supports high professional standards of service within the securities industry." Previously, Mitchell, who helped found Mitchell, Hoilman in 1975, has served as regional manager of Westamerica Financial Corporation and as securities and investment instructor for the Massachusetts Department of Education. He was also associated with Geophysics Corporation, Dictograph Products, Dempsey Tegler Co., and Hayden-Stone.

1948

**Clark Poland** was recently promoted to vice president and general manager of consumer towel and tissue products at American Can Co. He became associated with the company in 1971 as vice president of operations development. Formerly he was with Howard Johnson and General Foods.

1951

Still with Texaco, **Halsey Griswold** is now world-wide crude oil coordinator for the firm in New York City.

1952

The Rev. **Richard H. Englund** now serves at Trinity Lutheran Church in Chambersburg, Pa.

1953

**Philip Charron** has been named the new general manager of Wing Archery in Jacksonville, Texas. Wing, now under the Head division of AMF, will manufacture a new type of wood composite tennis racket at the Jacksonville plant. It will also continue the production of bows and arrows for an international market. Earlier Charron had been plant manager for the Rochester Button Co. of Wellsville, N.Y. . . . **Richard Davis**, president of the Thermos Division at King-Seeley Thermos Company, Norwich, Conn., was recently elected a director of the Chelsea Savings Bank. He is a United Way of Eastern Connecticut director and is associated with the Explorer program of the Boy Scouts.

1955

**Bruce Sealy** has left Control Data after fifteen years to become a marketing representative for COMTEN in St. Louis, Mo. He is setting up a new sales office in St. Louis.

1956

**Robert Delahunt** is now a vice president at Polaroid.

1957

**Allyn Hemenway, Jr.** serves as an environmental scientist for the Energy Research & Development Administration in Washington, D.C.

1958

**Edward Fraser** holds the post of manager of navigation systems at Develco, Inc. in Sunnyvale, Calif.



# Charles Amidon's Little Big Top!

Charles H. Amidon, '39 has a favorite memory. The time is the late 1930's and the place is Clinton, Massachusetts. His grandfather and he are watching a spine-tingling acrobatic act during a performance of the Kay Brothers Circus.

"One of the acrobats was Burt Lancaster," says Amidon. "Long before he became a big name in the movies."

Amidon, who has been a circus buff for about as long as he can remember, still goes to several circuses a year, and although he hasn't spotted any budding Burt Lancasters of late, continues to find the big top fascinating.

"The acrobatics and horse acts are the best," he confides. His wife, Eva, enthusiastically agrees.

Amidon, it turns out, is considerably more than a circus spectator. He gets totally involved. Recently, while doing research on America's first circus (circa 1793), he decided to build a complete scale model, all the way from the performers and animals down to the fruit and cookies sold by the strolling vendors. The model was on display in the Worcester Public Library in July.

As far as he knows, his is the only scale model of the first American circus. He is one of about 500 members of the National Organization of Circus Modelers, and so far no one other than he has claimed to have modeled that first circus.

"It wasn't easy deciding what to put in the model," Amidon admits. "There are virtually no circus drawings from that period. I had to depend almost entirely on written descriptions, the best of which remained unpublished for 160 years."

Amidon ultimately had to depend on his own ingenuity. He wrote a research article on the Ricketts Circus, reportedly the first American circus, once attended by George Washington in Philadelphia.

"It was pretty much a one-man show," he reports. "Bill Ricketts, a young Scotsman did trick riding, while a couple of other performers did tumbling and comedy acts."

Amidon's research articles on the Ricketts Circus appeared in *Bandwagon*, the magazine of the national Circus Historical Society. He not only wrote the article, he also illustrated it, putting his Worcester Art Museum background



into play. (He took drawing there, part time, for eight years.)

While a student at WPI, he made a model of a contemporary truck circus which became well known in the Worcester area. "Back then railroad-type circuses were the most colorful, particularly those which carried a street parade," he says.

At the moment, Amidon's main interest lies in the hoopla of the early days. His latest project is to follow the route of an 1841 wagon circus through New England, up to New Brunswick, and down through New York state. With an old circus performer's diary in hand, plus old copies of local newspapers en route, he plans to write a story about the trip.

"It was the great expense of moving heavy equipment and the constant putting up and taking down of the tents

which caused the demise of the railroad circus," Amidon says. "Do you know that in 1956, the last year Ringling traveled by train, that the daily expense exceeded \$20,000!"

Charles Amidon knows about the problems of moving heavy equipment from his own professional experience. A mechanical engineer, he helps companies rearrange machinery for more efficient production.

"My work is akin to that of the circus people who put their tents up and take them down," he explains. "Of course they don't do that so much any more. Most of the big circuses are now being held in indoor arenas." He looks thoughtful. "Today's circuses are still good," he says. "But without the big top, some of that old-time flavor is gone."

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## 1959

**Roger Kuenzel** is the vice president of Callahan Engineer Associates in Wilkes-Barre, Pa. The firm is presently concerned with street and sewer restoration following the 1972 flood damage caused by Hurricane Agnes. Reportedly, three billion dollars worth of damage was sustained in the area. . . .

**Roger Miller**, who was ordained a deacon in the Episcopal Church last June, is currently an assistant at Trinity Episcopal Church in Vero Beach, Fla. . . . **Michael Saunders** has joined Harza Engineering Co. in Chicago.

## 1960

Continuing with Polaroid, **William Aitken** now holds the position of quality control manager. . . . **Dr. Robert Bearse** serves as a professor and associate dean at the University of Kansas in Lawrence. . . . **James Buchanan** is presently a senior staff economic specialist at Shell Oil Company in Houston, Texas. . . . **John O'Connell** works as a project manager at H.K. Ferguson Co. in Cleveland, Ohio.

**Dr. Robert A. Condrate**, and Mrs. Condrate have been named associates in a program sponsored by the Danforth Foundation designed to encourage the "humanizing of the learning experience at colleges and universities." **Dr. Condrate** is associate professor of spectroscopy at the New York State College of Ceramics, Alfred (N.Y.) University. He is a member of the Basic Science Division of the American Ceramic Society and the Ceramic Education Council. During the six-year term, the Condrates will work toward improving student-faculty relations and the teaching-learning process.

## 1961

**Married:** **Yesugey Oktay** and Miss Shirley McMahon on July 4, 1976 in Duxbury, Massachusetts. Mrs. Oktay graduated from Middlebury College and Boston University School of Medicine. She teaches pediatrics at Harvard University and Beth Israel Hospital, Boston. Her husband graduated from Robert College, Istanbul, later receiving his master's degree from WPI. He is associated with Badger-American, Inc. and also teaches structural engineering at Northeastern University.

**Richard Andrews** works as program manager for Environmental Research & Technology, Inc. in Concord, Mass. . . .

**Kenneth Blanchard** is a senior construction engineer at Fluor Engineers & Constructors in Los Angeles. Currently he is on assignment in the Orient. . . . **Stephen Brody** is a manufacturing engineer at Torin Corp. in Torrington, Conn. . . . **George Durnin**, SIM, has been appointed personnel manager of Fairlawn Hospital in Worcester. He was one of the first personnel managers in New England to receive accreditation in executive and personnel management and is the hospital's first full time director of personnel

relations. Also, he has been an instructor in personnel management at Worcester Junior College and Anna Maria College. For 18 years he was personnel manager at Rexnord, Inc. and for ten years he was director of personnel at Riley Stoker.

**Dr. Jay Fox** has been nominated for the Army Research and Development Award by the U.S. Army Mobility Equipment Research and Development Command at Ft. Belvoir, Va. Twice previously he was nominated for the Commander's Award for Scientific Achievement. . . . **James Kachadorian** has started his own business, Green Mountain Homes, Inc., in Royalton, Vt. His panelized homes will be marketed throughout the eastern U.S. and feature a unique solar design which utilizes the entire home as a solar unit that both collects solar heat and stores it for chilly days. The system is also reversible, allowing the house to cool itself in summer. . . . **David Lawrence** is an investment officer at Bay Bank Merchants, in New Bedford, Mass.

**William Montgomery** is the president of a new company, American Engineering & Testing, Inc., which recently opened in South Hingham, Mass. The company tests concrete, masonry products, soils, and other construction materials and offers consulting engineering services to the industry for quality control and inspection of construction procedures. Montgomery was formerly vice president of Briggs Engineering & Testing Co., Inc. An active member in the Massachusetts Construction Industry Board, he also belongs to the American Concrete Institute, the Massachusetts Society of Professional Engineers, and the National Society of Professional Engineers.

## 1962

**John Tufano** is division manager at PECO Enterprises, Inc., in East Moline, Illinois.

## 1963

After eight years with New York Telephone, **James Daily** has left to take a position with American Bell International, Inc. Currently he is a consultant to the Telecommunications Co. of Iran, a government owned and operated enterprise. He, his wife, Jean, son James, 10, and daughter Janet, 8, reside in Tehran and find "this part of the world fascinating." . . . **Richard Garvais** has joined Wilson Sporting Goods in Cortland, N.Y., where he is manager of technical services. . . . **James Kelly, Jr.** now works as a sales engineer for Processing Equipment Co. in Orchard Park, N.Y. . . . **Marvin Woodilla** has been making wooden files for the Bicentennial.

## 1964

**J. Michael Anderson** holds the post of manager of promotional programs at Continental Can in New York City. . . . Still with Boeing Aerospace Co., **Robert Bridgman** now serves as a senior engineer Seattle, Washington. . . . **Edward Brabaz** works as a senior power engineer at Stone Webster in Boston. . . . Currently **Robert Drean** is general manager at Once Upon a Stage in Orlando, Fla. . . . **Clare Gesswei** a telecommunications officer, is presently in Monrovia, Liberia with the Diplomatic Telecommunications Service of the U.S. Dept. of State. He is involved in providing telecommunications support to U.S. diplomatic missions in Africa. . . . **Alfred Hemingway** is now with Bryan & Bollo in Stamford, Conn. . . . **William Ingalls** works as planning supervisor at New England Telephone in Boston, Mass. . . . **George Whiteside** holds the position of principal engineer at Polaroid Corp. in Cambridge, Mass. He designed the shutter of the new Pronto camera.

## 1965

**Walter Chang** has been appointed by the mayor of Fall River, Mass. as a new member of the Industrial Commission. Chang is president of Chang & Chang, Inc. of Boston an exporter of manufacturing equipment. He is also associated with the China Royal Restaurant and serves as an advance jet engine system engineer for General Electric. . . . Currently **Jordan Dern** is employed as project specialist in planning at Koppers Co. Inc. in Pittsburgh. . . . **Francis Pinhack** holds the post of safety chief with the Air Force Reserve at Pittsburgh (Pa.) Airport. . . . **Dr. David Sawicki** has been appointed review editor of the *Journal of the American Institute of Planners* at the University of Wisconsin in Milwaukee. Earlier he had served as assistant dean of the School of Architecture and Urban Planning at the university, and then as chairman of the Department of Urban Planning. . . . The Small Business Institute recently gave **Rog Williams** a national honorable mention award for a study he participated in on AuriNil Industries in Fitchburg, Mass. in 1971 while doing graduate work at WPI. He is now with G.E.'s mechanical drive turbine department in Fitchburg. . . . **Ronald Wood** has received his MBA from the University of South Alabama. He is a project engineer at Ingalls Shipbuilding division in Pascagoula, Miss.

## 1966

**Raymond D'Ambra** is chairman of the science department for the Johnston, (R.I.) school department. . . . **Steve Erhard** works for GTE Laboratories in Waltham, Mass. . . . **John Gilbert** has received his doctor of jurisprudence cum laude from Western New England College, Springfield, Mass. . . . Also earning graduate degrees are **Anson Mora** who received his master's from Occidental College, Los Angeles, and **Joseph Pastic**,

earned his MBA from the University of  
m. . . **Donald Petersen, Jr.** is a  
keting support representative for IBM in  
hersburg, Md. . . **Robert Trefry** works  
cost engineer at Brown & Root in  
ston, Texas.

067

to **William E. Tanzer**, '67 and Judith  
son Tanzer a daughter, Amy, on July 8,  
6. Bill is employed at Eastman Gelatine  
p., Peabody, Mass. (Judy was formerly  
loyed in public relations at WPI.)  
**Joseph Janikas** has been appointed  
away superintendent in Turners Falls,  
ss. Previously he had been with the  
artment of public works in Greenfield. . . .  
**Jan Kuenzler**, a senior application sales  
ineer with the Foxboro (Mass.)  
npany's Metals Industry Division, was  
nor of "Combustion Control Techniques  
Efficient Fuel Usage" which appeared in  
May issue of *The Glass Industry*. . . .  
**Charles Proctor** owns and operates the  
aba Shoppe, Inc. in Stratford, Conn.

068

*Married:* **William J. Giokas** and Miss  
inia M. Case in Chicopee, Massachusetts  
June 26, 1976. The bride graduated from  
stfield State College and is an art teacher  
he Chicopee school system. The groom, a  
uate of Western New England College of  
/, is a practicing attorney in Chicopee.  
**Wurt Benson** was recently awarded the  
ree of Juris Doctor, cum laude, from  
folk University. . . . **John Burns** has also  
ved a Juris Doctor, his having been  
rded by the University of San Diego  
ool of Law. . . . **Neil Durkee** is the new  
eral manager of Bear-Tex operations for  
ton Company's Coated Abrasive Division  
roy, N.Y. He joined Norton two years ago  
financial analyst for the division. Earlier  
as a project engineer for the Torrington  
rk.) Co. . . . **Don Holden** holds the post  
anager of engineering at Goodyear Tire  
ubber in Mount Pleasant, Iowa. . . . **Jack  
Cabe** has been named vice president of  
ufacturing for Carl Gordon Industries,  
He will be responsible for all  
ufacturing operations at Carl Gordon  
stries and its Hammond Plastics, Oxford  
tics, and Fox Specialty Co. divisions. He  
ed the company in 1970. . . . **Dr. Louis  
ong** recently accepted a post doctorate  
arch position with the Boston Bio-  
ical Research Institute. The institute is  
iated with the Massachusetts General  
pital, MIT, and Harvard University. Dr.  
ong will be involved in research of the  
rt muscles.

069

*Married:* **Michael J. Cohen** to Cheryl F.  
isman on July 11, 1976 in Bloomfield,  
nnecticut. The bride is a PhD candidate in  
nch at the University of Connecticut. The  
om, who received his master's in  
mputer science from RPI, is a marketing  
representative for the Boston office of  
entific Time Sharing Corporation,  
hesda, Md.

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**Gregory Enz** is currently a project  
engineer for New England Telephone in  
Framingham, Mass. . . . Lt. **David  
Manchester**, U.S.A.F. is a weapons system  
officer flying an F-4 Phantom out of  
Spangdahlem, Germany. . . . Capt. **Douglas  
Nelson** has entered the Air Force Institute of  
Technology to study for a master's degree in  
aeronautical engineering. The Institute is  
located at Wright-Patterson AFB, Ohio. . . .  
**Richard Palm** serves as a senior software  
specialist at Digital Equipment Corp. in  
Waltham, Mass.

### 1970

**Herbert Coulter** works as a facilities  
engineer for General Electric Silicone in  
Waterford, N.Y. . . . **Clark Knickerbocker**  
was awarded his MBA from Canisius College  
in Buffalo, N.Y. last May. He is an account  
manager at the Hooker Chemical Company in  
Niagara Falls. . . . **David Lawton** holds the  
post of regional sales manager at  
Carborundum, Filters Division, in Lebanon,  
Indiana. . . . **James Lockwood** is now  
marketing supervisor for water treatment  
chemicals at Allied Chemical in Morristown,  
N.J. The Lockwoods have a son, James Paul,  
born on June 8, 1976. . . . **Jethalal Makati**  
is employed by the Hartford (Conn.) Board of  
Education. . . . **Robert Markot** has received  
a doctor of philosophy degree in mathematics  
from Ohio State University, where he  
specialized in group theory. He belongs to Pi  
Mu Epsilon and the American Mathematical  
Society. . . . **Charles Pickett, Jr.** serves as a  
plant engineer at Knolls Atomic Power Lab.  
in West Milton, N.Y.

### 1971

*Married:* **Robert C. Blaisdell** and Miss  
Veronica A. Sarausky on May 28, 1976 in  
Bethlehem, New Hampshire. Mrs. Blaisdell,  
an ensign in the Navy Nurse Corps,  
graduated from the University of New  
Hampshire. Her husband is an economist  
with New England Electric System. . . .  
**Gregory A. Taylor** and Miss Rita Faircloth  
on June 27 in Knoxville, Tennessee. The  
bride is a graduate of Widener College,  
Chester, Pa. The groom is employed by  
United Engineers and Constructors.

**Paul Ash**, a member of the Newton  
(Mass.) School Committee, will be studying  
full time this fall at Harvard Graduate School  
of Education. He will be on a leave of  
absence from the Dover-Sherborn regional  
school system where he is a chemistry  
teacher. He is past president of the Dover-  
Sherborn Teachers' Association. This year he  
was a delegate to the Massachusetts  
Teachers Association's annual meeting. . . .  
**Dan Donahue** works for Koretsky King in  
San Francisco, Calif. . . . **Stephen Douglas**  
is a project engineer at Foster-Miller Assoc.,  
Inc., in Waltham, Mass. . . . **Kevin  
O'Connell** holds the post of fire protection  
engineer at Factory Mutual Engineering in  
Jericho, Long Island, N.Y. . . . **Alfred  
Scaramelli** serves as a research engineer at  
Westuaco Research Center in North  
Charleston, S.C. The Scaramellis have a year-  
old-daughter, Nicole. . . . **Raymond  
Skowrya, Jr.** recently received his MBA  
from Harvard University. He has accepted a  
position with GE in Fairfield, Conn.

### 1972

*Married:* **Thomas Mueller** and Miss Miranda  
Tracy on May 22, 1976 in Worcester. The  
bride graduated from Doherty Memorial High  
School, Worcester. The bridegroom is with  
the Anaconda Metal Hose Division at  
American Brass.



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(2) \_\_\_\_\_ (3) \_\_\_\_\_

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  - Miles College, Birmingham 35208
  - University of Alabama, Birmingham, University Station 35294
  - University of Montevallo, Montevallo 35115
  - Tuskegee Institute, Tuskegee 36088
  - Troy State University, Troy 36081
  - Alabama State University, Montgomery 36101
  - Auburn University of Montgomery, Montgomery 36109
  - Huntingdon College, Montgomery 36106
- ARIZONA**
  - University of Arizona, Tucson 85721
  - Pima Community College, Tucson 85709 (GMC only)
  - Arizona State University, Tempe 85281
  - Glendale Community College, Glendale 85301 (GMC only)
  - San Joaquin Community College, Mesa 85222 (GMC only)
  - Phoenix College, Phoenix 85013
  - Scottsdale Community College 85251 (GMC only)
  - Northern Arizona University, Flagstaff 86001
- ARKANSAS**
  - University of Arkansas, Fayetteville 72701
- CALIFORNIA**
  - California State University, Fresno 93740
  - Loyola Marymount University, Los Angeles 90045
  - Cypress College, Cypress 90630 (GMC only)
  - East Los Angeles College, Los Angeles 90002 (GMC only)
  - El Camino College, El Camino 90506 (GMC only)
  - Fullerton College, Fullerton 92634 (GMC only)
  - Los Angeles City College, Los Angeles 90029 (GMC only)
  - Los Angeles Harbor College, Wilmington 90744 (GMC only)
  - Los Angeles Pierce College, Woodland Hills 91360 (GMC only)
  - Los Angeles SW College, Los Angeles 90047 (GMC only)
  - Los Angeles Trade Tech College, Los Angeles 90015 (GMC only)
  - Los Angeles Valley College, Van Nuys 91401 (GMC only)
  - Marymount Palms Verdes College, Palms Verdes 90274
  - Mount St. Mary's College, Los Angeles 90049
  - Northrop Institute of Technology, Inglewood 90306
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  - West Los Angeles College, Culver City 90230 (GMC only)
  - San Jose State University, San Jose 95114
  - University of Southern California, Los Angeles 90024
  - Cal Lutheran College, Thousand Oaks 91360
  - Cal State University at Fullerton, Fullerton 92631
  - Cal State University at Los Angeles, Los Angeles 90032
  - Cal State University at Long Beach, Long Beach 90801
  - Cal State University at Northridge, Northridge 91324
  - Cal State University, San Bernardino 92407
  - Cal State Polytechnic College, Pomona 91768
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  - East Los Angeles City College, Los Angeles 90022 (GMC only)
  - El Camino College, El Camino 90506 (GMC only)
  - Glendale Community College, Glendale 91208 (GMC only)
  - Long Beach City College, Long Beach 90808 (GMC only)
  - Los Angeles City College, Los Angeles 90029 (GMC only)
  - Los Angeles Harbor College, Wilmington 90744 (GMC only)
  - Los Angeles Pierce College, Woodland Hills 91360 (GMC only)
  - Los Angeles SW College, Los Angeles 90047 (GMC only)
  - Los Angeles Trade Tech College, Los Angeles 90015 (GMC only)
  - Los Angeles Valley College, Van Nuys 91401 (GMC only)
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  - Northrop Institute of Technology, Inglewood 90306
  - St. Antonio College, Walnut 91789 (GMC only)
  - Occidental College, Los Angeles 90041
  - Pasadena City College, Pasadena 91106 (GMC only)
  - Pepperdine University, Los Angeles 90044
  - University of California, Irvine 92664
  - Ventura College, Ventura 93003 (GMC only)
  - West Los Angeles College, Culver City 90230 (GMC only)
  - Whittier College, Whittier 90606
  - San Diego State University, San Diego 92182
  - Poini Loma College, San Diego 92106
  - San Francisco State University, San Francisco 94132
  - City College of San Francisco, San Francisco 94112 (GMC only)
  - Golden Gate University, San Francisco 94106
  - Univ. of Cal. Hastings College of Law, San Francisco 94102
  - Lone Mountain College, San Francisco 94118
  - Univ. of Cal. San Francisco 94122
  - Univ. of San Francisco, San Francisco 94117
  - University of California at Berkeley, Berkeley 94720
  - California State University at Hayward, Hayward 94542
  - Contra Costa College, San Pablo 94806 (GMC only)
  - Diablo Valley College, Pleasant Hill 94523 (GMC only)
- COLORADO**
  - Colorado State University, Fort Collins 80521
  - University of Northern Colorado, Greeley 80639
  - University of Colorado Boulder 80302
  - Metropolitan State College, Denver 80202
  - Regis College, Denver 80221
  - University of Colorado, Denver 80203
  - University of Denver, Denver 80210
- CONNECTICUT**
  - University of Connecticut, Storrs 06268
  - Central Connecticut State, New Britain 06030
  - Eastern Connecticut State, Willimantic 06295
- DISTRICT OF COLUMBIA**
  - Howard University, Washington 20001
  - American University, Washington 20016
  - C. C. Teachers' College, Washington 20009
  - Federal City College, Washington 20005
  - Gallaudet College, Washington 20002
  - Georgetown University, Washington 20007
  - George Washington University, Washington 20008
  - The Catholic University of America, Washington 20017
  - Trinity College, Washington 20017
- FLORIDA**
  - Florida State University, Tallahassee 32306
  - Florida A&M University, Tallahassee 32601
  - University of Florida, Gainesville 32601
  - University of Miami, P.O. Box 8164, Coral Gables 33124
  - Miami-Dade Community College, Miami 33155 (GMC only)
  - Embry-Riddle Aeronautical University, Daytona Beach 32015
  - Florida Technological University, Orlando 32816
  - Lake Sumter Community College, Leesburg 32748 (GMC only)
  - Seminole Junior College, Sanford 32771 (GMC only)
  - Valencia Community College, Orlando 32816 (GMC only)
- GEORGIA**
  - University of Georgia, Athens 30601
  - Georgia Institute of Technology, Atlanta 30332
  - Georgia State University, Atlanta 30303
  - Morehouse College, Atlanta 30314
  - Southern Tech, Marietta 30060
  - Valdosta State College, Valdosta 31601
- HAWAII**
  - University of Hawaii, Honolulu 96822
  - Chamorro College of Honolulu, Honolulu 96816
- IDaho**
  - University of Idaho, Moscow 83843
- ILLINOIS**
  - Bradley University, Peoria 61606
  - University of Illinois, Urbana 61801
  - Parkland College, Urapaigan 61820 (GMC only)
  - Illinois Institute of Technology, Chicago 60616
  - Chicago Kent College of Law, Chicago 60606
  - Elmhurst College, Elmhurst 60126
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  - Kennedy-King College, Chicago 60621
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  - Loop College, Chicago 60601 (GMC only)
  - West Loop College, Chicago 60612 (GMC only)
  - Mayfair College, Chicago, 60630 (GMC only)
  - Harvey College, Chicago 60028 (GMC only)
  - Saint Xavier College, Chicago 60655
  - Southwest College, Chicago 60652 (GMC only)
  - Triton College, River Grove 60171 (GMC only)
  - University of Illinois at Chicago Circle, Chicago 60680
  - Wright College, Chicago 60634 (GMC only)
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  - Belleveille Area College, Belleville 62221 (GMC only)
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  - Park College, Cahokia 62206
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  - St. Louis University, St. Louis, Missouri 63108
  - University of Missouri at St. Louis, Missouri 63121
  - Washington University, St. Louis, Missouri 63130
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  - Indiana University, Bloomington 47401
  - Purdue University, Lafayette 47906
  - University of Notre Dame, Notre Dame 46556
  - Holy Cross Junior College, Notre Dame 46556 (GMC only)
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  - St. Mary's College, Notre Dame 46556
  - University of Evansville, Evansville 47702
  - Indiana State University of Evansville, Evansville 47712
- IOWA**
  - Coe College, Cedar Rapids 52402
  - Kirkwood Community College, Cedar Rapids 52405 (GMC only)
  - Mount Mercy College, Cedar Rapids 52402
  - Iowa State University, Ames 50010
  - Orake University, Des Moines 50311
  - University of Iowa, Iowa City 52242
- KANSAS**
  - Kansas State University, Manhattan 66506
  - Wichita State University, Wichita 67208
  - The University of Kansas, Lawrence 66045
  - Washburn University, Topeka 66621
- KENTUCKY**
  - University of Kentucky, Lexington 40506
  - Georgetown College, Georgetown 40324
  - Kentucky State University, Frankfort 40601
  - Midway College, Midway 40347 (GMC only)
  - Transylvania University, Lexington 40508
  - University of Louisville, Louisville 40208
  - Bellarmine College, Louisville 40205
  - Indiana University, Southeast, New Albany, Indiana 47150
  - Jefferson Community College, Louisville 40201 (GMC only)
  - Louisville Presbyterian Theological Seminary, Louisville 40202
  - Southern Baptist Theological Seminary, Louisville 40206
  - Spaulding College, Louisville 40203
- LOUISIANA**
  - Louisiana Tech University, Ruston 71270
  - Louisiana State U. and A&M College, Baton Rouge 70803
  - Southern University & A&M System, Baton Rouge 70803
  - Grambling College, Grambling 71245
  - University of Southwestern Louisiana, Lafayette 70501
  - Tuane University, New Orleans 70118
  - Dillard University, New Orleans 70122
- LOUISIANA**
  - Holy Cross College, New Orleans 70114
  - Louisiana State University at New Orleans, New Orleans 70112
  - Loyola University of New Orleans, New Orleans 70118
  - Southern University in New Orleans, New Orleans 70126
  - Xavier University of Louisiana, New Orleans 70125
  - Nicholls State University, Thibodaux 70301
- MARYLAND**
  - University of Maryland, College Park 20742
  - University of Maryland, Eastern Shore, Princess Ann 21853
  - Salisbury State College, Salisbury 21801
- MASSACHUSETTS**
  - College of the Holy Cross, Worcester 01610
  - Assassination College, Worcester 01609
  - Worcester State College, Worcester 01620
  - Trinity College, Worcester 01609
  - Anna Maria College, Paxton 01612
  - Assumption College, Worcester 01609
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  - Clark University, Worcester 01609
  - Worcester Junior College, Leicester 01524 (GMC only)
  - Lowell State College, Lowell 01850
  - Quincy Hammond Community College, Worcester 01606 (GMC only)
  - Worcester Junior College, Worcester 01606 (GMC only)
  - Worcester Polytech Institute, Worcester 01609
  - Worcester State College, Worcester 01602
  - Massachusetts Institute of Technology, Cambridge 02139
  - University of Massachusetts, Amherst 01002
- MICHIGAN**
  - Michigan State University, East Lansing 48824
  - Lansing Community College, Lansing 48914 (GMC only)
  - The University of Michigan, Ann Arbor 48104
  - Eastern Michigan University, Ypsilanti 48197
  - University of Michigan, Dearborn, Dearborn 48128
  - Western Michigan University, Kalamazoo 49001
  - Michigan Technological University, Houghton 49931
  - Suomi College, Hancock 49930 (GMC only)
- MINNESOTA**
  - The College of St. Thomas, St. Paul 55105
  - Augsburg College, Minneapolis 55404
  - College of St. Catherine, St. Paul 55105
  - Macalester College, St. Paul 55106
  - St. Olaf College, Northfield 55057
  - University of Minnesota, Minneapolis 55455
  - University of Minnesota at Duluth, Duluth 55812
  - College of St. Scholastica, Duluth 55811
  - University of Wisconsin at Superior, Superior, Wisconsin 54880
- MISSISSIPPI**
  - Mississippi State University, State College 39762
  - University of Mississippi, University 38677
  - University of Southern Mississippi, Hattiesburg 39401
  - William Carey College, Hattiesburg 39401
  - Mississippi Valley State College, Itta Bena 38911 (GMC only)
- MISSOURI**
  - Southeast Missouri State University, Cape Girardeau 63701
  - University of Missouri, Columbia 65201
  - Columbia College, Columbia 65201
  - University of Missouri at Rolla, Rolla 65401
- MONTANA**
  - Montana State University, Bozeman 59715
- NEBRASKA**
  - University of Nebraska, Lincoln 68508
  - Concordia Teachers College, Seward 68434
  - Nebraska Wesleyan University, Lincoln 68504
  - University of Nebraska at Omaha, Omaha 68101
  - Immaculate Conception College, Council Bluffs, Iowa 51501 (GMC only)
- NEW HAMPSHIRE**
  - University of New Hampshire, Durham 03824
- NEW JERSEY**
  - Rutgers, The State University, New Brunswick 08903
  - Brookdale Community College, Lincoln 07738 (GMC only)
  - Mercer County College, Trenton 08690 (GMC only)
  - Middlesex County College, Edison 08817 (GMC only)
  - Honmout College, West Long Branch 07764
  - Newark State College, Union 07083
  - Rider College, Trenton 08602
  - Somerset County College, Somerville 08876 (GMC only)
  - Trenton State College, Trenton 08625
  - Union College, Cranford 07016 (GMC only)
  - New Jersey Institute of Technology, Newark 07102
  - Montclair State College, Upper Merion 07093
  - William Paterson College, Wayne 07470
  - Stevens Institute of Technology, Hoboken 07030
  - Jersey City State College, Jersey City 07305
  - St. Peter's College, Jersey City 07306
- NEW MEXICO**
  - New Mexico State University, Las Cruces 88003
  - University of Texas at El Paso, El Paso, Texas 79968
  - University of New Mexico, Albuquerque 87131
  - University of Albuquerque, Albuquerque 87120
- NEW YORK**
  - Cornell University, Ithaca 14850
  - SUNY College, Ithaca 14850
  - SUNY College at Cortland, Cortland 13805
  - Syracuse University, Syracuse 13210
  - LeMoyne College, Syracuse 13214
  - Long College, New Rochelle 10801
  - SUNY, Gol of Environmental Science & Forestry, Syracuse 13210
  - Ulster College of Syracuse University, Utica 13502
  - Rensselaer Polytechnic Institute, Troy 12181
  - Albany College of Pharmacy, Albany 12208
  - College of St. Rose, Albany 12203
  - SUNY Empire State College, Saratoga Springs 12861
  - Fulton, Montgomery Community College, Johnstown 12095 (iGMC only)
  - Hudson Valley Community College, Troy 12180 (GMC only)
  - Immaculate Conception Seminary, Troy 12180
  - Junior College of Albany, Albany 12208 (GMC only)
  - Schenectady College, Troy 12180
  - Schenectady County Community College, Schenectady 12305 (GMC only)
  - Saratoga College, Loudonville 12211
  - Skidmore College, Saratoga Springs 12866
  - State University of New York, Albany 12210
  - Union College, Schenectady 12308
  - Manhattan College, Bronx 10471
  - College of Mount St. Vincent, Riverville 10471
- NORTH CAROLINA**
  - Duke University, Durham 27706
  - North Carolina Central University, Durham 27707
  - University of North Carolina, Chapel Hill 27514
  - North Carolina State University at Raleigh, Raleigh 27607
  - Meredith College, Raleigh 27611
  - Peace College, Raleigh 27602 (GMC only)
  - St. Augustine's College, Raleigh 27611
  - St. Mary's College, Raleigh 27611 (GMC only)
  - Shaw University, Raleigh 27602
  - East Carolina University, Greenville 27834
  - Pitt Technical Institute, Greenville 27834 (GMC only)
  - North Carolina A&T State University, Greensboro 27411
  - Bennett College, Greensboro 27420
  - Greensboro College, Greensboro 27420
  - Guilford College, Greensboro 27410
  - High Point College, High Point 27626
  - University of North Carolina, Greensboro 27412
  - Fayetteville State University, Fayetteville 28301
- NORTH DAKOTA**
  - North Dakota State University of A&S, Fargo 58102
  - Concordia College, Moorhead, Minn. 56560
  - Moorhead State College, Moorhead, Minn. 58202
  - University of North Dakota, Grand Forks 58202
- DHIO**
  - Bowling Green State University, Bowling Green 43403
  - Bowling Green State University, Firelands Campus, Huron 44839 (GMC only)
  - University of Toledo, Toledo 43606
  - Kent State University, Kent 44242
  - Cleveland State University, Cleveland 44115
  - Miami University, Oxford 45056
  - The Ohio State University, Columbus 43201
  - Ohio Wesleyan University, Delaware 43015
  - Otterbein College, Westerville 43081
  - Central University, Columbus 43209
  - Columbus Tech Institute, Columbus 43215 (GMC only)
  - Ohio Dominican College, Columbus 43219
  - Chio University, Athens 45701
  - The University of Akron, Akron 44325
  - University of Cincinnati, Cincinnati 45221
  - Northern Kentucky State University, Highland Heights, Kentucky 41076
- OKLAHOMA**
  - Oklahoma State University, Stillwater 74074
  - The University of Oklahoma, Norman 73069
- OREGON**
  - Oregon State University, Corvallis 97331
  - Linfield College, McMinnville 97128
  - Oregon College of Education, Monmouth 97301
  - Willamette University, Salem 97301
  - University of Oregon, Eugene 97403
  - Norwest Christian College, Eugene 97401
  - University of Portland 97030
  - Clackamas Community College, Oregon City 97045 (GMC only)
  - Clark Community College, Vancouver, Washington 98601 (GMC only)
  - Concordia College, Portland 97211 (GMC only)
  - Mt. Hood Community College, Gresham 97030 (GMC only)
  - Portland Community College, Portland 97219 (GMC only)
  - Portland State University, Portland 97207
- PENNSYLVANIA**
  - Pittsburgh College, Gettysburg 17325
  - Shanklin College, Gettysburg, Maryland 21727
  - Shippensburg State College, Shippensburg 17257
  - Wilson College, Gettysburg 17201
  - Lehigh University, Bethlehem 18015
  - Allentown College of St. Francis Desales, Allentown 18104
  - Cedar Crest College, Allentown 18104
  - Lafayette College, Easton 18042
  - Moravian College, Bethlehem 18018
  - Muhlenberg College, Allentown 18104
  - Penn St. Allentown, Allentown 18051
  - The Pennsylvania State University, University Park 16802
  - University of Pittsburgh, Pittsburgh 15260
  - Carlow College, Pittsburgh 15213
  - Carnegie-Mellon University, Pittsburgh 15213
  - Chatham College, Pittsburgh 15232
  - Community College of Allegheny County, Pittsburgh 15212
  - Quisque University, Pittsburgh 15219
  - Point Park College, Pittsburgh 15222
  - Marion Morris College, Coraopolis 15108
  - Allegheny College, Meadville 16335
  - Alliance College, Cambridge Springs 16304
  - Edinboro State College, Edinboro 16412
  - Grove City College, Grove City 16127
  - Slippery Rock State College, Slippery Rock 16057
  - St. Joseph's College, Philadelphia 19131
  - Wilkes College, Wilkes-Barre 18259
  - Bloomsburg State College, Bloomsburg 17815
  - Keystone Junior College, La Plume 18440 (GMC only)
  - Lack College, Wilkes-Barre 18711
  - Kingswanna Junior College, Scranton 18505 (GMC only)
  - Luzerne County Community College, Wilkes-Barre 18711 (GMC only)
  - Marywood College, Scranton 18509
  - Misericordia College, Oallas 18612
  - Penn State University, Hazleton Campus, Hazleton 18201 (GMC only)
  - Penn State University, Wilkes-Barre Campus, Wilkes-Barre 18708 (GMC only)
  - Penn State University, The Williamston Scranton Campus, Scranton 18512 (GMC only)
  - University of Scranton, Scranton 18510
- PUERTO RICO**
  - University of Puerto Rico, Rio Piedras 00931
  - Bayam Central University, Bayamon 00619
  - Inter American University, San Juan 00936
  - Inter American University, Bayamon 00619
  - Univ. of Puerto Rico Bayamon Regional College, Bayamon 00619
  - Univ. of Puerto Rico Carolina Regional College, Carolina 00630 (GMC only)
  - University of Puerto Rico, Mayaguez 00708
  - Univ. of Puerto Rico Aguila Regional College, Aguila 00601
  - Inter American Univ. of Puerto Rico, San German 00753
- SOUTH CAROLINA**
  - Baptist College at Charleston, Charleston 29411
  - The Citadel, Charleston 29409
  - Clemson University, Clemson 29631
  - Anderson College, Anderson 29621 (GMC only)
  - Central Wesleyan College, Central 29630
  - University of South Carolina, Columbia 29208
  - Ernest College, Columbia 29204
  - Newberry College, Newberry 29108
- SOUTH DAKOTA**
  - South Dakota State University, Brookings 57006
- TENNESSEE**
  - Memphis State University, Memphis 38152
  - Christian Brothers College, Memphis 38104
  - Lemoyne-Owen, Memphis 38126
  - Shelby State University, Memphis 38122
  - Memphis 38122 (GMC only)
  - Southwestern College at Memphis, Memphis 38112
  - Tennessee State University, Nashville 37203
  - Aquinas Jr. College, Nashville 37205 (GMC only)
  - Fisk University, Nashville 37203
  - Middle Tennessee State University, Murfreesboro 37130
  - Trevecca Nazarene College, Nashville 37210
  - Vanderbilt University, Nashville 37203
  - University of Tennessee, Knoxville 37916
  - Knoxville College, Knoxville 37921
- TEXAS**
  - Texas A&M University, College Station 77840
  - Baylor University, Waco 76706
  - McLennan Community College, Waco 76703 (GMC only)
  - Paul Quinn College, Waco 76703
  - Southern Methodist University, Dallas 75275
  - Eastfield College, Mesquite 75149 (GMC only)
  - El Centro College, Dallas 75202 (GMC only)
  - Mouamir View College, Dallas 75211 (GMC only)
  - Richland College, Dallas 75080 (GMC only)
  - University of Dallas, Irving 75060
  - University of Texas at Dallas, Dallas 75230
  - Texas Tech University, Lubbock 79409
  - Lubbock Christian College, Lubbock 79407
  - The University of Texas at Austin, Austin 78712
  - St. Edwards University, Austin 78704
  - East Texas State University, Commerce 75428
  - Paris Junior College, Paris 75460 (GMC only)
  - North Texas State University, Denton 76203
  - Southwest Texas State University, San Marcos 76861
  - American Technological University, Killeen 76541
  - Tex Lutheran College, Seguin 78155
  - Lamar University, Beaumont 77710
  - Texas Christian University, Fort Worth 76129
  - Llano County Junior College, Fort Worth 76102 (GMC only)
  - Texas Wesleyan College, Fort Worth 76105
  - University of Texas at Arlington, Arlington 76010
  - Angelo State University, San Angelo 76901
- UTAH**
  - University of Utah, Salt Lake City 84112
  - Weber State College, Ogden 84003
  - Westminster College, Salt Lake City 84105
  - Brigham Young University, Provo 84602
  - Utah State University, Logan 84322
- VERMONT**
  - St. Michael's College, Winooski 05404
  - Shanklin College, Burlington 05401 (GMC only)
  - Trinity College, Burlington 05401
  - University of Vermont, Burlington 05401
  - Norwich University, Northfield 05663
- VIRGINIA**
  - Virginia Polytechnic Institute, Blacksburg 24060
  - Virginia Military Institute, Lexington 24450
  - University of Virginia, Charlottesville 22903
- WASHINGTON**
  - Central Washington State College, Ellensburg 98926
  - University of Puget Sound, Tacoma 98416
  - Fort Steilacoom Community College, Tacoma 98409 (GMC only)
  - Pacific Lutheran University, Tacoma 98477
  - St. Martin's College, Dlymba 98503
  - Tacoma Community College, Tacoma 98435 (GMC only)
  - Washington State University, College Station Box 2220, Pullman 99163
  - University of Washington, Seattle 98195
  - Belleuve Community College, Bellevue 98007 (GMC only)
  - Everett Community College, Everett 98201 (GMC only)
- WEST VIRGINIA**
  - West Virginia University, Morgantown 26506
  - Farmont State College, Farmont 26554
- WISCONSIN**
  - University of Wisconsin, Madison 53706
  - Madison Area Tech College, Madison 53703 (GMC only)
  - University of Wisconsin at Superior, Superior 54880
- WYOMING**
  - University of Wyoming, Box 3005, University Station, Laramie 82071
  - Schools having cross-enrollment agreements with AFROTC host universities:
  - University of Wyoming, Burlington 57500
  - University of Wyoming, Cheyenne 82002
  - University of Wyoming, Casper 82401
  - University of Wyoming, Laramie 82071
  - Schools having cross-enrollment agreements with AFROTC host universities:
  - University of Wyoming, Burlington 57500
  - University of Wyoming, Cheyenne 82002
  - University of Wyoming, Casper 82401
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Henry Greene writes that he is now working for AMSAA under the Army Materiel Command (part of the Dept. of Defense), where he serves as an operations research analyst. Recently he received his master's in mathematics at Wichita State University. He and his wife, Suzie, reside in Bel Air, Md. . . . **Andrew Lasko** has been promoted to test supervisor of standards and calibrations at Northeast Utilities headquarters in Berlin, Conn. He had been in the test department at Connecticut Light and Power since 1972. . . . **Henry Margolis** is a research associate in the chemistry department at the University of Chicago. He received his PhD from the University of Vermont this year. . . . **Walter Staples**, MNS, serves as director of the Audio-Visual Dept. at Central High School in Manchester, N.H. . . . **Donald Taft** has graduated from Harvard Business School as a Baker Scholar, the highest academic honor the school confers. His MBA degree was granted "with high distinction." He plans to work for Monsanto Polymers & Petrochemicals, St. Louis, Mo., as a planning coordinator.

## 1973

*Married:* **Kenneth O. Redden** and Miss Wanda M. Giza on August 7, 1976 in Worcester. Mrs. Redden graduated from Worcester State College and is a secretary-receptionist for Dr. Thornton A. Rheaume, Grafton. Her husband is a sales representative for Century Sports of Plainfield, N.J. . . . **Mark W. Rockett** to Miss Jean L. Daly on June 27, 1976 in Danvers, Massachusetts. The bride, a teacher, is a graduate of Anna Maria College. The bridegroom is employed by Dickerman Software as a senior systems analyst. . . . **K. Stephen Williams** and Miss Cheryl L. Miner in Northfield, Massachusetts on June 5. The bride graduated from Mount Holyoke College. The groom is maintenance supervisor at Sterling School in Craftsbury Common, Vt.

**Bob Akie**, who has completed work for his MS at WPI, is currently with Service Master Industries in Hingham, Mass. . . . **Garry Breitbach** is a process design engineer for Union Carbide-Line in Tonawanda, N.Y. . . . **David Brown** works for Westinghouse Electric Corp. in Lester, Pa. . . . **Ray Cherenzia** serves as a field engineer at Northeast Constructors in Millinocket, Maine. . . . **John Chiarelli** currently specializes in corporate law study at New York Law School. His wife, Gloria, is employed by Gulf Western as a legal secretary in the law department. . . . **Timothy French** has joined Tenneco Chemicals, Inc., Newton, Mass., where he is plant engineer. . . . **Stephen Greenberg** is a manpower specialist and acting local office manager at the Maine Employment Security Commission in Machias.

**M. Erik Husby** is with Multisystems, Inc. in Cambridge, Mass. . . . **David Matthey**, the proprietor of a service station in Sydney, Australia and writes that "business is going very well." He is married and has two daughters aged four and two. David says he'd be glad to hear from his friends at V. His address is: 13A Smarts Cres, Cronulla, NSW, Australia, 2229. . . . **Firdosh Mehrotra**, a senior mechanical engineer at Altech Ltd., Edmonton, Alberta, Canada. . . . **William Nutter** serves as a product service representative at General Electric Ordnance Mare Island Naval Shipyard, Vallejo, Calif. **Bruce Parent, Jr.**, SIM, has been appointed purchasing agent for Norton Co., Grinding Wheel Division. He has been with Norton since 1961. He graduated from California State Polytechnic University and the School of Industrial Management at WPI. . . . **Paul Parulis** holds the post of production engineer at General Dynamics' Electric Boat Division in Groton, Conn. . . . **Mark Richards** has joined Pennsylvania Life Insurance Co. of Raleigh, N.C. . . . **Daniel Robbins** is a junior civil engineer for the city of Worcester. . . . **G. Selden**, a materials engineer for GE Corp. research and development in Schenectady, N.Y., plans to work for his PhD in materials engineering at RPI this fall.

## 1974

*Married:* **Donald P. Bucci** and Miss Nancy E. Werme in Boylston, Massachusetts on June 26, 1976. Mrs. Bucci attended Worcester State College and graduated a registered nurse from the City Hospital in Pittsburgh. The groom is with Koppers Company in Pittsburgh. . . . **Gary E. Carr** and Miss Marie E. Negri on May 22, 1976 in Canaan, Connecticut. The bride graduated from Rosary College, River Forest, Ill. and a master's degree from the University of Arizona. She is a teaching assistant in clothing and textiles at the University of Arizona. Her husband is a graduate student in optical sciences and is working in solar energy at the university. . . . **David W. Packard** to Miss Patricia Ann Horgan in Worcester on July 10, 1976. Mrs. Packard graduated from Worcester State College and teaches third grade at Thomas Prince School in Princeton, Mass. The groom works as a service engineer for Riley Stoker Corp., Worcester. . . . **Mathew DiPilato** and Miss Jo Ann Rowse in Worcester on July 2, 1976. The bride is a graduate of Wheelock College and has served as a substitute teacher. Her husband holds the post of geotechnical engineer for Parsons, Brinckerhoff, Quade and Douglas, Inc. in Honolulu, Hawaii.

*Married:* **Dale Freygang** to Miss Sandra Evans recently in Cuyahoga Falls, Ohio. Mr. Freygang attended Akron (Ohio) University and is a secretary with B.F. Goodrich. The bridegroom is presently an associate production engineer in tire technology with B.F. Goodrich. . . . **Daniel Palmer** to Miss Barbara J. Peshek on June 20, 1976 in Norton, Massachusetts. The bride graduated from Wheaton College. Her husband serves as a mechanical nuclear engineer for Ebasco Services, Inc., New York City. . . . **Ralph Worden**, MNS and Miss Carolyn Ann Hooper in Northfield, Massachusetts on July 24,

# Goodspeed's houses — Guatemala to Bangladesh

ousands of people were recently left homeless by floods and earthquakes in Bangladesh and Guatemala, but if **Charles Goodspeed**, '67 has anything to say about it, property destruction and personal injury from future natural disturbances in the two countries will be greatly minimized.

Dr. Goodspeed, an assistant professor at Carnegie-Mellon University in Pittsburgh, on a \$370,000 research contract with the Agency for International Development, has traveled to the ravaged areas to illustrate appropriate technology for housing construction. At CMU he is the co-director of an interdisciplinary team conducting research on housing construction conducive to the third world.

During the earthquake in Guatemala, many people were seriously injured or killed when heavy tile roofs and adobe walls collapsed on them. "Tile roofs were introduced more than 40 years ago in earthquake-prone Guatemala as a technological improvement which has become a status symbol over grass thatched roofs," Goodspeed explains. "But they have now proved to be very dangerous."

Goodspeed, working with his co-investigators, has been instrumental in redesigning the typical adobe houses of Guatemala to be lighter and more earthquake resistant. The new designs are presently being implemented in Guatemala by a member of the team, a consultant from Dallas, Texas. They are presently doing research on wood preservation and ferrocement roof construction to be completed for implementation this fall.

In the first part of next year Dr. Goodspeed plans to return to Bangladesh to review their work in the relief camps near Dacca and in the flood plains in the southern part of the country. Their work consisted of constructing over two hundred multifamily units through the support of the relief agencies working the country. "Whatever modifications the inhabitants make to have the shelters better meet the needs of their culture," Goodspeed says, "we want to know so as to improve the overall acceptance of the new designs. Our students working on the Bangladesh project submitted their work to the UNESCO competition held in conjunction with the XII World

Congress of the International Union of Architects in Madrid, Spain where they won the prize of the Soviet Union."

The ultimate goal of the group, through their research and their combined work with the United Nations Disaster Relief Organization projects, is to prevent disasters in the third world, following natural disturbances through better engineered housing.

International attention is beginning to focus on the problem of housing. The first international forum "HABITAT" held in Vancouver, British Columbia this spring, at which the CMU team through State Department support exhibited their work in Bangladesh and gave lectures on an Approach to Housing, brought together people from all over the world to address the problems of housing.

"Fortunately we are funded for the next three and a half years," reports Goodspeed. "Soon we will be doing research for housing systems for Sahi, Ethiopia where the drought over the past few years has destroyed the nomadic way of life of many."

The bride graduated from Ohio Wesleyan University. She teaches French and her husband teaches science at Pioneer Valley Regional School in Northfield. . . . ASF Wyandotte Corp. has transferred **Be Beaupre** to Santa Fe Springs, Calif. where he will assume new duties as purchasing agent, safety coordinator, product evaluations coordinator and assistant plant engineer. . . . **Wayne Bryant** is a systems programmer at Composition Systems, Inc., Ford, N.Y. . . . **Gene DeJackome** works as research engineer at Monsanto Chemical in Indian Orchard, Mass. . . . **Bill Phos**, who received his master's degree in marketing and finance from Northwestern University in June, has accepted a position in management and development program at Gould, Inc. in the Chicago area. . . . Last year **David Gerth** graduated from the University of Tuck School of Business Administration at Dartmouth College. . . . **David Greene** is with Bell Laboratories in Holmdel, N.J. . . . **Glenn Haringa** has received his MSEE from WPI and is now a design engineer at GE in Schenectady,

**Gary Hills** is a field engineering representative at Industrial Risk Insurers. . . . **Koenig** received his MA in mathematics from Pennsylvania State University in May. **James Kudzal** has earned his MS in physics from the University of New Hampshire. . . . **Roland Lariviere** is now a design engineer for Combustion Engineering, in Windsor, Conn. . . . **Jeffrey Lindberg** works for DuPont in Wilmington, Del. . . . **Les Litwinowich** is a civil engineer at

Cullinan Engineering Co., Inc. in Auburn, Mass. . . . Lt. **James Martin** has graduated from the T-38 Talon instructor pilot course at Randolph AFB, Texas. He is being assigned to Reese AFB, Texas for duty with a unit of the Air Training Command. . . . **John Mathews** competed with the U.S. Rowing Team at the Olympic Games in Montreal.

**Richard Miles** works for Colonial Data Systems in West Boylston, Mass. . . . Continuing with GE, **Hugh O'Donnell** is now a survivability engineer for the firm in Philadelphia. . . . **Stephen Page** is a student at Stetson Law School in Gulfport, Fla. . . . **Peter Petroski** recently received his master's degree in electrical engineering from Purdue University. Currently he is a development engineer with the Data Systems Division of Hewlett-Packard Co., Cupertino, Calif. . . . **Richard Piwko** now works as an application engineer from GE in Schenectady, N.Y. . . . **Elizabeth Ronchetti** serves as a digital design engineer at Austron, Inc., Austin, Texas. . . . **James Rubino** is a district engineer in the bearings division for the Torrington Co. He was recently transferred from South Bend, Ind. to Cleveland, Ohio. . . . **Lawrence Saint, Jr.** is employed as general manager at George Schmitt Co. in Santa Cruz, Calif. . . . **David Steiner**, a project manager at W.R. Grace of Lexington, Mass., is presently located in San Francisco. . . . **John Stopa** is a graduate student at Boston University Law School. . . . **Bruce Webster** works for Bettis Atomic Power Lab. in West Mifflin, Pa. . . . **James Wong** is a chemical engineer at Texaco, Inc. in Tulsa, Oklahoma.

## 1975

**Married:** **William George** to Miss Elizabeth Lavoie on June 5, 1976 in Worcester. Mrs. George, who is with the personnel department of the Mechanics National Bank, graduated from the University of Massachusetts. The bridegroom is a student at Suffolk University Law School, Boston. . . . **Robert M. Granger** and Miss Cassandra O'Connor on July 3, 1976. Mrs. Granger graduated from Wells College and is an accountant for Bort Carleton, Inc. Her husband is a systems specialist for Chas. T. Main, Inc., Boston. This fall he will be studying in the evening division of Suffolk University Law School. . . . **David F. Irvine** and Miss Shelley A. Mientka in Amherst, Massachusetts on July 10, 1976. The bride, a graduate of Becker, is manager of Hardee's Restaurant in Old Saybrook, Conn. The bridegroom is a teacher in the Southern Berkshire School District. . . . **Jonathan S. Kardell** to Miss Christine Wolons in Auburn, Massachusetts on July 31, 1976. Mrs. Kardell graduated from Anna Maria and is employed at the Auburn branch of the Consumer Savings Bank of Worcester. The groom also works for the Consumer Savings Bank of Worcester.

**Married:** **Stephen Mealy** and Paula Costa on June 11, 1976 in Dighton, Massachusetts. The bride graduated from Bristol Community College and has been a computer programmer for SPAN Management Systems in East Providence, R.I. Her husband is with the Naval Ordnance Laboratory, Silver



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We welcome this 200th anniversary as we welcome every important milestone in our lives . . . a significant occasion for celebration, reflection and rededication .

**WYMAN - GORDON** 

Maryland. . . . **Raymond W. Mott** and Miss Sallyanne Olearcek in Warren, Massachusetts on June 19, 1976. Mrs. Mott attended Anna Maria College. The groom is with Universal Products in Chicago. . . . **Bert C. Simon** and Miss Deborah J. Anne on September 7, 1975 in Franklin Lakes, New Jersey. Bob has completed his first year at the Amos Tuck School of Business Administration at Dartmouth College. He will receive his MBA next June. **Bruce Arey** works as assistant engineer at Rcell Associates in Glastonbury, Conn. . . . **Harry Braunstein** is a field sales engineer for Texas Instruments in Waltham, Mass., while **Drew Brock** holds a similar position for a firm in Hamden, Conn. . . . **Alan Chandler** serves as an associate design engineer at Pritchard International in Algeria. . . . **Louis Christoporo** works for Stereo Component Systems, Inc. in Randolph, Mass. **Bill Faltas** is presently employed as an actuarial student with the Hartford Insurance Group in Hartford, Conn. . . . **Dan Grover** has joined the South Portland (Me.) office of Mark Stimson Associates, a real estate firm. Previously he was manager of Northgate Owl-a-Rama in Portland. . . . **Lloyd Menway** is a self-employed consultant in Worcester. . . . **Jeffrey Lacko** works as a computer programmer for the Hartford Insurance Group in Hartford, Conn. **Jonathan Leather** is a sales engineer for Itair Corp. at Mentor-on-the-Lake, Ohio. **Terrence Lee** has joined Eastman Kodak Company as a development engineer in the chemical manufacturing division of the film manufacturing organization at Rochester, N.Y. Recently he received his master's degree in Cornell University. . . . **Alan Destribats**, **Ger Nowlin**, and **Richard Orsini** were awarded with national honorable mention awards by the Small Business Institute in preparation for the study they participated in on the part of Nil Industries of Fitchburg in 1974 when they were doing graduate work at WPI. The study recommended an overall business plan for the firm, which electroplates on plastic. It included data on finance, marketing, and new product growth. Largely as a result of implementing the recommendations, AuriNil has tripled its sales in the last two years. All three men are currently employees of GE's mechanical drive turbine department in Fitchburg. **William Gregory, Jr.** is a manufacturing engineer at Boston Insulated Wire & Cable, Fitchburg, Mass. . . . **Bob Petersen** is teaching chemistry at Emma Willard School in Troy, N.Y. . . . **Tumkur Ramaprasad** works as a quality analyst at Colt Industries in Hartford, Conn. . . . **Jeffrey Setlin** is a production chemist at Pandel-Bradford in Lowell, Mass. . . . **Jon Wyman**, an ensign in the Navy Civil Engineer Corps, is presently a facilities planning officer for the Public Works Department at the Naval Weapons Support Center in Crane, Indiana.

## 1976

**Married: J. Hunter Babcock** and Miss Kathryn C. Keene in Manchester, Connecticut on June 19, 1976. Mrs. Babcock attended Smith College. . . . Miss **Karen A. Bird** and Dennis H. May on June 12 in Worcester. Mrs. May is a chemist for Warner-Lambert Co., Morris Plains, N.J. Her husband, a graduate of the University of Kentucky, is a commercial property underwriter for Allendale Mutual Insurance Co., Short Hills. . . . **Walter C. Braley** and Miss Jean Borowski in Northampton, Massachusetts on June 19, 1976. The bride is a senior nursing student at Burbank Hospital School of Nursing in Fitchburg. The groom is a chemical engineer at Presmet Corp. in Worcester. . . . **Joseph L. Calabrese** to Miss Rebecca A. Greco in Waterbury, Connecticut on June 18, 1976. Mrs. Calabrese graduated from Southern Connecticut State College with a BS degree in early childhood education. . . . **Philip B. Doherty** and Miss Diane E. Laukaitis on July 24, 1976 in Auburn, Massachusetts. The bride graduated from Auburn High School. The bridegroom is with Tek Bearing Co., Auburn, and is a student at Central New England School of Technology.

**Married: Randall S. Emerson** to Miss Anne M. Doucet on July 3, 1976 in Newington, Connecticut. Mrs. Emerson, a veterinary assistant, graduated from Becker. Her husband is employed by Kemper Insurance, Quincy, Mass. . . . **John J. Hamilton** and Miss Virginia M. Ward on May 23, 1976 in South Yarmouth, Massachusetts. The bride graduated from the University of Massachusetts, Boston and is an assistant buyer for Filene's. The groom is with the Central Line Division of Raymond International, Inc., Oakland, N.J. . . . **Douglas Knowles** to Miss Linda J. Woodward in Pembroke, Massachusetts on June 12, 1976. Mrs. Knowles graduated from the University of Massachusetts at Amherst, and is an assistant buyer for Abraham and Strauss of

New York. The bridegroom is a computer programmer for RCA in Somerville, N.J. . . . **Steven M. Landry** and Miss Diane E. Bedard recently in Fitchburg, Massachusetts. The bride graduated from Burbank Hospital School of Nursing. . . . **Jeffrey M. McLean** and Miss **Penny J. Bergmann** on June 5, 1976 in Litchfield, Connecticut. The bride is a quality control supervisor and the groom is a process engineer at Polaroid Corp. in Waltham, Mass. . . . **Charles B. Price III** to Miss Diane M. Burke on June 5 in Worcester. Mrs. Price is a Becker graduate. Her husband works for RCA Corp., Burlington, Mass. . . . **Geoffrey E. Thayer** and Miss Michelle Ann Gagnon on July 17, 1976 in Worcester. The bride, who graduated from Regis College, has been an administrative assistant in community and family medicine at the University of Massachusetts Medical Center. The groom is a field sales engineer for Texas Instruments in Houston.

**Douglas Adams** is an actuarial student at Massachusetts Mutual Life Insurance Company in Springfield, Mass. . . . **Mark Allyn** works for WCBB-TV in Lewiston, Me. . . . **David Altieri** serves as a programmer at Dynamics Research Corp. in Wilmington, Mass. . . . **David Andel** has joined Farrel Co., a division of USM Corp., in Ansonia, Conn. . . . **Pamela Baradine** is employed by Westinghouse. . . . **Pete Barbadora** and **Richard Rudis** are assistant engineers for Stone & Webster in Lycoming, N.Y. . . . **James Beech** holds the post of process engineer at Mobil Research & Development Corp. in Paulsboro, N.J. . . . **Al Briggs** has been named a manufacturing supervisor at DuPont in Waynesboro, Va. . . . **Alan Brown** is doing graduate work at Brown University. . . . **John Bucci** is with GE in the manufacturing management training program at Plainville, Conn. . . . **Lynne Buckley** works for United Engineers & Constructors in Boston. . . . **James Buss** is an actuarial assistant at State Mutual Life Assurance Co., Worcester.

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John Casey serves as an industrial engineer for Clairol in Stamford, Conn. . . . William Casey, Jr. is a programmer trainee at Sperry Univac in Blue Bell, Pa. . . . David Chabot has been employed as a systems programmer for Sperry Univac. . . . Gary Chabot works for Combustion Engineering in Windsor, Conn. . . . Earl Chapman has joined Eastman Kodak, Rochester, N.Y., as a development engineer in the motion picture film division at Kodak Park. He belongs to ASME. . . . Richard Cheever is a materials planner at Digital Equipment Corporation in Maynard, Mass. . . . Jeffrey Coderre works for Union Carbide Corp. in Tonawanda, N.Y., and attends night school at Canisius College, Buffalo, where he is studying for his MBA. . . . Robert Cormier has joined Allan H. Swanson, Inc., Nashua, N.H. . . . Michael Dabkowski is with Mobil Corp., Paulsboro, N.J. . . . Jay D'Angona holds the post of assistant specialist at the University of California School of Pharmacy in San Francisco.

David DeMeo is an officer candidate in the U.S. Navy, NETC, Newport, R.I. . . . Loretta Deming works for the gas turbine division of GE in Schenectady, N.Y. . . . John Dewine, a field engineer for Turner Construction, is located in Cleveland, Ohio. . . . Peter DiPietro serves as a fire production engineer for Industrial Risk Insurers in Wellesley, Mass. . . . John Duane is a graduate student at WPI. . . . Joseph Dzialo is employed as a process engineer at Procter & Gamble Paper Products Co. in Mehoopany, Pa. . . . American Cyanamid Company, Bound Brook, N.J. employs Edward Fasulo as a shift supervisor in the organic chemicals division. . . . Sidney Formal has joined Soil Conservation Service of Baton Rouge, La. This fall he will be situated in Thibodeaux, La. . . . John Forster works for Camp Dresser & McKee in Boston. . . . Daniel Garfi was recently named a systems analyst at Insko Systems Corp., Neptune, N.J.

Larry Gaspar has accepted a position from GTE Sylvania. . . . William Giudice is with AT&T. . . . Len Goldberg works as a systems programmer at Johnson & Johnson's management information center. . . . Timothy Golden is a manufacturing supervisor at Monsanto in Indian Orchard, Mass. . . . Roland Gravel holds the post of field service engineer at Combustion Engineering in Windsor, Conn. . . . State Mutual Life in Worcester employs John Grenier, Jr. as a systems analyst. . . . Edward Griffin has joined the ordnance department at General Electric in Pittsfield, Mass. . . . Perry Griffin is a production supervisor at Estee Lauder, Inc. in Oakland, N.J. . . . Peter Hallock is a self-employed contract programming consultant at Online Applications in Hudson, N.H. . . . Richard Hansen has joined Westinghouse. . . . Currently John Heid holds the post of process engineer at Clairol in Stamford, Conn. . . . Barry Heitner is a graduate student at Cornell University.

# Alumni Basketball Night

## SATURDAY, DECEMBER 4

### WPI vs. Bentley

Come to Harrington Auditorium for a  
Big Night of Basketball  
Special admission charges for  
Alumni families

Charles Hillman was recently named career development program engineer at General Electric in Burlington, Vt. . . . Mark Hoey is a junior civil engineering aide in the engineering department of the City of Worcester. . . . Gregory Hostetler has received a fellowship to study for a master's degree at Colorado State University in Fort Collins. . . . Raymond Houle, Jr. has joined Chesebrough-Pond. . . . Zeses Karoutas attends graduate school at Virginia Polytechnic Institute. . . . Charles Lauzon is doing graduate work at the University of Michigan. . . . Roger Locantore serves as a mechanical engineer trainee at Pratt & Whitney Aircraft in East Hartford, Conn. . . . Anne Madara holds the post of evaluation engineer at Polaroid Corporation in New Bedford, Mass. . . . Marc Mahoney is assistant engineer at Public Service Co. of N.H. in Manchester. . . . John Manning works for GTE Sylvania in Needham Heights, Mass. . . . John Maxouris has been named a programmer-analyst at Orange & Rockland Utilities in Spring Valley, N.Y. . . . Thomas May is a sales engineer in training at the Torrington (Conn.) Company.

Michelle McGuire has been employed by Westinghouse. . . . Philip McNamara is presently a nuclear test engineer at Electric Boat in Groton, Conn. . . . Michael Menesale works as a wire rope engineer for U.S. Steel in East Haven, Conn. . . . Commercial Union, Boston, employs Donald Moore as a computer programmer. . . . Roland Moreau has been named a resident engineer for United Nuclear Corp. of Uncasville, Conn. His current assignment is at Teledyne Wah Chang Albany (Ore.) Corp. . . . John Moroney serves as a production supervisor for Texas Instruments in Attleboro, Mass. . . . Kurt Muscanell is a system programmer for Pratt & Whitney in East Hartford, Conn. . . . Matt Naclerio is with Goodyear in Akron, Ohio. . . . James Nolan works for Westinghouse in Baltimore Md. . . . Dennis Nygaard holds the post of field service engineer at Combustion Engineering in Windsor, Conn.

Kevin Osborne is assistant engineer at Industrial Risk Insurers in Philadelphia. . . . Edward Perry has entered the U.S. Air Force. . . . Craig Plourde has accepted a position as system analyst with Jethro in Wayland, Mass. . . . Richard Predella holds the post of operations supervisor at AT&T Long Lines in New Haven, Conn. . . . Charles Pritchard serves as a programmer for Maine Medical Center in Waterville. . . . Raymond Robey is a research engineer at Allied Chemical Corp. in Solvay, N.Y. . . . Gerard Robidoux has been employed as electronic engineer at National Security Agency in Fort Meade, Md. . . . Robert R. Salt has joined GTE Sylvania. . . . Robert Salt is associated with Veeder Root Co. . . . Raymond Smith serves as an associate engineer for Westinghouse Electric Corp., Defense and Aerospace Center, in Baltimore, Md. . . . Stanley Stadnicki, Jr. has accepted a position in the toxicology section of the safety evaluation department at Pfizer, Inc. Central Research, in Groton, Conn. Formerly he was with the Mason Research Institute in Worcester. He belongs to the American Association for the Advancement of Science and the Engineering in Medical and Biological Group of the Institute of Electrical and Electronic Engineers. . . . Paula Stratouly with Exxon Corp. in Houston, Texas.

Barry Tarr works as a systems engineer with Epsilon Data Management in Burlington, Mass. . . . William Van Herwarde holds position of machine designer for Worthing Pump in Taneytown, Md. . . . Kevin Wall has received a graduate teaching assistantship from RPI in Troy, N.Y. . . . Robert Winter is with Raymond International, Inc. . . . Neal Wright, a second lieutenant in the U.S. Army Corps of Engineers, Alexandria, Va., is currently studying on a graduate fellowship. . . . Brian Young is a graduate trainee at Allied Chemical Corp., Morristown, N.J. For six months he expects to be rotated through plant locations in South Point, and Toledo, Ohio and Orange, Texas.









**George F. Martin, '10**, retired chief engineer of Stafford Iron Works, Worcester, passed away in Heywood Memorial Hospital in Gardner, Massachusetts on June 11, 1976.

He was born in Millville, Mass. on June 16, 1886. After graduating as a civil engineer from WPI, he was with Eastern Bridge & Structural Co. until 1940, where he served as manager and general superintendent. From 1940 until his retirement he was chief engineer at Stafford Iron Works.

A member of Sigma Xi, and past president of the Auburn Rotary Club, he also belonged to the Tech Old Timers Club, Worcester Economic Club and the Massachusetts Civil Engineering Society.

**Sidney T. Swallow, '16** of Orange City, Florida passed away recently.

Following graduation as a mechanical engineer from WPI, he joined Central States Envelope Co. in Indianapolis. From 1923 until his retirement in 1956, he was with Western Electric Co. His final assignment was at company headquarters in New York City, where he was concerned with plant extensions and layout.

Mr. Swallow was born on Sept. 14, 1892 in Allston, Mass. He belonged to the Masons, served in World War I, and had been a scoutmaster. Formerly he was president of the Northern New Jersey chapter of the Alumni Association.

**Clleon A. Perkins, '17**, former Vermont State Highway Board chairman, died on June 9, 1976 in Rutland, Vermont. He was 80 years old and a native of Rutland.

After graduating as a chemist from WPI, he was with Rutland Fire Clay Co. until 1956, when he retired as president. He was also president of the Killington Bank & Trust Co. from 1937 to 1960. He served several years in the Vermont Senate and House of Representatives, where he was Democrat leader of the house.

He belonged to Sigma Phi Epsilon and was trustee of the University of Vermont from which he received an honorary doctor of law degree in 1951. During World War I he served in France.

**Donald M. McAndrew, '25**, a long-time employe of Exxon Oil Co., died on July 15, 1976 in Baton Rouge, Louisiana.

A well known civic leader, he was director of the East Baton Rouge Council on Aging, director of the Community Services Council, and president of the Area Council on Alcoholism, Humble 30-year Club, Pelican State Investment Club, Southdowns PTA, and the Family Counseling Service. He was also associated with the local Legal Aid Society, United Givers Planning Council, and a member of Theta Chi.

He was born on July 29, 1904 in Barre, Mass. and received his degree in chemistry in 1925. From 1930 to 1962 he was with Exxon, where he served as a process control head at Eagle Works Refinery in Jersey City, N.J. and assistant head of Petroleum Products Lab. in Baton Rouge.

**Herbert R. Wittig, '26** died on June 10, 1976 in Tampa, Florida. He was 74.

A native of Adams, Mass., he graduated as a chemist from WPI. From 1927 until 1962 he was with the Vellumoid Company in Worcester. He worked for the Commonwealth of Massachusetts laboratory at Paul A. Dever School in Taunton from 1962 to 1967. He belonged to Taunton Personnel Association, the Elks, and SAE.

**Gregory J. Samoylenko, '27** of Auburndale, Massachusetts died on May 28, 1976 at the age of 78.

He was born in Russia on October 10, 1897 and attended Armavir Classical Gymnasium in Russia prior to attending WPI. In 1927 he graduated from WPI as a mechanical engineer. For many years he was with Boston Edison Co., Boston.

**Carl H. Schwind, '27** died of heart disease at his home in Dallas, Texas on May 6, 1976.

He graduated from WPI as a chemist. During his career he was associated with Whiting Milk Co., Slater, Co., Dupont Rayon Co., and National Aniline. For many years he was employed by Curtiss Aeroplane Co. and Chance Vought Corp. in Dallas.

Mr. Schwind was born on August 2, 1906 in Arlington, Mass. He was active in scouting and served as a trustee of the Unitarian Church.

**E. Waldemar Carlsson, '30**, founder of the former Bryton Chemical Co. and world-wide authority on oil research, died in Philadelphia, Pennsylvania on July 4, 1976.

He was born on August 2, 1907 in Worcester and graduated from WPI as a chemist. He joined Standard Oil (Esso) Co. New Jersey, ultimately becoming chief chemical engineer of the firm. In 1947 he founded Bryton Chemical Co., where he remained as president until he retired and sold the company to Continental Oil Co. in 1959.

Mr. Carlsson, who held several patents, belonged to Sigma Phi Epsilon, Skull, Tau Beta Pi, and Sigma Xi. He was a member of the Union League, ACS, U.S. Power Squadron and the American Wood Preservers Association.

**John C. Spence, '33**, a retired sales engineer, passed away on July 12, 1976 in Glen Ridge, New Jersey.

Born on August 8, 1911 in Springfield, Mass., he later graduated as a mechanical engineer from WPI. For several years he was the production planner at Federal Shipbuilding & Drydock Co. in Kearny, N.J. From 1949 until his retirement in 1971, he was sales engineer for the Newark Caster & Truck Co.

He belonged to Phi Gamma Delta and served as president of the board of trustees of the First Presbyterian Church of Orange, N.J.

**M. Kent Smith, '35**, a division manager at Baker Castor Oil Co., Bayonne, New Jersey passed away last December.

He was born on December 1, 1912 in Worcester, later graduating as a chemist from WPI. During his early years he was with Vultex Chemical Co. and Barrett Co. He then joined Baker Castor Oil Co., where he became manager of the technical division. A member of ACS, he also belonged to AOCSS, CMRA, and CCDA.

**Billie A. Schmidt, '39** of Novato, California died on June 4, 1976.

He was born on November 27, 1916 in Omaha, Neb. After receiving his BSEE from WPI, he joined Ivy H. Smith Co. For many years he was with the Pacific Telephone & Telegraph Co. where he worked as division plant engineer and district plant engineer in San Rafael and Concord, Calif.

Mr. Schmidt belonged to Sigma Alpha Epsilon, the Masons, AIEE, and the California Society of Professional Engineers.







DECEMBER 1976

# WPI Journal

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# WPI Journal

Vol. 79, No. 4

December 1976

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## WPI ALUMNI ASSOCIATION

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# The future— what?

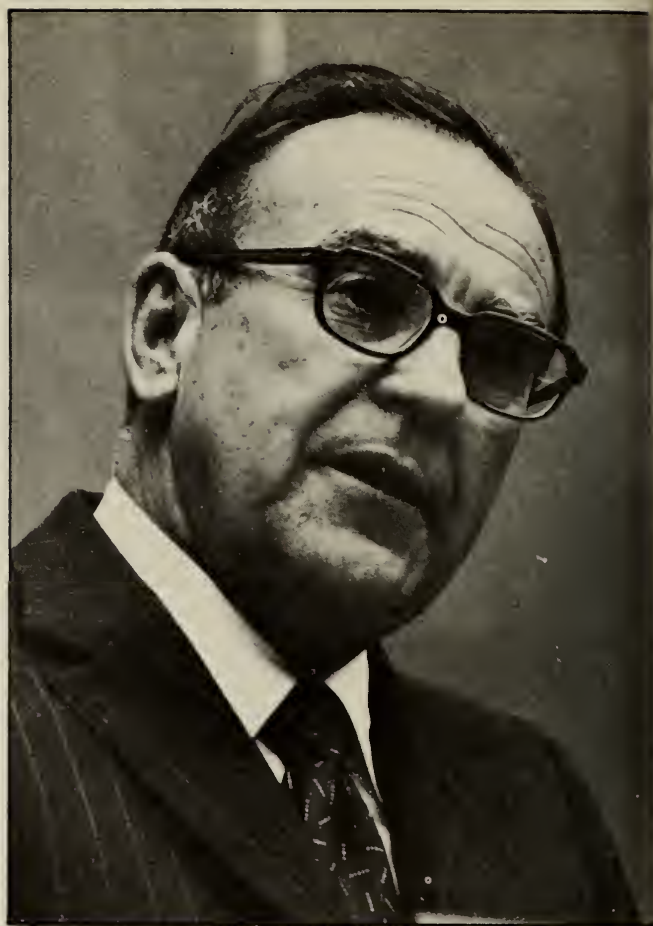
QUE SERA, SERA, Whatever will be, will be," went the refrain of the song. But what *will* be ahead in our lifetimes? It sometimes seems as if the world is split into two camps on that issue. On the one hand, we have the prophets of doom, who argue that we will soon run out of food, energy, mineral resources, and that our long-term future on Earth is one of despair and degradation. On the other side, we have those who see that the system has worked well enough for them so far, and why won't it continue? And on each side there are myriad special interest groups pushing their own particular interpretation.

There's even a name for this business of trying to predict the future: *futurology*. What distinguishes these modern-day seers from their predecessors is the basis for their statements: not revelation from on high, nor divination from tea leaves or bamboo sticks, but scientific, educated guessing based on extrapolation of trends and hard data. That no two futurologists agree on what the future holds may be some measure of the "science" involved.

But the questions they ask, and the issues they raise are vitally important. And in all the debates, pro and con, the role of technology is central. To some it is *the* primary evil, responsible for most of our present-day problems; others see it as the one real avenue for solving those problems; still others wonder what the fuss is all about, since they feel technology is merely one part of a complex world.

The problem seems to be in assessing the proper balance between *technology* as it represents the material side of life, and *values*, as they embody the inner needs and yearnings of people. This is hardly a new debate, but it is no less important for that. As a technical institution, WPI is inevitably caught up in that debate, and it is no news to *Journal* readers that with the WPI Plan the college has come out squarely in the middle. Our philosophy embodies the goal of producing technically competent specialists who are aware of and open to the consequences of their actions, the social context of their work, and the ways in which what they do affects other people and the whole of society.

When WPI got ready to open and rededicate Salisbury Laboratories, three articulate speakers were invited to address these questions in public symposium. Two of them are futurologists by profession and one is a concerned and conscientious businessman. Although they have many points of disagreement, each is optimistic about the future and about our ability to surmount present-day problems.



---

Fletcher L. Byrom is chairman of the board of Koppers Co., Inc., in Pittsburgh. As head of one of the nation's largest manufacturing companies, Byrom insists that responsible corporate citizenship must be a consideration in every major management decision. He is an articulate spokesman for the growing number of businessmen who recognize their responsibility to the world at large as well as to their stockholders and employees.

# Navigation chart, engine, and compass:

## Tools for the management of growth and technology

Fletcher L. Byrom

YOU MAY BE FAMILIAR with a study made a few years ago reporting that many alumni of a certain university still suffered from a common nightmare, in which they dreamed that they had neglected some of their courses or missed some of their examinations. That nightmare could persist for as much as 40 years beyond graduation.

There has been almost that long since I submitted myself to the joys and errors of a formal education, but I know the feeling.

Therefore, I concluded that I had better do my homework well before speaking at WPI.

During the course of my preparation, I came across something called the WPI Plan. Two aspects of that plan captured my attention and admiration.

One is the requirement that the student complete a major project relating technology to social needs or interests. This is an altogether laudable and much-needed effort, one that I would like to see adopted by corporations and other institutions, as well as by universities. I could not continue one more day in my job without the constant assurance that what I and my colleagues do serves the needs and interests of society.

Another other aspect of the WPI Plan that fascinates me is the requirement that the student pass a competency examination at the end of his curriculum to prove that he has truly learned what he was supposed to learn. A few years ago, I addressed an assembly of school administrators and posed the simple question: "Is anybody learning?"

"I know a lot of people are teaching," I said, "just as there may be intelligent creatures in outer space trying to communicate with us. The question is whether the message is getting through." And then I quoted from a booklet on educational guidelines, as follows:

"Too often and too much, our schools have been input-oriented. Budgets have been devised with an eye to the satisfaction of cold formulations, rather than results. It is as if a team of management consultants, architects and engineers were to create a manufacturing corporation with well-defined staff, office buildings and plants—but with no thought as to the goods to be produced."

The present company excepted, of course. The first products of the WPI Plan are already on the market, and they are outstanding in quality.

I take special pleasure in the happy occasion that brings us here today. The rededication of Salisbury Hall focuses renewed attention upon the need to promote interfaces between science and the humanities if their various disciplines are to serve society. I was far from the campus, in time and distance, when I discovered, mostly on my own, how much I could learn from the biologists, the philosophers, the anthropologists, the social scientists, the clas-

sic economists. I am still working hard to catch up. Your graduates—those "technological humanists" described in a recent issue of *American Education*—leave here with a running start.

One of the most important issues that will face them as they take their places in the world outside is the theme of this symposium: *People and Technology: A Humane Balance*. Specifically, they will have to consider whether and how the needs and interests of society can be served by technology, and particularly whether and how we should foster economic growth.

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### Technology, I'm afraid, is the only tool we have for dealing with the problems that have been created by technology.

---

My own view is that we have no reasonable alternatives. Someone has defined a wife as the person who helps you through all the problems you wouldn't have had if you had remained single. Technology, I'm afraid, is the only tool we have for dealing with the problems that have been created by technology.

As for growth, it is indispensable to the dreams of millions. Rudolf Klein, a senior fellow at London's Center for Studies in Social Policy, has warned us that for the American economy to stop growing would "simply freeze the existing social and political system in perpetuity." Applied on a global scale, he says, it "would in effect mean condemning the majority of the world's population to poverty for the rest of time."

The real question, therefore, is whether our social and political systems are structured in such a way as to take advantage of the promise of technology in order to promote beneficial growth. I submit that they are not. Neither do I believe that we are yet in a position to begin the monumental job of realigning our priorities and redesigning our systems.

I come to that conclusion from my own experience. I am at least nominally the head of a not-too-small apparatus known as the Koppers Company—not so large as to be carried forward by its own momentum, yet large enough to embody, if only in miniature, many of the structural pains that afflict organizations of greater size, complexity and scope, such as world society at large. If I may be so immodest, I will say that our recent successes in fulfilling our role indicate that we may be doing something right, and therefore an inspection of our methodology may be in order.



Although I must admit that when you're reasonably successful, you're never sure what you're doing right. It's only when you foul it up that you find out what you did wrong.

We proceed in this manner:

First, we determine where we stand today, in terms of our capabilities, our markets, our competitors and other factors.

Next, we determine the mission of the organization.

We then take certain abstractions and make sure they are translated into measurable objectives. *Measurable* objectives.

Only at this point do we lay out an organization to accomplish those objectives, because organizations are the fundamental means by which you set up a communications channel that allows you to implement objectives.

Finally, we establish a sensing system that will tell us whether we really *are* making progress and to steer us continually clear of unpredictable calamity.

To compress these five steps into three tools, we look for a navigational chart, an engine, and a compass: something to tell us where we're going—something to propel us there—and something to keep us continually on course.

None of these steps is taken in the vacuum of our executive chambers. All of them are considered in the perspective of the society we inhabit. We encourage that broader outlook by a number of means. For instance, a few years ago, I instituted an experiment under which three groups of our younger managers would come to my office for a seminar on what might be titled "A General Survey of the Nation and the World, Past, Present and Future, As Seen From the 15th Floor of the Koppers Building in Pittsburgh." Each of the three groups consisted of 10 participants, and each of them met with me once a month.

The program has now been expanded, and we have other officers meeting with other groups. I *think* it has been productive. At least, no one has ever asked me whether I wouldn't like to take a little break for a cup of hemlock.

We proceed from massive reading assignments between sessions—everything from the Club of Rome reports and Michael Harrington's "Socialism" to an article on soybeans from *Scientific American* and whatever Professor Galbraith has published most recently, which is a considerable library in itself. I don't know whether any other company has such a program. I do know that, within 10 years' time, we just might have the most enlightened management team in the country.

It is this background that leavens the Koppers methodology, which I will now try to apply to some of the issues contemplated by this symposium.

**S**URELY A MAJOR CONSIDERATION affecting our deliberations on technology and growth is a rising concern over our supplies of food, fuel and other resources. I respect the many warnings, and would even add some of my own. For instance, a good portion of my company's activities has to do with fossil fuels, and I have gone on record to say that we cannot afford to burn them for energy much longer, but must restrict them to use as chemical building blocks.

There may be countering arguments, but I am willing to assume that, in terms of the needs of generations to come, many of the resources we now use and for which we have found no substitutes are in short supply and should be allocated to avoid waste. As a private enterpriser, I am amazed to hear myself say so, but I have serious doubts as to whether we can go on using price as the sole means of allocation in times of continuing shortage and inflation. That can only result in placing the greatest burden

upon those at the bottom of the economic ladder, who can least afford it.

In assessing where we stand today, we do well to avoid what call "the nostalgic fallacy," which assumes that life was better older, simpler times. It was not. More than a century ago, Charles Dickens referred to my home city of Pittsburgh as "hell with a lid off." About half a century before that, the poet Shelley called London "a populous and smoky city," much like hell. Around the same time, Samuel Taylor Coleridge told of how he had counted "two and seventy stench . . . and several stinks" in his travels, and summed up the hopelessness of the situation with these words:

*The river Rhine, it is well known,  
Doth wash your city of Cologne;  
But tell me, Nymphs, what power divine  
Shall henceforth wash the river Rhine!*

On the economic front, our concerns may be exaggerated by what Daniel Yankelovich has called a "galloping psychology of entitlement." Daniel Moynihan argues that, "until the dislocations caused by OPEC, things were simply not as bad as they were typically portrayed." "Things were better than they had been," he says, and he underlines those words. But then he adds two words of qualification: "Almost everywhere."

Almost everywhere. In the United States, we have eliminated material poverty to the extent that anyone working full-time has access to disposable income, which was not true in my father's day. Transfer payments take care of others on a scale unprecedented in our history.

Needless to say, this relatively happy state does not prevail everywhere outside our borders, and both rationality and humanitarianism call upon us to seek ways for extending it. To do so will require something more constructive than the bitter railing at advanced nations we have heard in some recent dialogues. Eric Sevareid last year called it "highly debatable" that the rich nations should compensate the poor nations for their supposed exploitation, and pointed out that "many of the new nations insist on starting out with a social welfare society, bypassing the historical period of capital accumulation that characterized the West and Japan."

I repeat this view because it underlies the current debate as to who owns the world's resources and how the riches made possible by those resources should be parceled out. The new catchword is "interdependence," and the concept may mark a milestone in the world's development.

The British scientist James Lovelock has offered us what he calls the "Gaia hypothesis," in which he sees living matter, air, water and land as parts of a gigantic system that seems to "exhibit the behavior of a single organism—even a living creature." This kind of attitude has been underlined by Lewis Thomas in his book, *The Lives of the Cell*.

I believe our interdependence is just that organic, and that if a visitor from outer space ever drops in on us, he may not ask to talk to our leader. Instead, he may wish to talk to our planet, which he—or she—will see as a single, complex organization of entities functioning for the common good.

These are some of the considerations that occupy our attention at Koppers as we survey a world grappling with the problems of technology and growth. Our view is that society has given us a franchise to perform. If we do not perform in useful ways, society can just as easily remove that franchise, and should remove it. It behooves us, therefore, to know what society expects of us.

That leads us to step two—to determine the mission of the organization. For Koppers, it is fairly simple—to take raw materials and translate them into material abundance for the good of society.



profits are to a corporation what breathing is to a human being: we cannot live without breathing, but breathing is not the purpose of life.

For those who must manage the world's affairs, the challenge is much more complex. We in America are learning from harsh experience that while it may still be true that we can have *anything* we want, we can no longer count on having *everything* we want all at the same time. We must choose.

Others learned that lesson a long time ago. It is time now for all of us, together, to come to some agreement on the practical choices that are available to us. As of today, we do not have any choices on which there is reasonable consensus.

When I argue for consensus, I do not mean to imply that we should rush at once into a Grand Master Plan. At this point in our deliberation, I much prefer a dredging out of alternatives for consideration. I want to read the menu before I order my meal. My modest contribution to this discussion will be to list some of the options we must consider.

**D**O WE WANT growth of the kind we have known in the past? I, for one, do not believe that Americans can go on eating an average of more than 100 pounds of feedlot-fattened beef every year when we could get 10 to 15 times as much protein per acre by eating soybeans and grain products instead. We cannot continue to misuse our resources for lifestyles that are self-indulgent at their best and frivolously wasteful at their worst.

I think my position lies close to that set forth by the Club of Rome's *Mankind at the Turning Point*, which distinguishes between organic growth and undifferentiated growth. Certainly, I am not yet ready to join the camp of those who tell us that the answers to all our problems lie in a total curbing of economic growth. I have heard this proposition—mostly from people in rather comfortable circumstances—and I always respond with a standing offer. I say that I will invite them to visit a crossroads in Bangladesh, a slum in South America, a village in Africa. All they have to do is to announce: "Good news, friends! We've just decided on a policy of zero economic growth that will freeze everything just where it is." For my part of the bargain, I will notify their next of kin.

I am persuaded that excessive limitations on economic growth will injure our souls as well as our stomachs. We cannot provide the tools of education unless we first provide the tools of production. We cannot build great colleges and universities unless we first build factories. And for every teacher in the schools, there must be mechanics, farmers, and managers working to create the surplus that makes it possible for us to support and maintain the schools.

Those who attack growth are likely to attack also the technology that makes it possible. I remember a story set down by the late Paul Goodman. "Just the other day," he said, "I listened to a young fellow sing a very passionate song about how technology is killing us and all that . . . But before he started, he bent down and plugged his electric guitar into the wall socket."

I see technology as a powerful weapon for decency in our social intercourse. It calls for *more* human participation in decision-making, not less. It provides the instant and full communication that is the enemy of covert power. It is moving us toward a time when fewer and fewer people will be needed to produce the necessities of life, so that our chief concern will be whether to cash in this greatly improved efficiency for a new outpouring of material goods or for a further pursuit of leisure, cultural, and educational activities. Being human, we will likely opt for both.

Technology, contrary to what many believe, has not hastened the depletion of our resources. It has made it possible for us to get eight times more energy from a ton of coal than we did in 1900. It has made it possible for the advanced nations to devote less of their gross national product to raw materials and to turn more of their effort toward education and other services that enrich human life. It holds the promise of providing substitutes for those materials that cannot be replaced.

In dealing with the consequences of technology, the choices are not always clear. I will take only one example—the continuing debate over DDT.

It began with what seemed like an unassailable demand by the environmentalists for a total and permanent ban. But when the initial outcry died down, we found unexpected allies coming to the defense of DDT. Two agencies of the United Nations fought hard to preserve its use in dozens of countries. Norman Borlaug, who won the 1970 Nobel Peace Prize for his work in helping to feed the hungry, said, "No chemical has ever done as much . . . to improve the health, economic and social benefits of the people of the developing nations."



What we learn from this and other controversies is that the world is a varied place, and that no single prescription will serve the needs of every patient. Some years ago, I talked with the head of a Latin American country who had his heart set on building a major petrochemical complex. I would have welcomed the business, but I suggested to him that conditions in the area called at that time for a labor-intensive industry to help solve the problem of a huge manpower surplus.

**W**E MOVE ON to step three—to translate our abstractions into measurable objectives. For a corporation such as Koppers, that is a more subtle procedure than you might think.

Unlike Milton Friedman, I have contended for years that profits are to a corporation what breathing is to a human being. We cannot live without breathing, and a corporation cannot survive without profits. But breathing is not the purpose of life, and profits are not the sole purpose of management.

I spoke earlier of the implicit franchise under which we operate. Its various clauses can eventually be boiled down to measurable objectives. The job is infinitely more complex when it comes to measuring objectives for our world society.

The danger lies in the fact that there is a tendency to concentrate upon phenomena that lend themselves to easy quantification and to slight those that do not. We have not yet invented a way to put numbers to such problems as the despair of an able-bodied man who is comfortably supported by the state, but who has lost self-respect because he cannot find employment.

This is significant because there is a strong body of belief to the effect that, in order to deliver the greatest good to the greatest number, we should direct our social expenditures where they will give us the best return on our investment. I realize that our programs must sometimes respond to immediate need, if only because we are inherently creatures of compassion. But I realize, too, that we will never have money enough or time enough to meet all the demands, and so we will come to difficult choices. Unless we make those choices correctly, we may find ourselves in the position of the worker wasp, which is so frantic about nourishing its young that if it cannot find any other food, it will bite off the back half of the grub and try to feed it to the front.

In any consideration of technology and growth, and of their consequences, we must turn eventually to the prophets among us. We have no shortage of soothsayers who are cheerfully eager to sketch out for us what the world will be like 20, 50, 100 years from now. Yet I remember that in 1933, President Roosevelt called together a panel of distinguished experts to tell us what changes we could expect in the next quarter-century. Missing from their list were such basic things as electronics, antibiotics, rocketry and space flight.

In 1947, the Census Bureau projected a population figure of 160 million Americans by 1970. It said that would rise by 1990 to the incredible total of 165 million, but would fall back to 163 million by the year 2000.

Now, there is nothing more basic to the art of national forecasting than the size of the population. That is what we use when we plan highways, when we make capital investments for telephone service, when we estimate our needs for housing and health facilities, dishes and diapers. I imagine it figured in the decision to commit more than \$2 million for the refurbishing of Salisbury Hall.

Let us assume that we are now wiser and more sophisticated than we were three or four decades ago—after all, the early computers were awkward, clanking monsters compared with what we have today—and that we will indeed be able to translate our abstractions into measurable objectives.



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Our governmental system does not encourage something like the act of faith that prompts a man to plant a tree when he knows it will not bear fruit within his lifetime.

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**W**E COME THEN to step four—to lay out an organization that can accomplish these objectives. The adventure that first landed astronauts on the moon has been cited as an example of how men can organize their efforts toward a definable goal, but it is notable because it is practically unique. In various degrees, our institutions are less than ideally suited for the functions they are supposed to perform.

I will not exempt the business corporation from that kind of criticism. I happen to view it as a logical form that has developed naturally out of an instinct that drives us to look for ways to make the most efficient use of manpower, energy, resources and ingenuity for the good of humanity. I believe, further, that the private enterprise system under which it operates is the best mechanism yet devised for the constructive exploitation of surplus. I am *not* as sure that the system will work as well in times of scarcity, but when I consider the alternatives, I remember what the Socialist Michael Harrington has written about socialist nations—that in most cases they have succeeded only in the collectivization of poverty.

all the things that I have observed about corporations, the disturbing has been a tendency toward overorganization, creating a rigidity that is intolerable in a time of rapidly erupting change. I had not been at Koppers very long before I discovered that our organization charts were telling each of us about what we couldn't do than about what we could do. The structural problems of corporations are as nothing compared with those of our political institutions, which simply are geared to deal with the future. Our federal government is a managerial nightmare. It is like a 200-year-old house that has had a succession of new heating plants, new wiring, new plumbing—without ever ripping out the old heating plants, the old wiring, the old plumbing. The basic design is good, but the structure is being destroyed by "improvements."

I don't wish to be too hard on the bureaucrats. They are the products of a system that motivates our leaders on the basis of short-term performance. In today's technology, it takes eight to ten years to work out our problems. It takes legislation about 20 years from conception to execution. We cope with these conditions through officials whose vision stops at a horizon only two to three years away at most, when they must again face the voters. Our system does not encourage something like the act of faith that prompts a man to plant a tree when he knows it will not bear fruit in his lifetime.

I have seen the problem close up in the field of health care. I have held volunteer posts at two hospitals, two schools of medicine, a regional Blue Cross organization, and the Subcommittee on Organizing and Financing of a National Health Care Program of the Committee for Economic Development. I served a number of years as chairman of a county Hospital Planning Association.

In that last post, I was appalled—I am still appalled—at the fact that we could agree on our mission and we could set our objectives, but then found we were encumbered by an organizational structure that could not function. I was and am appalled at the hospital system that was established for another day and another set of problems, that is now trying to be used to deliver health care in a highly technological society with major changes in demography.

When you combine that, with a deadly penchant for redundancy in medical facilities, is why my enthusiasm for a national health insurance program is tempered by caution. I favor such a program, but I know that if we fund it now, without basic changes in the delivery system, we will cast in concrete a system that cannot do the job.

JUST ADMIT that I have no precise idea as to how we should restructure our institutions, and I doubt that we should do so until we have carried out the first three steps in the methodology I have been discussing. I do know that most of our institutions—private, governmental and humanitarian—are too clumsy to cope with a world in transition. They react to stimuli instead of anticipating them, and their responses are too slow and feeble.

I know, too, that in our attempts to restructure our political organizations, we cannot forever tolerate the sovereignty of nation-states. The Rhine, with its two and seventy stanches, flows in Switzerland and flows for 820 miles across the face of Europe to the North Sea. It will remain a sewer until some international body, in effect, operates the Rhine river basin under the discipline of cost-benefit analysis, with the authority to impose sanctions upon the sovereign states through which the

river flows. Air and water pollution are no respecter of boundaries. The Swedes say that their largest import is polluted air from the United Kingdom. In addition, we are entering an age in which we will explore the ocean depths on a massive scale for fuel, food and other resources. We have as yet no clearly defined rules to ensure that we will do so on an orderly and equitable basis.

I do not go so far as to propose that we submit ourselves to a global government, however benevolent it might be. I see some advantage in political compartmentalization. It permits us to follow different paths of experimentation and then to share the secrets of our individual successes. Just as importantly, it permits each of us to indulge in the pursuit of creative errors, learning from those errors and passing on the lessons without the danger of bringing down all of civilization.

Given all that I have said, we move to the final step, which is to set up a sensing system that will tell us whether we really are making progress.

Such a system must detect advances and setbacks more accurately than ever before—and more quickly. We do fairly well with single factors, but when it comes to the interplay of variables, we are often perplexed. For instance, we cannot agree on the environmental economics of using recycled paper—on the relative safety and benefits of nuclear versus conventional power plants—on methods for the disposal of solid wastes—on whether the application of DDT does more harm than good.

In spite of these enigmas—in spite of all the woeful predictions I have been reading lately—I am not a pessimist. I have said that, given our present state of knowledge and organization, it is premature to propose solutions. Nevertheless, the process must begin, and soon. If I observe a man swimming out to sea, I can hope that he will come across a raft, that a ship will spot him and pick him up, or that he will turn around and swim back to shore before he is exhausted. But I know that if none of these things happens, and if the man continues to swim out to sea, he's not going to get to the opposite shore, he will eventually drown.

But—I repeat—I am not a pessimist. I am encouraged by many signs of new vitality in this 200-year-old structure of ours. One of those signs is what you are doing here at WPI to stimulate the creation of interfaces among the various fields of study. Not long ago, George Cabot Lodge, a professor at the Harvard Business School, former assistant secretary of labor, and author of *The New American Ideology*, commented on the need for perception of whole systems. He said, "The old idea of scientific specialization has given way to a new consciousness of the interrelatedness of all things." He spoke of the "long dark tunnels" called disciplines, and concluded:

"The student has come to wonder whether this kind of education is what he needs to understand the world—whether, in fact, what is truly important is not what ties the tunnels together and how they are related to one another."

You might want to invite Professor Lodge to make the short trip over here to Worcester. He would find, as I have found, not a series of tunnels, but a broad highway carrying vehicles (if you don't mind my calling you people vehicles) of every description and leading to a variety of destinations, with every foot of the way illuminated by the beacons of knowledge and inquiry.

**WPI**





# The need for growth

by Herman Kahn

**W**E TALK A LOT about predicting the future and about getting consensus. I make my living doing that. But like many people who make a living in a given field, I don't believe a word of it.

I could name about ten historic examples of people setting out large programs with clear objectives, and they worked out — Augustan Rome, our own canal system laid out by the Secretary of the Treasury, and so on. You can count them on the fingers of two hands. Almost everything else has grown — and when you grow something, you're not quite sure where it's going to go. You have to trust the system. There's a lot of luck in it, and a lot of internal momentum.

Let's take population predictions as an example. First, let me poll the group here. If you were president of the United States and could somehow actually control future population, how many of you would be in favor of a somewhat increased growth rate for the U.S. population today? How many in favor of leaving it alone? How many in favor of decreasing it? All right, you're a very balanced group, roughly one-third for each alternative.

I was recently in Houston, Texas, to talk to a group of Club of Rome people. I asked them the same questions. They voted about 95 percent in favor of reducing population growth in the United States. I then asked how many of them knew the consequences of their action; that is, how many had a right to an opinion. They all claimed to have done their homework. And then I showed them the following chart. The population growth rate used to be roughly 7 children per family in the United States in 1800. It went down to 2.1, which is the rate which would have led to those 194 Census Bureau predictions Fletcher Byrom mentioned. Then American women got frivolous, and the rate went up to 3 something. Now it's back to 1.8. If it stays at 1.8, we have a declining population around the year 2005 with mostly old people and relatively few young people. If you decrease the rate, you make that division very sharp. If you decrease it for a while and then increase it, we have an hourglass-shaped population distribution, with old people and young people and no one in the middle. Now, very few people in the United States like the demography with more old people than young people, and so *ipso facto* they don't want to decrease the growth rate. And they don't want to leave it alone, either. They want it to increase and get back to 2.1. My own guess is that the rate is going to get back there, but that's only a guess.

Obviously, it's very difficult to predict anything like this. This is the kind of uncertainty that, by the way, has caused the collapse of almost every demographer in the world who's tried his hand on it. You know how they will issue a high, low, and median? It always comes out lower than low or higher than high. In every case. One moral here is, Don't try to predict population

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Herman Kahn is founder and director of the Hudson Institute. He is author of the recent best-seller, *The Next 200 Years: A Scenario for America and the World*. With degrees in physics and mathematics from the University of California and California Institute of Technology, his optimistic beliefs about the future are based on an appreciation of the technology which, coupled with a humanistic approach, can bring about the near-Utopia he envisions. Before he founded the Hudson Institute in 1961, Kahn spent 14 years with the RAND Corporation as a senior physicist and military analyst. He serves as a consultant for many governmental agencies and industrial firms

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## Population growth rate dropped because children changed from being producers to consumers, and people tend to ration themselves in consumer goods.

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modern society. It turns out to be unbelievably frivolous and dependent upon fashion. Second moral: When we had the 7+ rate, a lot of people were getting one billion, two billion population in the United States in the mid-19th century. But it actually went down, as you know, by itself. There wasn't a single government program to cause it, which was very unfortunate. If there had been such a program, it could have been incredibly successful, and whoever was in charge would have gone down in history as the man who saved the country. But unfortunately nobody had the idea. You understand, any program at all would have worked, including this one of mine.

Why did the population growth rate drop so drastically? Benjamin Franklin once made the comment that the easiest way for an American to get rich would be to marry a widow with many children. Don't try that today. It's a prescription for bankruptcy. Can you imagine buying nine tickets wherever you go? Basically, children changed from being producers to being consumers, to put the situation in its bluntest terms. When I look at my young children I love them, but I don't think of them as economic assets. And people tend to ration themselves in consumer goods.

At the Club of Rome festival in Houston, I commented that on this issue I was going to talk about, most of them were about as ignorant of the facts as they had just showed themselves to be on television. And here I'm talking about resources, energy, food, a whole new style of life — what's causing it and where it's coming from. This is another reason why I don't like too much planning. I've talked a lot about having sensors to see the future. We've actually got an incredible number of sensors, but no one's looking at them. It's all *fashion* in the discussions. Remember fashion — whatever people happen to feel is interesting that month, and it changes. It has very little to do with anything based upon data or direct observation of the scene.

Let me ask another question. How many of you expect that in the long run, say the next 50 to 100 years, your children will live better than you, or about the same, or better, because of technology and the defects of technology? I'm asking about running out of food, resources, the whole Club of Rome position. I suspect the experts are going to have it correct. But we don't really know, of course.

WOULD LIKE TO SUMMARIZE 400 years of history. About 200 years ago, mankind was just entering the industrial revolution. Before that, the per capita income — for all its difficulties, that's a useful expression — was generally between \$100 and \$300. Anybody over \$300 was very rich; anybody under \$100 was very poor; \$200 was sort of normal. In India today the figure is about \$150, but that's pretty comparable to the \$200 of 200 years ago, so we can think of India as normal. Indonesia is normal. If you ask, Why are Indians and Indonesians poor? it's because for 10,000 years, ever since civilization started, *that's the way people have lived*. It's a perfectly natural phenomenon. As Byrom said, you have to go through a process of capital accumulation and increased productivity. The problem is not in distribution. The problem is in increasing the productivity and the capital in India, not of giving them charity.

In that sense, 200 years ago mankind was everywhere poor, almost everywhere powerless before the forces of nature. Two hundred years from now, barring bad management and bad luck, mankind should be almost everywhere numerous — we're talking about 15 billion people, give or take a factor or two and we won't be annoyed if we miss it. Everywhere rich — about \$20,000 per capita, give or take a factor of three. Almost everywhere in control of the forces of nature. This 400-year period should be the most exciting time in man's history. I used to comment that there were only two incidents worthy of notice in the world — the agricultural revolution, which created civilization, and this industrial revolution now underway. The first took about 8,000 years to spread around the world; the second looks like it will be done in 400 years. That's fast!

You've heard of the population explosion. Have you heard of the GNP explosion? Since 1950, gross world product has increased about 5 percent a year. That's a doubling every 14 years. It's growth by a factor of more than 10 every 50 years; more than 100 in a century; and by a factor of 10,000 in 200 years. If that rate were maintained for many decades, you'd have no problem with poverty in the world. And you don't have to worry about distribution. In every country that has gotten rich, the distribution problems have tended to solve themselves, at least in terms of absolute poverty. Relative poverty we'll always have. How many of you, by the way, have felt recently depressed because you don't live as well as a Rockefeller? I asked that once with a Rockefeller in the room, and he was shocked. You people look desperately poor to him. It always looks worse from the top down than from the bottom up. Almost everywhere people worry a lot about gaps, it's from the top down, not the other way around.

I'm not particularly a believer in limits to growth, but I don't believe the gross world product will be 10,000 times larger 200 years from now. And why am I interested in gross world product



anyway? Is it a mindless concern for growth? (You know, the current term is gross national pollution — the effluent society.) People talk about mindless growth a lot. I don't know of a single country where they're not arguing over the distribution of the gross national product. They know exactly what they want it for, and they're arguing about it. I know of no country in the world which is growing mindlessly. They just don't exist. Each of them has a bill of needs they'd like to fill, and they can't unless their gross national product increases.

There's not a total consensus on this. Some people say these needs are silly, and here I want to disagree with Byrom. We don't waste a great deal in this country, if you look at the actual costs and the way people behave. Except for a three- or four-year period when we were putting out really badly designed cars and electrical appliances, I know of very few things in the United States which represent a lot of waste.

Now, you may ask the following question: Why would you put an air conditioner in a car which has enough btu output to cool a small two-bedroom house? Isn't it a waste? Well it just happens that when people go into a car on a hot day they don't want to wait two minutes for it to cool off. Have you ever tried it? They want it cool in 10 seconds. And you know something? They're right, they're absolutely right. They can afford it, and under normal conditions the energy was there. The energy will be there again.

**W**ANT TO DISAGREE with Fletcher Byrom's comment that we should start thinking of fossil fuels primarily as a base for petrochemicals. Now it is true, the engineer is very upset at that. It's a little bit like using a human being as a horse for pulling something. A human being is a complicated thing, and there ought to be a higher use for it. Hydrocarbons are incredibly complicated substances, and the idea of burning them in a furnace strikes most engineers as somehow rather destructive. Unfortunately, there are so many hydrocarbons left in the world that, if you tried to use them for petrochemicals alone, the exhaustion point, where they get to roughly 50 cents per million btu's, is measured in the hundreds of billions of years. Now, I look ahead . . . but I don't look ahead that far!

As near as I can see, we have enough hydrocarbons to use at a reasonable price for burning purposes — heat — until well into the 22nd century. I think that in the early 21st century we're going to move to more or less eternal supplies of energy, things which are self-renewing, if you will. So we have a 100-year overlap between running out for the purposes of fuel and being able to replace with basically eternal sources. We have about eight alternatives for the eternal source, and they all look like they'll be competitive around the year 2000. At this point, we don't know which one of the eight it's going to be. I have no idea at all. It might just end up being the boiling water reactor we already use, where we will be dependent upon very low-grade uranium ore — what you find off Norway, or in shales or in granite. It might be fusion power. It will almost certainly involve some solar power.

I'm not going to guess, I have no idea. They all look competitive. If somebody tells you he feels we're going to run out of energy, he's either worrying about some extraordinarily remote threat, or he's paranoid or foolish or ignorant. I'd like to make the point just that strong. Now, he might tell you, if we don't invest the capital we won't have any of these things, and there I think he's right. But the capital is being invested, particularly in research and development.

Byrom commented that the price system doesn't work perfectly. That's certainly correct. But we're doing a study called "The Long Term Prospects of Mankind," and we're desperately trying to find situations where we can say the price system there is just wrong, because that will make us look very good and non-ideological. So we're looking hard for any place where we can say, "Don't use the dollar as a signal." And boy, when we find that, are we going to be pleased, and we're going to plaster it all over the world!

What I am saying here is subject to one important *caveat*: that in principle the costs are internalized. In other words, a businessman really has to look at what his profits are, and that really is his guide except for something called decent behavior. But it's terribly important that when he does something which is socially costly, like dumping pollutants into a river, or creating a work environment which is harmful to the people concerned, that he either be forbidden to do that or that he be *charged* for it to discourage him.

So I've made the assumption that we've internalized costs. But this turns out to be very difficult, because we don't know what the costs should be. We have no consensus, and will not achieve a consensus, on what the appropriate value systems are. Take the Alaska pipeline. The delay that the Sierra Club caused the Alaska pipeline can be split into two pieces. The first part, which Governor Hickel says he caused, not them, was due to a badly designed pipeline. That first-year delay was justified, and the pipeline was redesigned and passed the proper reviews. The next five-year delay cost this country at least \$25 billion in foreign exchange. My own guess is that the total cost to the country will be well over \$50 billion before we're finished. That's a lot for about 12 square miles out of 500,000. I could stick you at random in Alaska, and you couldn't find the pipeline. The caribou love it, it turns out, and the Eskimos approve. One would have thought that \$25 billion, maybe \$50 billion in costs, is a little excessive to preserving a landscape which nobody really wants preserved. You go to the Sierra Club today, and they'll tell you, No, that was a moral decision on their part. All right, maybe it's moral, but it's also damn dumb by the value system of almost all Americans — but not by theirs. They're entitled to their value systems, but they're not necessarily entitled to thrust them upon the rest of us.

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Why are Indians and Indonesians poor? Because for 10,000 years, that's the way people have lived. It's perfectly natural.

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even use that argument for things like the extinction of  
es. Perhaps 20 or 30 billion species have become extinct  
world history started. On the face of it, adding a few to that  
not be a terrible thing to do. Now, I'd be terribly upset if the  
e became extinct, or the grizzly bear or the eagle, because  
represent something to my culture. But how do you feel  
t the passenger pigeon? The last one died in Cincinnati in  
Anybody want to mourn it? The skies were dark with them  
d so was the ground. If you want to talk about pollution, you  
d live with passenger pigeons.

rom was absolutely right when he said there were no good  
ays. I have talked to high school kids in both Pittsburgh and  
on. Not one of those kids knew their city was clean. They  
ght the environment had steadily deteriorated. They had no  
hat twenty years ago, in Pittsburgh, you used to change your  
four or five times a day, depending on whether you wanted  
filthy or just dirty. They had no idea what pollution is.  
ody burns soft coal anymore, and you have no horses. The  
ge horse, by the way, leaves a kilogram of pollutants per  
60 percent solid, 40 percent liquid. A very small number of  
s on a dry or wet day can create unbelievable havoc. I've  
in horse towns, and they're unbelievably unpleasant.  
e's nothing remotely like it in Los Angeles or New York.  
I'm not talking about a lot of horses — just a few for the rich,  
s enough.

at I'm trying to say is that much of the discussion is at an  
dibly low level. I use the phrase *educated incapacity*. It  
es from Veblen, who used the term "trained incapacity." By  
he meant many things, among which was "the inability of  
ologists and engineers to deal with simple issues they could  
handled if they had not had graduate training." Is the  
ept clear? I give the term "educated incapacity" a larger role.  
s, look at the educated elites.

is is not a world-wide phenomenon. It's largely restricted to  
n and what we call the Atlantic partisan culture — Scan-  
ria, Holland, England, U.S., Canada, Australia, New Zea-  
Holland is probably the greatest example I have ever seen.  
book *Limits to Growth* sold 500,000 copies there in about  
weeks. There are only 12 million people in the whole  
try. Each intellectual must have at least three copies! (I'm  
g a little unfair, because it was sold through the high-school  
em.) Holland has no Viet Nam, no poverty, the pollution all  
es from the outside, and no race problems — and yet it's got  
ie difficulties we had in the late 60's. It has the dropout kids.  
he only place in the world where they publish the price of  
juana in the newspaper — bid, asked. It has the *provos*, who  
nore extreme than our Yippie movement, and it's got every  
y fashion I know of. And that tells me something terribly  
resting. These fashions have very little to do with the actual  
orical data, the hard facts of life; they have to do with  
orical culture. They have to do with the way children are  
ed and the attitudes their parents have.

or example, almost every prestige school in the United States,  
n about 1968 to 1975, taught limits to growth, generally in an  
eme fashion. The usual picture they gave you was, America is  
of the world's population and is using up  $\frac{1}{3}$  of the world's  
ources, and this is the greatest crime in history. It's the greatest  
*crime* in history, because it's going to condemn millions of  
ple to death by starvation. (I use the term war crime advisedly.  
ring war you're allowed to do all kinds of things which you  
't do in peacetime, but even in war there are very clear limits,  
ending on the country, as to what you can do. You can't do  
thing you want. You get punished if they catch you, and then



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They had no idea that twenty years  
ago, in Pittsburgh, you used to change  
your shirt four or five times a day,  
depending on whether you wanted to  
be filthy or just dirty.

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you're really looked upon with absolute contempt.) If all this  
were true, that would be the biggest war crime in history, and  
anybody who's not opposing it, as far as I am concerned, would be  
a war criminal. You're not allowed to stand aside in those  
circumstances.



IN FACT, the major reason for the wealth of most of the world is the growth of Europe, America, and Japan. And the major reason for this very high growth rate I'm talking about, 5 percent, is the 4½ percent growth rate of the rich which makes for a 6 percent growth in the poor. It's one of the greatest feats in world history.

Let me just talk about this picture of the world for a moment. How many of you believe that half the world goes to bed hungry at night? You've heard that statement over and over again. And it's not true. It's a mistake in arithmetic made by Lloyd Bodor, head of the FAO. For a long time he refused to admit his mistake, and there was a consequent mistake in understanding the situation. But finally the FAO admitted they were wrong. (And at that point the economists accused the FAO of being a permanent lobby for starvation!) Their more recent calculations are that about one-eighth of the world suffers from malnutrition because of poverty. That seems reasonable. Now, one-eighth is a lot of people; you can't be complacent about it. *But it's not one-half.* It's different.

In fact, the world isn't that poor. About 30 percent of the world lives at \$150 per capita or a little bit less — normal, classical poverty. About 44 percent of the world lives at about \$600 per capita. The Chinese are at \$350, but very well organized. You can't call them poor by any standards. Go to China and call them poor, and they'll kick you in the teeth. They won't stand for it. So 44 percent of the world is middle income — neither rich nor poor. It's growing about 5 percent a year, and rapidly catching up with the 26 percent who are rich. By the end of the century, something like two-thirds of the world will be rich by almost any standard, including the standard of 1950 (not necessarily the standard of today). And roughly one-third will be poor, but not by historic standards. By historic standards most of them will be relatively well off.

Basically the system is succeeding. Like our own country, the 44 percent who are relatively talented in economic development grow very fast in the current atmosphere. And they do so because of the capital, the markets, the technology, and the organization supplied by the rich. The Japanese, who now profess a belief in "balanced" growth (though they're dropping that position), calculate that if they stuck to their guns and grew only 5 to 6 percent a year, the growth rate of southeast Asia would drop 3 points. The growth rate of the poor depends almost entirely today on the growth rate of the rich. That's why I totally disagree with the limits to growth people.

First of all, I disagree with their concept of organic growth. Their basic concept is that we should tie ourselves to India in such a way that if India goes down, we go down too. They think it's an unbalanced situation, that if we get richer, India gets poorer. The last thing in the world we want to do is marry India economically. It just doesn't make sense. First, we would ruin India. Second, India would ruin us.



I believe in what could be called very unbalanced growth. There's no particular reason why the rich should grow richer, far as I'm concerned they're already rich enough. But there's no particular reason why they shouldn't; it's a matter of taste. To the extent that we let morality enter the picture, because we want to help the poor, we have the rich grow faster. It's not a question of reducing gaps; it's a matter of increasing the income of the poor so they can get someplace. I don't believe there's a single worker or peasant in Latin America, Africa, or Asia who worries about getting rich. They want to get rich. I've often asked their governments the following question: Say there are two ways to get rich. One way is they triple their income in, say, twenty years, and U.S. income remains constant. The second way they double their income and the U.S. income goes down a little bit, and the gap narrows. Which way would they pick? They tell me they wouldn't give one penny in income to reduce the gap, to cut U.S. income. They don't love us for being rich — and they don't hate us either. We're far away.

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By the end of the century, about two-thirds of the world will be rich by almost any standard.

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IN THE LAST FIVE YEARS you've heard a great deal about limits to growth. The Club of Rome people more or less officially changed their position recently in Philadelphia. The original position said you can't grow even if you want to, because there are no resources. The new position is very much married to the so-called new international order. It says the poor should grow (you can't tell the poor they can't grow!), but the rich should stop; the rich should stop or slow down. That position is even less satisfactory to me than their original position, because that first position was obviously wrong.

Now, I can make some statements here in the year 1976 which I couldn't have made in 1960, and it's terribly important for you to realize that fact to really understand my position. This is not a long-ho speech, this is not a speech of *Man Can Rise To The Occasion*; this is not a speech of *Optimism Is Better Than Pessimism*. I want to give you some numbers. I don't believe you can prove many things by numbers, but one of the things you can prove is, the resources add up, because that's an arithmetic question.

I want to take one of the first issues raised in *Limits to Growth*, at we're running out of aluminum. There are some twenty things we're running out of, and they start out with aluminum. Now what they're *really* saying, if you look at it, is we're running out of bauxite. I doubt that, but I can't prove it's wrong. On the other hand, aluminum is 7 percent of the earth's crust! It's sort of obvious even in 1960 that you can't run out of aluminum, but in 1960 if you asked me what I mean by that, I mean *Man Is Going To Rise To The Occasion*, somehow we'll handle it. Today, however, I mean that I can point out to you the various sources of aluminum which will substitute for bauxite — if we run out of bauxite — at a roughly comparable price. So don't argue with me about running out of aluminum. If you think we're running out, you're wrong; it's a matter of arithmetic. We actually know where the resources are, and I can show you on a map. This is not being optimistic, and it's not being pessimistic. It's adding up the numbers properly.

If you say we're running out of energy, I'll come back with the same answer. Sure, we have a shortage of energy today. If we're dependent on the Middle East and they turn the faucet off, we're going to run short. I think that if they had not turned off the faucet, Byrom would be right: then the price system would not be a good guide to energy sources. In fact, I think history will record at the act of the OPEC nations in turning off the faucet at that point actually *solved* the energy problem for the medium and long run. There's a rather good chance that if they hadn't done it, we would have run through a very rough ten or fifteen years. Back in 1972 we were preparing a report that said, Let's get the price of oil up to \$5 a barrel as fast as possible, for a number of reasons, one of which was to stimulate R&D.

What about air pollution, water pollution? If your standards are reasonable — not health standards but aesthetic standards — it will be achieved in North America, in northwest Europe, in Japan, by around 1985 or soon afterwards. By this, I mean the programs will be in operation. Now what if you really have a very high aesthetic standard? Those who live out in the West know you can sometimes see for 50 miles, and it's beautiful. I don't think that will be preserved for as many days a year as we have now. In other words, we might now have 100 days a year when you can see Catalina Island from the coast, and that may go down to 60 days, or 50. And that's a loss, a real loss. But I suspect the higher income is worth it to most people. They want it. They may be wrong, because they don't need the higher income; they're not dying of starvation. But I think that they will so choose.

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I think history will record that the OPEC nations' turning off the faucet actually *solved* the energy problem for the medium and long run.

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THERE ARE TWO WAYS in which quality of life will go down. First, you'll never reproduce what I had in Los Angeles as a very poor boy. We were on relief. We'd just gotten off the boat when we went to Los Angeles, and I went to work, and I've worked all my life since I've been about 12. Even when I was going to school I worked anywhere from thirty to forty hours a week. Nevertheless, I bought a car, a Model A, for \$75, and I was able to maintain it myself, with no insurance. We used to drive down to Malibu, where we would have the entire beach to ourselves, just two couples. That's where the movie stars are now. If anybody else came, we moved to a beach farther north. We used to go hiking in the high Sierras; and if we met one other couple on the trail, the day was ruined. We used to drive to San Francisco for Chinese meals, and there was no traffic. You couldn't make it today. We used to drive to Mexico for Mexican meals. That's gone, and it can never be reproduced. You know something? My children don't miss it. They're not smart enough to, and I haven't told them. Why should I wreck their lives?

I should make this clear, because it relates to the second kind of loss, where values will disappear. This has been so important a factor in Western culture that for the last thousand years you could make the following observation: The elites would not have liked the culture 100 or 200 years later. If you stopped somebody on the street in 1776 or 1876 and described today's world to him, he would say, "My God, that's awful!" Let's take my own family. We came to this country for freedom, wealth, safety, status, respect. We got all that. Except it was a total failure, according to my grandfather. He walked with God; his degenerate grandson was an atheist at 12. What was the point of the trip? I explained to him that if we'd stayed in Poland, I would have been the same. I might as well be rich, knowledgeable, and so on.

Actually, things are looking better for my grandfather now. I became an agnostic at about 25, a deist at 35. I think I'm going to die a rabbi! But it took a long time.

WPI





## The mirage of efficiency

by Hazel Henderson

SCIENCE HAS BECOME a religion for all too many of us, while human values and ethical concerns are driven into hiding because they are embarrassingly unquantifiable and "non-rigorous." Most of the incentives in the academic world reward rather narrow, reductionist study and pseudo-rigorous examination of less and less significant phenomena.

Many distinguished scholars have called attention to these "fallacies of misplaced concreteness," as Alfred North Whitehead called such efforts of micro-rigor. They include, of course, the great Werner Heisenberg in physics; Kurt Gödel in mathematics; Oskar Morgenstern, Georgescu-Roegen, Kenneth Boulding, and E. F. Schumacher in economics. The torch is still being upheld in the science-policy arena by Lewis Mumford, Gerald Holton, Margaret Mead, Gregory Bateson, and many others, and there are the vigorous new critiques of reductionist science by Theodore Roszak, R. D. Laing, and William Irwin Thompson.

All these humanists force us to remember that reality is what we pay attention to. The normative nature of science is revealed in the first decision of any scientist: what phenomena to study. This choice then influences our view of reality: where we see ourselves in space-time — perhaps it's a sort of Heisenberg Uncertainty Principle at the macro, rather than the quantum level.

I believe that human survival now requires an awareness that transcends our very natural anthropocentrism. Each great knowledge explosion in our history has been based on such a new level of expanded awareness, from Ptolemy's view of the sun and stars revolving around us on Earth, to the Copernican revolution, which reduced us to a subordinate position in the universe. Darwin further undermined our proud image with his theories of evolution, and much of today's new knowledge is increasingly shattering our sense of self-importance. And that is so whether we study ourselves as components of living ecosystems, or as infinitely malleable creatures viewed by behaviorist B. F. Skinner in *Beyond Freedom and Dignity*, creatures whose profoundly emotional responses are nothing but electrical stimulation, reproducible by brain-probing instruments. Now we learn that two more of our claims to uniqueness are being debunked: dolphins and other mammals have well-developed languages; and many other species use tools, including even the lowly ant, which loads supplies on leaf fragments and thus multiplies its transport capabilities tenfold.

We are just becoming aware of ecosystems as immanent information. For example, it has been shown that grasses in typical grazing pasture are capable of growing themselves tougher and more unpalatable by increasing the cellulose content of their leaves in order to drive off excessive numbers of graz-

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The entropy state . . . a society that has reached such levels of complexity and interdependence that it has become unmodelable, and therefore unmanageable.

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animals. In our pride, we tend to overlook these levels of wisdom around us.

But let us not be dismayed by this disturbing new evidence of our need for greater humility. Let's instead relax and enjoy our natural curiosity, and indulge the new burst of imagination and speculation it creates. Imagination, indeed, has always been one of our most important survival tools. We must now employ imagination to help us deal with the perceptual crisis that is upon us, as our species has now multiplied almost to the limits of its ecological niche on this planet.

This perceptual crisis has two aspects. First, we are experiencing an implosion, as space and resources diminish relative to our growing population. We feel the loss of frontiers, the slowing of economic expansion, urban crowding, and the evaporation of many of our historically defined freedoms. And at the same time we are experiencing ourselves getting smaller and less significant as all of the old perceptual boundaries fall away. So paradoxically, we feel *physically* confined and frustrated, we are also confronted with an expanded *mental* model of the universe. We are again facing the oldest human dilemma: a consciousness that can wander among planets, stars, and millennia, but trapped in a few dollars worth of chemicals which will degrade in a few brief years. In short, we have to again face the fact of our own death and finiteness, as the old games our cultures have provided to shield us from this reality break down and become destructive and inappropriate for the new conditions, leaving us shorn of psychological clothes with which to protect ourselves.

Imagination is already coming to our aid again. As physical forms of growth are foreclosed, we are learning to make some new psychological "elbow room" in diversifying lifestyles and in envisioning new images to help us expand our consciousness for the next evolutionary leap we must now make. We might imagine ourselves as a termite colony, up to now living happily in a beam in the basement of a house. We have developed elaborate social structures and academic disciplines: termite geography, termite mathematics, physics, engineering, and economics. Suddenly our current generation has been used up and transformed the beam and emerged at its external surfaces. Not only does this change all the conditions within the colony and its beam, but the roof on the house seems to have blown off and the walls collapsed! Survival now requires the reconstruction of a more appropriate geography, physics, math, and economics to incorporate the new variables and expanded boundaries and contexts.

I HAVE OFTEN WONDERED why we are so much better at creating "hardware" than at designing the "software" to go with it. At one level, it is rooted in our fear of death and non-existence. When we build cities, dams, and factories, we provide for our material requirements, but we also affirm our existence and importance. These physical artifacts that are so tangible reassure us of our own reality. Another root of our interest in hardware is that humans love to manipulate their surroundings and enjoy the sense of mastery and control these activities confer, as well as the expression of self in such creation and play. Yet another explanation may be that we would rather project our inner tensions and conflicts onto the objective world than resolve them by examining our own psyches and trying to retool ourselves.

Lastly, I wonder whether this passion for hardware is not a result of a cultural overdose of the masculine consciousness? (I like to call it "macho technology.") The masculine psyche does seem more attuned (either biologically or by cultural conditioning) to manipulating external things and objects, while the female psyche seems similarly more attuned to "software," i.e., interpersonal and social relationships and arrangements.

Technology, defined as knowledge systematically applied to human problem-solving, means software as well as hardware. For example, the social security system and income tax are as much technologies as any hardware system. Lewis Mumford pointed this out a long time ago in *The Myth of the Machine*, and drew attention to our bias toward hardware in anthropology and archeology. He pointed out that when we dig for evidence of earlier cultures, such remains are tangible by definition: in other words, their hardware, whether arrowheads, axes, pots, or other artifacts. We infer from the extent and elaboration of these artifacts their level of "civilization." We often forget that many cultures may have existed without leaving a trace. They could have developed highly refined technologies, but of the software variety: techniques of conflict resolution, supportive interpersonal relationships, production systems based on elaborate barter, reciprocity, and redistribution schemes, as well as myths and taboos to regulate antisocial behavior without the use of jails, clubs, or physical restraints. A culture which elaborated such software techniques would have had little need for spears and arrowheads, and might have had few energies left over to elaborate its tools, and so we might assume too casually that, because there were few tangible remains, it was less "civilized."

In the same vein, I recently visited Japan and talked with a project director at the Japan Techno-Economics Society, who was directing an effort to computer-model the value system of the Japanese people. He pointed out that it was possible to infer from the quantities and configurations of material artifacts and



technologies created by various cultures, a great deal about their value systems. As an example, he mentioned the culture of the Balinese, who create exquisite music, dances, rituals, stories, and clothes, but who are just not interested in hardware. On the other end of the scale are the Americans, who are fascinated with hardware and produce more of it than any culture the world has ever known. We are even unable to enjoy leisure activities such as hiking without an incredible quantity of gear.

Similarly, we know that values are the dominant variables driving not only technological but economic systems. Relationships have been established between Judaeo-Christian religious beliefs and the rise of capitalism and the industrial revolution. E. F. Schumacher described in his book *Small Is Beautiful* the value system that drives Buddhist economics. There labor is an *output* of production rather than an input; it is embodied in the idea of "right livelihood," where work is a valuable mode of self-actualization while the product is of secondary importance.

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We again face the oldest human dilemma — a consciousness that can wander among stars and millennia trapped in a few dollars worth of chemicals that will degrade in a few years.

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In this culture we may at last be awakening from that altered state of consciousness which Thomas Berry calls "the technological trance," and all the unthinking assumptions that underlie it. The most destructive of these beliefs is that we see innovation and technological progress mostly in terms of hardware, and as continuous. We rarely recognize limits or the concepts of balance and paradox. This technological trance has led us on with a mirage of "efficiency" as its will-o-the-wisp. Our technological consciousness has permitted us to conquer nature (temporarily, at least), expand our ecological niche, and manage more of the variables that affect our existence. But the trade-off is that, as we proceed with this process, the task of managing these proliferating variables becomes ever more complex and onerous, until we find that we need a breakthrough a day to keep the crisis at bay. We lose sight of the fact that some human and natural processes are not susceptible to increases in "efficiency." Women understand this better than men: it still takes nine months to make a baby, and 200 years to grow a hardwood tree. And while human interactions can be increased and made faster with technology, they are rarely made better and sometimes made worse. A companion myth is that new technologies can always be "debugged" if only we wait long enough. My view is, if you put the bugs in at the front end of the cost-benefit analysis, you might have a whole different idea of whether it is worth doing.

Let us look at a few contemporary examples of this mirage of efficiency. A recent one is the effort of officials in the U.S. Postal Service to reduce "inefficient" mail. After reducing the human workforce (adding to the ranks of the unemployed) and investing millions in capital, they find that the machines are ripping, crushing, or destroying an alarming number of parcels. It might have been more socially efficient to add one million unemployed workers to the Postal Service, increasing the care in handling while reinstating the twice-a-day mail service our forefathers took for granted!

Another more somber example is the efforts of electric utilities to seek "efficiency" in larger and larger generating plants, substituting nuclear power for less costly and violent technologies. For this increasingly suspect and evanescent "efficiency," they are willing to assume risks on our behalf and trade social efficiency, since costly and elaborate police and security systems will have to be invented to contain and manage the plutonium wastes, now and for thousands of years to come. This does not mention, either, the additional social costs which must be paid: the loss of many cherished civil liberties. Already, consumers and citizens are in full-scale revolt against these social inefficiencies. Yet another example is the current effort of supermarkets to automate checkout counters in search of greater "efficiency."

You can see as well as I that the word "efficiency" is fast becoming meaningless. We must ask, in all cases, "efficient for whom?" We are now more aware that if the term efficiency is to mean anything, time and space coordinates must be specified. We have to know over what time-frame efficiency is to be maximized: One year, as in corporate balance sheets? Five years? Or sustained-yield, long-term productivity? Farmers understand that; I don't know why economists don't. Similarly, we must know at what system level efficiency is to be maximized: At the individual level? The corporate level? Or do we mean societal efficiency, or ecosystem efficiency? Each of these different time-space specifications of "efficiency" requires totally different policies for their implementation. Indeed, in an economy with nearly 8 percent of the workforce unemployed, corporate efficiency may be served by further automation and capital-intensification, while social efficiency is sub-optimized because taxpayers must foot the bills for unemployment and welfare payments.

Buckminster Fuller uses a similar term in a vacuum. He calls it "ephemeralization." You know, you're going to do more with less, and that's bound to be good for all cases, all times, and all places. There again, you have to break it out. He uses the example of the few pounds of material in the satellite replacing thousands of pounds of copper wire in telephone cables under the Atlantic. Of course, you cannot even discuss the efficiency of doing that without asking the question of how the access to the satellite has been altered by that new configuration. In some cases, it may be efficient to use stone-age technology if the material is readily available to the local people. So let's call people to account who they use these terms loosely.

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Try this one out on a neoclassical Western economist: Do me a model of a production system where labor is the output, not an input!

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BELIEVE OUR ECONOMY has overshot the mark in its substitution of capital for labor. In fact, I contend that in hundreds of production and service processes, labor has now become the more efficient factor. As natural resources become increasingly scarce, we must employ our human resources more fully. In fact, a resource-conserving economy must, by definition, be a full-employment economy as well as, incidentally, a more environmentally benign one.

I got so angry about the way this debate was going last year that I formed a coalition called Environmentalists for Full Employment. You know, there are a lot of front groups formed by the energy industry, with names like Californians for Jobs and Energy, and Americans for Energy Independence, and so forth. So we're trying to call them to account by saying, jobs producing what? At the substitution of what other public priorities? Jobs at how much capital per workplace? They think all they have to do now, you see, is wave the holy icon of jobs, and they can do the most absurd things in that name. But I think we're now getting beyond that.

On a world scale, this capital/labor ratio has obviously shifted to labor, not only because capital is scarce, but because natural resources are becoming scarce and people are becoming more plentiful. But in our own U.S. economy, the capital/labor ratio has shifted back to labor for other reasons. We have been subsidizing the overuse of capital relative to labor through investment tax credits, while at the same time we have been using linear-extrapolation type projections of labor costs which conceal the fact that labor is now cheaper than capital, materials, and energy in many industries and services.

Another reason we are oversubstituting capital for labor is due to economists' confusion about the concept of "productivity." They measure productivity as output per employee-hour. This is a measure of how much more *capital* has been placed at the disposal of each worker. As economists examine these capital-rich production processes, they measure these predictable increases in "productivity," case by case, while overlooking the fact that these processes all tend to shake out more and more workers at the bottom of the economy, where *their* productivity falls to below zero and they join the ranks of the unemployed. Therefore, we need additional "average productivity" measures across the whole workforce, including those who are able-bodied but unable to find work.



Indeed, it is the current combination of high unemployment, inflation, and shortages of capital, energy, and materials that are now signalling the limits of macro-economic management. Our society is now negotiating what I have called "the coming economic transition" from a maximum-materials-throughput system based on nonrenewable resources, to a minimum-throughput, recycling economy based on renewable resources and managed for sustained-yield, long-term productivity. In dealing with this difficult transition to the new productive system we must now put into place, we are facing *social* and *conceptual* limits to growth. These social limits are now clearly visible in most industrialized economies, in the backlog of soaring social and environmental costs (dismissed by most economists, in almost a Freudian slip, as "externalities"). These include not only cleaning up after the mess created by mass production and consumption, but dealing with the dropouts from urban complexity and massive, incomprehensible technology: mediating the social conflicts, controlling crime, and attempting to coordinate the whole and maintain social equilibrium.

I have proposed that, far from achieving Daniel Bell's salubrious vision of the post-industrial state, we may well be heading for what I call the entropy state. I define the entropy state as a society that has reached such levels of complexity and interdependence that it has become unmodelable, and therefore unmanageable. Such a society begins generating so many unanticipated social costs that these cumulative "transaction costs" begin growing exponentially, and finally exceed the society's real production. Like a physical system, it winds down of its own weight into a



state of entropic equilibrium, with little further useful potential. I believe that many industrial societies are now exhibiting this syndrome, and many may have already drifted to a soft landing in an accidental steady state, with inflation masking their declining condition. I think Britain is a perfect example. Ironically, since the inadequate formulation of gross national product indicators adds in all these rising social costs as if they were real and useful production, we are further deceived when the GNP rises.

Mature industrial societies reaching the entropy stage seem to generate two additional causes for their increased inflation rates which cannot be understood from the perspective of economics. First are the rising, systemic transaction costs of excessive complexity, a sort of meta-level trade-off between the division of labor and specialization on the one side and transaction costs on the other side. This is perhaps best understood from the vantage point of general systems theory, or you can use a game theory approach, such as James Robertson has done in two recent books. He maintains that a society will only have non-inflationary currency when it is seen by all its members as being just and fair. That's not altruism; it's just game theory.

An additional factor, best measured by thermodynamic analysis, arises when a society on a declining resource base must cycle more of its real wealth back into the process of extracting its energy and materials from ever-more degraded and inaccessible resources, resulting in higher costs and lower net yields. Consequently, although people may be fully employed and economic activity remains high, it is a wheel-spinning process in which fewer real goods and services are produced; and so the currency itself progressively loses its real purchasing power. All of this is viewed through the inadequate lens of economics as a single phenomenon called "inflation" or as a declining productivity of capital and a capital shortage. There is little understanding of the non-economic causes of these phenomena, and that we are now squandering our last precious store of "cheap" capital amassed from easily extracted resources, and that it represents a vital stock of "flexibility," which is as much of a meta-level resource as coal or oil.

The limits to growth issue is a political issue. The point is that if you have already been consuming a vast amount of the world's resources, then it behooves you to pay out a lot of money to get people to justify your continuing to consume, and so you have an awful lot of studies done, and propagated, to say that there is no problem. And if you don't have your face quite so firmly buried in the sand, you tend to be a little worried about when it might all run out. And this is why the Third World countries are now talking about a new economic world order. And I think they understand that the justification of inequality for capital formation, which is the old Keynesian "trickle-down" model of economic development, is going to leave them waiting in the back of the line forever, until all of us have our second houses and third boats. I was recently with a Third World leader, and we were talking about the inevitable subject of the limits to growth. He said "It's like a tunnel with two lanes of traffic. You go into the tunnel with your car, and you get stuck in the lane that's not moving, and you're not allowed to change lanes. And there is the other lane going by you at a pretty good clip, and you get very frustrated." I'm afraid I disagree with Herman Kahn about this. You *do* see the other lane going by, and you do get very angry about it. And of course, the thing is *we do not have the choice* of whether to marry India. We chose to marry India when we (the industrial nations) extended our global search for materials and resources to support our economies. It was not India's choice; she was a captive bride.

**W**E NOW REALIZE that we must learn humility if we are to face these complexities we have created. We sense the truth that only the system can manage the system, and we sense the airy arrogance in some of our concepts of management and administration. We must examine anew the easy assumptions that sociotechnical systems are even susceptible to manipulation by legislation, just as ancient kings had to learn that they could not affect the behavior of natural systems by royal decree. We marvel once more at the ingenuity of "primitive" cultures, whose most obvious characteristic is the relative absence of government, because social controls have been internalized.

We are indeed at a crossroads, faced with our own sociotechnical complexity. We can take one path — that of further stepping up the computer power to model these complexities — and progress down the road to the computerized Leviathan state of George Orwell's *1984*. Or we can take, not the Luddite's ax, but the surgeon's scalpel, and try to disentangle some of the unnecessary interlinkages and the over-coherent technologies themselves, and by such decentralizing of means try to reduce the number of interacting variables that we must manage.

We also realize that hard choices and trade-offs must now be made, not just as to budget priorities between education, transportation, health, or more private consumption; or between R&D priorities, public and private investments, capital- or labor-intensive production, or energy alternatives. There is a new range of now visible meta-choices, such as between further centralization or decentralization, between maintaining a stock of social flexibility and options versus making current investments which may hard-program society into unsustainable or irreversible patterns. These meta-level trade-offs are visible in every social subsystem, from government and corporate organizations to the educational system, where maintaining capital plant and equipment must be traded off against flexibility and adaptability, while similar choices must be made in teacher training and student curricula.

At the personal level, educators also have to deal with these new trade-offs: whether to specialize further or to expand their horizons into interdisciplinary studies, even at the expense of "rigor" (as academically defined and rewarded), and whether to trade expanded consciousness for greater secular power and emoluments. We see that such goals conflict, because knowledge has become the servant of power in too many cases, and our educational enterprises have too often turned out intellectual mercenaries, whose lances are for hire to justify policies of entrenched bureaucracies and interest groups, rather than to merely search for the truth. Indeed, we should debate whether our incentives to scientific achievement, such as the Nobel Prize should be redirected. Perhaps we should call a moratorium on giving Nobel Prizes in highly controversial and dangerous research, such as nuclear physics or work on recombinant DNA.

At last we see that science is *not* neutral, nor is technology, as its pretensions to value-free objectivity are now debasing the currency of public debate and preventing us from making adequate social choices. For example, economics is now obscuring the needed debate about what is valuable under the new constraints and conditions we face. Technology now creates its own social configurations, and we must ask to what extent the continued drive toward big-bang, capital-intensive technology simply concentrates power, wealth, and knowledge in fewer and fewer hands, while making the rest of us poorer and more powerless, and all the while actually increasing overall human ignorance.



Perhaps we should call a moratorium on giving Nobel Prizes for highly controversial and dangerous research.

It is now clear that the free market is not working to direct technological innovation to consumer demand, as it should. If it were, we would not now have a debate raging in the political arena about what is "appropriate" to technology, which has been pillaged out of the market choice arena into the realm of social and political choice. All this was predicted in 1944 by Karl Polanyi in his study of human production and exchange systems, *The Great Transformation*. Polanyi pointed out that leaving resource allocations to a free-market system would merely suboptimize the social system while leading to rapid environmental depletion. He demonstrated that free markets, far from being derived from some natural order or human behavioral laws, as Adam Smith thought, were created by carefully designed human planning and software. The conditions thus created for the operation of free markets were bitterly contested and legislated over many decades. This new package of social legislation, *laissez faire*, which enclosed land so that it might be marketed as a commodity and drove off peasants so as to require them to sell their labor as a commodity, laid the groundwork for the industrial revolution. Here again, this increase in efficiency of production was won at a terrible price in social dislocation and inefficiency. In the larger scale of human history, market systems are a mere blip associated with the rise of industrialism, and have actually been a rare aberration in human societies. As the industrial system has reached its present complexity, I agree with system theorist Todd LaPorte, who asserts that markets can no longer allocate re-

sources where production has indivisible social consequences. So we must now face the paradox: *laissez faire* does not always work, although it does wherever Adam Smith's conditions are met, and then it is the *best* way to allocate resources. And the terrible truth is, we do not know how to plan, and the socialist countries do not know how to plan. I think it would clear the air if we talked about that paradox, that there must be a third way . . . and we are all looking for that third way.

This discussion of market failure is necessary if we are to properly assess technology and try to understand its likely second-order consequences. Each major technological innovation redistributed power, destroys some jobs and creates others, rearranges population patterns, and creates new ranks of winners and losers. Technologies do not arise in a vacuum. There is always a force field of institutional vested interests whose interactions may tend to promote or suppress technologies.

**T**HE REAL JOB over the next ten years is to start retooling ourselves. Herman Kahn asks, Are we worse off? Is the future going to be better? To me that's not the question. We have to redefine what's better and what's worse; we have to redefine what we mean by satisfaction. We can't talk about waste without redefining needs and greeds. There's plenty for our needs, maybe not for all of our greeds.

I hope that eventually some of us will see the advent of the ultimate industrial revolution: the revolution from hardware to software. One day, a problem of production may not automatically trigger visions of a factory, machinery or hardware at all. Instead we may learn to stop and think harder and with more subtlety. We will then scan suitable natural ecosystems for signs of the natural capability we seek, or for useful biological potential that we can tap into or augment. This bioengineering approach is already leading to a design revolution and a rethinking of many problems of production and energy and materials management. For example, many architects are now designing houses with "passive" heating systems — that is, they are constructing and positioning houses to take advantage of natural solar and wind conditions so that they will not need a heating unit at all. Or take the production of nitrogen fertilizers. This does not require factories, but can be approached by recycling animal and human wastes, or by genetically engineering plants to augment their own nitrogen-fixing capabilities. The lowly joruba plant that grows wild in the U.S. southwest desert regions is a rich source of petroleum, while plants "mine" millions of tons of important industrial minerals every year by collecting them from the soil and storing them in their roots, where they are accessible for extraction.

Our planet is more marvelous than we yet understand, and our own capabilities and imaginations will be stretched by the current crises of our dying industrial system. Your program at WPI is helping us in transcending the old system and rising to meet and guide these new levels of human awareness, as are those in so many other fields undergoing creative ferment. Time is short, but we can all do no less than play our part in this human evolutionary struggle.

**WPI**



# Thank you!

**Dear WPI Alumni:**

It began as an extraordinary year — and it ended as an extraordinary year.

We were faced with the challenge of mobilizing enough volunteers to telephone 8,000 alumni. The year ended with a 30% increase in the Fund and a record total of \$282,883.58 having been contributed. The year started with the most elaborate planning, both conceptually and logistically, of any WPI annual drive. The task was to combine the solicitation for the 1975-76 Alumni Fund (gifts used for operational purposes) with the WPI Plan to Restore the Balance (capital purposes).

Our basic premise was one adopted by the WPI Fund Board in 1972 — that every alumnus should be provided an opportunity to take part in the capital fund raising program. Moreover, we had an acute awareness of the disaster resulting from elimination of the Alumni Fund during the capital program in the mid-sixties. At that time, participation in the Fund dropped drastically. Fifty percent of WPI alumni were contributing prior to the capital campaign; whereas, only 25% were making gifts when the Fund resumed in 1967. Our objective in 1975-76 was thus to maintain the strong momentum of the Alumni Fund over the last several years, while also giving every alumnus an opportunity to become involved in the capital program.

Our initial decision was that a personalized door-to-door solicitation program would be neither cost-effective nor labor-effective. We were also aware that general mail solicitation by itself is perhaps the weakest form of fund-raising. Thus, we opted for a combined telephone and mail program and set out to conduct 19 phonothons at sites from New Hampshire to California. The positive response from alumni asked to work was heartwarming, and the end results were exceptional. We had over 600 volunteers who stepped forward to man telephones throughout the country and to work with Anniversary Gift Programs for their classes. The results are a record breaking Alumni Fund which gives the Fund Board and all alumni a lofty target to strive for in future years. It's a pleasure to send you this annual report, and I commend and thank all who were involved either as donors or as volunteers. The final results for the year show:

<b>Cash Received</b>	<b>\$282,883.58</b>
<b>Number of Donors</b>	<b>3,686</b>
<b>Percentage Participation</b>	<b>31.97%</b>
<b>Average Gift</b>	<b>\$76.74</b>

The phonothon was the most ambitious alumni program ever undertaken at WPI. In a period of three weeks, or a total of 12 calling days, we phoned over 50% of our total alumni body. The results certainly justified our initial decision to raise money in this way, for we received in excess of \$125,000 through telephone pledges. I was involved in several of these in the eastern New England area and I can say without hesitation that I think all alumni who participated really enjoyed themselves while performing a very worthwhile service for their Alma Mater. I commend Phonothon Chairman Howard I. Nelson '54 of Grafton, MA and his entire Phonothon Task Force for their extraordinary organizational efforts which made this program such a success.

Another highly successful effort has been the Anniversary Gift Program which focuses on the classes celebrating 25th, 40th and 50th reunions. Last year, the classes of 1926, 1936 and 1951 with Milton C. Berglund '26 of Hyannis, MA; George E. Rocheford '36 of Natick, MA; and Robert C. Wolff '51 of Cambridge, NY as the respective chairmen generated almost one quarter of a million dollars for WPI. All three classes restricted their gifts to the renovation of Salisbury Hall. At the reunion luncheon in June, they presented some extraordinary gifts to President Hazzard for the College. For example, the Class of 1926 presented a gift totaling \$180,675.90, which included a bequest from a classmate of \$125,000 in addition to the \$55,675.90 donated by the class and matched in part by corporate funding. The Class of 1936 presented a gift of \$24,295.00, and the Class of 1951 contributed \$28,867.52. Both of these amounts included corporate matching gifts. I sincerely thank Milt, George and Bob, along with all of their classmates who participated in the program as volunteers and donors. In addition, I extend a very special thanks to Daniel Maguire '66 of Stow, MA, an Alumni Fund Board member who served as the national chairman once again last year for the Anniversary Gift Program.

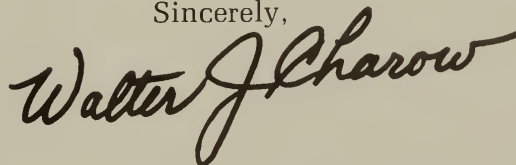
Particularly pleasing to me is the fact that the total for the fund was approximately \$67,000 (or 30%) greater than the previous year. As we all know, our Alma Mater has gone through some very dramatic and impressive changes in recent years, and it is tremendously gratifying for me to see alumni of our college come forth in such a generous and helpful way to support these changes.

Finally and imperatively, a very special and heartfelt thanks to each of the Fund Board members. They have made my job as Chairman of the Fund Board exceptionally easy, and it has been extremely enjoyable to work with them. In addition to Mr. Maguire and Mr. Nelson, I extend my profound appreciation to three other gentlemen. The leadership talents of Leonard H. White '41 of Worcester, Chairman of the President's Advisory Council, have enabled the P.A.C. to grow from 17 members four years ago to 90 members currently. Peter H. Horstmann '55 of Holden, MA, Chairman of the Special Gifts Program, has recently completed a major effort in support of the College. And G. Albert Anderson '51 of Gardner, MA is chairman of the newly-inaugurated Class Agent Program. Without the help of these key individuals, our efforts and even our results might have been smaller and would certainly have been more difficult.

To each and every volunteer — Fund Board members, phonathon callers, anniversary and special gift program people — and to all the donors, I offer my wholehearted gratitude for your generosity and assistance. The students of WPI today are the true beneficiaries of your support. We are pleased that your efforts and the funds we have raised will support so significantly the continuing operations of the College.

Yes, it was an extraordinary year!

Sincerely,

A handwritten signature in black ink that reads "Walter J. Charow". The signature is written in a cursive, flowing style with a long, sweeping underline.

Walter J. Charow '49

Alumni Fund Board Chairman



## GIVING BY CLASS

Class	Number in Class	Number of Cash Gifts	Total Cash Gifts	Percent Participation	Average Cash
1890	1				
1895	2				
1896	2				
1897	2				
1900	2				
1901	2				
1902	2	1	\$ 25.00	50.00	\$ 25.00
1903	6	1	50.00	16.66	50.00
1905	2	1	50.00	50.00	50.00
1906	7	1	5.00	14.28	5.00
1907	8	3	355.00	37.50	118.33
1908	12	5	361.66	41.66	72.33
1909	10	5	350.00	50.00	70.00
1910	15	1	200.00	6.66	200.00
1911	12	1	100.00	8.33	100.00
1912	25	8	505.00	32.00	63.12
1913	26	8	870.00	30.76	108.75
1914	29	10	1,963.55	34.48	196.35
1915	35	8	881.76	22.85	110.22
1916	40	14	1,620.00	35.00	115.71
1917	53	15	1,005.00	28.30	67.00
1918	43	19	1,280.00	44.18	67.37
1919	34	15	4,064.80	44.11	270.99
1920	64	26	2,905.00	40.62	111.73
1921	49	16	1,335.00	32.65	83.44
1922	75	32	3,600.00	42.66	112.50
1923	61	21	3,052.80	34.42	145.41
1924	51	23	2,754.70	45.09	119.75
1925	64	10	625.00	15.62	62.50
1926	102	59	25,422.40	57.84	430.04
1927	74	37	7,000.00	50.00	189.19
1928	84	49	9,346.35	58.33	190.76
1929	81	27	1,935.00	33.33	71.67
1930	114	45	4,373.00	39.47	97.18
1931	114	46	3,010.00	40.35	65.22
1932	105	38	2,391.54	36.19	62.16
1933	118	47	4,745.00	39.83	101.19
1934	111	41	3,440.00	36.93	83.87
1935	132	43	5,095.00	32.57	118.41
1936	101	53	7,028.00	52.47	132.81
1937	107	46	9,909.25	42.99	215.73
1938	134	56	21,789.00	41.79	389.55
1939	140	60	3,870.00	42.85	64.50
1940	151	59	4,361.45	39.07	73.83
1941	154	59	3,600.00	38.31	61.02
1942	161	60	3,905.00	37.26	65.17
1943	141	58	3,501.00	41.13	60.36
1944	153	56	4,425.00	36.60	79.15
1945	141	46	3,964.96	32.62	86.01
1946	314	106	7,065.08	33.75	66.75
1947	79	29	1,450.00	36.70	50.00
1948	188	68	3,563.00	36.17	52.06
1949	242	81	6,275.00	33.47	77.44
1950	211	74	4,598.00	35.07	62.12
1951	194	107	10,926.07	55.15	102.71
1952	173	37	5,300.00	21.38	143.43
1953	184	61	5,868.00	33.15	96.41
1954	157	58	3,530.00	36.94	60.76
1955	148	47	2,545.00	31.75	54.15
1956	163	53	3,155.00	32.51	59.15
1957	229	71	3,305.00	31.00	46.33
1958	235	84	3,502.00	35.74	41.57
1959	277	102	5,310.00	36.82	52.00
1960	297	93	4,800.00	31.31	51.51
1961	315	106	5,252.60	33.65	49.37
1962	284	81	3,520.00	28.52	43.46
1963	264	92	4,085.00	34.84	44.30
1964	320	91	4,205.96	28.43	46.16

65	323	103	3,842.62	31.88	37.30
66	344	105	3,831.33	30.52	36.48
67	352	91	2,918.24	25.85	32.06
68	447	119	4,775.00	26.62	40.12
69	354	99	3,125.00	27.96	31.56
70	390	82	3,010.00	21.02	36.70
71	460	100	3,063.96	21.73	30.63
72	351	69	1,760.00	19.65	25.50
73	540	124	4,372.00	22.96	35.25
74	478	90	2,202.00	18.82	24.46
75	467	34	656.50	7.28	19.30
TOTAL	11,530	3,686	\$282,883.58	31.97	\$76.74

TOTAL COMMITMENT (CASH + OUTSTANDING PLEDGES) = \$332,080.43

## GIVING BY CHAPTER

Chapter Name	Number in Chapter	Number of Cash Gifts	Total Cash Gifts	Percent Participation	Average Gift
Arkshire	69	21	\$ 1,150.00	30.43	\$ 54.76
Boston	1,087	311	28,964.56	28.61	93.13
Central New York	109	53	3,126.25	48.62	58.98
Chicago	141	43	4,630.00	30.49	107.67
Cincinnati	52	16	1,235.00	30.76	77.18
Cleveland	97	35	4,015.00	36.08	114.71
Connecticut Valley	365	130	17,805.50	35.61	136.96
Detroit	110	45	3,040.00	40.90	67.55
Eastern Connecticut	170	57	2,985.00	33.52	52.36
Hartford	713	260	16,055.00	36.46	61.75
Hudson-Mohawk	184	74	4,627.82	40.21	62.53
Los Angeles	278	87	5,541.45	31.29	63.69
Long Haven	432	137	7,790.00	31.71	56.86
Long York	517	158	13,543.00	30.56	85.71
North Shore	353	121	6,092.96	34.27	50.35
Northern California	199	74	5,560.00	37.18	75.13
Northern New Jersey	475	212	19,885.00	44.63	93.79
Pacific Northwest	50	11	1,105.00	22.00	100.45
Philadelphia	332	118	7,358.00	35.54	62.35
Pittsburgh	85	44	3,690.00	51.76	83.86
Rhode Island	392	112	10,595.06	28.57	94.59
Rochester-Genessee	130	53	3,085.00	40.76	58.20
Southwestern	85	22	1,222.00	25.88	55.54
Louis	21	8	290.00	38.09	36.25
Washington	465	205	12,219.62	44.08	59.60
Western New York	85	31	1,529.70	36.47	49.34
Wilmington	107	53	3,780.00	49.53	71.32
Worcester	2,024	540	40,555.71	26.67	75.10
West Of District	1,601	639	49,923.53	39.91	78.12
Address Unknown	564	2	120.00	.35	60.00
Total Assigned	238	14	1,363.42	5.88	97.38
TOTALS	11,530	3,686	\$282,883.58	31.97	\$ 76.74

## 1976 ANNIVERSARY GIFTS

Class of 1926	\$180,675.90*
Class of 1936	\$ 24,295.00
Class of 1951	\$ 28,867.52

\*Including a bequest of \$125,000

All Anniversary Gifts were applied to the renovation of Salisbury Hall.





*The data on which these class notes are based had all been received by the Alumni Association before November 1, when it was compiled for publication. Information received after that date will be used in succeeding issues of the WPI Journal.*

## 1912

The second Main Street in Marlboro, Mass., which is expected to be the pivotal point in the redevelopment of the downtown area, has been named Granger Boulevard for **J. Francis Granger**, who has served the city for over fifty years. For thirty-four years he served as Marlboro's superintendent of streets and as city engineer. He was also clerk of the works for Marlboro Hospital. A partner in Granger, Thompson and Liston, he is currently vice president of the Marlboro Hospital board of trustees and chairman of the high school building committee. For many years he has served as secretary of the Massachusetts Highway Association.

## 1921

**Joseph Kushner** is a sales manager at Consolidated Brokers, Inc., New Haven, Conn.

## 1922

A member of the reunion committee and self-appointed spokesman for class president **Wayne Keith, Larry Larson**, reminds the members of the illustrious class of 1922 that their 55th is only months away and to keep the 1977 alumni reunion weekend open (June 9, 10, and 11)

## 1933

**Leighton Jackson** retired from duPont in June after nearly 43 years of service. **Alfred Parker** has been appointed technical director of chemical engineering research at the John Blizard Research Center of Foster Wheeler Energy Corp., Livingston, N.J. Since 1944 he has served as a project engineer, proposal engineer, head of the chemical engineering department, and manager of the chemical research laboratory. He holds several patents and is a trustee of Engineering Index, Inc.

## 1938

**Walter Knapp** was selected the 1976 winner of the Durrance Award by the International Fraternity of Phi Gamma Delta. The award is given for leadership within the fraternity.

## 1939

**Walter Longnecker** has retired from Gould Inc., Cleveland, Ohio, where he had served as a vice president.

## 1941

**Donald Smith** has been recommended as vice president for development and public affairs at Southern Methodist University, his appointment having yet to be formally approved by SMU trustees. Smith, a former alumni secretary at WPI and official at Washington & Lee University, and the University of Rochester (N.Y.), for the past six years has headed Smith, Hazlett & Darcy, Inc., in Rochester. The firm provides counseling services to educational, cultural and health care institutions.

## 1942

**Charles Berry** holds the position of eastern sales manager at Kinometrics, Inc., in San Gabriel, Calif.

## 1943

**S. Bailey Norton, Jr.**, president of Acme Chain, Holyoke, Mass., has been elected a director of AIM (Associated Industries of Massachusetts). Norton joined Acme Chain in 1950. He has served the company as vice president of manufacturing, and general manager of the Acme Chain division under its new owner, Rockwell International. In December 1975 when the division was acquired by Incom International, he was elected president, with his responsibilities extending to Incom Singapore Pte., Ltd.

## 1945

**Bertrand Mills**, vice president of manufacturing at Carrier Corporation, serves on the production editorial advisory board of the Dana Chase publication, *Appliance*. He joined Carrier as president of the Carlyle Compressor Company division in 1970. In 1946 he started his career at GE, holding positions in engineering, manufacturing, and general management.

## 1946

**Clayton Adams** is with Bath (Me.) Iron Work Corp. . . . **Donald Ferguson** currently holds the post of corporate vice president of manufacturing at the Singer Company in New York City. . . . **Prescott Grout** has been named adjunct assistant professor of humanities at Nichols College, Dudley, Mass. . . . **Julius Palley** and his brother Arthur of Commonwealth Stationers, Inc., Worcester, are currently renovating a collection of factory buildings on Union Street built by Stephen Salisbury in 1892. A number of tenants including a clothing store, are already taking advantage of the complex which will ultimately be landscaped and be adjacent to the proposed Worcester Center Boulevard and a new police station across from Court Hill.

## 1947

**Russell Smith** recently attended a meeting of the International Electrotechnical Commission in Nice, France. This commission is charged with the responsibility of setting standards for industrial and scientific apparatus sold in international markets. Russ is the U.S. delegate to the committee developing such standards for locomotive and other electric traction equipment. Presently he is the manager of electric locomotive engineering for the General Electric Company in Erie, Pa.

## 1948

Currently **Eli Braley** holds the post of president of Hathaway Machinery Co., Inc., Fairhaven, Mass.

## 1949

Capt. **Bohdan Boluch**, who has retired after 27 years of service with the Massachusetts State Police, was recently honored at a testimonial dinner in Northampton. At his retirement he was commander of Troop B, Northampton. . . . **Francis Carini** is a research scientist at Johnson Research in New Brunswick, N.J.

## 1950

Gov. Ella T. Grasso of Connecticut has named **Robert Stewart** to the University of Connecticut Board of trustees for a five-year term. He is vice president for strategic planning and group vice president for flight systems and equipment at United Technologies. . . . **William Carpenter**, having completed 25 years of service with Foster Wheeler Energy Corp. in Livingston, N.J., currently serves as assistant to the manager of the equipment division, licensing department. He joined the firm in 1951 and since then has been promoted to sales engineer, district manager, and project manager in the contract control department. He is past president and trustee of the Puddingstone Community Club and past president of the Hudson-Mohawk chapter of the WPI Alumni Association.

## 1951

**ter Groop** was recently named vice president sales at the newly created Rexene Polyolefins, located in Paramus, N.J. He worked for the firm for ten years prior to its reorganization. . . . **John Lewis**, who resigned from Monsanto after 12 years, is now vice president and general manager at Consupak, Inc., Morristown, N.J. . . . **Robert Luce** serves as a process engineer at PPG Industries, Pittsburgh, Pa. . . . **Joseph Thomas** holds the post of director of engineering resources at GTE Sylvania, Stamford, Conn. He is with the GTE consumer products business group, a world-wide activity.

## 1952

Following graduation from WPI, **Joe Giunnies** joined duPont. Currently he is assistant superintendent of the reactor and heavy water departments at duPont's Savannah (Ga.) River Plant and Laboratory. . . . **Daniel Stoughton** is manager of the industrial division at Synergo Co., Philadelphia.

## 1953

**David Beach** has been appointed a product design manager in the consumer products engineering area at Kodak Apparatus Division in Rochester, N.Y. He started at Kodak in 1953 and has served as an assistant engineer in still camera design, administrative assistant on the management staff at Kodak office, and was advanced to senior supervising development engineer in still picture engineering in 1974. He is a member of the Society of Photographic Scientists and Engineers. . . . **George Crozier** serves as director of project management at Monsanto Enviro Chemicals, Inc. in St. Louis, Missouri. . . . **Charles Magan** holds the post of vice president of the automotive group at Bendix Corp. in Troy, Mich. . . . **Gene Larson** was recently named commissioner of public works in Newton Centre, Mass. Previously he was building commissioner.

## 1954

**William Hills** is the author of "Future Trends in Textured Yarn Manufacture" which appeared in the June issue of *Fiber Producer*. For 17 years he has worked with the textiles and new enterprise divisions at Monsanto. Today he is the president of Hills Research & Development, Inc., Melbourne, Fla. His firm developed the Sahm Super Speed texturing machine on a contract basis. . . . **Paul Wagenknecht** has been appointed manager of corporate engineering at Inland Container Corporation's headquarters in Indianapolis. Previously he was with Westvaco, Rice Barton Corp., and A. P. Wagenknecht Company, a family-owned manufacturing company of auxiliary equipment for the paper industry.

## 1955

**William Johnson** operates Wm. Johnson Leather Co. in Madison, Wis. . . . **Robert Kirkpatrick** serves as a senior analyst for Coastal States Gas Corp., Houston, Texas.

## 1956

Currently an associate professor of management at Southeastern Massachusetts University, Dr. **Howard Brown** has become a partner in University Collaborative. The university was recently organized to enable a group of university and community professionals to deal with needs of individuals and organizations by offering consulting services in a wide range of human-resource-oriented areas, seminars, specially-designed programs, and organization development. . . . Dr. **Raymond Hagglund**, professor of mechanical engineering at WPI, received an award from the American Society for Engineering Education in October. The Western Electric Fund Award, which includes a citation and a \$1,000 grant, was presented at a dinner held at the University of Maine in Orono. . . . **Jack McHugh** has been elected president of the Waterbury (Conn.) Exchange Club. He is president of his own firm, the Royal Screw Machine Products Co. and serves on the board of advisors of Waterbury State Technical College. He has also been president of the local Smaller Business Manufacturers Association.

## 1957

**John Atchison** recently resigned from E.C.I. in St. Petersburg, Fla. and is now a member of the technical staff at Mitre Corp., Bedford, Mass. . . . Dr. **René Bertrand** is the co-author of "Environmental Aspects of Coal Gasification" which appeared in *CEP-Chemical Engineering Progress*. He is manager of the Fuels Utilization and Conversion Section at Exxon's Government Research Laboratories. . . . **Arthur Sullivan** is a manager for INCO in Bellevue, Washington.

## 1958

**Charles Cushman** holds the post of product development engineer at Dunlop Sports Division in Westminster, S.C. . . . **George Walker**, SIM, has been appointed vice president and general manager of Johnson Steel & Wire Co., Inc., Worcester. Previously he was vice president for administration and had also served as plant manager at Worcester. He has been with the firm since 1950.

## 1959

**Robert Berg** is marketing manager at American Standard, Inc., Lexington, Ky. . . . **W. U. Pursell, Jr.** serves as plant manager of Hydrials' Tubular plants in Rochester, Pa. and Youngstown, Ohio. He has passed the certification exams given by the American Production and Inventory Control Society. . . . **Bob Sharkey** of Shark's Marine, Keene, N.H. has moved his business out to a main highway and put up a new steel building with about three times more space than the old. He has also increased his line to include chain saws, wood splitters, and Arctic Cats. Bob and his wife, Eve, are part-time farmers and have a steer, pigs, sheep, and chickens. . . . **Ronald Swenson** is manager of corporate engineering systems at Xerox in Webster, N.Y.

## 1960

**Sang Ki Lee** has been transferred from the Motorola Patent Department in Phoenix to the firm's patent department in the Chicago area where he will serve as division attorney for the Communications Group, International Division. . . . **Raymond Levesque**, former manager of services in the aerospace structural adhesives division of American Cyanamid, has relocated to the Wallingford (Conn.) plant, where he serves as manager of material services in the plastics and resins division. . . . **William Linke** was recently promoted to junior process engineer at the Bard-Parker plant in Hancock, N.Y. In his new position he will be responsible for process improvement and implementing process development programs. Previously he was an electro mechanical technician. . . . **Norman Mack**, a district agent of the New York/Arden general agency of National Life Insurance Co. of Vermont, has earned membership in the 1976 President's Club. The club recognizes outstanding client services and sales. Mack is located in Great Neck, N.Y. . . . **Edward Russell** has been named general manager of GE's lamp business in Mexico. Formerly he was group strategic planning manager for the firm's consumer products group in Fairfield, Conn. . . . **Richard Tufts** is now with Maryland Casualty Co. in Baltimore.

## 1961

**Francis Cichowski** owns Industrial Design Company in Southington, Conn. . . . Currently **Richard Davis** holds the post of executive editor at EW Communications, publishers of *Microwave Systems News* and *EW Magazine*. Both are trade-press monthlies for engineers in the industry. Davis is presently located in Los Altos, Calif. . . . **Martin Gordon** has been appointed to the position of marketing manager for Analog to Digital Systems at Analogic in Wakefield, Mass. He will be responsible for the overall marketing efforts for A-D Systems including key account marketing and market and product definition. Earlier he was with Transatron Electronic Corporation and Digital Electronic Corporation. . . . **William Hoduer** is a project engineer at Albany Engineered Systems in Glens Falls, N.Y. . . . Continuing with the American International Group in New York City, **James Tolos** is currently regional engineering manager.

## 1962

**Married: John Szymanski** and Miss Eileen A. McCook in Osterville, Massachusetts on October 2, 1976. The bride graduated from Boston College and received her MS from Boston University. She is executive director of the Visiting Nurse Association, Central Cape Cod, Inc. Her husband is president of Paradise Travel Service, Inc., Allston, Mass. He received his MBA from B.U.

**Joseph Baldasaro** has been promoted to the position of material controls manager for Speidel Division of Tectron, Inc. He joined Speidel in 1968. Active in community affairs, Baldasaro has held office and served in several civic organizations.





## Solar houses in Vermont by Jim Kachadorian, '61

How would you like a three-bedroom solar home that heats and cools itself and costs \$30,000? If the prospect sounds inviting, **James Kachadorian, '61**, president of Green Mountain Homes in Royalton, Vermont, can help you make your dream house a reality.

A former planning and scheduling engineer for the Bechtel Corporation at the Peach Bottom, Pa., nuclear plant, Kachadorian was the general manager for a home manufacturing operation for a number of years prior to the recent opening of Green Mountain Homes. His wife Lea, a graduate of Middlebury College, does all of the artwork and advertising for the housing firm. Both are pleased with the growing success of Green Mountain Homes.

Kachadorian has made a fresh analytical approach to home design for the seventies. His designs are based on energy conservation, affordability, high quality, and appealing architecture. His products are factory-produced panelized solar homes with design features so flexible that he can meet almost any home builder's requirements. His houses are designed to fill a void in the present housing field for homes which are low in initial cost, energy demands, and maintenance, yet high in quality materials, craftsmanship, and attractiveness.

Kachadorian's solar design is a carefully researched system which he claims yields the highest possible heating or air conditioning savings for the lowest possible purchase price and yearly operating cost. The architectural design and function are unified, incorporating the entire house as a solar collection and storage unit. The houses are built of wood with multilayered roof and walls including extra layers of insulation. Air entrance locks help reduce heat losses. The average heat loss per square foot of living space per degree day is approximately one half that experienced by what was considered to be a well insulated house a few years ago.

Green Mountain houses combine the classic barn shapes of the Vermont landscape with an ingeniously simple solar design, presenting an exciting breakthrough for the housing market. Kachadorian has eschewed the usual collecting panels, liquid-filled roof collectors, and

complicated machinery found on other solar buildings. His unique solar system simply uses east, west, and south facing windows to collect heat via the greenhouse effect. According to Kachadorian, windows are the most efficient solar collectors known. A south facing window is about 80 per cent efficient while the best liquid roof collector is between 40 and 60 per cent efficient. Therefore, he needs to use only about one-half the glass area to collect the same amount of solar energy as compared to a roof-mounted collection system. Excess heat is stored within the first floor concrete subsystem — what Green Mountain Homes calls their "solar slab." Stored heat subsequently helps heat the home at night and on cold days by radiation. A hot water preheater is contained within the system. Thermo-shutters, manually operated on the inside of windows and sliding glass doors, further reduce heat loss at night.

The special solar system is particularly complementary to wood burning since the house is designed to redistribute heat generated in an isolated area. For instance, excess heat derived from a wood-burning stove in a family room could be either distributed to other parts of the house or placed in storage.

To reverse the system for summer cooling, night air is put into storage from midnight until four a.m., thereby chilling the solar slab. This prepares the slab to absorb the heat of the day, helping reduce the electrical demand on air conditioning equipment.

Kachadorian predicts his model home solar system will carry about 40 per cent of the total heat load, based on Vermont's severe 8086 degree-day heating season. The Green Mountain Homes solar concept is being studied by the Central Vermont Public Service Corporation and Dartmouth's Thayer School of Engineering, both of which are monitoring the solar equipped office/model home in Royalton on a 24-hour basis.

The many sizes and designs of Green Mountain Homes allow planning flexibility and growth potential and units may be combined at a later date. All homes can be purchased in kit form.

"We have addressed ourselves to every obvious aspect of the building over which the manufacturer and builder could have control. In every area we have been able to effect cost reductions and at the same time provide functional design," reports Kachadorian. "The initial solar monitoring of the operational model home has shown some exciting preliminary results," he says. "But we do have one problem. The customers have been keeping our men so busy that they haven't had time to finish off the interior of the model house yet!"

## 1963

**Married:** Dr. **Robert M. Desmond** and Miss Cynthia J. Doolittle in Syracuse, New York on July 30, 1976. Mrs. Desmond graduated from Rowleson Business Institute, attended Grove City College, and has been employed at the Merchants National Bank. The bridegroom is a professor and head of the mechanical engineering department at Rochester Institute of Technology.

**Joseph Mielinski** has been named manager of operations at Alden Research Laboratories. For the last six years he has been an administrative assistant at WPI. Formerly he was with duPont and General Electric. . . .

**William Zinno** has joined Dresser Clark, Plain, N.Y. as project manager, inventory management. He will design and implement new computer-assisted manufacturing systems and be responsible for a task force representing various disciplines within the division. Previously he had been manager of manufacturing planning and control for Industrial Nucleonics Corp. in Columbus, Ohio. . . . **Robert Magnant**, who recently received his MS from the University of Colorado, is the author of a telecommunications study, *Domestic Satellite: An FCC Giant Step*. He is chief engineer for U.S. Army Communications at Ft. Ritchie, Maryland.

## 1964

**Born:** to Mr. and Mrs. **Gerald Tammi** their first child, a daughter Abigail, on March 24, 1976. Jerry is with Fairchild Cameron Instrument in Mt. View, California.

**John Camera** holds the post of vice president at Camera Construction Co., Inc. in West Hartford, Conn. . . . Dr. **Wayne Keene** is one of our Raytheon Company engineers responsible for the invention of a laser radar system that uses optimum predetection amplification for the return signal. The patent covering the invention was recently assigned to Raytheon. Keene is manager of the equipment division's advanced electro-optical techniques section and collaborated on two other projects resulting in patents for an optical scanner and a clear air turbulence detector. He joined Raytheon in 1965. . . . Prof. **Robert Peura** has been named acting director of biomedical engineering at WPI.

## 1965

**Born:** at **Moran** now works for Digital Equipment in Maynard, Mass.

## 1966

**Married:** **Richard B. Nelson** and Mrs. Sherrie P. Beck on July 10, 1976 in Shreveport, Louisiana. Randy Beck, the bride's younger son, served as best man, with daughter Leslie serving as maid of honor and older son, David, giving the bride away. The bridegroom is an independent oil and gas producer in Shreveport.

**Born:** to Mr. and Mrs. **Peter J. Kudless** their fourth child, Stephen Paul, on July 31, 1976. Pete was recently promoted to senior construction engineer at Public Service Electric & Gas Company in New Jersey. Currently he has been assigned to the Hope Creek Generating Station in Hancocks Ridge, N.J. Also, he has been prom-

oted to Lt. Cdr. in the Civil Engineer Corps with the Naval Reserve, and is Alpha Company commander for Reserve Navy Mobile Construction 13. Alpha Co. was named honor company recently. Serving with Pete are LCDR **Skip Kuntz**, '66, and Lt. **Phil Clark**, '67.

**Joseph Acker** holds the post of production manager at FMC Corporation's agricultural chemical division in Middleport, N.Y. . . . Capt. **Howard Braley** (USAF) serves as a project officer for the Space and Missile Systems Office, Los Angeles, Calif. Recently he received the U. S. Air Force Air Commendation Medal. . . . **Don Foley** is vice president of Pattern Analysis & Recognition Corp., Rome, N.Y. . . . **John Gilbert**, who received his law degree from Western New England College, has passed the Connecticut bar exam. He specializes in contract and corporate law. Presently he is still employed at Pratt & Whitney. . . . **Donald McCarthy** is a social worker for the city of Philadelphia.

**Hugh McMenamy** serves as senior project engineer at Exxon Research & Engineering Co. in Florham Park, N.J. . . . **Donald Mugnai** is now a design engineer in the Electronics Branch at the Naval Surface Weapons Center in Silver Spring, Md. He is a registered professional engineer in the District of Columbia, and recently received his license in electrical engineering. . . . **Lawrence Pihl** holds the post of western regional manager for Omni Spectra, Inc., Merrimack, N.H. . . . **John Sakala**, MNS has been named the new principal at Watertown (Mass.) High School. . . . **Robert Shaw** owns Spoon & Fork Garage in Worcester. . . . **Andrew Warner, Jr.**, serves as a consultant for Southern Consulting Group, Clearwater, Florida.

## 1967

**Married:** **Allen J. Ikalainen** and Miss Barbara J. Henwood at Christmas Cove, Maine on September 4, 1976. The bride graduated from Colby College. Both she and her husband are employed by the Environmental Protection Agency, Region I, Boston.

**Michael Barr** has been named marketing manager for the Metals Recovery Division at M&T Chemicals, Inc., Rahway, N.J. With the firm since 1972, he has served as plant manager and plant engineer. He has an MS degree in industrial management from Newark College of Engineering. . . . **Joseph Goulart** is a customer liaison engineer at Simpson Industries in Litchfield, Mich. . . . **Robert Hellen**, who earned his Ph.D. in chemical engineering from Cornell University, is currently employed by 3M Company, St. Paul, Minn. . . . Dr. **Kenneth Rex** is an assistant professor of physics at St. Bonaventure University. . . . **John Soulliere** was recently promoted to regional sales manager at the Foxboro (Mass.) Company. He had been district sales manager for the power systems division, and a field and home sales engineer. He began work at the company in 1969.

## 1968

**Married:** **Roger J. Pikor** and Miss Marilyn R. Moore on October 2, 1976 in West Hartford, Connecticut. Mrs. Pikor, a research assistant in diabetes at the University of Connecticut Health Center, graduated from Drew University, Madison, N.J. Her husband is with Pratt & Whitney Aircraft Division of United Technologies.

**Norman Brunell** is a division patent counsel for Litton Industries, Inc., Beverly Hills, Calif. . . . **Stephen Davis** works for the aircraft engine group at GE in Lynn, Mass. . . . **Bert Gunter** is with the mathematics department at Beloit (Wis.) College. . . . Presently **Joseph Hilyard** is a full-time graduate student in journalism at the University of Wisconsin in Madison. . . . **John Lunney**, who now resides in Fredericksburg, Va., is a senior field service engineer for GE Ordnance Systems of Pittsfield, Mass.

Dr. **Joseph Owens** serves as a research associate in the physics department at Florida State University in Tallahassee. . . . **Ronald Rehkamp** has been promoted to actuarial associate at State Mutual Life Assurance Co. of America, Worcester. He joined the firm's actuarial organization in 1974. Recently he became an associate of the Society of Actuaries. . . . **Douglas Riley** holds the post of construction superintendent at Harvey Construction Co., Manchester, N.H. . . . **Richard Snay** is a geodesist for the Department of Commerce, National Oceanic & Atmospheric Administration, Rockville, Md. . . . **Leo Sprecher** is the senior financial analyst at Mellon National Corp. in Pittsburgh, Pa. . . . **Malcolm Wittenberg** presently practices law with Limbach, Limbach & Sutton in San Francisco.

## 1969

**Married:** **Jon C. Anderson** and Judith Weaver on July 10, 1976 in Danvers, Massachusetts. Anderson, who served in the U.S. Army for three years, is presently employed as a construction manager. . . . **Robert L. Simonds** to Miss Ann S. Bainbridge in Chestnut Hill, Massachusetts on October 9, 1976. Mrs. Simonds, an alumna of Colby Junior College and Lake Forest College, is a member of the Vincent Club and is with the Museum of Fine Arts, Boston. The groom is employed by United Engineers and Constructors.

**Joel Cehn**, a radiological engineer at Boston Edison Co., recently presented a slide and lecture program on nuclear power at the Public Affairs Action Committee meeting held in Easton, Mass. Cehn is responsible for monitoring radioactivity in the environment at Pilgrim Nuclear Power Station, Plymouth. . . . **Joel Greene** has relocated his law offices to 14 Harvard St. in Worcester. . . . Dr. **Roy Johnson, Jr.** is assistant professor in the civil engineering department at Auburn (Ala.) University. . . . After four years of teaching at Holy Name High School, Worcester, **Joel O'Rourke** is now teaching math at Martha's Vineyard Regional High School. He also has served as a computer programmer and a programmer/analyst at the American Optical Corporation in Southbridge. . . . **Tom Starr** (formerly Gwazdauskas) is now working for CTI-Nuclear in Waltham, Mass. He writes that he and **Richard Abrams**, '70 form the process engineering group at the firm. Tom, his wife, and children, Betsy, 1, and Michael, 4, reside in Framingham. . . . **Richard Warren** is a self-employed consultant in Wilton, Conn.



## 1970

*Born:* to Mr. and Mrs. **William Hakkinen** a daughter, Erika Lynn, on August 26, 1976.

**Gerry Blodgett** serves as technical adviser for the U.S. Court of Customs and Patent Appeals in Washington, D.C. He received his Juris Doctor from Suffolk University and is presently enrolled in an L.L.M. program in patent, trademark, and copyright law at George Washington University. . . . **John Cattel** owns and operates Rumble Seat, a singalong pub at 112 Green St. in Worcester. Rumble Seat offers good hot dogs, cold beer, and live music. Formerly, Cattel had worked three years for Riley Stoker Co. . . .

**Christopher Cowles** holds the post of systems consultant for Christian Rovsing of Herlev, Denmark. He is consulting for the Civil Service Commission of Kuwait designing a civil registration system and government personnel information system. His wife Patricia works on the same project. . . . **William Ferranti** is a loss prevention engineer at Fred S. James & Co., Boston.

**Garrett Graham** works as general supervisor for Polaroid in Waltham, Mass. . . . **John Kaferle, Jr.** serves as a senior process engineer at Crawford & Russell, Inc., Stamford, Conn. . . . **P. B. Koradia**, a product research group leader in the chemical process products division at Norton Co., was a co-author of "Molecular Sieves for SO<sub>2</sub> Removal" which appeared in the August issue of *CEP-Chemical Engineering Progress*. . . . The New England Electric System employs **Kenneth Oberg** as a senior budget analyst in Westboro, Mass. . . . **Michael Sullivan** is manager of recovery unit operations at Aztec Engineering in Louisville, Ky. . . . **Paul Wilson** works for Arwood Corp. in Tilton, N.H. . . . **Alan Zabarsky** holds the position of manager of quality assurance at Motorola Corp., Schaumburg, Illinois.

## 1971

*Married:* **P. James Allfrey III** and Miss Virginia M. White of Lexington, Massachusetts on August 14, 1976. Mrs. Allfrey, who graduated from Simmons College, is a registered nurse on the staff of Addison Gilbert Hospital in Gloucester. Her husband is with Liberty Mutual Insurance

. . . **Myles H. Kleper** and Miss Judith E. Izen in West Newton, Massachusetts on August 29, 1976. The bride graduated from Boston University and is a research analyst on the psychiatric service staff at Mass. General Hospital. The groom has served in the Peace Corps and is presently a project engineer with the Walden division of Abcor, Inc. Wilmington, Mass. He is also studying for his MBA at Northeastern University

*Married* **John R. Oscarson** and Miss Arlene L. Slifkin in New London, Connecticut on August 8, 1976. Mrs. Oscarson, who graduated from Mitchell College and Quinnipiac College, is a programmer at Mystech Associates, Inc. in Mystic, Conn. Her husband is a laboratory technician at Pfizer in Groton. . . . **David A. True** and Miss Mary Lee Bannister of Point Pleasant, New Jersey recently. The bride graduated from Swarthmore and earned a master's in marine biology from the University of Rhode Island. She is presently employed at Woods Hole Oceanographic Institute. Dave continues with New England Power Co

*Born:* to Mr. and Mrs. **John C. Moore III** a son **Bradley** on June 6, 1976. Moore, now a field engineer for Westinghouse in Minneapolis, Minn., recently spent a year in Spain working on new power plants.

**Joseph Bellino** is a design engineer for GE in Gainesville, Fla. . . . **Ellen Brueck** teaches mathematics at the Lovett School in Atlanta, Ga. . . . Continuing with Riley Stoker, **Robert Childs** is now a sales engineer for the firm in Portland, Oregon. . . . **John Giordano** serves as a planning officer at Old Stone Bank in Providence, R.I. . . . **Michael Grady** has joined Data Systems Division of ITT Business Systems LTD, London, England. He holds the post of senior software systems engineer. The Grady's and their four-year-old son, Peter will remain in England for three years.

**John Gyory** is presently enrolled at the University Simon Bolivar, Caracas, Venezuela, where he is in his last year of architectural studies. . . . **Elaine Kowalewski** has been appointed assistant professor of mathematics and statistics at Nichols College, Dudley, Mass. She has also been enrolled in the Ph.D. program at the University of Connecticut. . . . **Richard Lisayskas** is an R&D engineer at Texas Instruments in Attleboro, Mass. This year he received his master's degree from MIT. . . . Having received his Ph.D. in physics from the University of Wisconsin in Madison, **Toh-Ming Lu** has returned to Malaysia.

**Gary Mason**, plant manager at Stevens Linen Associates, has been named general chairman for the 1976 United Way campaign of Webster and Dudley (Mass.), Inc. Last year he served as first vice president and as a member of the budget committee. . . . **Tom Mirarchi** is a manufacturing quality engineer at American Optical in Brattleboro, Vt. . . . **Robert Payne** holds the post of research associate at Charles H. Kline & Co., Fairfield, N.J. . . . **Donald Peterson** has joined Northern Telecom, Inc. as manager of analysis, credit and insurance. He will be responsible for defining and solving managerial problems, especially in the areas of finance, control, long range planning and internal operations. Before joining the Nashville-based firm, he was senior investment analyst for State Mutual Life Assurance Company of America.

**John Petrillo** has received his Juris Doctor degree from Brooklyn Law School. He is employed by the American Telephone & Telegraph Company, New York City. . . . **Abbas Salim** is currently a senior engineer for General Dynamics' Electronics Division in Orlando, Fla. In September he published a paper in the records of the 11th Intersociety Energy Conversion Engineering Conference. . . . **Anthony Schepis** serves as an application engineer in the centrifugal separator department at De Laval Separator Co., St. Louis, Missouri. . . . **Robert Vayo**, SIM has been named plant manager of Reed and Prince's new packaging and plating plant in Jaffrey, N.H. Since joining the firm in 1965, he has served as an industrial engineer and plant manager.

## 1972

*Married:* **Robert A. Grant** and Miss Jill Holbrook in Columbia, Connecticut on September 25, 1976. Mrs. Grant graduated from Russell Sage College and is manager of the Weathervane in Burlington, Mass. Her husband is with Salath and Pecci, consulting engineers, Boston. . . . **Bruce M. Szygot** and Miss Judith A. Pond in Rochester, New York on April 24, 1976. **Bill Delphos**, '74 and **Greg Stamper**, '73 were ushers. Mrs. Szygot graduated from Central City Business Institute, Syracuse, and is a secretary for Eastman Kodak. Her husband continues at Kodak where he is an industrial engineer.

**Charles Chase** is with Consumer's Water Co. in Portland, Me. . . . **Dr. James Colangelo** serves as a medical intern at Hartford (Conn.) Hospital. He received his MD from St. Louis University this year. . . . **Raymond Del Colle**, MNS has accepted a position as a teacher of physics and math at the Whitman-Hanson Regional High School in Whitman, Mass. . . . **James DeVries**, MNS, has been appointed associate professor of mathematics and physical science at Barrington (R.I.) College. He has also been doing graduate work at the University of Pennsylvania.

**Alan Dion** recently received his master's degree in civil-environmental engineering from the University of Rhode Island. . . . **John Ferraro** has been promoted to the position of engineer in the transmission and substation engineering department at Northeast Utilities in Berlin, Mass. He began as an assistant engineer in the protective relaying department in 1972 and was named associate engineer in 1974. . . . **David Hayhurst**, who received his Ph.D. in chemical engineering from WPI in June, is now an assistant professor in the Chemical Engineering Department at Cleveland State University in Ohio. . . . **William Klein, Jr.** is assistant plant manager in the Boxmakers Division at Rexham Corp. in Pinetops, N.C. . . . **James Lacy** is a senior engineer for Digital Equipment Corp., Marlboro, Mass.

**Randall Partridge**, a research engineer at Mobil R/D Corp., Paulsboro, N.J., is on a three-year leave of absence while studying for his Ph.D. at the University of Delaware. He also does research at Children's Hospital of Philadelphia. . . . **Thomas Staehr** serves as a field engineer at Stone & Webster, Oak Ridge, Tenn. . . . **Hubert Thompson** works as a technical supervisor for duPont in Buffalo, N.Y. . . . **William Way** is a fire protection engineer at Kemper Insurance Co., North Quincy, Mass. . . . **Ira Weissman** is an associate engineer for Public Service Electric & Gas in Newark, N.J.

## 1973

*Married:* **Robert E. Baron** to Miss Carolyn Pulvirenti in Longmeadow, Massachusetts on July 18, 1976. The bride graduated from Westfield State College and received her master's degree from Lesley College, Cambridge. She is a specific learning disability teacher in the Belmont school system. Her husband recently received his master's degree in chemical engineering from MIT. He is associated with MIT's Energy Laboratory. Recently his article, "Synthetic Fuels: Prices, Prospects, and Prior Art" appeared in *American Scientist*. . . . **Michael S. Gipps** and Miss Margaret A. Eldridge in Walnut Creek, California on July 17, 1976. Mrs. Gipps has a BS from the University of Montana. Both she and the groom are chemical engineers at Dow Chemical in Pittsburg, Calif.

Married: **Michael J. Kowaleski** and Miss **Sharon A. Leonardi** in Worcester on July 18, 1976. The bride, a home economics teacher in Brainree, graduated from Framingham State College. The groom is a field service manager in the computerized building automation systems department at Johnson Controls, Inc., Woburn, Mass. . . . **Michael D. Peterson** and Miss **Carolyn Barnard**, '74 in Worcester on August 21. Mrs. Peterson, an accounting supervisor at Mechanics National Bank, is also a student in the evening division at Clark University. Her husband is a candidate for his master's degree at Anna Maria College and a sales coordinator at Altec Corp., West Boylston, Mass. . . . **Wayne Pitts** to Miss **Shelley Wright** of Scotia, New York on October 18, 1975. Mrs. Pitts is a magazine typist at Ford Motor Company. She is a graduate of Becker and was formerly with the PR public relations office. Her husband is an environmentalist at Vollmer Associates in Louisville, Ky.

Born: to **Stephen H. Goodwin** and **Deborah Plante Goodwin** a daughter **Tracey** on August 1, 1976. Now on maternity leave, Mrs. Goodwin was a scientific computer programmer in the large steam turbine division at GE in Schenectady, N.Y. Recently her husband was named the division's standard engineer for Niagara Mohawk Syracuse. . . . to Mr. and Mrs. **George Gosselin** their first child, **Bryan Marshall**, on September 1, 1976. Presently **Ray Cherenzia** is a civil engineer at aboard Engineering in Niantic, Conn. . . . **James Di Milia** serves as an assembly-process engineer at Ford Motor Co., Dearborn, Mich. . . . **Michael Eide** now holds the post of plant manager Hammond Plastics in Owensboro, Ky. . . . **Thomas Ferguson**, who was awarded a master science degree in biomedical engineering from Iowa State University in August, is currently doing more graduate work at the university. Dr. **John Goulet** has been appointed an assistant professor of mathematics at Colby College, Waterville, Me. He holds MS and Ph.D. degrees from RPI, Troy, N.Y. While at RPI he received the Ralph Huston Award as the outstanding graduate student instructor of mathematics. Previously he was with Youngblood Laminates.

**Roger James** is a manager for F. W. Woolworth Co. in Middletown, R.I. . . . **William Andrewsley** was recently promoted to senior actuarial associate at State Mutual Life Assurance Co. of America in Worcester. He has been with the company since 1973. . . . **Frank Kania**, a field engineer for Stone & Webster, is presently working on the Clinch River Breeder Reactor Plant Project in Oak Ridge, Tenn. He, his wife, Denise, and son Michael currently reside in Roxville. . . . **Mark Oleson** is a construction engineer for Stone & Webster and is located in coming, N.Y.

**David Pouliot** works as an electronics engineer at Naval Surface Weapons Center, Dahlgren, Va. . . . **Stuart Roth**, who is with the U.S. Army, is currently a platoon leader for the 2nd Airborne in Fort Bragg, N.C. . . . **Gary Iden**, a research engineer for GE in Schenectady, N.Y., is also enrolled in the materials science Ph.D. program at RPI. . . . **Stu Wallack** has accepted a sales engineering job with the Torrington (Conn.) Company. . . . Continuing with the Central Vermont Public Service Corp., **David Watts** is now assistant transmission engineer in Rutland.

# MORGAN CONSTRUCTION COMPANY

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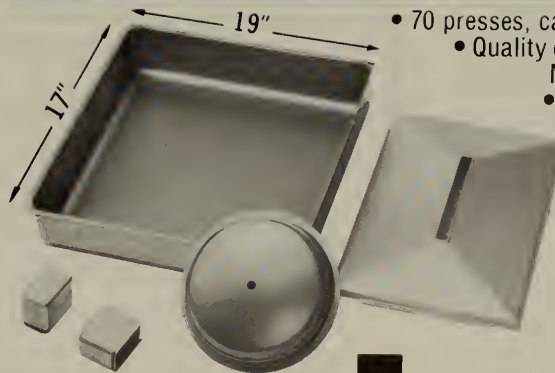
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# 1974

**Married:** **Donald W. Campbell** and Miss Diane Botelho on August 28, 1976 in Newport, Rhode Island. Mrs. Campbell graduated from Anna Maria College. The bridegroom is an analytical chemist at Liberty Mutual Research Center in Hopkinton, Mass. . . . **C. Wayne Chistolini** and Miss Kathleen Blake on July 17, 1976 in East Longmeadow, Massachusetts. The bride graduated from Fitchburg State College. The groom is doing graduate work at RPI and is division supervisor of construction and maintenance for Texaco Oil Corp., Albany, N.Y. . . . **William Frazier** and Miss Jean D'Isidoro in Holliston, Massachusetts on October 2, 1976. Mrs. Frazier, a substitute teacher, graduated from Westfield State College. Her husband is with Arthur D. Little Co., Cambridge, Mass. . . . **Robert E. Lindberg, Jr.** and Miss Nancy K. Montalbano in Franklin Square, New York on June 12, 1976. **Gerald Buzanoski** and **Michael Kosmo** were ushers. The bride has a BA in special education from Anna Maria College. The groom is a physicist at the Naval Research Laboratory in Washington, D.C.

**Married:** **Victor Melechow** to Miss Lucia K. Polanik in Worcester on July 18, 1976. Mrs. Melechow graduated from Lowell University and is a music teacher. Her husband teaches science in the Marlboro (Mass.) public school system. . . . **Garry E. Nunes** and Miss Deborah J. Ring on October 23, 1976 in Schenectady, New York. The bride is an alumna of Becker and was employed by the Boston Store in Latham. The groom is with Stone & Webster Engineering in Astoria, N.Y. . . . **Thomas J. Stone** to Miss Bonnie J. Carlson in Southington, Connecticut on August 14, 1976. The bride, an elementary teacher in the Southington school system, graduated from Central Connecticut State College. The bridegroom is a field service engineer with Excelon Automation. . . . **Stephen J. Yankum, Jr.** and Miss Brenda G. Morse on July 17, 1976 in North Attleboro, Massachusetts. Mrs. Yankum graduated from Katharine Gibbs School and is a secretary at Airtex Corp., Newton. Her husband is an assistant actuarial consultant for the Wyatt Co., Wellesley.

**David A. Gerth** serves as a staff accountant at Arthur Andersen & Co. in Boston. He recently received his MBA from Amos Tuck School at Dartmouth College. **Robert Hodgson** is pursuing an MBA at Tuck School. . . . Currently **David Lapre** holds the post of department manager at P&G Paper Products in Mehoopany, Pa.

**Michael Lewandowski** MNS has received his master of education degree with concentration in school administration from Bridgewater State College. An A student, he was commended for receiving one of the highest scores ever given on a comprehensive examination. A member of the science department at Joseph Case High School, Swansea, Mass., Lewandowski serves as vice president of the Mass. Region III science fair committee and is also a member of the State Science Fair executive board.

**Russell Naber** is a process engineer for Procter & Gamble on temporary assignment at a new manufacturing facility in Greenville, N.C. Lt. **David Nickless**, U.S. Army, serves as commander of the 137th Ord. Det. (EOD) at Corpus Christi, Texas. **"Mex" Sanchez**, who has received his MS in biochemical engineering from Virginia Polytechnic Institute and S.U., is currently with Procter & Gamble's product de-

velopment department in Mexico. . . . **Richard Takanen** has graduated from GE's two-year manufacturing program and is now foreman of product and process appraisal for GE in Pittsfield, Mass.

**Lee Turner** serves as senior financial analyst at Baxter Travenol Labs, Inc. in Deerfield, Ill. He recently received his MBA from Tuck School at Dartmouth. . . . **Craig Tyler** works as a field service engineer for Veeder Root Co. in Des Plaines, Ill. . . . **Andrew Wemple** has been promoted to actuarial associate in the actuarial organization at State Mutual Life Assurance Co. of America. . . . **Christopher Williams** is a field service representative at Digital Equipment Co. in Waltham, Mass. . . . Continuing with GE, **Stephen Williams** is now a quality control engineer for the company in Ft. Wayne, Ind. . . . **Gordon Woodfall** is production-inventory control supervisor for Texas Instruments in Attleboro, Mass.

**Douglas Briggs** serves as a production control supervisor at GE in Wilmington, Mass. Also, he is studying for his MBA at Northeastern University. . . . Also studying for his MBA is **Erik Brodin**, who is at Western New England College, Springfield, Mass. . . . **Thomas Burns** works for GE's ordnance systems division in Pittsfield, Mass. . . . **Steve Dacri**, who received an award from the National Safety Council for his duties as toastmaster at the Annual Safety Awards banquet held in Worcester recently, is presently working on a series of "magical" TV public service announcements highlighting child and automotive safety for the Council. In September he starred in a TV special which he wrote and produced on Worcester's Channel 27. In October he was a featured entertainer at the Optical Wholesalers of America Trade Show in the MGM Grand Hotel in Las Vegas, following a performance for the Screen Printing Association in New Orleans.

# 1975

**Married:** **Christopher E. Danker** and Miss Melody A. King on August 21, 1976 in Watertown, Massachusetts. Mrs. Danker graduated from Anna Maria and currently attends Madison College. The bridegroom is a process engineer at Thiokol Fibers in Waynesboro, Va. . . . **William A. Demers** to Miss Judith E. Marraty on August 28, 1976 in Dery Village, New Hampshire. The bride graduated from Pinkerton Academy and is a teller at Derry Bank and Trust Co. . . . **Wilson G. Dobson** and Miss Lynn LePoer in Petersham, Massachusetts on October 23, 1976. Mrs. Dobson graduated from Hahnemann Hospital School of Nursing, Worcester. She is a registered nurse at the hospital. The groom is a graduate assistant in the material engineering department at WPI. **Henry Fitzgerald** and Miss Jean M. Tyer on August 28, 1976 in Worcester. Mrs. Fitzgerald is a senior at Worcester State College and is a part-time employee of the Worcester Boys' Club. Her husband works for Gillette Co. in South Boston.

**Married:** **John J. Fitzgibbons, Jr.** to Miss Michelle A. Plante in North Attleboro, Massachusetts on September 11, 1976. The bride, a graduate of Katharine Gibbs, is a secretary at Regis Paper Co. Her husband is an estimator at H. Carr & Sons. . . . **Ronald E. Gagnon** and Miss Ellen M. Connor on October 2, 1976 in West Boylston, Massachusetts. Mrs. Gagnon graduated from West Boylston Junior-Senior High School and is a secretary at Norton Co. The groom, manager of purchasing and traffic at Kinefac Corp., is also studying at Quinsigamond Community College. . . . **John R. Mason III** to Miss Paula Ann Yurewicz on July 25, 1976 in Paxton, Massachusetts. Mrs. Mason is a graduate of Anna Maria College. She is currently completing an internship in medical technology at Worcester City Hospital. The groom is a candidate for a master's degree in nuclear engineering at WPI.

**Married:** **Frank W. Moitoza** to Miss Linda L. Halliday in Portsmouth, Rhode Island on September 25, 1976. The bride, who graduated from the University of Rhode Island, is an instructor at the YMCA and a substitute teacher in the Newport school system. Her husband is with the Naval Underwater Systems Center. . . . **Peter F. Pombo** and Miss Kristina M. Jamieson on August 14, 1976 in Paxton, Massachusetts. Mrs. Pombo graduated from Anna Maria and teaches special-needs children at Auburn Junior High School. The bridegroom is chief engineer at Syntest Corp. in Marlboro. . . . **Stephen A. Werner** and Miss Kathleen M. Geran on June 19, 1976 in Worcester. Mrs. Werner attended Quinsigamond Community College and was employed at Wayside Nursing Home. The groom is a nuclear refueling engineer for General Dynamics, Electric Boat Division, Groton, Conn. . . . **Richard J. Newhouse** to Miss Barbara A. Branau in Centereach, Long Island, New York on July 10, 1976. The bride graduated from Becker. Her husband is employed by Raymond International, Inc., in Africa.

**George Breece** holds the post of vice president at Southern Fluid Controls Corp., Ft. Lauderdale, Fla. . . . **Mark Chevrier**, who was married to Paul Labege in September 1975, is now project engineer at Monsanto in Bloomfield, Conn. . . . **Robert Martinaitis** is currently employed by the ground systems group at Hughes Aircraft Co. in Fullerton, Calif. He is also studying for his MSEI at U.S.C. on a Hughes Master's Fellowship. . . . **Gregory Miranda** works for the Worcester Foundation for Experimental Biology in Shrewsbury, Mass. as a research assistant. . . . **Mark Candello** has joined Troy (N.H.) Mills, Inc.

**Ray Cibulskis** serves as applications engineer at the Lee Company in Westbrook, Conn. The firm manufactures engineered hydraulic components. . . . Presently **Mark Koris** holds a graduate assistantship in biomedical engineering at Case Western Reserve. . . . **Laurence Michael** is a systems programmer at Whitlow Computer Systems in Englewood Cliffs, N.J. . . . **John FitzPatrick** has joined Exxon Research and Engineering Co. in Florham Park, N.J. . . . **James Roche** is a research engineer at Gleason Works Rochester, N.Y.

**Vance Rowe** holds the post of project engineer at Pfizer in Adams, Mass. . . . **Steven Standaher** is a graduate assistant at WPI. **P. Toomey** serves as a design engineer at Sprague Electric in Worcester. . . . **John Tropeano** is a methods and standards analyst at Sky Chefs, New York City. . . . **Scott Wilson** is a test engineer at Thomas G. Faria Corporation in Uncasville, Conn.

**Married: Bourdillon P. Aprela** to Miss Virginia Latimore on July 24, 1976 in Boston. The bride attended Radcliffe College. Her husband is a student at Atlanta University Business School. **H. Scott Bicknell** and Miss Brenda L. Cowles recently in Enfield, Connecticut. Mrs. Bicknell graduated from Becker Junior College and is a manager of the Bay State Savings Bank in Worcester. The groom serves as a divisional manager for Bicknell, Inc., in Framingham, Mass. . . .

**ffrey J. Coderre** to Miss Debra Pinet on April 1, 1976 in Moosup, Connecticut. The bride graduated from Plainfield High School. The bridegroom is with the Linde Division of Union Carbide. . . . **Richard A. Escolos, Jr.** and Miss Maureen D. Hardy on October 17, 1976 in Worcester. Mrs. Escolos graduated from Holy Cross and is assistant manager of Windsor Button Shop, Worcester Center. Her husband is a manufacturing supervisor at Texas Instruments Attleboro.

**Married: George J. Hefferon** to Miss Marguerite L. Dunn in Ridgefield, Connecticut on August 1976. The bride graduated from State University College, Geneseo, N.Y. and teaches English at John Jay High School, Katonah. The groom is a doctoral candidate at Columbia University. . . .

**ses E. Karoutas** and Miss Stephanie A. Tsolas Haverhill, Massachusetts on August 22, 1976. Mrs. Karoutas graduated from Salem State College. Both she and her husband are attending graduate school in Blacksburg, Va. . . . **Wayne Andruss** and Miss Margaret E. Gaby '79 last day in Springfield, Massachusetts. The groom is a systems analyst at Bay State Gas Co. . . .

**Michael J. Miller** to Miss Pamela C. Pearce on May 29, 1976 in Groton, Connecticut. Mrs. Miller graduated from Fitch Senior High School and is employed at the Naval Submarine Medical Center.

**Married: Kevin A. Osborne** and Miss Laurea Payette on August 28, 1976 in Greenville, Rhode Island. The bride graduated from Rhode Island Junior College. The groom works as a field engineer for Industrial Risk Insurers of Philadelphia. . . . **Thomas K. Pelis** and Miss Joan E. Holly on August 14, 1976 in Newark, New York. Mrs. Pelis is a graduate of Becker Junior College. The bridegroom is employed by O'Brien and Geer.

**t. Edward J. Perry II (USAF)** and Miss Mary E. Perry on July 4, 1976 in Southbridge, Massachusetts. The bride graduated from Endicott Junior College and is with the Southbridge Credit Union. Her husband has been assigned to Warner-Robbins AFB, Georgia. . . . **Miss Mary F. Blunik** to Reggie N. Sherman on October 2, 1976 in Shrewsbury, Massachusetts. Mrs. Sherman is a mathematics teacher at Shawshen High School, Billerica. Her husband graduated from Worcester State College and is presently enrolled in the master's program in psychology and guidance at Assumption College. . . . **Eugene L. Savoie** to Miss Candyce A. Sawyer in East Chatham, New York on August 4, 1976. The bride graduated from Chatham Central School. The groom is with GE in Auburn.

**Jeffrey L. Wilcox** and Miss Deborah J. Tessier on August 21, 1976 in Somerset, Massachusetts. Mrs. Wilcox graduated from Bristol Community College and is a medical laboratory technician at Union-Tuesdale Hospital. The bridegroom attends the Graduate School of Business at the University of Pittsburgh.

**urtis Allshouse** is with the heat treatment department at Corning Glass Works, Corning, N.Y. . . . **Scott Bamford**, a graduate student at the University of Rhode Island's School of Ocean

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(See instructions on reverse)

Engineering, has received a research fellowship grant from the university to study in the field of nuclear waste disposal. . . . **Kent Baschwitz** is a marketing representative at Mobil Oil in Scarsdale, N.Y. . . . **Stephen Borys, Jr.** works as a construction and maintenance engineer for Exxon Co., U.S.A., Pelham, N.Y. . . . **Tony Clawson** serves as an associate industrial engineer for Inland Steel Co., East Chicago, Ind. . . . **Mark Coulson** has been employed by General Dynamics, Electric Boat Division. **Jay Cruickshank** is involved with safety engineering at Liberty Mutual Insurance Co., West Springfield, Mass. . . . **Joseph D'Alesio** is with W. C. Larsen in Rochester, N.Y. . . . **John Fairbanks** has been employed as a service engineer at Babcock & Wilcox Co., Cincinnati, Ohio. . . . It was erroneously reported in the October issue that **Mark Hoey** was employed by the engineering department of the city of Worcester. Actually, he was named acting city engineer for the city of Holyoke, Mass., a position which he held until the end of October. He is now a field engineer for Daniel O'Connell's Sons, Inc., a construction company located in Holyoke. . . . **Catherine Hogsett** recently accepted a position with GE in the company's manufacturing management program. . . . **Paul Jacques** has joined Eastman Kodak Co., Rochester, N.Y. . . . **Michael Koronkiewicz** works for Sikorsky Aircraft. . . . **Carey Lazerow** is a minicomputer medical systems analyst at Norwalk (Conn.) Hospital. . . .

**Richard Lessard** is a programmer at First Data Corp., Washington, D.C. . . . **David McCormick** has joined Armco Steel Co., Middletown, Ohio. . . . **Kathleen Morse** holds the post of software engineer at Digital in Maynard, Mass. . . . **James Pinzino** is a marketing representative at Burroughs Corporation, Lexington, Mass. . . . **Charles Putnam** serves as a design engineer for the Ford Motor Co. in Dearborn, Mich. . . . **Jonathan Rourke** is with the Defense & Electronics Center, Systems Development Division, at Westinghouse in Baltimore, Md. . . . **William Ruoff** is general manager of R. H. White Construction Co., Merrimack, N.H. **Ed Sawicki** has joined Standard Pressed Steel Co., Jenkintown, Pa. in the sales engineering program. The international company specializes in the manufacture of precision fasteners. Following the training course, Sawicki will assume marketing responsibilities for the firm's Hallowell Division in Hatfield, Pa. . . . **James Sieminski** is with RCA/ASD in Burlington, Mass. . . . **John Smith** is a graduate assistant at Roswell Park Memorial Institute in the Grace Cancer Drug Center, Buffalo, N.Y. . . . **Kenneth Stannard** serves as an R&D chemical engineer at UniRoyal Chemical in Naugatuck, Conn. . . . **Frank Van-ecek** has been named as an instructor in computer science at Norwich University, Northfield, Vt. . . . **Joseph Yu** is a project engineer at Mobil Oil in Paulsboro, N.J.





**Raymond A. Haskell, '07** of Sturbridge, Massachusetts died on February 18, 1976.

He was born on August 30, 1884 in Hope Valley, Rhode Island. Following graduation as an electrical engineer, he was with the Long Lines Department of the American Telephone & Telegraph Co. from 1909 to 1949, when he retired.

**Donald H. Mace, '07** of Sarasota, Florida, a retired patent attorney, passed away on September 4, 1976.

After receiving his BSEE from WPI, he studied law at National Law School in Washington, D.C., where he earned his law degree. During his career he was with General Electric; Westinghouse; VanEveren, Fish & Hildreth; Texas Co.; Gasoline Products Co.; and Gifford, Scull & Burgess, New York City. He belonged to ATO and Sigma Xi and had served as secretary-treasurer of the Pittsburgh chapter of the Alumni Association.

**Richmond W. Smith, '08**, a retired executive for Bird Machine Co., passed away at his home in Walpole, Massachusetts on August 24, 1976. He was 90 years old.

He was born on March 10, 1886 in Princeton, Mass. and graduated as a mechanical engineer in 1908. After graduation he was with Hollingsworth Vose Co. and Kendall Co. He retired in 1953 after 30 years as a sales executive for Bird Machine Co., Walpole.

Mr. Smith belonged to Theta Chi and the Masons. He received his MSME from WPI in 1910.

**Charles A. Bassett, '11** of Naples, Florida died on July 22, 1976.

A native of Taunton, Mass., he was born on August 31, 1887. He studied at WPI and for many years was a self-employed fuel oil broker.

**Allen H. Gridley, '13** died at his home in New Rochelle, New York on September 2, 1976 following a civil engineering career which spanned 62 years.

He was born on November 27, 1890 in Springfield, Massachusetts. In 1913 he received his BSCE from WPI, later doing graduate work at the College of the City of New York and Pratt Institute. During his lifetime he was with Hardy S. Ferguson & Co., Alvin H. Johnson & Co., Walter Kidde Constructors, Inc., Lockwood Greene Engineers, Roderick O. Donoghue & Co., Great Northern Paper Co. and National Container Corp. From 1969 until his death he was associated with Velzy Associates.

Mr. Gridley belonged to Tau Beta Pi, ASME, TAPPI, and was a former secretary of the New York chapter of the Alumni Association.

**Kirtland Marsh, '14** of Mt. Lebanon, Pittsburgh, Pennsylvania, a long-time employee of the Aluminum Co. of America, died on September 20, 1976.

A native of West Newton, Mass., he was born on February 25, 1891. After receiving his BSME from WPI, he joined Norton Co. for two years prior to service with the U.S. Army in the chemical warfare division during World War I. From 1919 until his retirement in 1957, he was with ALCOA, where he was in charge of the furnace division in the mechanical engineering department.

Mr. Marsh, a Mason, was the father of Herbert W. Marsh of the Class of 1943. He played a significant role in the development of furnaces used in heat treating and fabricating of aluminum.

**Clarence F. Alexander, '15** of Tavares, Florida passed away on June 6, 1976.

He was born on April 22, 1894 in Worcester and received his BSEE from WPI in 1915. During his career he was with International Projector Corp. and National Theatre Supply, New York City, retiring in 1958. He belonged to Phi Sigma Kappa.

**Joseph M. Chandler, '16** of East Bridgewater, Massachusetts, co-founder and manager of the Chandler Construction Co., died on October 14, 1976 at the age of 83.

An East Bridgewater native, he became a mechanical engineering student at WPI. For many years he served as trustee and president of East Bridgewater Savings Bank. He was also a trustee of Brockton Hospital and a former member of the Brockton Country Club. During World War I he was a flying instructor at Lake Charles, La.

**Herman Hollerith, Jr., '17** of Oxford, Maryland passed away on September 1, 1976.

After graduating from WPI as a mechanical engineer, he was employed by the Naval Aircraft Factory. Later he was with John Harrison, Jr. Co., Victor Talking Machine Co., and Mechanical Improvements Co. From 1931 to 1936 he was co-president of Virginia Navigation. In 1961 he retired from Glenn L. Martin Co. as senior materials engineer.

Mr. Hollerith belonged to the American Society of Mechanical Engineers and the Society of Automotive Engineers. He was born in Georgetown, D.C. on September 17, 1892.

**Richard D. Lambert, '17** of Orleans, Massachusetts, a retired executive secretary of the Central Massachusetts Employers Association died on July 30, 1976.

A native of West New Brighton, N.Y., he attended WPI and graduated as a mechanical engineer. During World War I he served with the British Merchant Marine and the U.S. Navy. After the war he was with Elevator Supply Co., General Motors, and GE. Later he joined Norton Co. and then the Worcester Children's Friend Society. In 1934 he became executive secretary of the Central Massachusetts Employers Association, a post he held until he retired in 1965. During World War II he represented New England employers on the wage committee of the Regional War Labor Board.

Mr. Lambert belonged to Phi Sigma Kappa, the Masons, and had served on the executive committee of the Boston chapter of the Alumni Association. He had received a presidential citation for his work with the crippled and handicapped.

**Joseph P. Garmon, '18** of Bolingbrook, Illinois, passed away on his 82nd birthday, September 1976.

A native of Lowell, Mass., he later graduated from WPI as a mechanical engineer. From 1922 until he retired in 1960, he was with R. E. Run Construction Co., Inc., Lowell. He belonged to Lambda Chi Alpha, and was a registered, professional engineer.

**Rudolph C. Stange, '20**, a retired civil engineer, died August 10, 1976 in Los Altos, California. He was 78.

A specialist in fire prevention, he worked for the Navy and the Coast Guard during World War II. Later he became general manager of the National Board of Fire Underwriters in San Francisco.

Mr. Stange was born on June 21, 1898 in Orange, Mass. He was a member of Phi Sigma Kappa, Tau Beta Pi, and Sigma Xi. He also belonged to the Society of Fire Protection Engineers and the Society of American Military Engineers. Formerly he was president of the Northern California chapter of the Alumni Association.

**E. Sumner Thayer, '21** of North Grafton, Massachusetts passed away recently.

Born on July 28, 1898 in Worcester, he later graduated as a chemist from WPI. He was with International Paper Co., Falulah Paper Co., Norton Co., and Gro-Lex, Inc. He belonged to the Scottish Rites, A.F. & A.M., the Shrine, and Phi Sigma Kappa. He served as a former vice president of the New York chapter of the Alumni Association.

**Dean W. Alden, '22** of Philadelphia, Pennsylvania died on October 9, 1976.

A native of Durham, N.H., he was born on August 12, 1896. He graduated with a BSEE in 1922. From 1922 until 1923 he was with GE. In 1961 he retired as chief engineer from Blackstone Valley Gas & Electric Co., where he had worked since 1923. He was a member of the Providence Engineering Society, AIEE, the Masons, and Lambda Chi Alpha. Formerly he was council member from the Rhode Island chapter of the Alumni Association.

**Paul Bradlaw, '22**, who served Northwood Academy (N.F.A.) for 52 years, died unexpectedly at his home in Norwich, Connecticut on October 9, 1976. He was 76 years old.  
Born in Norwich on May 24, 1900, he later studied at WPI with the Student Army Training Corps. He taught printing and industrial arts at F.A., where he also served as administrative assistant to three principals. The manual training building was named Bradlaw House in his honor.  
In 1941 he was cited for his distinguished service to education by the State Board of Education. A copy of his book, *Observations on the development of the Alphabet and Printing*, was recently added to the Rare Book and Special Collections Division of the Library of Congress.

**John V. Abadjieff, '28**, a retired chief engineer for Leland-Gifford Co., died on September 3, 1976 at his home in Worcester.  
He invented many machine parts that are currently used world-wide. He also was a consultant and products tester for a number of manufacturers.  
Mr. Abadjieff, who was born in Bulgaria in 1900, studied finance and administration at the University of Sofia prior to entering WPI. After graduating as a mechanical engineer, he joined Leland-Gifford where he retired eleven years ago. He belonged to the Worcester County Music Association, was active with the Music Festival and Worcester County Light Opera, and served as president of the Coes Pond Preservation Association. He was also a member of ASME and Chartered American Inventors.

**Rayman W. Cross, '28**, retired manager of U.S. Envelope Co., died in Laconia, New Hampshire on August 24, 1976. He was 70 years old.  
A native of Millbury, Mass., he received his ASME in 1928. He retired in 1970 following 42 years of service with the Kellogg Division of U.S. Envelope Co. in Springfield, Mass. He was a member of Lambda Chi Alpha, Sigma Xi, and the Engineering Society of Western Massachusetts. He was a past president of the Connecticut Valley Chapter of the Alumni Association.

**Bernard Erkkila, '31** of Fitchburg, Massachusetts died on July 22, 1976 at the age of 66.  
After graduating as a civil engineer from WPI, he was with Independent Lock Co. until 1946. During his career he was a general manager for Grant Plastics, Inc., and Ilco Co. A former employee of Iver Johnson Co., Fitchburg, he retired in 1975.  
Mr. Erkkila was born in Fitchburg on August 10, 1909 and was a member of the Massachusetts Society of Professional Engineers. He also belonged to Alpha Tau Omega.

**Reginald A. Morrill, '36**, president of Dominion Fence Co., Worcester, died on October 10, 1976. He was 61 years old.  
He was born on January 11, 1915 in Waltham, Mass. A graduate mechanical engineer, he was with Morrill Lumber Co., Worcester and Blackstone (Mass.) Lumber Co. For the past 15 years he was president of Dominion Fence Co. He belonged to Sigma Phi Epsilon, the Masons, and the Worcester Country Club.

**Douglas W. Marden, '39**, a consulting geologist, died on August 16, 1976 in Garden City, Kansas. He was stricken while on a business trip.  
He was born on Jan. 3, 1917 in Oklahoma City, Okla. After studying at WPI, he graduated from Clark University in 1939, later receiving his master's in geology at Johns Hopkins University.  
During World War II he was captain of a minesweeper in the Pacific and was cited for bravery in action off Guam in 1944. He owned three companies dealing with geology with headquarters in Evergreen, Colo. He had worked for the U.S. Geological Service and several oil companies prior to forming his own business as a consulting geologist. He held the rank of Lt. Commander, USNR, retired.

**Gordon B. Turner, '47**, former editor and publisher of the *Nantucket Inquirer Mirror* and circulation distributor for the *Cape Cod Times*, died in Nantucket, Massachusetts on October 8, 1976.  
After attending WPI, he took over the operation of the *Inquirer* following his father's death. He sold the paper in 1958, but remained in the graphics department until last year when he retired for health reasons. At one time he was the proprietor of Universal Photo Shop in Nantucket.  
A Mason, he also belonged to the Nantucket Historical Association, the Sons of the Revolution, and the Eastern Star. He was born in New Bedford, Mass. on January 22, 1927.

**Neil J. Crowley, '50**, a civil engineer associated with the construction of several buildings at WPI, died on September 23, 1976 in Worcester. He was 49.  
He served as clerk of the works for Daniels, Gordon Library, Goddard, Harrington Auditorium, and Stoddard Residence. Previously he was superintendent at Turner Construction Co. He also owned Crowley Package Store, Inc. at Tatnuck Square.  
Mr. Crowley belonged to Phi Kappa Theta, PDE, Skull, ASCE, Tatnuck Island Club, and Aquinas Association. After WPI, he attended Babson Institute. He had been a member of the WPI Alumni Citations Committee, the Nominating Committee, the Alumni Council, and was a former president of the Worcester County chapter of the Alumni Association. A Worcester native, he was also a World War II Navy veteran.

**Allan R. Whittum, '63** died on August 29, 1976 in Dillon, Montana after being struck by a car while riding a bicycle on a cross-country trip.  
He was born on August 30, 1941 in New Haven, Conn., studied mechanical engineering at WPI, and received his BA from Northeastern in 1967. He was a systems engineer for IBM in Boston. A member of Outward Bound Association of Greenwich, Conn., he also belonged to Community Boating, Inc. of Boston and Ford Hall Forum, Boston.  
Among his relatives who attended WPI were his father Gordon Whittum, '33; his cousin, Robert Whittum, '62; and his grandfather, Leonard W. Howell, '08.

**Thomas Y. Liu, '67** of Van Nuys, California died on June 26, 1975.  
He was born on October 21, 1938 in Honan, China. In 1967 he graduated as a chemical engineer from WPI. During his career he was with American Reinforced Plastics, Los Angeles, Calif.; Armour Industrial Products; and duPont. He belonged to AICE and the American Chemical Society.

**Stephen D. Hausmann, '72** died August 6, 1976 in Great Falls, Montana following an accident in which his motorcycle slammed into the rear wheels of a tractor trailer.  
He was born in Springfield, Mass. on October 18, 1950. While studying at WPI, he was a member of Phi Kappa Theta. He joined the Air Force five years ago and was a staff sergeant at the time of his death, having been stationed at Malmstrom AFB as a member of the team training branch of the 341th Strategic Missile Wing Headquarters Squadron. A president of Big Brothers, Inc., he was also a member of the Optimist Club.

**Paul J. Soares, '75** was fatally injured in an auto accident in Pottstown, Pennsylvania on May 15, 1976.  
He was born in Providence, R.I. on August 18, 1953. After graduating as a chemical engineer from WPI, he worked for Firestone Tire & Rubber Co., Perryville, Md. He belonged to TKE.

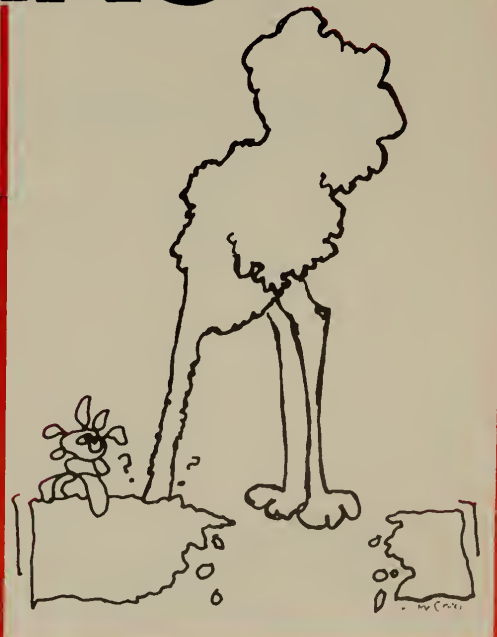


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# Earthquake!





# Reunion Weekend 1977

Enjoy an early summer weekend at WPI with your classmates.

Alumni and their families are invited to return to campus for the Reunion weekend. Enjoy a fun time to renew old acquaintances and the camaraderie of old friends in the familiar surroundings of your college campus.

Programs planned for alumni on Friday and Saturday are:

**Financial and Estate Planning:** An informative and invaluable session on personal finances for young and old, male or female.

**Admissions:** For those with college-age children or grandchildren some tips on current trends in admissions practices and financial aid throughout the country.

**WPI Today:** What the WPI Plan is really like discussed by faculty and students. You will be amazed by the changes and impressed by the innovation and enthusiasm on campus.

**Good Old Days Get-Together:** Friday evening – an informal party at the Pub. Banjo band, draught beer, wine, peanuts and good fellowship. Everyone invited.

**Annual Reunion Luncheon:** On the lawn of the Higgins House Saturday noon.

**Special Reunion Parties and Activities** are planned for: 1912, 1917, 1922, 1927, 1932, 1937, 1942, 1947, 1952, 1957, 1962 (1962 and 1972 will be holding their reunions at Homecoming).

**Campus Tours** throughout the weekend.

**Convenient rooms** available in dormitories or apartments.

June 9-12

For reservations or more detailed information call or write the Alumni Office (617/753-1411).

## 2 On the Hill

### 3 Tuition at WPI—up, up, and away out of reach?

Economics professor Thad Roddenbery analyzes tuition increases at WPI over the past quarter century—and finds them not nearly so bad as we'd thought.

### 6 Earthquake!

Jay Pulli, '75, discusses the mechanics—and more importantly, the implications—of knowing where and when an earthquake will hit.

## 14 Your class and others

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### 20 Iacobucci lights 'em up!

### 23 Math teacher in Malaysia

### 24 Completed Careers

**Cover:** This is one possible approach to the earthquake problem—but don't say we recommended it. Art by Ann McCrea.

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## WPI ALUMNI ASSOCIATION

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by the editor

## An energetic winter

The winter of 1977 is one most of us will remember for a long time to come — particularly those who live in the eastern two-thirds of the country. And while New England hasn't been as hard hit as the Midwest and the South, it's been no picnic.

One of the costs of a winter like this, for the college just as for every homeowner, is the enormous expense for heating. Just a year ago, WPI won a federal award for conservation after cutting total energy use on campus by 32 percent. But this year the much colder than normal temperatures have, despite all further attempts at saving, boosted heating oil usage by 30 percent and electrical consumption by 4 percent.

## Solar houses for Maine? Not quite yet, according to a student project

Maine, with its plunging temperatures, is one of the areas in the United States which is most affected by the energy crisis. The search for alternative energy sources has led to Maine Congressman David F. Emery's ('70) interest in solar energy and his sponsoring of a solar energy project which was carried out last fall by three student interns completing their Interactive Qualifying Project (IQP) degree requirements.

For seven weeks, the students, Edmund J. Sprogs, '78, David T. Hawley, '77, and John E. Anderson, '78, worked out of WPI's Washington Project Center in cooperation with Charles F. Bass, administrative assistant to Congressman Emery. Under the guidance of Dr. Thomas Keil, chairman of the WPI physics department, and George Mansfield, professor of civil

engineering, the students made an analysis comparing the costs of conventional heating systems, solar systems with auxiliary heating, and pure solar systems. They also developed a computer program which can help the individual homeowner determine his own solar energy needs.

During the study, the group compiled information concerning energy problems and potentials in the Maine area. For additional information they met with several experts in various energy fields. Considerable data came from Emery's own office, the congressman being particularly energy-minded. He is a member of the House Committee of Science and Technology and a subcommittee member for Energy Research, Science Research and Technology.

As plans for the WPI-Washington project were being formulated, Congressman Emery said, "The more rapidly we develop solar energy in our own state, the sooner we will become independent of expensive, unreliable, imported oil."

At the conclusion of the project, the students made a number of recommendations aimed at increasing the economic feasibility of solar heating in the State of Maine. They suggested that there are many incentives which a state government could adopt to hasten wider public use of solar heating: grants, tax credits, property tax exemptions, depreciation allowances, and interest subsidies. They felt that a property tax incentive would be the most effective in increasing the economic feasibility of solar heating in Maine. Such an incentive would increase solar heating system sales, thus accelerating mass production of collectors, which would ultimately lower collector prices. Solar heating would then be more competitive with conventional heating systems.

It is hoped by the students that the computer program developed from their project will be used by the people of Maine to bring the potentials of solar heating to their attention. One way in which this could be done is to make the program available to heating and plumbing contractors for use in determining the economic feasibility of solar heating on an individual basis. It could also be used by asking homeowners to send the required inputs of the program to a central location where the individual cases may be run through the computer, with the results being sent back to the appropriate homeowner.

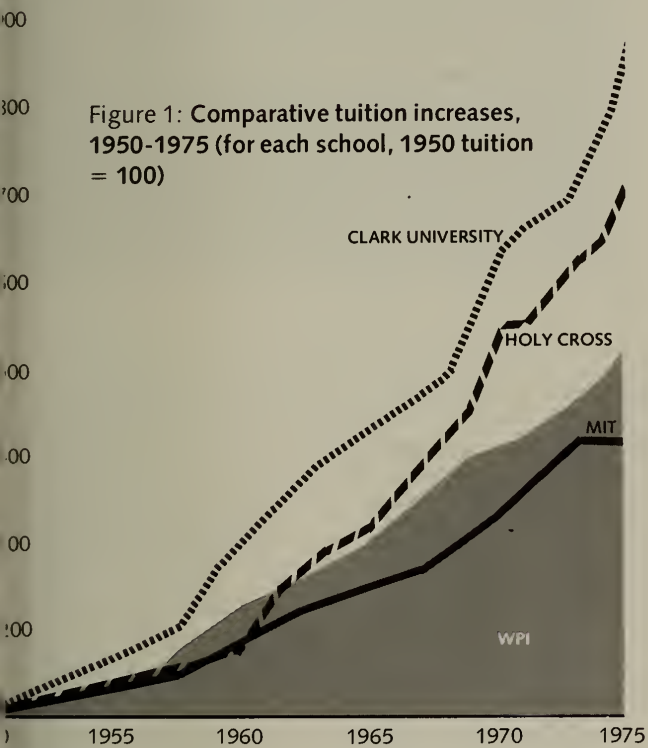
In any case, the student interns who worked on the solar project in cooperation with Congressman Emery, hope that their computer program will be used in some capacity so that the people of Maine will become more aware of the potential of solar heating.

## Trustee nominations now being received

Each year the WPI Alumni Association has the opportunity to nominate three alumni to five-year terms as Alumni Term members of the WPI Board of Trustees. C. Eugene Center '30 of Pittsburgh, PA, Chairman of the Alumni Association Trustee Search Committee, has recently announced that his committee is now receiving petitions for consideration for the term beginning in July, 1978. Alumni may submit petitions on or before March 30, 1977 and should be mailed to Mr. Center, c/o WPI Alumni Office, Alden Memorial, WPI, Worcester, MA 01609. Questions regarding procedures for the formal submission of proposals should be directed to Stephen J. Hebert '66 at the WPI Alumni Office, Area Code 617/753-1411.

# Tuition at WPI: Up, up, & away out of reach?

by Thaddeus Roddenbery



Thaddeus H. Roddenbery is professor of economics at WPI. He holds an A.B. from Mercer University, and M.A. and Ph.D. degrees from Boston University. A WPI faculty member since 1953, Roddenbery is known as the campus's finest cartoonist—something which most of its students will agree is a fine way to brighten up a class.

ARE SOARING TUITIONS pushing the cost of a WPI education beyond the reach of the children of modest and middle income families? The surprising answer, according to a recent study, is that 1975's tuition, at \$3,150, was *less* of a burden to today's students than was the \$600 paid by their parents' generation in the early 1950s.

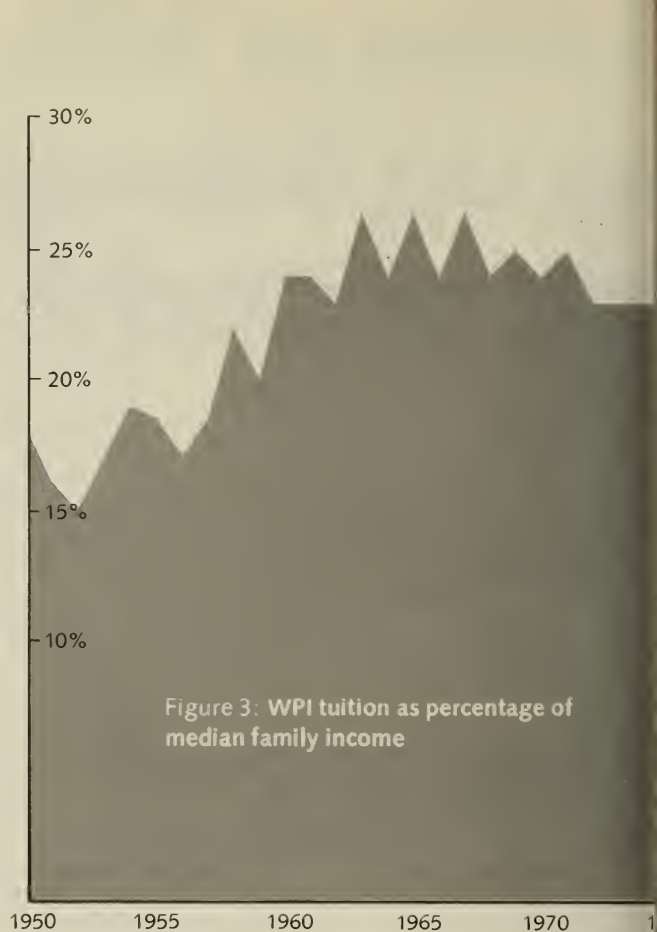
This was the conclusion reached by eighteen students last year in a course titled "Issues in Political Economy." Rising education costs was one of eight economic problems surveyed, including topics such as consumer protection, resource conservation, and economic discrimination. The tuition study was pursued as a course project throughout the seven-week term to allow for the collection and analysis of data. This topic was chosen for more intensive study because it is a national economic problem with immediate and practical importance to students, because students have relatively good access to sources of original data, and because—to our surprise—no previous study of the problem and data could be found!

Tuition figures for WPI and six other colleges and universities were accumulated from the respective annual bulletins for the years 1950-75. The comparison institutions—Brown University, Clark University, Dartmouth College, College of the Holy Cross, Massachusetts Institute of Technology, and the University of Vermont—were "selected" more for their accessibility than for any other reason, but they comprise a reasonably comparable group nevertheless. Clark and Holy Cross are both Worcester institutions similar in size to WPI, and MIT provides comparison with another predominately scientific and technological college. Brown, Dartmouth and the University of Vermont were included mainly because members of the class were able to collect the data while in their vicinities during weekends. They provide, however, an interesting comparison with institutions which are larger and have a broader educational orientation than WPI. "Technical colleges" at the University of Vermont include schools of agriculture, home economics, and education, and they are less comparable to WPI than the general heading suggests.

The accompanying table shows a persistent rise in tuition for all seven institutions over the twenty-five-year period, but whereas WPI was among the more expensive colleges in 1950, only the University of Vermont had a lower tuition than WPI in 1975. The bottom line of the table shows the percentage increase over the twenty-five years for each institution, and here again only one college, MIT, showed a smaller increase than WPI. It is interesting that the two engineering schools in the sample showed the smallest increase. This is one of a number of intriguing observations which could not be explored in the time available.

Figure 1 provides a better visualization of the relative increase in tuition among the four most nearly comparable colleges. Tuition in dollars was converted to index numbers, in which annual tuition for each college is expressed as a per cent of that college's tuition in 1950. Rapid escalation in tuition appears to have begun around 1955, with WPI's tuition growing at an almost constant





### Annual tuition charges for undergraduate students

Year	WPI	Brown Univ.	Clark Univ.	Dartmouth College	Holy Cross College	MIT	Univ. of Vermont, Technical Colleges
1949-50	\$ 600	\$ 600	\$ 400	\$ 675	\$ 440	\$ 800	\$ 525
1950-51	600	600	450	675	500	800	525
1951-52	600	700	500	800	500	900	525
1952-53	600	700	500	800	500	900	620
1953-54	800	700	600	800	500	900	625
1954-55	800	850	600	800	500	900	705
1955-56	800	850	700	980	600	1,100	705
1956-57	900	950	700	1,170	600	1,100	835
1957-58	1,100	1,250	850	1,170	700	1,300	835
1958-59	1,100	1,250	1,050	1,400	700	1,300	835
1959-60	1,350	1,400	1,050	1,400	775	1,500	----
1960-61	1,350	1,400	1,300	1,550	1,000	1,500	1,040
1961-62	1,350	1,600	1,300	1,550	1,000	1,700	1,200
1962-63	1,600	1,600	1,500	1,675	1,200	1,700	1,200
1963-64	1,600	1,800	1,500	1,800	1,200	1,700	1,500
1964-65	1,800	1,800	1,700	1,800	1,400	1,700	1,500
1965-66	1,800	2,000	1,700	1,925	1,400	1,900	1,500
1966-67	2,100	2,000	1,900	2,075	1,700	1,900	1,800
1967-68	2,100	2,100	2,000	2,075	1,700	2,150	1,800
1968-69	2,400	2,300	2,200	2,350	2,000	2,150	2,000
1969-70	2,400	2,600	2,500	2,550	2,350	2,150	2,200
1970-71	2,525	2,850	2,600	2,820	2,480	2,650	2,200
1971-72	2,525	3,050	2,600	3,060	2,480	2,900	2,400
1972-73	2,750	3,250	2,800	3,270	2,730	3,100	2,500
1973-74	2,900	3,500	3,100	3,700	2,900	3,350	2,650
1974-75	3,150	3,900	3,450	3,900	3,150	3,350	2,930
% Increase 1950-75	425.0	550.0	762.5	477.8	615.9	318.8	458.1

all rate since then, while Clark and Holy Cross institutions were growing exponentially. At MIT, the rate of increase lagged behind WPI during the 1960s, but has been closing the gap in the 1970s. The evidence indicates that WPI has done a relatively good job of holding down the rate of tuition increase.

Small comfort? After all, tuition in the year just past was more than *five times* what it was twenty-five years ago, wasn't it? Well, not really. Measuring the price of anything in inflated dollars creates exactly the same overstatement as measuring distance with a shrunken tape measure. The comparison of growth rates between colleges is still valid, but comparing \$3,150 in today's inflated money with \$600 in 1950 is meaningless.

To get around this problem, economists use the concept *opportunity costs*. The real cost of anything is what you have to give up in order to get it. Spending \$600 on tuition in 1950 — or \$3,150 in 1975 — represents a lost opportunity to spend that money on other things. The real sacrifice of goods and services by 1950's students must be compared with those sacrificed by students in 1975. According to the U.S. Department of Commerce's Consumer Price Index, each 1950 dollar had the purchasing power of \$2.22 of 1975 money. In dollars of 1975 purchasing power, then, tuition in 1950 was \$1,333, and the real increase over the past twenty-five years was 136 per cent rather than 425 per cent.

In dollars of constant purchasing power, the total increase in tuition charges at WPI since 1950 was not only drastically less than inflated dollar figures would indicate, but the pattern of increase was markedly different. While the nominal tuition was marching steadily upward, the real cost actually declined in some years, and reached its peak in 1969. Figure 2 shows that the 1970s have so far been a period of real decline in the tuition charged at WPI. This is explained, of course, by the fact that since 1969 the value of money was falling faster than tuition was rising. Inflation erodes family incomes just as it does tuition charges, but incomes have risen enough since 1969 to offset the effect of the rise in the price level. Median family income rose 46 percent from 1969 to 1975 (\$9,433 to \$13,726) compared with a 31 percent rise in WPI's tuition from \$2,400 to \$3,150. The decline in tuition in constant-value dollars since 1969 can therefore be extended to conclude that there has been a real and significant decrease in the burden of tuition payments on WPI students in the 1970s.

Figure 3 shows WPI tuition as a percentage of median family income. Up to 1964 tuition generally took a larger and larger bite out of family income. Payments averaged 33 percent of family income in the 1950's, rose to hover at 35 percent in the mid-sixties, then leveled off at 23 percent from 1972 to 1975. But although today's tuition payments take a larger percentage of the family's income than did those of the 1950's, the parents of today's students do not have to make as large a sacrifice on the average as their parents did. This is true because the real purchasing power left over after paying tuition today is much greater than it was twenty-five years ago. The "typical" or median in-

come family earned \$3,319 in 1950, and had \$2,719 left after paying \$600 tuition. Taking account of inflation, this would have bought the equivalent of \$6,002 in 1975. Subtracting \$3,150 in tuition in 1975 from the median family income of \$13,726 leaves \$10,576 — a 76% increase in residual purchasing power.

These figures are all based on median or "typical" family incomes, but since there has been no significant shift in income distribution over the past twenty-five years the same conclusion holds, on the average, for all families. A "poor" family or an "affluent" family today can much better afford to pay today's "high" tuitions at WPI than could a family of comparable economic status a generation ago.

In making this study, the class showed an awareness of the fact that tuition buys more at WPI today than it did in the past, but many of the changes are not as apparent to contemporary students as they would be to a visiting alumnus. At the class's invitation, President Hazzard spent one class period discussing the improvements that have been made in the educational program and physical facilities, and the problems of financing educational innovation and development. Improvements are not only desirable, but they are essential to the survival of the college. Keeping pace with developments in science, technology, and education has required such major physical additions as a large computer facility, a nuclear reactor, and a modern central library, with academic departments and service staffs to provide educational opportunities which simply did not exist for the students of twenty-five years ago. Continual development in traditional subject offerings necessitated new laboratories and equipment and the expansion of faculty expertise. The expectations of students and more aggressive competition among colleges in attracting the ablest students required the development of a wide choice of studies in the humanities and social sciences.

The launching of the WPI Plan was clearly the most dramatic qualitative change in the educational services which the college provides in return for its tuition charges. There remain some students who express doubts as to whether or not this innovation represents an improvement, but an overwhelming majority apparently regard it as such. Existing objective evidence also strongly supports a positive view of the Plan. If it is difficult to get universal agreement even on the direction of such qualitative changes, it may well be impossible to devise any objective scale of measurement. Without attempting such measurement, the members of the class concluded that there has indeed been a very significant increase in the value of the educational experience provided at WPI, and that this too must be taken into account in assessing the historical growth in tuition rates.

There. Doesn't that make you feel better?







Recent natural disasters in Guatemala, Italy, and China have again brought attention to the destructive power of earthquakes. Experiments now being performed in laboratories and seismological observatories across the country may lead to reliable earthquake prediction in ten years. But what are the social and economic problems associated with earthquake prediction? A recent prediction for the Los Angeles area illustrates the problems.

# Earthquake!

by Jay J. Pulli, '75

IT HAS BEEN ESTIMATED that, during historic times, as many as 15 million people have lost their lives because of earthquakes and such related effects as landslides and tsunami's (seismic sea waves). Certainly a list of the world's most destructive earthquakes reads like wartime casualty figures, with the exception that during an earthquake the majority of lives are lost within minutes of the shock. The United States has been rather lucky in its brief history even though the notorious San Andreas Fault runs up and down our west coast. Yes, we have had destructive earthquakes in the past, notably the San Francisco earthquake of 1906 which killed 600 people. But the United States has so far escaped disasters such as those which occur in the Mediterranean, India, China, and Japan where a single shock can kill 100,000 people. In the meantime, the population of California grows, strain is building up along the San Andreas Fault, and the potential for such a disaster becomes more real by the day.

Earthquakes have always been one of nature's most mysterious phenomena. It has only been within this century that we have really understood what an earthquake really is, and only for ten years have we understood why earthquakes occur along certain belts of the earth. Now we are beginning to understand why certain phenomena occur before an earthquake, and how we can use these phenomena to predict when and where an earthquake will occur. But the science of earthquake prediction is a young one, which most experts believe will take at least another ten years to perfect. Earthquake control is far in the future, but the basic principles of control have been tried with some success.

But there are many nonscientific problems associated with earthquake prediction, especially as it applies to the United States. For example, imagine

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Jay J. Pulli, a 1975 WPI physics graduate from Somerville, Mass., is currently a graduate student at the Weston Observatory of Boston University, studying seismology. This article was originally scheduled for the October issue of the Journal, but the July great earthquake in China created a significant amount of extra work and study for seismologists all over the globe. Thus the delay.



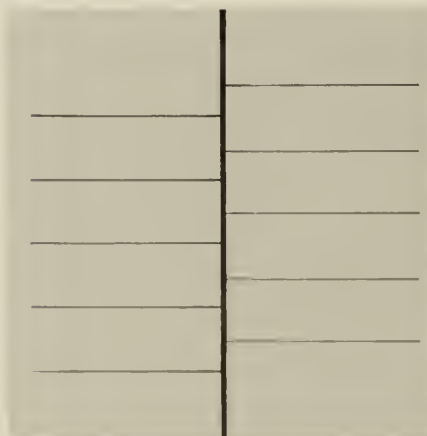
that our ability to predict earthquakes is 100 percent successful, and it has been determined that a destructive earthquake will occur in your area within a week. What would be your plan of action? Mass evacuation sounds like a first approach, but the logistics of moving, sheltering, and feeding tens of thousands of people are almost prohibitive. One solution used during the recent earthquake swarms in Italy and China was for people to camp in the streets to avoid the collapse of buildings. But most of our earthquake-prone areas are major cities, and the thought of the entire population of Los Angeles camping in the streets puts a damper on this approach. So what is the solution? Obviously, long-term predictions must be made so that we can identify a potential earthquake hazard years in advance, with plenty of time to prepare.

### What is an earthquake?

An earthquake is an irreversible deformation accompanied by a sudden stress drop and the release of stored elastic strain energy, which is a fancy way of saying that when you bend a material (rock) it will eventually break. For example, take a pencil in both hands and bend it in the middle. The wood will bend so far and then will break, releasing strain energy in the form of sound waves which travel through the air and eventually reach your ears. The earthquake process is much the same. Forces within the earth will tend to deform crustal rocks, and when the forces exceed the strength of the material the rock breaks sending waves throughout the earth which finally reach the surface causing the destructive ground vibrations.

This is the classic Elastic Rebound Theory, first proposed by Harry Fielding Reid in 1910 after observing the effects of the San Francisco earthquake of 1906. Sixty-seven years later the theory has withstood the test of modern seismology. Although the earthquake process is now considered to be much more complicated, all the models are based on the mechanism shown in Figure 1.

Imagine a set of survey lines laid out perpendicular to a fault (a). Tectonic forces within the earth will tend to move the crust on either side of the fault in opposite directions, but the fault is locked due to friction (b). The deformation continues and elastic strain energy builds up until the breaking strength of the material is reached, and cracking begins at a point (c). The crack propagates along the length of the fault producing offsets — which for the 1906 San Francisco earthquake were on the order of 15 feet (d).



**Figure 1: the elastic rebound theory**

“As strains always precede the rupture and as the strains are sufficiently great to be easily detected before the rupture occurs, in order to foresee tectonic earthquakes it is merely necessary to devise a method of determining the existence of the strains.”  
H.F. Reid 1910.

## late tectonics

What causes the motion that leads to the accumulation of strain energy which will eventually be released in the form of an earthquake? Several developments during the 1960's lead to our present understanding of earthquakes which is an integral part of the theory of plate tectonics.

One of these developments was the worldwide deployment of standard seismographs all reporting to a central computing station for the accurate location of earthquakes. After a few years of data collection, the map shown in Figure 2 was produced. It showed that earthquakes were not randomly distributed but occurred along specific belts on the earth's surface. This result, along with conclusions drawn from other areas of geophysics, led to the unifying theory of plate tectonics which explains sea floor spreading, mountain building, volcanism, and earthquake activity.

The assumptions of this theory are that the outer shell of the earth is broken into about a dozen rigid plates which are constantly in motion, colliding and rubbing against one another producing friction, strain accumulation, and eventually earthquakes. Thus the major earthquake belts define the plate boundaries, whereas earthquakes occurring within the plates are usually explained as being due to the distortion of the plate itself as it interacts with neighboring plates.

This motion of the plates has produced great changes in the physical make-up of the earth's surface. As little as 200 million years ago (a short time compared to the 4.6 billion year history of the earth) the continents were all one, the supercontinent we call Pangea. Rifting broke the continents apart, and North

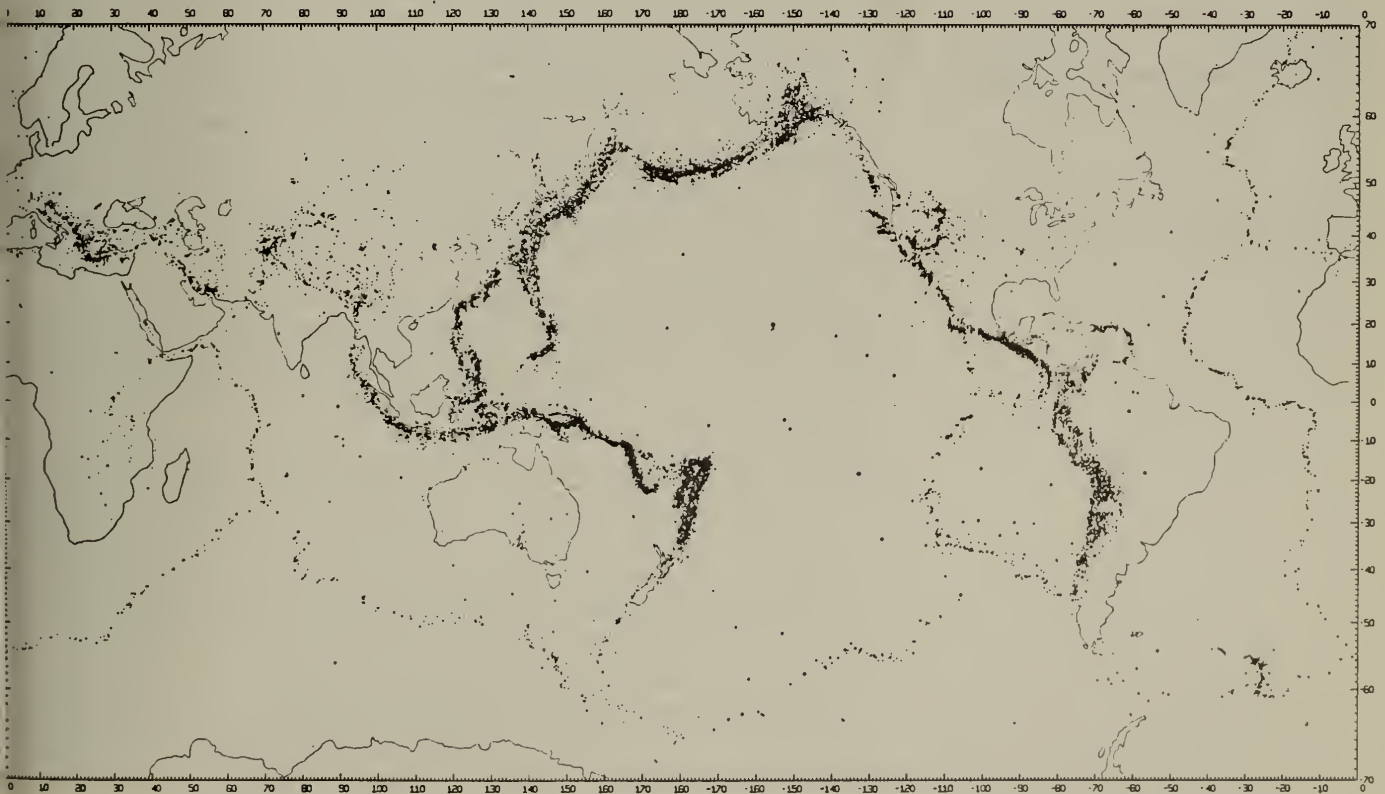
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### Some earthquake statistics

Throughout the world there are approximately:

- ▶ **1,000,000** earthquakes per year, most of them small;
  - ▶ **55** earthquakes of magnitude 6 per year, or one a week the size of the recent Italy quake;
  - ▶ **12** earthquakes of magnitude 7 per year, or one a month the size of the recent Guatemala quake; and
  - ▶ **1** earthquake per year of magnitude 8, the size of the recent China quake.
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## Some earthquake terms

**Focus:** The point within the earth described by latitude, longitude, and depth at which an earthquake occurs.

**Epicenter:** The point on the surface of the earth directly above an earthquake focus.

**Magnitude:** An instrumentally determined parameter related to the maximum amplitude of seismic waves generated by an earthquake, usually measured on the open-ended Richter Scale.

**Intensity:** A subjectively determined parameter related to the effect of an earthquake on people and structures, usually measured on the 12 point Modified Mercalli Scale (M.M.).

**Shallow Quake:** An earthquake occurring at a depth of less than 70 km.

**Intermediate Depth:** An earthquake occurring at a depth of between 71 and 300 km.

**Deep Quake:** An earthquake occurring at a depth of between 301 and 700 km.

**Major Quake:** An earthquake with a magnitude between 7.0 and 8.0.

**Great Quake:** An earthquake of magnitude greater than 8.0.

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and South America drifted away from Europe and Africa forming the Atlantic Ocean. The process continues today, with the Atlantic widening at a rate of two inches per year. Actually, new crustal material is rising along the middle of the Atlantic and pushing the continents apart. As seen from Figure 2, earthquakes occur up and down this Mid-Atlantic Ridge, and with each shock, new material is added to the earth's surface.

Since new material is continually being added but the earth is not expanding to provide new space for this material, other areas of the crust must be consumed and destroyed. This occurs along the deep trenches surrounding the Pacific Ocean, where crustal material is plunging deep into the earth. This material eventually melts and rises forming great chains of volcanic islands and mountain belts. Seventy-five percent of all earthquakes occur along this Pacific ring of fire. Thus as the Atlantic grows the Pacific shrinks.

There are other areas where the plates simply slide past one another, but when they bind in selected spots, they produce strain accumulation and earthquakes. One of these areas is the San Andreas Fault, where the western portion of California is moving north with respect to the eastern portion of the state. At the present rate of motion, Los Angeles will be within San Francisco city limits in 30 million years.

## How safe is New England?

Although there are no plate boundaries in New England, our area is seismically active, much more so in the past than at present. There were large earthquakes in New England during the 17th and 18th centuries, notably the shock on November 18, 1755, which did extensive damage in Boston.

The earthquake was actually located off Cape Ann and was felt from Annapolis River, Nova Scotia to Chesapeake Bay, and from Lake George, New York, to a point at sea 200 miles east of Cape Ann . . . where a ship actually touched bottom. At Boston, walls and chimneys were thrown down and waves could be seen rolling along the surface of the earth. At Pembroke and Scituate Mass., small chasms were broken open in the earth through which fine sand reached the surface.

The area has settled down in recent times. Today there are about two earthquakes per month in New England, most of them small, while about half dozen shocks a year are large enough to be felt somewhere within our six states.

Does this mean that New England is relatively safe from the risk of earthquakes? No!

Earthquake statistics follow rather closely the laws of probability. In other words, during any given time period there are a certain number of earthquakes of a certain size. This means that we may develop recursion formulas which predict the interval of time between earthquakes of any given size. Using the statistics for New England, we find that the mean recurrence interval for earthquakes of intensity IX or larger is 220 years. Judging from the history of the region, it seems we are overdue for the next big one.

Obviously the statistics represent only average figures which are by no means deterministic. But the facts are that New England has had large earthquakes in the past, and the possibility is there for extensive damage in the future.

Besides historical seismicity, one fact has served to place Boston in the same seismic risk category as San Francisco and Los Angeles. That fact is filled land. Much of downtown Boston is built on filled land, during the violent shaking of a large earthquake, filled land tends to flow like quicksand, taking with it buildings and bridges. Obviously this situation cannot be corrected, but future building codes should require a firm foundation in solid rock. Boston is not alone, for many cities build on filled land.

New England has no official earthquake prediction program, although the author and his colleagues are conducting research into this problem. As it stands now, most of the money is siphoned to the west coast, which has about twenty times as many earthquakes as New England.

The year 1976 will be remembered for many things, especially the great earthquake disasters. The United States has not been on the list of great earthquakes up to this writing. With future developments in earthquake prediction, we can hopefully avoid that dubious distinction.

## Earthquake prediction

During the 1970's, seismology teamed up with the laboratory science of rock mechanics and earthquake prediction was born. During compression tests with granite it was observed that, when the applied stress reached 75 percent of the strength of the material, the granite suddenly increased in volume by opening small cracks throughout the material. This volumetric increase prior to failure is known as dilatancy and is responsible for many changes in the physical properties of rock which may be easily detected by geophysical methods. For instance, when cracks open up in a stressed rock the velocity of sound waves through the material decreases. This can be easily detected on seismograms, and it was utilized to predict an earthquake in the Blue Mountain Lake region of New York, the first successful prediction made in the United States. Other effects which can be detected are an increase in the electrical resistivity of stressed rock, a change in the magnetic properties, and an anomalous tilting of the ground prior to a quake. Thus the seismologist has a number of tools with which to work for the accurate prediction of earthquakes.

Why then are earthquakes not predicted routinely? One answer lies in the seismologist's definition of a prediction, for a successful prediction must pinpoint the exact time, place, and size of an earthquake. So far we have been able to narrow down the time and place, but not the size. To overcome this we need a more complete model of the earthquake process to understand the relationship between the physical changes we see prior to a shock and the shock itself. This has to be done in the laboratory and is just a matter of time. Another problem is manpower, for the United States has fewer than a thousand seismologists. Compare this figure to the tens of thousands of scientists working on environmental problems or the space program. And of course money is a problem. Seismometers, tiltmeters, and electrical resistivity surveys are expensive, and the allotment of the United States Geological Survey to earthquake prediction is less than 1 percent of its total budget. But help may be on the way, for the Earthquake Prediction Act will soon await Congressional approval.

Unfortunately our ability to predict earthquakes is growing faster than the

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## Some of the larger New England earthquakes (intensities on the I-XII M.M. scale)

**June 11, 1638**

St. Lawrence Valley, Canada  
intensity X

**November 9, 1727**

Newbury, Mass.  
intensity IX

**June 14, 1744**

off Cape Ann, Mass.  
intensity VIII

**November 18, 1755**

off Cape Ann, Mass.  
intensity IX

**October 5, 1817**

Woburn, Mass.  
intensity VIII

**November 23, 1884**

southern New Hampshire  
intensity VI

**October 16, 1963**

Massachusetts Bay  
intensity VI

**July 1, 1967**

Augusta, Maine  
intensity VI

**June 15, 1973**

Maine-Quebec border  
intensity VI

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## Ten of the world's most destructive earthquakes

January 23, 1556

Shansi, China  
830,000 people killed

January 9, 1693

Sicily, Italy  
60,000 people killed

December 30, 1730

Hokkaido, Japan  
137,000 people killed

1737

Calcutta, India  
300,000 people killed

November 1, 1755

Lisbon, Portugal  
60,000 people killed

December 28, 1908

Messina, Italy  
83,000 people killed

December 16, 1920

Kansu, China  
100,000 people killed

September 1, 1923

Tokyo, Japan  
99,330 people killed

May 22, 1927

Nan-Shan, China  
200,000 people killed

July 27, 1976

Tientsin, China  
600,000? people killed

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public would like. After the San Francisco earthquake of 1906, government officials encouraged the public to forget about the danger of earthquakes as an aid to the fast recovery of the city, a policy which has been criticized by the Seismological Society of America ever since its founding in 1910. Surprisingly few residents of California care about the threat from earthquakes and prefer to ignore earthquake warnings. This has been the great obstacle of the seismologist. Public education about earthquakes is slowly removing this obstacle.

As discussed above, there are many social and economic problems associated with earthquake prediction. These problems are magnified when the prediction involves a technological society, for it is impossible simply to close down a city and wait out the shock. And who should announce the warning? This question is now being pondered by government officials, and at present the only official warnings can come from the federal government. Unfortunately, the answers to the seismologist's technical problems are coming faster than the answers to the social problems of earthquake prediction.

One of those answers, which is receiving more and more attention, is that we must learn to live with earthquakes. This involves long-term predictions on the order of five years or more, coupled with definite actions by government officials to insure the safety of the public. Stricter building codes are among the answers, but again we run into the same economic problems brought about by strict environmental codes. Certainly there are many precautions which may be taken by local officials, such as the lowering of reservoir levels, and storage of emergency vehicles out of doors where they are safe from building collapse, a problem encountered during the San Fernando quake of 1971. And of course we need fast communication, so that a prediction made on a Friday afternoon will not sit on a government official's desk until the following Monday.

There is one more problem which plagues us: our ability to predict earthquakes will not be 100 percent successful for at least ten years. In the meantime, will the public be willing to accept a few false alarms? And if not, will they listen to an earthquake warning when we are certain a disaster is imminent? Or should we just withhold earthquake information until the methods of prediction are flawless? One seismologist recently felt that the public had a right to know the evidence, so he publicly announced the conclusions of his research, which showed that a large quake would occur north of Los Angeles within ten months. A few days later the City Council of Los Angeles presented him with a lawsuit charging that his prediction had lowered real estate values in the city.

This is the dilemma of the present-day seismologist. Do we really want to know when an earthquake will occur?

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College \_\_\_\_\_ Major \_\_\_\_\_ Graduation date \_\_\_\_\_

High School \_\_\_\_\_ Graduation date \_\_\_\_\_

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The data on which these class notes are based was all received by the Alumni Association before January 15, when it was compiled for publication. Information received after that date will be used in future issues of the WPI Journal.

## 1903

**Joseph Berger** currently lives at St. Edward Home in Akron, Ohio. He was 97 in April.

## 1909

**Charles Goldthwait** has been presented with a plaque in recognition of his over 50 years of service as an active member of the Society of Dyers and Colourists. A charter member of AATCC, he was the 1962 recipient of the Olney Medal for outstanding contributions to textile chemistry. In 1925 he received a fellowship to the Mellon Institute where he specialized in experimental mercerizing of cotton.

He joined the U.S. Department of Agriculture's Southern Regional Research Center in 1941 and was in charge of a number of war-time projects, including development of the semi-elastic cotton gauze bandage. At retirement he took a research post at North Carolina State where he was awarded an honorary Doctor of Science degree in 1965.

## 1914

**Franklin Gurley** is chairman of the board at W.F. Mfg. Co., Inc., Buffalo, N.Y.

## 1917

**Glendon Pomeroy** was the only member present at the November meeting of the 181-year-old Worcester Association of Mutual Aid in Detecting Thieves, so he promptly called the meeting to order, elected himself president, secretary and treasurer, then voted to disband the association.

The organization was founded in 1795 "to detect thieves for stealing horses", and horse stealing is a rarity in Worcester these days. This was not, however, the real reason for disbanding the group. The real reason was financial.

About \$3,100 received from the club bank accounts (inactive for over ten years) and the banks indicated that the money would be turned over to the state within 60 days, unless they were otherwise notified.

Norman Wood, son of the late secretary-treasurer of the association, contacted three unofficial out-of-town members and all agreed to let Mr. Pomeroy, as the only official local member, hold the final meeting and dissolve the group.

And the \$3,100? It was "unanimously" voted to turn the full amount over to the American Antiquarian Society.

Mr. Pomeroy works part time as treasurer of Tainor Tech Corp., Northbridge. His daughter-in-law, Mrs. Seward Pomeroy, is a circulation associate at WPI's Gordon Library.

## 1926

**Ken Archibald** writes that he's "only 74 years of age" and indicates that he still has a busy schedule. For instance, he is presently executive vice president of the Springfield (Vt.) Chamber of Commerce; president of the Vermont Association of Chamber Executives; a director of the Vermont State Chamber of Commerce (1000 members); chairman of the committee for Industrial Prospects for the Third Green Mountain Industrial Tour in 1977, and president of the Lake Rescue Association of Ludlow, Vt. He has also had 30 years of perfect attendance at Rotary.

## 1928

**Arthur Chavoov** was honored at a testimonial dinner sponsored by the Beth Nahreen Assyrian American Organization of Massachusetts last December in Holden. He was presented with an engraved plaque in recognition of outstanding contributions and leadership. A retired professional civil engineer and land surveyor in Massachusetts, he had been associate civil engineer and assistant director of engineering in the MDC's (Boston) Sewerage Division.

Upon retirement, he was cited for his 41 years of service with the Commission. He was on the Board of Governors and was voted Life Member of the Society of Massachusetts State Engineers. He was also a cofounder and past president of the United Assyrian Association of Massachusetts, Inc.

## 1932

**William Cullen** has retired as manager of customer services at Enthone, Incorporated, New Haven, Conn. The firm manufactures metal finishing supplies. Previously he was with Dorset Rex Division, Risdon Manufacturing Co., Stanley Works, and Tuttle and Bailey, Incorporated, in New Britain, Conn. . . . **Constantine Orfanos** recently retired as project manager of the International Projects Division of General Electric Co. in New York City. He has been named a life member of the Institute of Electrical and Electronics Engineers, "a status reserved for those who have had a great deal of experience in the profession and a long association with the IEEE."

In June he and his wife attended their daughter Elaine's graduation at the University of San Francisco, where she earned her doctor of jurisprudence degree "cum laude." Earlier, as a member of Yale's first coeducational class, she had also graduated "cum laude." She is now practicing corporate law in San Francisco.

**Son Jonathan**, a graduate of Rutgers, is engaged in his lithographic and printing business in Sacramento. Daughter Demetra is in her last year as an arts major at the City College of San Francisco. The senior Orfanos plan to settle in Sacramento to be near their family.

## 1935

**Leonard Humphrey** who started with Buffalo Forge in 1936, retired in November. In 1939 he was assigned to the firm's Federal & Marine Office in Washington, D.C. In 1956 he was named assistant manager of that office and manager in 1967. He retired as manager.

Under his direction in Washington, the company enjoyed continuing Navy and Marine business for fans and pumps. Also, there was a build-up in commercial business, primarily in the area of nuclear products. "Hump" retired in excellent health and plans to stay on at his home in Chevy Chase, Md., with wife Louise.

## 1936

**Robert Fowler, Jr.** retired February 1st after completing 40 years of service with New England Electric System. He started as a student engineer at Narragansett Electric Co. in Providence. He was later transferred to New England Power Service Co. in Boston, then to New England Power Co., Worcester, where he served as technical assistant.

After temporary assignments in Boston doing transmission design work, and in Westboro working on system standards, he spent his recent years in Worcester as senior engineer for Massachusetts Electric Co. His fellow worker honored him at a party held January 20th at a William Paul House in Holden.

## 1938

**Allen Deschere** retired last September from Rohm and Haas Company. He has started a new "career" as automated systems coordinator with the Division for the Blind and Physically Handicapped in the Library of Congress. He writes: "I'm having a ball!" . . . **A. George Mallis** currently serves as a member of the Board of Registration for Professional Engineers and Land Surveyors in the Commonwealth of Massachusetts. His book, *Morgan and Peace Silver Dollars, The Comprehensive Catalogue and Encyclopedia of United States Morgan and Peace Silver Dollars*, which he wrote with Leroy Van Allen, has just been published in its second edition. . . . R & R Plumbing Supply Corp., **Henry Ritz**, president, celebrated its 71st anniversary by opening a new 15,000 square foot warehouse and completing an extensive renovation of its Worcester-based offices and showroom last spring. Over 600 guests attended the open house marking the anniversary.

## 1939

**Frank Abbott** has retired as production manager at Cincinnati Milacron. He is presently located in Saxtons River, Vermont. . . . **Bob Martin**, a project manager for Pratt & Whitney Aircraft, currently based in Brussels, Belgium for a two three-year stint.

## 1941

**Leslie Harding** is with U.S.P.S. in Atlanta, Georgia.

## 1942

**Robert Grant** serves as chairman of the board at Grant Investment Corp. in Newport Beach, California.

## 1943

**Jackson Durkee** left Bethlehem Steel Corporation's fabricated steel construction division, where he was chief bridge engineer, in January of last year. In the spring he served as visiting professor of structural engineering at Cornell University. During the summer he and Marian vacationed in St. Andrews, Scotland, and then went to Japan in September for the 10th Congress of the International Association for Bridge and Structural Engineering. Jack is now a consulting structural engineer specializing in bridge-work fabrication and erection problems, with an office in Bethlehem, Pa.

## 1944

**Alfred Larkin**, president of Rexnord International, Inc., has been elected a corporate officer of Rexnord, Inc., and named corporate vice president, international. He began work at Rexnord in 1947 as a student engineering trainee and held supervisory positions with Rexnord's Roller Chain Division in Worcester and Springfield. Larkin's new corporate position was made to centralize responsibility for the company's world wide operations.

## 1945

**Dr. Ernest Kretzmer** has been elected a fellow of IEEE in recognition of his contributions to the understanding of video signal transmission and his leadership in the development of data communication systems. He is director of the data communications lab. at Bell Telephone Labs, Holmdel, N.J. . . . **Roger N. Perry Jr.**, director of public relations at WPI, has retired as a commander in the U.S. Navy Reserve following 27 years of service.

## 1947

*Practical Invention*, a new book written by **Robert Yereance**, is designed to help the would-be inventor through the mental and physical steps necessary to take along the pathway to an invention. Suggestions for selling the invention are discussed, as well as methods of protection. The book's 104 pages are full of interesting and useful information.

Yereance, a professional engineer, holds a number of U.S. and foreign patents. After 25 years of research, he formed his own company, Yideas, to provide courses to upgrade the idea-generation capability of industrial researchers and to aid in the development and evaluation of concepts and new products. He has served as a contributing editor to *Instruments and Controls* magazine and has also written several novels, short stories and poems.

## 1949

**Robert Miller** is now with Central Vermont Public Service Corp. and writes that he is "Happily" settled in Rutland.

## 1950

**George Barna** was recently appointed manager of the TIROS Program for RCA Astro Electronics, Princeton, N.J. He will be responsible for the design and fabrication of the improved TIROS operational system satellites and for development of the next generation of TIROS-N operational environmental spacecraft.

Previously, as manager of the Standard Spacecraft Group at RCA, he supervised the design, engineering, assembly, and test of the standard spacecraft. Barna, who joined RCA in 1961, is an associate fellow of the American Institute of Aeronautics.

## 1951

Capt. **Charles Darrell**, USN, is currently commanding officer of the Naval Ocean Research and Development Activity at Bay St. Louis, Mississippi. . . . **Duncan Munro**, superintendent of Mount Auburn Cemetery in Cambridge, Mass., was elected president of the American Cemetery Association in November during the organization's convention in San Antonio, Texas. He has served as vice president, secretary, and a member of the board of directors, as well as acting president of the group. A recognized authority in cemetery operations and management, he has written numerous articles for cemetery technical journals and chaired a number of conferences for the industry.

## 1952

**Robert Cushman** is a programmer at Jones & Lamson, Springfield, Vermont.

## 1953

Perini Corporation, Framingham, Mass., has announced the appointment of **David Holmes** as assistant manager of operation. Since 1959, when he joined the company, Holmes has supervised construction of many commercial and industrial buildings. Presently, he is project manager for the new Federal Reserve Bank building in Boston. . . . **Eugene Rubin** has been re-elected to the executive board of the National Federation of Temple Brotherhoods-Jewish Chautauqua Society for a two-year term. The NFTB is comprised of 500 Reform Temple Brotherhoods, while the Chautauqua Society helps promote interfaith understanding. Rubin, an attorney, is a member of the Massachusetts Bar Association and the Massachusetts Academy of Trial Attorneys.

## 1954

Currently **Elmer Corujo** holds the post of sales manager at Harris Corp. . . . **Joachim Herz** presently serves as vice president of marketing for the components group of Siemens Corporation, with headquarters in Iselin, N.J. . . . **David Hoyle** wrote "Designing for pH Control" which appeared in the November issue of *Chemical Engineering*. He is a senior systems design engineer at the Foxboro (Mass.) Co., where he is responsible for design of advanced control systems from concept to startup. Earlier he was concerned with panel design and chromatograph application and development. He joined the firm in 1959, having previously worked for Union Carbide Corp.

**Roy Hayward** was recently named the top "barbershopper of the year" in the Northeast District. For 13 years he has been a member of the Worcester Chapter, SPEBSQSA, the barber-shop singers. In January, as commission exhibit coordinator for Astra Pharmaceutical Products, Inc., Worcester, he accepted the Professional Convention Management Association's Award for the most educational convention exhibit to be produced by a member of the health care industry during the 1976 convention season.

## 1958

**Donald Bean** holds the position of vice president and general manager at Kieley & Mueller, Inc., Middletown, N.Y. . . . **Frank Chin** has been named a senior structural engineer at Stone & Webster. He became associated with the company 14 years ago and has been lead structural engineer for a nuclear power plant project. A registered professional engineer, he is a member of ASCE and Chi Epsilon.

## 1959

**Dr. Donald Kirk** is the new chairman of the electrical engineering department at the Naval Postgraduate School in Monterey, Calif. The Postgraduate School's mission is to provide graduate education for military officers of the United States and allied nations, and for a limited number of civilian employees of the federal government. The Kirks and three daughters, Kara, 13, Valerie, 10, and Dana, 8, live in Carmel.

## 1960

**John Kirkpatrick** is a project leader in the LRSP division at BCA-NABSP in Chicago, Illinois. . . . **Irwin Jacobs**, product group manager in the business product group at Digital Equipment Corp., Maynard, Mass., has been appointed a vice president at the corporation. He joined the firm as an applications engineer in 1965 and has held numerous positions at district and regional sales management levels. He became business product line manager in 1973 and group manager two years ago.

## 1961

**Arthur Greene** was recently appointed assistant director for program planning at Fermi National Accelerator Laboratory, Batavia, Ill. The program planning office sets schedules for the installation and operation of experiments that have been approved to run at Fermilab. Dr. Greene joined the firm in 1972. Previously he was with Argonne National Laboratory. . . . **Dr. Robert Seamon** has just received a two-year appointment to the staff of the International Atomic Energy Agency in Vienna. A staff scientist at the Los Alamos Scientific Laboratory in New Mexico, Dr. Seamon is the only American scientist appointed to the agency this year. About 100 nations exchange information on the peaceful use of the atom through the agency which is considered as a "United Nations" for physicists and nuclear engineers. An accomplished musician and organist, as well as a scientist, Dr. Seamon is eagerly looking forward to his stay in music-loving Vienna.



## WPI's own Kennedy clan

WPI's own "Kennedy clan" is doing nicely, thank you.

*Francis E. Kennedy*, '30, who started the family trek to WPI, runs Kennedy Die Castings, Inc., Worcester, along with son *Paul*, '68. Francis is the president and owner of the company, while Paul serves as sales manager.

Son *Richard*, '65 has been named director of computer systems and services at Norton Co., Worcester. Until his recent appointment, he was a marketing consultant for IBM. In his new position, he will be responsible for management and coordination of Norton computer related activities worldwide, with primary responsibility for North American computer operations.

*Francis Jr.*, '63, assistant professor of mechanical engineering at Dartmouth College, was named the first recipient of ASME's Burt L. Newkirk Tribology Award last fall. Dr. Kennedy was cited for "his significant contributions to the field of tribology (fluid friction) as established by his research and by technical papers in the tribology field."

## 1962

*William Properzio* is division director of training and medical applications at the Bureau of Radiological Health, HEW, Rockville, Md.

## 1963

"*Peter*" *Shah* was recently promoted to the position of manager of planning for the Science Products Division of Corning Glass Works, a position which includes worldwide responsibilities. He has been with Corning since 1972, when he received his MBA from Boston University.

*Robert Magnant's* book, *Domestic Satellite*, which he wrote while doing graduate research under a government fellowship at the University of Colorado, will be published in a slightly revised version this March by Westview Press of Boulder. The book shows how difficult and complex the policy-making process is in today's technology-driven environment. In his present position as chief engineer for U.S. Army Communications at Ft. Ritchie, Md., Magnant is planning the technical future of the communication facilities for Army posts and installations within the U.S.

## 1964

*Dennis Briefer*, chief engineer with Setra System, Natick, Mass., has been appointed vice president of engineering. Formerly with Raytheon's missile system division, he also served with Memory Technology, Inc. He is a member of IEEE. *James Kaput* is a visiting professor of mathematics for College IV of Grand Valley State Colleges in Allendale, Michigan. In June he will return to Southeastern Massachusetts University.

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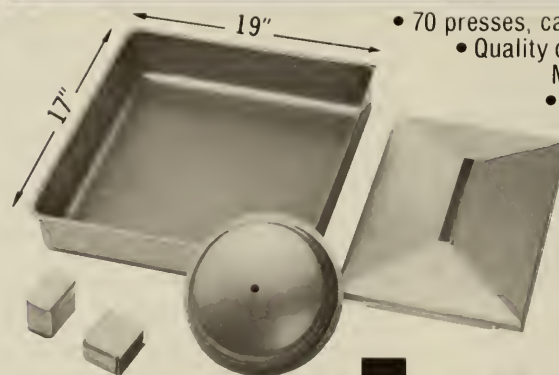
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**1965**  
**Married:** **Stephen L. Cloues** to Carolyn Pinter December 18, 1976. The groom will receive his master's in religious education from Southwestern Baptist Seminary in December.

**Richard Moore** serves as general manager at Moore Sales Co., Dennisport, Mass. . . . **Richard Ison**, vice president of National Development Corp. of Pittsburgh, is currently responsible for a mix of 13 real estate projects owned by the firm Florida. His headquarters are in Bradenton. Formerly he was vice president of Boise Cascade's eastern operations. . . . **Everett Sinclair**, M., has been named technical director of Norton Company's Grinding Wheel Division. Since joining the firm in 1939, he has held several research and engineering positions. In his new job he will be responsible for technical coordination between domestic and international grinding wheel business groups. He will manage the division's process information, product quality, and product safety functions. He is a registered professional engineer.

**Steven Sutker** has joined computer manufacturer Interdata, Inc. as original equipment manufacturers marketing manager. In the newly created position, Sutker will provide market research, planning, and promotion, and direct sales support to OEM's, companies which incorporate Interdata products in systems for resale to their customers. He is based at company headquarters in Oceanport, N.J. Prior to joining Interdata, Sutker held several senior sales and marketing positions with Digital Equipment Corporation's OEM Products Group.

## 1966

**Paul Castle** holds the post of plant superintendent in the Arm & Hammer Division of Church & Dwight Co., Inc., Syracuse, N.Y. . . . **Steve Erhard** works for the Fairbanks Weighing Division of Inert Industries, St. Johnsbury, Vt. . . . **Ronald Hayden** is a sales engineer at New England Controls, Inc., Mansfield, Mass. . . . **Paul Peterin** is a senior technical consultant for Software G. of North America, Reston, Va. He is located in Evergreen, Colorado.

**Richard Piasecki**, steel construction specialist of Armco Steel Corp., is diplomatically advising the 20 Russian steel assemblers in the construction of the Russian version of New York's World Trade Center in Moscow, according to a story published in the December 6th issue of *Business Week*. Previously he had worked on Manhattan's 110-story World Trade Center. . . . **Charles Roberts, Jr.**, formerly with Bell Telephone Labs, has joined Packer Engineering Assoc., Inc. in Naperville, Illinois.

## 1967

**Married:** **Peter N. Formica** and Miss Nicola F. Cappone in Waterbury, Connecticut on November 27, 1976. Mrs. Formica graduated from St. Joseph College and is a chemist at TRC-The Research Corp. of New England in Methuen. Her husband is a consulting air pollution engineer at TRC. . . . **Timothy J. Hester**, M., and Miss Linda S. Hopkins in Worcester on June 12, 1976. The bride graduated from Dorothy Memorial High School and is a secretary at Morgan Construction Co. Her husband is with Spencer (Mass.) Products.

Continuing with the Torin Corporation, **Thomas Keenan** has been elected assistant treasurer and secretary. Since joining Torin, he has served as a development engineer, project engineer, assistant to the controller in the Bel-Air Division, division accounting manager, and controller.

## 1968

**Michael Babin** serves as project engineer under a contract agreement on an ERDA project for development of a test facility for the fast breeder reactor. He is contracted to Westinghouse at Hanford Reservation. . . . **John Bresnahan** has been named supervisor of facilities engineering for Norton Company's Engineering and Construction Services department. Since 1968 he has served Norton as a manufacturing engineer in the Grinding Wheel Division and as a facilities engineer and energy conservation engineer. . . . **Frank Kuszpa, Jr.**, was recently appointed assistant director of engineering at Danbury (Conn.) Hospital. Formerly he was a senior experimental test engineer with Pratt and Whitney Aircraft.

**Roger Pryor** has joined Pitney Bowes as a senior physicist in the mailing systems division at Pitney Bowes in Stamford, Conn. A member of APS, AAAS, IEEE, and Sigma Xi, he earned his master's and doctorate from Pennsylvania State University. He has published several papers on thresholding switching in amorphous semiconductors and presented papers and tutorials in electro-optics. . . . Currently **Kenneth Roberts** is manager of planning systems and controls at Mobil Oil Corp., Valley Forge, Pa. . . . **L. Jack Roger** has received his PhD from the Department of Physiology and Pharmacology at Duke University, Durham, N.C. Presently he is a post-doctoral fellow in the Neurobiology Program at the University of North Carolina in Chapel Hill.

## 1969

**Joel Greene**, who recently opened a law office in Worcester, serves as director of the Worcester Area Drug Coalition, director and treasurer of Regatta Point Community Sailing, Inc., and director of the Ripon Society of Boston and Cambridge. He is a member of the Worcester County, Massachusetts, and American bar associations.

## 1970

**Married:** **Wayne E. Eastman** and Miss Linda G. Williams in Kershaw, South Carolina on October 2, 1976. The bride is a student at Winthrop College. The groom works for Allied Chemical Co., Columbia, S.C. . . . **Lewis H. Howes**, MNS, to Miss Patricia C. Daley in Norwood, Massachusetts on November 21, 1976. Mrs. Howes graduated from Boston State College and has a BS and master's in reading.

**Peter Bladen** attends graduate school at North Carolina State University. . . . **John Demase** is a product support engineer at Pratt & Whitney in West Palm Beach, Fla. . . . **Clark Knickerbocker** serves as sales manager for Swift Agricultural Chemicals in Chicago. . . . **Jonathan Leavitt** holds the post of test engineer for Combustion Engineering, Inc., Portsmouth, N.H. He, his wife, Fran, daughter, Julie 4, and son Jonathan, 2, reside in Exeter, N.H. . . . **Fred Nashawaty**, MNS, was named Conservation Educator of the Year by the Northern Rhode Island Conservation District in November. He is science department chairman at Cumberland (R.I.) High School and was selected for the honor on the basis of his work in establishing an oceanography course, a

federally sponsored nature trail project, and implementation of an environmental course into the science curriculum at the high school. . . . **Dr. James Schwing** is an assistant professor in the department of mathematics and computer science at Old Dominion University, Norfolk, Va. He received his PhD from the University of Utah last year.

## 1971

**Joseph Spezeski** and a team of scientists at the University of Arizona have identified the optical spectrum characteristics of the hydrogen molecule, the simplest molecule in nature. He is participating in the hydrogen spectrometer project while taking a year off from Yale, where he has been working on his doctorate.

## 1972

**Born:** to Mr. and Mrs. **Samuel T. Davis** their second child, Doug, on October 13, 1976. Davis is an industrial engineer at Stride Rite Shoe Corp. in Newburyport, Mass.

**Stephen Domeratzky** works for Chartier Bros. in Prescott, Arizona.

## 1973

**Married:** **Harry A. Kasparian** to Miss Elaine R. Matys on October 3, 1976 in Worcester. The bride, a mathematics teacher in Holden, graduated from Worcester State College. Her husband has a degree from Northeastern University Graduate School of Engineering and is an environmental engineer for Metcalf and Eddy in Boston. . . . **Dorothy L. O'Keefe** and Lawrence E. Francisus on October 15, 1976 in Dudley, Massachusetts. Mrs. Francisus is an industrial engineer at Norton Co., Worcester, and has completed one year of graduate study at WPI. The bridegroom graduated from Pennsylvania State University, where he received a bachelor of science degree in industrial engineering. He, too, is an industrial engineer at Norton Co. . . .

**Richard F. Silvestris** and Miss JoAnn McEachern in Paxton, Massachusetts on October 31, 1976. The bride graduated from the Memorial Hospital School of Nursing and attended the University of Maine and Worcester State College. She is a registered nurse at Memorial. The groom is with Monsanto of South Windsor, Conn.

**Born:** to Mr. and Mrs. **John B. Whitney**, their first child, Benjamin John, on October 20, 1976. John is a research engineer at A. E. Staley Co., Decatur, Ill.

**Jeffrey Berry** works for the Measurement and Control Systems Division of Gulton Industries in East Greenwich, R.I. He holds the post of design engineer for recording and printing instruments. . . . **Tom Bileski** is a field sales engineer covering Texas, Colorado, and Louisiana for the control products division of Texas Instruments, Dallas. . . .

**Michael DeCollibus** currently serves as a marketing engineer for Browne Corp. of Santa Barbara, Calif. The firm manufactures both industrial and medical diagnostic equipment. The DeCollibuses and their son Kevin, 1½, are located in Nashua, N.H. . . . **Alex Dzialo** is a chemist at Uniroyal in Bethany, Conn. . . . **Robert Haywood** has been awarded first-year honors at Harvard Business School. He is now in the second and final year of the MBA program there. . . . **Frederick Kolack** is a graduate student at Stanford University.



## Iacobucci lights 'em up!



Showing off some of their products are (from left) Mark Mooradian, '73, Dr. Richard Iacobucci, '63, and Frank Catanzaro, '71.

Roctronics Entertainment Lighting of Cambridge, Mass., a firm that designs nightclubs and theaters and the control equipment to go in them, has a high percentage of WPI graduates as employees — and with good reason! The president and founder of the ten-year-old company is Dr. **Richard Iacobucci, '63.**

After receiving his BSEE from WPI with distinction, Dr. Iacobucci obtained a master's degree in computer technology from the University of Pennsylvania and a Juris Doctoris from Harvard in 1968. While still a law student, he started a small business offering portable discotheque and lighting services to Boston area pri-

vate parties and performing artists.

That business has grown now to service clients worldwide, such as: the Sheraton Infinity Lounge in Hawaii; Sonesta Beach Hotel, Bermuda; Lucifer's, Calgary, Canada; the Rafters, Saratoga Springs, N.Y.; Reflections, Cambridge, Mass., and many others.

A recent addition to the firm's 15-member staff is Frank Catanzaro, '71, a management engineering graduate. As assistant division manager for the professional division, Frank is responsible for coordinating sales through a world-wide dealership network. Products include theatrical dimming systems, color syn-

thesizers for composing in color in harmony to music, special effects equipment (stroboscopes, bubblers, foggers, mirrored balls) and animated displays.

Mark Mooradian graduated in Physics in 1973. His new position as assistant division manager of the consumer division requires that he attend to the needs of nightclubs, theaters, and traveling performers at the retail level.

Dr. Iacobucci says: "I have a definite preference for hiring WPI graduates, because from my own experience, I know the rigorous training and intellectual discipline required to do well at Worcester Tech. We have applicants from many of the New England area schools, and most of them can't even pass the simple quiz that we give as part of our employment application interview. I feel badly for those students who spend so much money on an education that has ill prepared them for survival in the real world of finding a job and earning a living. It's nice to know that Worcester Tech is still offering a substantive education for the dollars and time that the students spend there. I encourage present students to pursue their studies diligently, despite the mental effort that it requires."

Roctronics is currently developing many new entertainment devices, including modulated laser beams, moving 3-dimensional pictures through holography, and giant (64' x 128') full-color TV screen controlled by the new micro processor technology.

Joshua Kolawole was honored recently for receiving his master's degree in electric power engineering from RPI as a member of GE's Center Industrial Research Graduate Study program. Program members work at the Center part time during the academic year and full time during the summer while pursuing a course of graduate study at a nearby university. An electrical engineer, Kolawole is already working toward his PhD. For his doctoral thesis, he is researching ion beam diagnostics of magnetically confined plasmas. . . . **William Nutter** has been named refurbishment engineer for GE Ordnance Systems at Mare Island Naval Shipyard, for the Polaris missile submarine SSB(N) 601, Robert E. Lee. He oversees the refurbishment of all GE missile fire control equipment during the third overhaul for the 598 class submarine. The shipyard is located in Vallejo, Calif. **Robert Sykes** is with duPont at the Spruance plant in Richmond, Va.

**Alexander Vrachnos** is production engineer at Viomichania Chalyvon S A, Athens, Greece.

## 1974

►**Married:** David J. Courtemanche and Miss Lee Ann Little on November 6, 1976 in Norwich, Connecticut. The bride graduated from Boston College and plans to do graduate work in higher education and psychology. Her husband is with United Engineers and Constructors in Boston.

. . . **William R. Delaney** and Miss **Paula M. Fragassi**, '76 on October 9, 1976 in Glens Falls, New York. Mrs. Delaney received her degree in life science. The groom is plant manager at Miles-Kedex Co. in Leominster, Mass.

**Leonard Brzozowski**, who received his MBA and ME from Dartmouth, is now an associate at Cresap, McCormick & Paget, Inc., Washington, D.C. . . . **Gasper Buffa, Jr.**, is a quality control engineer at General Electric in Youngstown, Ohio. . . . **Steve Dacri** taught "The Art of Legerdemain" during WPI's Intersession. The course included theory and practice of magic as a form of entertainment. Steve is expanding his School of Magic in Worcester. It will now include an Executive Course designed for businessmen who might like to learn tricks to show clients or associates. . . . **David Gracie** is a systems analyst at California Pacific Utilities in San Francisco. . . . **William Johannes**, MNS, is under contract with the Trust Territory government of the Pacific Islands. He is writing a new science curriculum, teaching math, physics, chemistry, and biology, and serving as chairman of the science department.

## 1975

►**Married:** David E. Medeiros and Miss Kathleen M. DeRoche in Seekonk, Massachusetts on November 20, 1976. The bride graduated from Bridgewater State College and is currently teaching physical education at Coyle-Cassidy High School. Her husband is with Gillette Co., Boston. . . . **Joseph W. Pratt** to Miss Dorothy E. Savastio on November 26, 1976 in Plymouth, Connecticut. Mrs. Pratt, a part-time student at Southern Connecticut State College, is employed by Southern New England Telephone Co. in New Haven. The bridegroom is self-employed with Pratt Brothers Contractors in Plymouth.

**Robert Baccaro** serves as a project engineer at Pfizer, Inc., Adams, Mass. . . . **Edward Boyea** is with the U.S. Postal Service in Keene, N.H. . . . **Robert Bradley** holds the post of systems programmer for U.S. Steel in Pittsburgh, Pa. He recently transferred from the electric cable division in Worcester to the Pittsburgh advanced systems development group. . . . **Garrett Cavanaugh**, who was formerly with Inter-Royce Co., Plainfield, Conn., is now a lecturer in industrial education, drafting, and material science at Keene (N.H.) State College.



## ENGINEERING GRADUATES

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**Frederick Cordella** is with Prunier & Sons in Worcester. . . . **Bruce D'Ambrosio** is at the University of Southern California in Los Angeles. . . . **William DiBenedetto** serves as section manager for graphic systems at Data General Corp., Southboro, Mass. . . . 2/Lt. **Maurice Ironoux** recently completed a professional military school course for Air Force electronics installation team chiefs and communications supervisors at Oklahoma City Air Force Station. Lt. Ironoux is a communications-electronics officer at Kelly AFB, Texas, with the 1827th Electronic Installation Squadron. . . . **John Heil** is a graduate student at San Diego (Calif.) State University.

## 1976

►**Married: Paul C. Carubia** to Miss Debra S. Demarais in Granville, Massachusetts on October 23, 1976. Mrs. Carubia graduated from Worcester State College. Her husband is doing graduate work at Cornell. . . . **Norman P. Gariepy** and Miss Diane Marrella recently in Fitchburg, Massachusetts. The bride, a graduate of the dental assistant program at Monty Tech, is employed by Dr. Joel Treewater in Leominster. The groom attends the Northeastern University Graduate School of Professional Accounting. . . . **Bernard E. Gordon** and Miss Christine Kularski in

Auburn, Massachusetts on August 21, 1976. Mrs. Gordon graduated from Auburn High School and is an inspector at Astra Pharmaceutical Products Co. The bridegroom is employed by Thunderbird Bowl in Auburn. ►**Married: Perry S. Griffin** and Miss Andrea Kenney on October 30, 1976 in Saugus, Massachusetts. Mrs. Griffin graduated from Becker. Her husband is a production supervisor at Estee Lauder, Inc., Oakland, N.J. . . . **Thomas A. Nery** and Miss Sharon R. Messinger in Brooklyn, Connecticut on October 24, 1976. The bride graduated from Worcester State College. The groom is a systems proposal engineer at the Foxboro (Mass.) Co. . . . **Steven C. Pratt** and Miss Kathleen McManus on December 4, 1976 in Pawtucket, Rhode Island. Mrs. Pratt attended Becker. The bridegroom is with Polyform Corp., Westboro, Mass.

**Ronald Abruzzese** is design engineer at Texas Instruments in Houston, Texas. . . . **Marian Bishop** works for AIU/Cutler Hammer in Deer Park, N.Y. . . . **Andre Bissonette** serves as assistant credit manager at Stamford Superior Drug in Stamford, Conn. . . . **Edward Fasulo, Jr.**, has been promoted to day shift supervisor in the Organic Chemicals Division at the American Cyanamid Company in New Jersey. He also plans to enroll at Princeton in pursuit of a master's degree. . . . **James Hall** is manager of the bar soap department at Procter & Gamble in Quincy, Mass.

**John Highman** holds the post of systems assistant at Travelers Insurance Co., Hartford, Conn. . . . **Thomas Keenan** has received a \$1,250 award from the James F. Lincoln Arc Welding Foundation for his research on the strength of stainless steel welds. He was the only winner in Massachusetts. . . . **Charles Lauzon** is a graduate student at the University of Michigan. . . . **Kestutis Pauliukonis**, a student with the U.S. Navy Health Science Education and Training Command, is presently a member of the Class of 1980 at Georgetown University Medical School. . . . **Graig Plourde** has joined Connecticut Bank and Trust Co. as a system programmer in the Technical Support Group.

**Richard Ranelli** has been promoted to systems development officer and systems manager for Financial Industry Systems (FIS) at Hartford National Bank. He is responsible for all check processing, correspondent banking, and financial control computer applications. Ranelli, who recently received his master's from WPI, joined Hartford National in 1973. He has been programmer analyst and project manager for the check processing control system project. . . . **James Roberge** is with Industrial Risk Insurers in Hartford, Conn. . . . **Richard Rudis** works as assistant quality control engineer for Stone & Webster of Boston. He is located in Oswego, N.Y. . . . **John Scott** is an engineer in training at Riley Stoker Corp., Worcester. . . . **Barry Siff** serves as a safety representative for Royal Globe Insurance in Southfield, Michigan.

## Math teacher in Malaysia

On July 9, 1975, **Gerald A. Otte**, '73, of Durham, Connecticut, became Abdul Hamid Abdullah. After serving as a Peace Corps volunteer for nearly two years in the Southeast Asian country of Malaysia, he converted to the Islam religion and took his new name.

"After a year here, my ideas about life and what I wanted from it had changed drastically. I found myself in need of religious beliefs and discovered that my beliefs were very similar to the doctrines of Islam," said Otte, who extended his original two-year Peace Corps term of service for an additional year.

"I would have to say that becoming a Muslim is my most satisfying experience here, along with the close friends I have made," said the volunteer, who teaches mathematics at a secondary school in Bore Bauru, the southernmost state in Malaysia.

"The important goal of my program is to improve the level of science knowledge in secondary Malay schools. This is important because of the progress of technology in this country and the need for science people," said Otte. He teaches the equivalent of the eleventh grade at the secondary school, which has about 1,600 Malay students and about 56 Malay, Chinese and Indian teachers.

During recent years, the Malaysian government has placed a strong emphasis on education, particularly for the Malay people who make up roughly 50 per cent of the country's population. Most of the Malays are subsistence farmers or rubber tappers who live in poor villages. The Malays, however, control much of the political and social life of the country. About 40 per cent of the population are Chinese who are mainly urban dwellers and, by virtue of their predominant role in trade, business and finance, possess a great deal of Malaysia's economic power. Malaysians of Indian descent make up about 10 per cent of the population of approximately 11.5 million. Their ancestors came from India, Pakistan and Sri Lanka, primarily as laborers on rubber

plantations around the turn of the century.

Pursuing a policy of national unity, the Malaysian government ruled in 1967 that Bahasa Malaysia would replace English as the country's national language. In 1970, this policy was enforced in government-funded schools by having all subjects taught in Bahasa Malaysia starting with the first grade. Subsequently, an additional grade has been added each year so that now the children are taught in the national language up through the equivalent of the seventh grade.

Otte teaches in Bahasa Malaysia and uses it most of the time outside of work. He initially learned the language in intensive Peace Corps training and since has improved his fluency in it through his association with the Malay people.

"Several times I have used a wrong word which was embarrassing, particularly when I ordered what I thought was a Malay food in a restaurant. What I said only turned the waiter's face red. The meaning shall be left unsaid," recalled the volunteer. He usually prepares his own meals, eats strictly Malay food and claims that he has become an expert cook.

"In my first few months here, I was completely unaware of many of the country's customs and, for fear of offending anyone, I took a rear seat and tried to learn about the customs without taking an active part," said Otte. Since he taught at a Malay school and associated with many Malays, the volunteer "soon became very close with several Malays and learned a lot about their culture and their religion."

Otte lives about a mile from his school in a semi-detached, one-story brick house in an area which is fairly rural, but is developing quickly. He teaches about five periods a day from 7:30 a.m. until 1:10 p.m. After lunch, he returns to school to teach extra classes or direct choir and badminton practice. Evenings, he usually prepares lessons or visits with friends. Since he lives only a mile from the waterfront on the Singapore Straits, he goes there once in a while with friends.





**Mark Eldredge, '06** of Santa Barbara, California died on December 5, 1976.

He was born on May 17, 1882 in Almonesson, N. J. In 1906 he received his BSEE from WPI. For many years he served as an electric power systems adviser in India. From 1948 to 1952 he was chief of the Utilities & Fuels Division in the office of the Secretary of Defense in Washington, D. C. He was also employed by General Electric, Electric Bond & Share, New York City, and Memphis (Tenn.) Power & Light Co. Prior to his retirement, he was with the Foreign Operations Administration, American Embassy, New Delhi, India.

Mr. Eldredge, a registered professional engineer, belonged to Phi Sigma Kappa, AECS, and ASME. He was a fellow of the American Institute of Electrical Engineers, director of AIEE, president of the Association for the U. N., and a former vice president of the Washington, D. C. chapter of the Alumni Association. He was an Army veteran of World War I, a Shriner, and a 32nd degree Mason.

**Roy S. Lanphear, '06** retired chief chemist for Worcester's Sewer and Water Departments, died on November 19, 1976 in Worcester. He was 92.

After graduating as a chemist from WPI, Mr. Lanphear joined the Worcester Department of Public Works. He remained with the department from 1913 to 1946 when he retired as supervising chemist. He was past president of the New England Sewage Work Association and he served as a captain with the Army Quartermaster Corps during World War I. He was born in Worcester on July 6, 1884.

**Udley W. Shaw, '09** former executive vice president of the New England Council for 26 years, passed away at his home in Harwich Port, Massachusetts on December 8, 1976. He died at 90 following a long illness.

He was born in Meriden, Conn. on November 18, 1886, later studying chemistry at WPI. In 1909 he graduated from Wesleyan University. During his career he was on the staff of the *Washington (D.C.) Herald*, the *Washington Times*, the *United Press*, and the *New York Sun*. He also served as the Washington editor of the *Ladies Home Journal*, executive assistant to the president of the Manufacturers Association of Connecticut, editor of *Carpenter World Travels*, and as coauthor of the travel book, *The British Isles*.

From 1926 until 1951 he was with the New England Council, where as executive vice president, he kept in touch with major developments affecting New England's business future. He belonged to Phi Gamma Delta and Boston Economic Club. In 1951 he received an honorary doctor of laws degree from Brown University.

**James J. Shea, '12** WPI Trustee Emeritus and Chairman of the Board Emeritus of Milton Bradley Company, Springfield, Massachusetts, died on January 3, 1977. He was 87 years old.

Mr. Shea's retirement as chairman of the Board of Directors in 1971, ended a long career at Milton Bradley, which he joined as president in 1941 when the company was on the verge of bankruptcy. Today, it is the largest manufacturer of games, puzzles, and educational materials in the United States, with sales last year of approximately \$190,000,000.

A native of Cambridge, Mass., Shea was born on August 18, 1889. After graduating as a mechanical engineer from WPI, where he was a member of Phi Kappa Theta, he was employed by United States Envelope Co., Worcester. In 1922 he was transferred to the former Kellogg Division in Springfield and served there as plant superintendent and assistant to the president. In 1941 he became president of Milton Bradley.

Mr. Shea was a director of Milton Bradley Company, Valley Bank & Trust Co., the Employers Association of Western Massachusetts, and Buxton, Inc. He served as a trustee of A. I. C., Old Sturbridge Village, the Hampden Savings Bank, the United Way, the Massachusetts Foundation, Mercy Hospital, and as an associate trustee of Holy Cross College. He was a WPI trustee for 13 years and a former president of the Alumni Association. He received honorary degrees from six New England colleges, including WPI and Holy Cross. In 1967 he received the Herbert F. Taylor Award from the WPI Alumni Association.

Among the many organizations with which he was affiliated were the Springfield Industrial Association, the Springfield Symphony Orchestra Association, the Springfield Water Commission, the Crayon, Water Color and Craft Institute of New York, Springfield Area Development Committee and the Springfield Council Against Discrimination.

In 1958 he was named a Knight of the Sovereign Military Order of Malta by Pope Pius XII. Other honors presented to Mr. Shea included the Key to the City of Springfield, the governor's Paul Revere Bowl, the John F. Kennedy National Award, Outstanding Citizen Award, and an award from the National Association of Manufacturers noting his many contributions to the development of educational toys and games through the Milton Bradley Company.

**Edward W. Shaw, '13** died in the Worcester Hospital in Worcester on November 6, 1976. He was 85.

In 1962 he retired as a structural engineer from Riley Stoker Corp. Previously, in 1956, he had retired from Stone & Webster Co. At one time he had been with E. B. Badger & Sons, Boston.

Mr. Shaw, who was born on January 26, 1891 in Worcester, studied civil engineering at WPI. He was a licensed professional engineer. A past master of Isaiah Thomas Lodge of Masons, he was also a member of Eureka Royal Arch Chapter of Masons. He belonged to the Unitarian Universalist Church.

**Norman V. Crane, '16**, a former Peabody, Massachusetts official, passed away after a lengthy illness on November 11, 1976. He was 83 years old.

He was born on June 6, 1894 in Blackstone, Mass. and studied at WPI and at Tri-State College of Engineering Indiana. For many years he was an insurance claims adjuster and owner of the Norman V. Crane Claims Adjusting Co. of Lynnfield.

Formerly Mr. Crane was city engineer for the city of Peabody, president of the City Council, chairman of the School Committee, and vice president of the Warren Five Cents Savings Bank. He was a past president of the Insurance Adjusters Association of Boston and had served as an officer in the Coast Guard Auxiliary during World War II. He belonged to the Shrine, the Elks, ATO, and was a 32nd degree Mason.

**William P. Kalagher, '18**, died in Worcester Nursing Home on November 14, 1976.

He was born on March 20, 1895 in Fitchburg, Mass. In 1918 he graduated summa cum laude from WPI as a chemist, but due to an injury, never worked. He belonged to Skull.

**Francis N. Luce, '18**, at one time a town official in West Boylston, Massachusetts, died on January 9, 1977 at the age of 82.

He had been a selectman and a member of the Finance Committee in West Boylston for many years. After graduating with a degree in chemistry from WPI, he worked at Norton Co. for forty years, retiring in 1960 as assistant superintendent.

Mr. Luce, a West Boylston native, was an Army veteran of both World Wars. He retired as a major after 23 years of active service. He was a 50-year member of the First Congregational Church, West Boylston, which he served as a former trustee, deacon, and treasurer. Also, he was a past post commander of the Boylston Lodge of Masons and a 32nd degree Mason. He belonged to Sigma Phi Epsilon, the Professional Engineers Society of Massachusetts, the American Chemical Society, and the American Ceramic Society.

**Raymond D. Bishop, '20**, of Brattleboro, Vermont died on December 21, 1976.

A Brattleboro native, he was born on March 24, 1898. He graduated as an electrical engineer from WPI. From 1922 to 1959 he was with Western Electric Co., Philadelphia, then Michigan Bell Telephone Co. in Detroit, where he retired as a customer service engineer.

Mr. Bishop, an associate member of AIEE, was a registered engineer and belonged to Sigma Alpha Epsilon and the Telephone Pioneers. He served as town representative and treasurer of the local Red Cross. He was the uncle of **Stephen J. Hebert, '66**, secretary-treasurer of the WPI Alumni Association.

**Charles S. Cushing, '22**, of Portland, Maine passed away on October 16, 1976.

He was born on April 9, 1897 in Portland. In 1922 he received his BSCE from WPI. From 1924 to 1939 he was an engineer with the Portland Assessor's Department. He was assessor for the city from 1940 to 1945, being named chairman of the board of assessors in 1946.

Mr. Cushing belonged to the Municipal Finance Officers Association of U.S. and Canada, the National Association of Assessing Officers, and the Masons.

**Helge S. Johnson, '24**, Trustee Emeritus of WPI and former president of the Alumni Association, died January 11, 1977 in Scarsdale, New York at the age of 73.

He was the retired president of Johnson-Norman Fans and Pumps, Inc., of New York City, sales and engineering representatives for Buffalo Forge Co.

Mr. Johnson served as a trustee at WPI from 1950 to 1960 and from 1964 to 1972 when he was named Trustee Emeritus. He was Alumni Association president from 1947 to 1949 and held many WPI regional and national Alumni Association posts.

A native of Manchester, N.H., he graduated as a mechanical engineer from WPI in 1924. During his career he was associated with Buffalo Forge Co., Coon DeVisser Co., and Koithan & Johnson, New York City. In 1973 he retired as president of Johnson-Norman Fans and Pumps, Inc.

Mr. Johnson received the Alumni Association's Herbert F. Taylor Award for distinguished service to WPI in 1961. In 1967 he was awarded the Scarsdale Bowl in recognition of the time, energy, and effort he had given to the civic welfare of Scarsdale. He belonged to Sigma Phi Epsilon, the White Plains (N.Y.) Hospital board of governors, the Village of Scarsdale Planning Commission, and the Scarsdale Board of Education, which he served as president. He was also a former president of the Town Club of Scarsdale, and a member of the National Society of Professional Engineers.

**Charles J. Thompson, '26**, former long lines service manager for Western Electric Co., New York City, died on December 9, 1976 in Summit, New Jersey.

A native of Worcester, he was born on November 9, 1904. After receiving his BSEE from WPI, he joined Western Electric, retiring in 1969 as long lines service manager.

He belonged to Tau Beta Pi, Telephone Pioneers of America, and had served as historian for the Lackawanna Power Squadron and as captain of the United Fund campaign. He was a past president of the Northern New Jersey chapter of the Alumni Association.

**Allan S. Merchant, '27**, died at his home in East Greenwich, Rhode Island on December 9, 1976.

He was born on January 2, 1903 in Providence. After studying at WPI, he was with the Providence-based firm of A.W. Merchant, Inc. for many years. He retired in 1943.

Mr. Merchant was a life member of Lambda Chi Alpha Fraternity, as well as a founding member of its charter society. He was a life member of the Thomas Smith Webb Lodge and Palestine Temple.

**Irving I. Zellon, '31**, died in Miami Beach, Florida on November 12, 1976 at the age of 68.

He was born on March 8, 1908 in Worcester, later becoming a student at WPI. Before retiring nine years ago, he was a radar meteorologist with U.S. National Weather Service in Philadelphia, Pa., and Atlantic City, N.J.

Mr. Zellon belonged to the American Meteorologists Association and the Shaarai Torah Sons of Abraham Synagogue in Worcester. During World War II he served as a staff sergeant in the U.S. Army Weather Squadron.

**Clair E. Stauffer, '39**, of Levittown, Pennsylvania died on January 21, 1975.

After earning his BSME from WPI, he joined DeLaval Steam Turbine Co. of Trenton, N.J., where he was a marine sales engineer. In 1970 he retired from DeLaval following 31 years of service.

Mr. Stauffer was born on September 4, 1914 in Ringtown, Pa. He belonged to Phi Sigma Kappa, Trenton Engineers Club, and the U.S. Naval Institute. He served as Past Master of Loyal #181 Masonic Lodge of Trenton and as an elder in the Morrisville (Pa.) Presbyterian Church.

**Eugene W. Cray, '45**, a vice president of Factory Mutual Engineering Co., died unexpectedly at his home in Walpole, Massachusetts on November 15, 1976. He was 52 years old.

A native of Dorchester, Mass., he graduated from WPI as an electrical engineer. From 1946 to 1949 he was a sales engineer at Gamewell Co. He joined Factory Mutual in 1944 and was a vice president at the time of his death. During World War II he was a lieutenant in the Navy. He was a member of Theta Chi.

**James S. MacKay, '53**, a manufacturer's representative, died November 12, 1976 after suffering a heart attack at his home in Los Altos Hills, California.

After graduating as an electrical engineer, he went with the U.S. Army Signal Corps., where he was promoted to captain and later to major in the Army Reserve. He worked for Lytle Corporation, Curtiss-Wright Corp., Williams Associates, Raytheon Co., and Watkins Johnson Co. For the past few years he had headed the firm of Systems Marketing Consultant of Los Altos Hills.

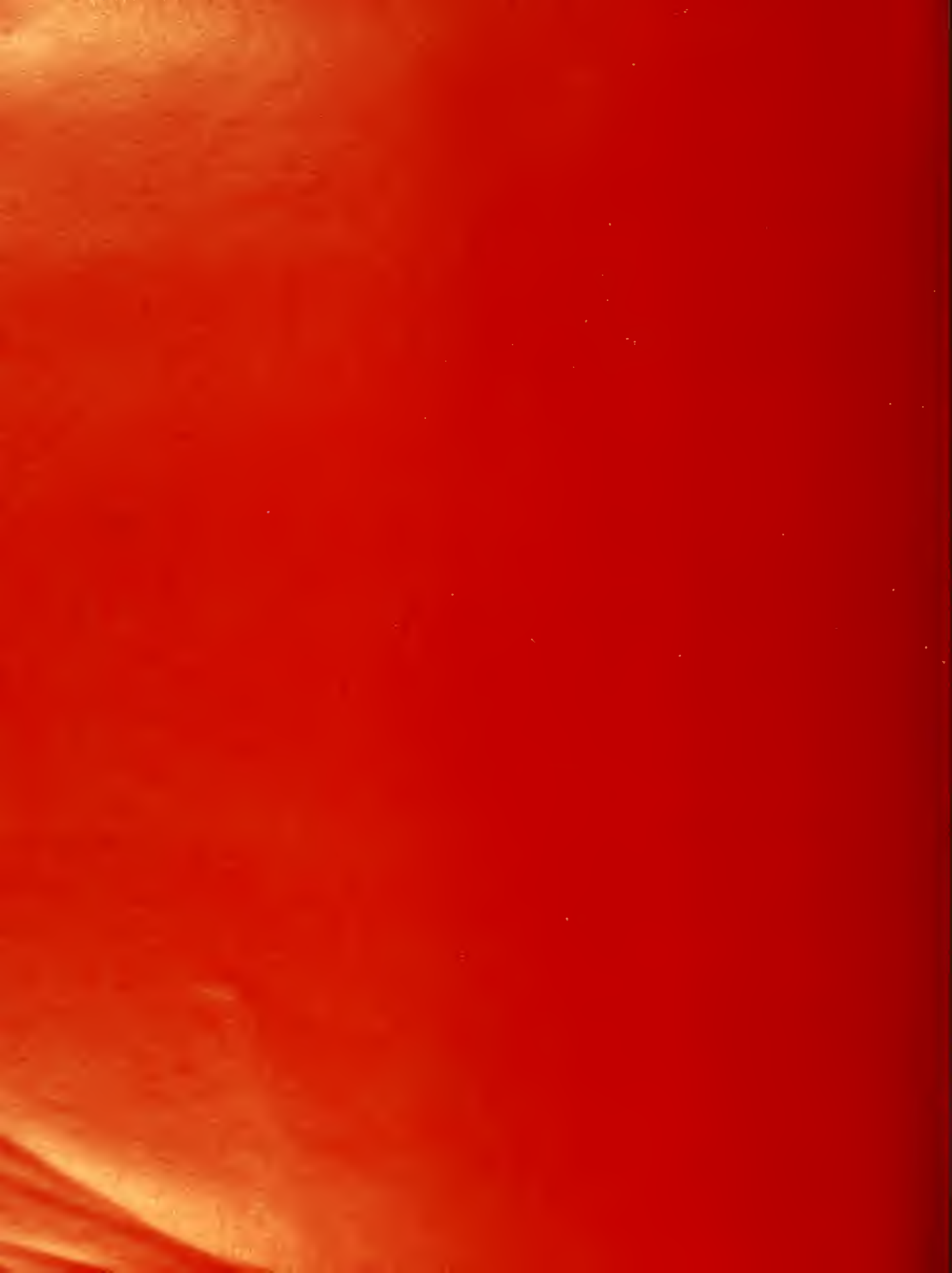
Mr. MacKay, who was born on August 18, 1930 in Greenfield, Mass., belonged to the Electronics Representatives Association, the Sierra Club, IEEE, ISA, and SID. He had graduate degrees from the University of New Mexico and Babson Institute.

**Raymond J. Tivnan, '59**, died in St. Vincent Hospital, Worcester, on November 14, 1976 following a long illness. He was 46.

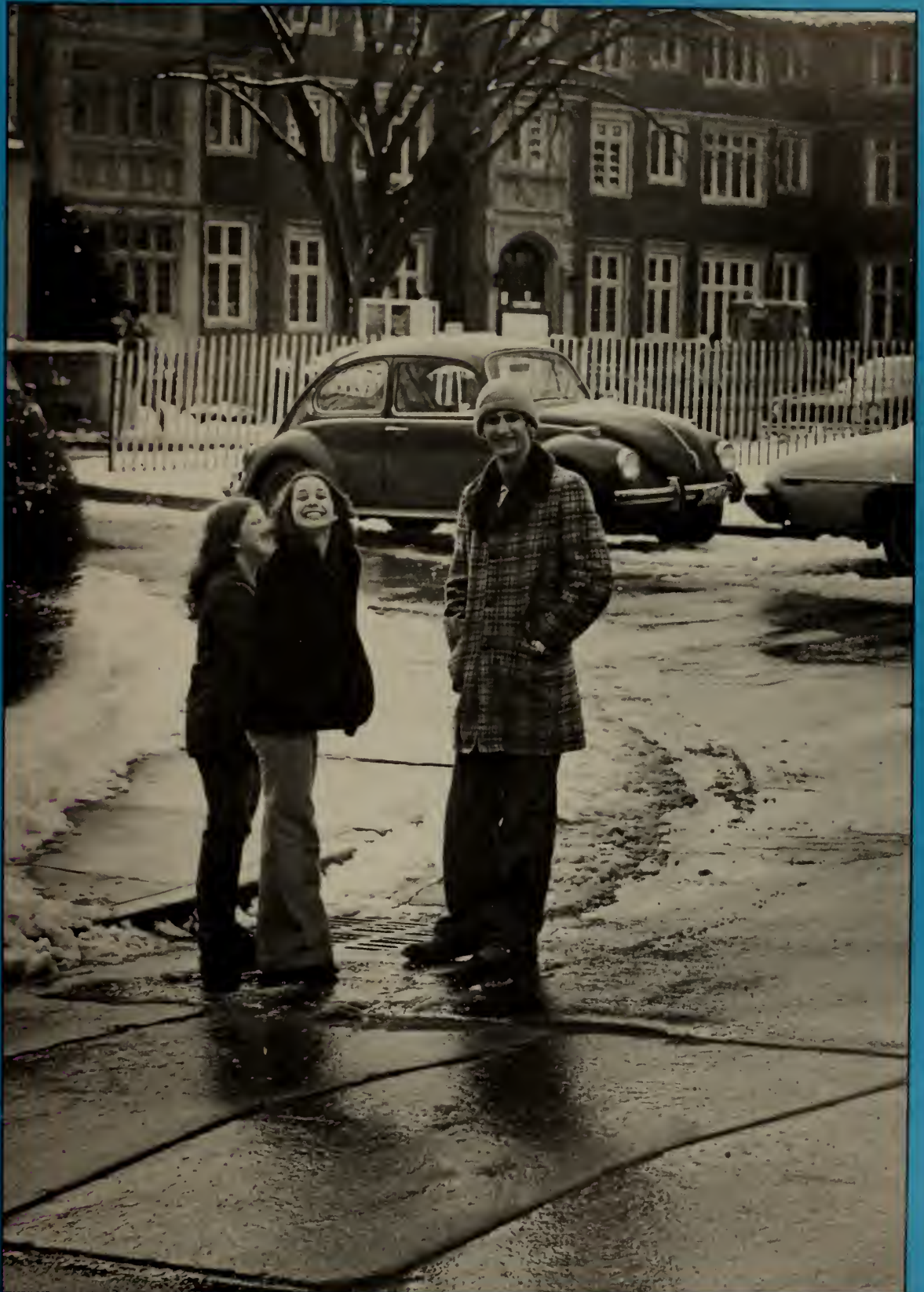
He was born in Worcester, graduated as an electrical engineer from WPI, and received his MBA from Western New England College. He had been associated with Simplex Time Recorder Co., Gardner, Mass. At his death he was president and treasurer of McMahan & Co., Inc., maker of industrial clutches in Worcester.

Mr. Tivnan was a registered professional engineer, a member of K. of C., and the Massachusetts Society of Professional Engineers. During the Korean conflict, he served as a Navy chief petty officer. He belonged to Phi Kappa Theta.





# WPI Journal



WPI STUDENTS



# It pays to enroll in AFROTC

The Air Force needs commissioned officers in the science and engineering areas. Many will enter active duty through Air Force ROTC.

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Date of Birth\_\_\_\_\_ Phone number\_\_\_\_\_

(Furnish college or high school information.)

College\_\_\_\_\_ Major\_\_\_\_\_ Graduation date\_\_\_\_\_

High School\_\_\_\_\_ Graduation date\_\_\_\_\_

**Air Force ROTC—Gateway to a great way of life** 

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#### WPI ALUMNI ASSOCIATION

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*Vice President:* J. H. McCabe, '68  
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*Secretary-Treasurer:* S. J. Hebert, '66

*Past President:* W. J. Bank, '46

*Executive Committee Members-at-large:* W. A. Julian, '49; W. B. Dennen, Jr., '51; J. A. Palley, '46; J. L. Brown, '46

*Fund Board:* W. J. Charow, '49, *chairman*; L. H. White, '41; G. A. Anderson, '51; H. I. Nelson, '54; P. H. Horstmann, '55; D. J. Maguire, '66









## WPI — Worcester's new cultural center

In the early 1950's, an Alumni Association committee organized a musical evening in an effort to bring cultural programming to the WPI Campus. Two of the great singers of the time gave a magnificent performance in Alden Memorial for 25 people. That ended the experiment for years to come.

Today, however, WPI is regarded as a center for cultural programming throughout the Worcester Community. The person most directly responsible is Bernard H. Brown, Associate Dean of Student Affairs who modestly attributes success to broad student participation.

This college year, 99 performances will be given on the WPI campus running the full gamut from chamber music to hard rock. Many are free and open to the public. The Spectrum and Cinematech series represent the largest share of these extracurricular offerings. In addition, the Lens and Lights Club schedules a variety of film fare throughout the year. Student social committee concerts provide most of the performances of currently popular groups. The student Coffee House and the Pub provide opportunities for local groups and amateurs just getting started to enjoy an audience.

Major support for these extracurricular programs comes from a student-voted activities tax which appears on the tuition bill. An elected student Social Committee works closely with Dean Brown in selecting the performances for the coming year. A grant for the National Endowment for the Arts has also helped bring performing groups to the campus. By joining with other colleges in the Worcester Consortium for Higher Education, WPI has been able to share expenses for traveling groups. Working with Clark and Holy Cross, WPI has brought to Worcester this year a dance band, a rock group, a mime, a

chamber music group and a classical guitarist, all well received.

Some groups have come to WPI to participate in Intersession, conducting workshops for interested students during the day with performances for anyone in the evening.

The Cinematech series offers a variety of movies not shown on the commercial screen. Some are old time classics, others noted foreign films. Assisting Dean Brown in this program is Mrs. Minnie Levenson now retired from the Worcester Art Museum staff and for many years in charge of their film program.

In addition to these many performances, the Gordon Library's gallery area and entrance windows feature outstanding exhibits of art, photography and WPI memorabilia which change every few weeks.

The organizers of that early attempt to bring culture to WPI can feel redeemed. Their idea was just ahead of its time. Today's events are well attended. Not every program appeals to every student but they are planned to provide something for everyone. If students didn't like the fare, it wouldn't be here. After all, it's their money.

## The Cluverius Society gets going again

The Cluverius Society hasn't been very active in recent years. Essentially an alumni inter-fraternity council, it is composed of members of alumni housing corporation boards, and it tries to foster communication and cooperation among the fraternity corporations.

But there is renewed interest in getting the group going again (Joel P. Green, '69; Bennett E. Gordon, Jr., '65; and Walter E. Knapp, '38), and a nominating committee is seeking new officers. If you're interested in holding office in the Society, or you can suggest some potential nominees

for president, vice president, and secretary-treasurer, please write Joel P. Green, 14 Harvard Street, Worcester, MA 01608, no later than June 15. Please indicate your fraternity, class year, and your interest and/or experience in the WPI fraternity system.

## An appreciation

Every magazine, the *WPI Journal* included, has a life and a personality of its own that reflects, in some way, the lives and personalities of all those who help put it together. When one of those people leaves, the magazine's character is bound to change in some degree.

One of those people has left, though you wouldn't know it from reading the masthead. Robert Kerr, sales manager of Davis Press, died on April 20 in Worcester following an illness. For fourteen years Bob watched over the production of the *Journal* as Davis printed it and, more recently, typeset the copy. Bob was a special friend of mine, quiet, warm, and one of the gentlest people I've ever known. During the six years I've been editor of the *Journal*, we worked together on 24 issues. This is the last of those.

I learned a lot from Bob about dealing with this magazine and its problems, a lot about the craft of publishing . . . and a good deal more about a really wonderful person. Bob Kerr was an important part of the *Journal*, and I don't think working on it is going to be quite the same for me again. I'm gonna miss you, Bob.

— Russell Kay





Formal notice is hereby given that the Annual Meeting of the WPI Alumni Association will be called to order on Saturday, June 11, 1977 in Worcester, Massachusetts at 1:00 p.m. at the Higgins House on the WPI campus to conduct the following business: ratify the actions of the Alumni Council for the past year, vote on the By-laws changes enumerated below, and to conduct such other business as may legally come before the meeting.

April 25, 1977

Stephen J. Hebert  
Secretary-Treasurer

## Proposed revisions to the Constitution & By-laws of the WPI Alumni Association, to be effective September 1, 1976

Existing

Proposed

### CONSTITUTION

#### ARTICLE VI — ALUMNI (CHAPTERS) CLUBS

**Section 1.** Alumni Chapters may be established as specified in the By-laws.

**Section 1.** Alumni Chapters may be established as specified in the By-laws.

### BY-LAWS

#### II MEETINGS

**Section 4.** The Executive Committee (see Article XI) of the Alumni Council shall meet with the President of WPI and selected administrative staff members at least quarterly to discuss and coordinate matters of mutual concern. The agenda for such meetings shall be jointly prepared by the President of WPI and the President of the Alumni Association.

**Section 4.** The Executive Committee (see Article XI) of the Alumni Council shall meet with the President of WPI and selected administrative staff members at least annually to discuss and coordinate matters of mutual concern. The agenda for such meetings shall be jointly prepared by the President of WPI and the President of the WPI Alumni Association.

#### III ALUMNI (CHAPTERS) CLUBS

**Section 1.** An Alumni Chapter may be established in any suitable area by the Alumni Council upon written petition of not less than fifteen members of the Alumni Association residing in or having a business address within the area, provided the petitioners state that they will adopt and will organize under the uniform constitution for Alumni Chapters approved by the Alumni Council. Each Alumni Chapter shall have the powers and privileges set forth in the uniform constitution for Alumni Chapters, including representation in the Alumni Council and recommendation to the Alumni Association, or to the Alumni Council. The President of each Chapter shall strongly urge that the Chapter's representatives or alternates attend each meeting of the Alumni Council.

**Section 1.** An Alumni Club may be established in any area by the Alumni Council according to organizational guidelines as established by the Alumni Council. Each Alumni Club shall have the right to representation on the Alumni Council. It shall be the responsibility of the chairperson of each Club to assure attendance by the Club's representative, or alternate, at each meeting of the Alumni Council.

**Section 2.** The Alumni Council may disband any Alumni Chapter which remains inactive for three consecutive years, or which fails to operate in accordance with the Constitution and By-laws of the Alumni Association. Notice of such intended action shall be mailed to all members of the Alumni Chapter at their last known address and an opportunity for a hearing shall be given. Should any Alumni Chapter be disbanded, such action shall be under the direction of the Alumni Association Executive Committee, and all monies, records and property shall revert to the Alumni Association.

**Section 3.** The purpose of Alumni Chapters shall be to form working and social bonds in the best interests of the Alumni, WPI, and the Alumni Association. Satellite clubs or districts may be formed within the Alumni Chapters, at the discretion of the officers of the Alumni Chapter, for the purpose of improving and/or expanding communications, activities or relations.

**Section 4.** For the purpose of Alumni Council representation, an alumnus may be a member of only one Alumni Chapter, normally in the encompassing area within which he resides, or if requested in writing, the one within which he has his business address.

**Section 2.** The Alumni Council may disband any Alumni Club which becomes inactive for an extensive period of time. Following such action by the Council, members of the Alumni Club shall be informed of the action by mail at their last known address. The disbanding of an Alumni Club shall be done under the direction of the Alumni Association Executive Committee and any monies, records or property shall revert to the Alumni Association in care of the Alumni Secretary-Treasurer.

**Section 3.** The purpose of Alumni Clubs shall be to form social bonds and programs, and to serve as a communications link, to best serve the interests of alumni in an area, WPI, and the Alumni Association.

**Section 4.** For the purpose of Alumni Council representation, an alumnus may be a member of only one Alumni Club. Such Club shall normally be the one encompassing the area within which the alumnus resides, or, if requested in writing, the Club area where the alumnus' business address is located.

#### IV. ALUMNI COUNCIL

**Section 1.** The Alumni Council shall be composed of Alumni Chapter representatives, the immediate Past-President of the Alumni Association, members-at-large of the Executive Committee, officers of the Alumni Association and all alumni members of the Alumni Fund Board. Each Alumni Chapter shall be entitled to elect at least one Alumni Council representative. Each Alumni Chapter containing more than two hundred members shall be entitled to elect one additional Alumni Council representative for each two hundred members or major fraction thereof. In the temporary disability of any Alumni Council representative, the President of the Alumni Chapter shall designate an alternate to attend the meeting.

**Section 1.** The Alumni Council shall be composed of all voting members of the Alumni Association Executive Committee; all alumni members of the Alumni Fund Board; one representative from each established Alumni Club; one representative from each graduating class from the most recent through and including the 50th reunion class; and one representative from the 50-year associates group representing all classes who have celebrated their 50th anniversaries. In the temporary disability of any Alumni Council representative, the Chairperson of an Alumni Club or Class shall designate an alternate to attend the meeting.

**Section 2.** The term of each Alumni Chapter representative shall be two years, commencing immediately after the Annual meeting of the Alumni Association. Alumni Council representatives shall be eligible for re-election for one additional consecutive term, and any number of non-consecutive terms thereafter.

**Section 2.** The term of each Alumni Club and class representative shall be three years, commencing immediately after the Annual meeting of the Alumni Association. Alumni Council representatives shall not be eligible to serve a successive term; however, they may be re-elected after a minimum of one year has passed since their term was completed.

Each Alumni Chapter shall inform the Secretary/Treasurer of the Alumni Association promptly of the election of an Alumni Council representative. The resignation of any member shall be addressed to the Alumni Council and sent to the Secretary/Treasurer of the Alumni Association.

Each Alumni Club and class shall inform the Secretary/Treasurer of the Alumni Association promptly of the selection of an Alumni Council representative. The resignation of any Council member shall be addressed to the Alumni Council and sent to the Secretary/Treasurer of the Alumni Association. Members of the Alumni Council may be reimbursed at the option of the Executive Committee for out-of-pocket expenditures incurred by attendance at scheduled Alumni Council meetings.

Members of the Alumni Council may be reimbursed for out of pocket expenditures incurred by attendance at scheduled meetings.

Section 3. The Alumni Council shall report to the Alumni Association at least once in each year, either in the *Journal* or by other mailing, on its activities and the financial affairs of the Alumni Association.

#### X. BOARDS AND COMMITTEES

Section 1. The Executive Committee and the Alumni Fund Board shall be established (see Articles XI and XII). Additional boards or committees may be appointed and maintained by the Alumni Council or the Executive Committee. The Alumni Council may discontinue any appointed board or committee temporarily or permanently or make changes in its organization or duties. The Alumni Council or Executive Committee may delegate to the Alumni Association President the formation and operation of any committee.

Section 1. The Executive Committee and the Alumni Fund Board shall be established (see Articles XI and XII). Standing Committees to carry out specific functions shall also be established and shall include a Citations Committee; an Investments Committee; a Nominating Committee (see Article XIII); a Publications Committee (see Article XX); a Student-Alumni Relations Committee; and a Trustee Search Committee (see Article XIV). In addition, Standing Committees and Task Forces may be appointed from time to time by the Alumni Council. In the interim between Council meetings, Standing Committees and Task Forces may be created by the Executive Committee, subject to approval by the Alumni Council at their next meeting. Unless otherwise stipulated in these By-laws, committee chairpeople shall be appointed annually by the Alumni Association President, subject to approval by the officers of the Alumni Association. The Alumni Council may discontinue any Task Force or Committee temporarily or permanently, or make changes in its organization or duties. The Alumni Council or Executive Committee may delegate to the Alumni Association President the formation and operation of any committee.

Section 3. Unless otherwise stipulated in these By-laws or by action of the Alumni Council, each board and standing or special committee shall submit to the Executive Committee and Alumni Council a complete, but concise, report of its activities, and an account of its use of funds and other property, at the times requested by the Secretary/Treasurer, but in no case less frequently than annually.

Section 3. Unless otherwise stipulated in these By-laws or by action of the Alumni Council, each Standing Committee and Task Force shall submit to the Executive Committee and Alumni Council a complete and concise report of its activities, together with an account of its use of funds and other property, at times requested by the Secretary/Treasurer and at least annually.

#### XI. EXECUTIVE COMMITTEE

Section 1. The Executive Committee shall have for members the officers of the Alumni Association, the immediate Past-President of the Alumni Association, the Chairman of the Alumni Fund Board, and four members-at-large chosen from Alumni Association membership. The President of the Alumni Association shall be the Chairman of the Committee.

Section 1. The Executive Committee shall have as voting members the officers of the Alumni Association, the immediate Past-President of the Alumni Association, the Chairperson of the Alumni Fund Board, the Chairperson of each Standing Committee, and four members-at-large chosen from Alumni Association membership. In no case shall any person have more than one vote. In addition, there shall be a non-voting WPI faculty member recommended jointly by the Alumni Secretary-Treasurer and the WPI Dean of the Faculty, subject to nomination by the Nominating Committee of the Alumni Association and election by the Alumni Council. The President of the Alumni Association shall be Chairperson of the Executive Committee. The Alumni Secretary/Treasurer shall be the Secretary of the Executive Committee.

At least one and not more than two of the members-at-large shall be alumni trustees of the College and all shall, upon their election, become voting members of the Alumni Council. Two members-at-large shall be elected each year for two-year terms. Each shall be eligible to succeed himself for one additional term, even though he may have served a partial term immediately prior to his first full term. A member-at-large shall not be eligible for re-election until after the expiration of at least one year from the close of his last term, except in such instances as he may become

Section 3. The Alumni Council shall report to the Alumni Association at least once in each year on its activities.

Section 1. The Alumni Association shall immediately upon completion of his Executive Committee membership. Vacancies which occur other than by the expiration of terms shall be filled by the Executive Committee for the period intervening between creation of the vacancy and the next Alumni Council meeting.

Section 2. The Executive Committee shall meet at the call of its Chairman or upon written request of four or more of its members delivered to the Alumni Association Secretary/Treasurer. It shall hold at least four meetings each year, exclusive of the four required meetings with the President of WPI and his selected staff members. A quorum of the Executive Committee shall be six members.

Section 4. The Executive Committee shall keep alumni and Alumni Chapters informed of their responsibilities with regard to nomination of term members to the WPI Board of trustees.

Section 5. The Executive Committee shall, after consultation with the Alumni Fund Board, recommend to the Nominating Committee nominations for election to the Fund Board.

Section 6. Whenever necessary between meetings of the Alumni Council, the Executive Committee shall take any action for which the Alumni Council has authority, except as restricted by these By-laws, but shall report all its actions to the Alumni Council.

At least one member of the Executive Committee shall be an alumni term trustee of the College. Two members-at-large shall be elected each year for two-year terms. Each shall be eligible to succeed himself for one additional term, even though he may have served a partial term immediately prior to his first full term. A member-at-large shall not be eligible for re-election until at least one year after the close of his last term, except in such instances as he may become an officer of the Alumni Association immediately upon completion of his Executive Committee membership.

The non-voting faculty member shall be elected to a three-year term and may not be re-elected as a member of the Executive Committee for a period of five years following conclusion of his term. Vacancies which occur other than by the expiration of terms shall be filled by the Executive Committee for the period between creation of the vacancy and the next Alumni Council meeting.

Section 2. The Executive Committee shall meet at the call of its Chairperson or upon written request of four or more of its members delivered to the Alumni Association Secretary/Treasurer. It shall hold at least four meetings each year. A quorum of the Executive Committee shall be a majority of the members, at least two of whom shall be officers of the Alumni Association.

Section 4. The Executive Committee shall assure that all alumni are kept informed of their responsibilities regarding the nomination of Alumni term members to the WPI Board of Trustees.

Section 5. (Deleted)

Section 6. (Deleted)

#### XIII. NOMINATIONS AND ELECTIONS

Section 1. Nominations for all officers, for members-at-large of the Executive Committee and for members of the Alumni Fund Board shall be made by a Nominating Committee of five members of the Alumni Association appointed by the Alumni Association President not less than two months before the date for election. At least three members of this committee shall not be members of the Alumni Council.

Section 1. Nominations for all officers, for members-at-large of the Executive Committee, for the Faculty Member of the Executive Committee, for alumni members of the Alumni Fund Board and for members of the Trustee Search Committee shall be made by a Nominating Committee of five members of the Alumni Association appointed by the Alumni Association President at least two months prior to the election date. At least one member of this committee shall not be a member of the Alumni Council and no two members may be from the same class.

Section 5. Each Alumni Chapter shall elect its member(s) of the Alumni Council at a regular Chapter meeting, or a Chapter meeting duly called for that purpose, or by mail ballot. The name and address of each member elected shall be sent to the Secretary/Treasurer of the Alumni Association within thirty days of his election.

Section 5. Each Alumni Club and each Alumni Class shall select its representative to the Alumni Council and forward the name and address of such representative to the Secretary/Treasurer of the Alumni Association within thirty days of the selection.



Section 3. A candidate may be proposed to the Alumni Council for consideration for nomination as an Alumni Trustee in any of three manners.

A Trustee Search Committee shall be established and charged with the responsibility of annually proposing to the Alumni Council at least one candidate for each existing vacancy for consideration as nominee(s) as Alumni Trustees. The committee shall consist of members, representing five age groups, as closely as possible, beginning with the most recent graduating class and nine classes before it and going back in decades until the oldest group consists of the 40th Anniversary class and all older classes. One member of the committee shall be elected annually by the Alumni Council for a five year term.

Alumni chapters may propose candidates to the Alumni Council by submitting a signed proposal, together with a statement by the candidate of his willingness to serve. The proposal must contain at least fifteen (15) signatures of Chapter members and must be submitted to the Trustee Search Committee, in care of the Secretary/Treasurer of the Alumni Association, at least two months prior to the meeting of the Alumni Council at which the nominee(s) will be selected.

Any group of at least twenty-five (25) alumni may propose a candidate by submitting a signed proposal, together with a statement by the candidate of his willingness to serve. The proposal must be submitted to the Trustee Search Committee, in care of the Secretary/Treasurer of the Alumni Association, at least two months prior to the meeting of the Alumni Council at which the nominee(s) will be selected.

Section 3. A candidate may be proposed to the Alumni Council for consideration for nomination as an Alumni Term Trustee either by petition or by nomination of the Trustee Search Committee.

Any Alumni Club or any Alumni Class, or any group of alumni, may propose candidates to the Alumni Council by petition. Such petition shall be a signed proposal, together with a statement by the candidate of his willingness to serve. The petition must contain at least fifteen (15) signatures of members of the Alumni Association and must be submitted to the Trustee Search Committee, in care of the Alumni Association.

A Trustee Search Committee shall be established and charged with the responsibility of assuring that there are at least four candidates for the three positions in consideration annually. The committee shall consist of five members, representing five age groups as closely as possible, beginning with the most recent graduating class and nine classes before it and going back in decades until the eldest group consists of the 40th anniversary class and all older classes. One member of the committee shall be nominated annually by the Nominating Committee and elected annually by the Alumni Council for a five-year term. The Chairperson of the committee shall be appointed by the President of the Alumni Association annually from among the membership of the committee.

All candidates for alumni term trustee positions shall be confirmed, shall have agreed to serve, and in the case of petitions shall have a valid petition in the hands of the Secretary/Treasurer of the Alumni Association at least two months prior to the meeting of the Alumni Council at which the candidates will be nominated.

*A delightful evening with the*

# **Boston Pops**

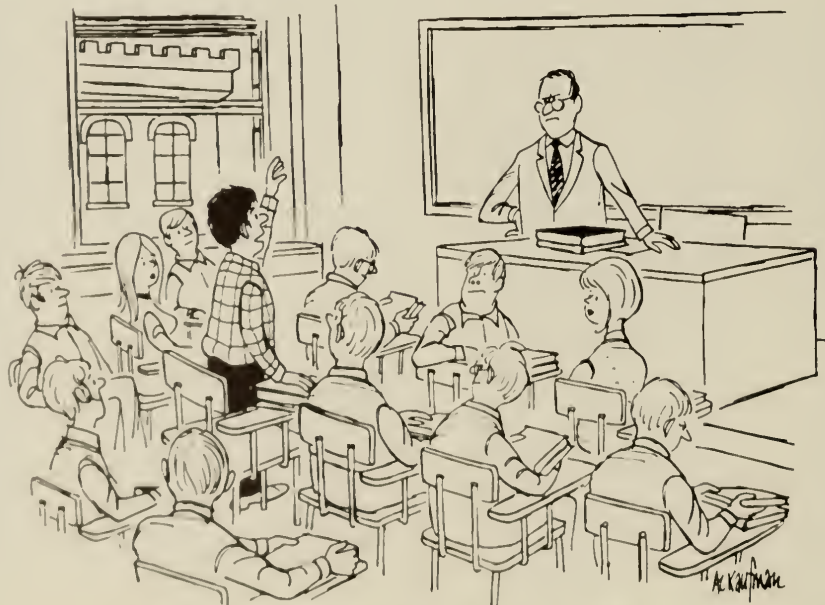
*Sponsored by the WPI Clubs of  
Boston and Worcester*

Friday, July 15, 1977  
8:00 p.m.

A limited number of tickets at \$9.50 each, will be available until June 17th. Make your reservations by writing to

"Night At The Pops"  
Alumni Office  
Worcester Polytechnic Institute  
Institute Road  
Worcester, MA 01609

or by calling (617) 753-1411,  
Ext. 204 or 209.



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'Good Morning, Students' and 'Class dismissed'?"

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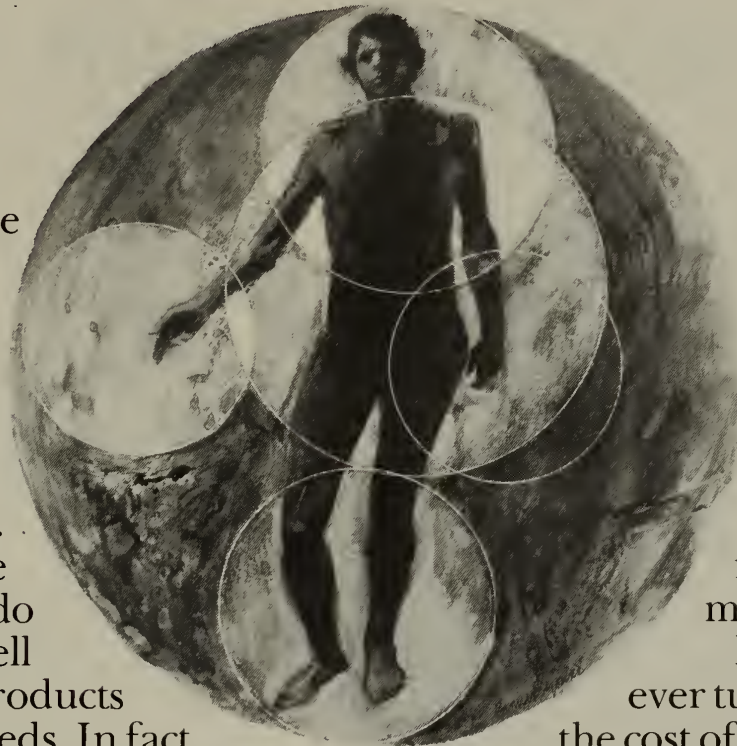
Just about anyone can sell you a pair of gloves or a pair of goggles. A hearing protector or a hard hat. And up to a point, that's okay.

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# Helping you find your next job

As a WPI graduate, there's a pretty good chance you got your *first* job through WPI — whether the Placement Office, or a faculty member, or an alumnus, or the Alumni Office. Now we'd like to help you get your *next* job.

A committee of the Alumni Association has been working on ways to help alumni with planning and managing their careers, and they've put together a program which will help you help yourself when it comes to examining your career options, assessing your strengths, needs, and deciding on career goals, and finding a job that matches those goals.

The Committee has been chaired by Phil Ryan, '65 who is a management consultant and a partner in the firm of N.F. Bigelow & Co., Manchester, NH. Over many months he worked with Greg Backstrom '70; Art Pingalore, '44; Phil Puddington, '59; William Rawstron, '57; Jeff Shaw, '68; and Leon Wendelowski, '69. Also working with the group were Mike Ahearn, former Assistant Alumni Director; William Trask, WPI Director of Graduate and Career Plans; and Prof. Robert Hall, WPI Director of Continuing Education.

To find out more about this program, the *Journal* interviewed Phil Ryan, Bill Trask, and Steve Hebert, '66 alumni secretary.

**Journal:** *How does this current plan differ from those we've announced in the past, since all have been aimed at helping alumni in their careers?*

**Steve Hebert:** There's a significant change. Our previous areas concern have been primarily job placement. This committee has taken the more encompassing approach to counseling people, helping them form their career plans and create directions for looking for jobs, without trying to be a match-maker.

**Phil Ryan:** The program has three parts — written materials, seminars, and individual counseling. It is designed to assist the individual alumnus in (a) evaluating and managing his or her successful career, and (b) preparing for and conducting the process of actually changing jobs.

**Bill Trask:** In the past, if the alumnus didn't come into the Placement Office, all he could do by mail was to request "Opportunities" or send us a resume and we'd try to develop leads. Now, with this package, the alumnus regardless of whether he's in Timbuktu or Worcester, doesn't even have to approach the Alumni Office or the Placement Office for guidance if he uses the material presented to him.

**Journal:** *So it's a real do-it-yourself kit that puts the initiative on the person with the greatest interest in the situation?*

**Phil Ryan:** That's exactly the point. Career management or conducting a successful job campaign cannot be done by someone else; it has to be done by the individual himself. Whether it's a good job change or career management, it's an individual task and you can't have somebody do it for you.

**Journal:** *Let's get down to the nuts and bolts of the program. Just what is it we are talking about? What are the elements of this plan, and how does it work?*

**Phil Ryan:** I indicated before that the program has three parts. Right now we're ready with the first of the three. We have put together a package of really excellent written materials, and this is our main thrust now.

You see, I look at the overall program as being a marketing situation. This process of people managing their careers or getting new jobs has — I think unfortunately — fallen into the world of placement and personnel, when in fact it's a marketing problem, a marketing opportunity. You have employers who are looking to fulfill certain needs, and you have people with certain skills, attitudes, expectations, values; and what's needed is a matching process. So we're addressing ourselves to the individual preparing himself — that is, the product — to be marketable to employers. And our written material is geared toward, first, the preparation, the "advertising" of the individual, and the specific process of implementation.

How can you prepare yourself, both in terms of skills and attitudes? When people are under pressure to look for a new job — either because their present job is being phased out, or because they may already be out of work — a great attitude-building process is necessary to successfully complete a job change. The absence of a positive attitude is almost death knell to successfully changing jobs.

So we include specific do's and don'ts about job searching. We include numerous bibliographies: executive placement and personnel firms, general reading references about the process, and where to find information about prospective or possible employers. One of the key things is being properly prepared when you go to market your product. You have to know who you should be talking to. We help you learn where to find out what you need to know. We also include information relating to personal and family needs, how to find and use office and secretarial assistance. The time and mental commitment required, financial, is explained. The individual has to make a substantial investment of time and effort in order to successfully manage this very important part of his or her life.

**Journal:** *That's an interesting way of looking at the job-search process — as an investment in yourself.*

**Phil Ryan:** People sometimes react very strangely about spending money to look for a job. Maybe they've panicked about what they are going to live on until the new job is found. But you'll see people who are looking for a job paying \$1,000 or \$2,000 a month, and they will refuse to spend \$50 or so to get their resume decently typed and duplicated. Instead they'll do it on their battered portable typewriter and get copies made at the cheapest copying machine they can find. They fail to see the connection between the poor impression this will make on a prospective employer and how it will adversely affect their chances of getting a personal interview with that employer. The individual has to realize that he needs to make a solid investment and commitment in himself or herself, and that usually includes spending some money too.



*Phil Ryan, '65*

**Journal:** *Could you amplify this business about attitude? How does it relate to finding a job?*

**Phil Ryan:** Often when a person loses a job, he goes into an incubator, so to speak, and just withdraws from the world. He goes out of his way to avoid chatting with his neighbors when they're mowing their lawns on a Sunday afternoon. It is as if he has an incurable disease, and he avoids personal contacts.

Yet in order to be successful in getting a new job, you really need just the opposite attitude. You can't walk around feeling sorry for yourself. Phil Puddington brought our committee a very interesting article from *Business Week* that dealt with the stages of dying. First is denial, "it can't be true!" Next is anger and frustration. Then comes bargaining, depression, and finally acceptance and a turn-around to action: making the most of the time left, getting out of the chair and doing something. I think there is a striking parallel between these stages of dying and those of losing a job.

**Journal:** *Is there material in the package that will help alumni evaluate their own qualifications objectively, so that they can take realistic approaches to the kinds of jobs they ought to be looking at, and where they are going to be successful?*





Bill Trask

**Steve Hebert:** There is material pertaining to self-evaluation and appraisal of strengths and weakness, as well as many reference sources. But this is done primarily through posing a number of questions which the individual should ask himself and then draw his own conclusions. It's not a testing or evaluation program per se.

**Journal:** *But isn't this an important element — that the person first takes a good healthy look at herself or himself, then says, What can I do best? Where would I be happiest? Where can I be most productive?*

**Phil Ryan:** A lot of people confuse activity with accomplishment. And an awful lot of activity can generate very little accomplishment. So what we're really trying to do is help the individual take a rifle, rather than a shotgun, approach at targeting his skills, interests, objectives, and values towards those types of companies and those types of situations where he can best fit. We feel this has to be more productive than the so-called blanket mailings, or listing your name with 15 to 20 placement agencies. Don't forget the placement agencies' primary loyalty is to the employer. They've got a slot to fill. Their commitment is not to the individual or to finding him a job, by and large.

WPI takes a little bit different approach in its placement assistance because it is focused on the individual. We're up trying to steer the individual to activities that will likely produce a high payoff, payoff here meaning offers of meaningful jobs.

**Journal:** *How does this career counseling program fit into the total alumni program at WPI?*

**Steve Hebert:** It's part of the total service orientation of the Association. We exist to serve the needs of both the individual and the college. This career program is consistent with many of the changes of the last three or four years within the Association. We're more active, and we're involving more people. In this case, we're offering a particular service from which a person can get great personal benefit. Other programs have been geared toward involving and helping people in other

ways. We offer group insurance, which is helpful to people who don't have this available through their jobs. We've had group travel programs, which have been service in a different direction. And now we're meeting an obligation we feel to assist the individual in placement and career counseling over a career that spans 45 years or so.

**Journal:** *Where did the impetus for this program originate? And how new a concern is alumni placement?*

**Steve Hebert:** I think it's always been a concern. But it's or that's been marked for action in recent years. A couple of years ago, Bob Higgs, '40, chaired a Master Plan Committee, which directed attention towards this area. More recently there was the committee chaired by Bill Densmore, '45 (this became known as the Densmore Committee), which was charged with developing a reorganization plan. An important point made by both groups was the need for an expanded alumni placement program.

This current committee began work in February 1976, and under Phil Ryan's leadership and guidance has brought many loose ends together so that we can implement this program.

**Bill Trask:** In 1958, when I came here, placement was departmentalized. Alumni looking for jobs would go to the Alumni Office, and Warren Zepp, the Association secretary, would give what help he could. The department then didn't seem to have the time or facilities to help alumni significantly at that time. So the Alumni Office's concern with placement is hardly a new thing.

**Phil Ryan:** I'd like to add one other thing. This new program is basically an add-on to what has already been going on. I know that Bill Trask's Placement Office, the Alumni Office, department heads, faculty members, and even the administration have given very liberally of their time and efforts to assist individual alumni on an ad hoc, one-to-one basis. I expect that this will continue.

**Journal:** *I recently read an article in Money about engineering careers. It described engineering as a good place to start in but very iffy job proposition after a few years, because employers tend to want to hire younger people who are more up-to-date, easier to move around, and who work cheaper than older and more experienced people. So I wonder, does this kit of ours address itself to the fact that engineers, by and large, often have to move away from engineering and into another area, such as management?*

**Phil Ryan:** I think it does. There is a career path in strictly staying in engineering, carving out a technical career. But a recent WPI survey asked the question of engineers: "Are you fairly confident you'll be with your present employer five years from now?" Over 41 percent answered No.

Another related and significant issue concerns the individual who leaves engineering and goes into another functional area or possibly a management position. The fact of the matter is that it's almost an irreversible process. Once someone leaves engineering and goes into management, the rapidity of technological change and the half-life of engineering knowledge and skills are such that he just can't go back again. There are exceptions, of course, but not many. And as a person contemplates making that change, we're trying to make him fully aware of the consequences — that is, allow him to evaluate the opportunities as well as the risks.

**Bill Trask:** Another thing to mention here is that this program is really geared toward the person who has been out working for at least a couple of years. It's got help for the senior who didn't get a job right away, but it's not really designed for him. It's meant for someone who's been out there in the job market, who can use his expertise, background, and accomplishments to further his goals.

**Journal:** *We've been talking about this package of written materials, primarily, and the help it can offer. But you mentioned, Phil, that this is just the first stage of a three-part program. What about those seminars you mentioned?*

**Phil Ryan:** These have not yet been developed. We've been taking this program step by step, because of the time commitment needed to get this off the ground, primarily on the part of the WPI staff. Our committee recommended that this alumni careers program include periodic seminars, 2-4 hour evening sessions where there could be discussion related to some of the areas covered in the written materials package. Videotapes of mock employment interviews followed by critiques might be included. Alumni members with expertise or recent experiences in career management or job changes could present some of their personal observations and experiences.

We've also talked about ways of formalizing what has been done — and done well — here at WPI: the individual attention of staff and volunteer alumni available to meet with individuals, answer questions, maybe provide assistance or referrals as well as peer counseling on a one-to-one basis. This has yet to be developed, but we feel confident that these things can be meaningful additions to our written material. But certainly this written material is an excellent beginning and will provide great assistance just as it stands.

**Steve Hebert:** As this counseling and assistance program is developed — and it's probably at least a year away — we'll probably enter it on a regional basis, going to where there is a concentration of alumni, such as Worcester, Boston, Hartford, Springfield, Providence, Manchester, and so on. This is still only in the drawing-board stage right now. It is very, very dependent upon the resources here at the college available to staff it — and to be able to do it in a first-class way.

**Journal:** *Overall, this sounds like a good program. How does it stack up against what other colleges are doing?*

**Phil Ryan:** We've looked at several other programs. We're familiar with one other university that has a very comprehensive program, perhaps more so than this one. Some of our ideas came from the career counseling program of the Harvard Business School which covers a lot of ground. Compared with primarily undergraduate schools of similar size to WPI, we've got a broader and better program than any others we've been able to identify.

**Bill Trask:** I sent our package to a recruiter who is pretty well known in the college placement circuit, a man who does alumni as well as undergraduate placement, and he said that he hasn't seen anything like this on any college campus he visits.

**Journal:** *Can you summarize briefly the ways this program will really help an individual alumnus?*



Steve Hebert, '66

**Phil Ryan:** The fundamental conclusion our committee arrived at was this: the person who gets hired is not necessarily the best person for the job. It's the person who knows the most about how to get hired. So our program is geared towards helping the individual learn as much as he can about how to get hired.

We haven't brought this out before, but we're really talking about three different segments of the alumni population: those who are out of a job and looking; those who are seriously contemplating a job change; and then everybody else. But the specific needs and skills of every one of those three groups are the same. The only difference is the issue of timing and the intensity to which these things apply. This program will apply to all WPI alumni over the course of their working career.

While we're trying to promote this program for the benefit of WPI alumni, we have to tell alumni that they aren't going to get all the answers from us. The individual has to do some work himself, and there are a lot of things that WPI is not going to do.

We're not going to get into the business of evaluating specific individuals' skills, aptitudes, and objectives. We give reference sources where the individual can get assistance, but he'll have to do that for himself.

We're not going to get involved in evaluating the attributes of a specific job or company as they may relate to a specific alumnus. This may get done on an ad hoc basis as in the past, but it's not really a part of the program.

We're not going to compete with commercial enterprises in the match-making role, with its requirements for screening, arranging interviews, executive search, and other related activities.

So we're not doing the whole job for anyone. What we are doing is showing a person what he may need and where he can go to find out for sure, what resources he can tap into that are commercially available. We feel this is a significant part of the career management and job-search process, but in the final analysis it's the individual alumnus who puts the whole act together.

**Interested?** The Alumni Career Package will be ready May 15, and costs just \$8.95. To get yours, write:

William F. Trask  
Director of Graduate and Career Plans  
Worcester Polytechnic Institute  
Worcester, Massachusetts 01609



# WHO is the WPI student?

Without students, WPI would not be in the business of education. (That can also be said for faculty, it's true, but the difference is that the faculty are here for the students and not vice versa.) So it is reasonable to wonder just what WPI students are like nowadays. Are they any different from WPI students of previous years? And how do they compare with students at other colleges?

For the past four years, WPI has gathered information about the background and attitudes of entering students by means of a national questionnaire sponsored by the American Council on Education, so we're in a position to supply some of the answers to those questions.

Background  
WPI students are good students in high school, and their record has been improving over the last four years. They come to WPI feeling well-prepared in math and science (distinctly more so than the national norms), but not so able in reading, composition, history, social sciences, music, and art — in other words, about what you might expect.

WPI has traditionally drawn its students primarily from Massachusetts and New England. That continues, though there is a slight trend showing students coming from farther away.

Our students' parents are distinctly better educated than the national norm for parents of college students, and better educated than the parents of students four years ago. Some 20 percent of our students' fathers are engineers, two and a half times the national figure for all college students. The percentage of engineer fathers is higher still for our women students. Another difference in the families of our women students is that their parents are not as well educated as those of our men.

In estimating their parents' incomes, freshmen probably estimate on the low side. Nonetheless, it seems clear that our students are coming from higher socioeconomic groups than most students bound for private colleges. Almost half come from families with incomes in the \$10,000-\$20,000 range, and nearly another half come from wealthier families. The national figure for both cases is about 40 percent. While slightly under half the men are receiving financial aid, over two-thirds of the women are getting help. They also need more help, with more than half receiving over \$1,500 a year in aid (vs. 35 percent for men).

## Why'd they pick WPI?

Four years ago, one-third of our freshman class applied only to WPI. That is about equal to the current nationwide figure, but in the meantime the situation here has changed dramatically. Only 12 percent of the current freshman class didn't apply elsewhere, while some 29 percent applied to four or more colleges — twice the national figure. Despite this, WPI remains the first choice for a consistent 80 percent of entering students.

The reasons they come to WPI make for some interesting comparisons with the national figures. 80 percent cite "good academic reputation" (50 percent nationwide), while 61 percent mention WPI's "special educational program" (26 percent nationally). WPI students are less influenced by their friends and, surprisingly, less by WPI recruiters than in the national sample. It would seem, in the words of Dean of Student Affairs Donald P. Reutlinger, that "the college's reality seems far more crucial than its salesmanship." Also in the category of reality, 25 percent of students cited the offer of financial aid as an important reason for their coming.

## Expectations in college and in life

WPI's students seem distinctly different from the average regarding their expectations and aspirations. Over half the entering class expect to receive a master's degree (half of those at WPI), and another 20 percent are aiming for a Ph.D. These compare with national figures of 34 percent and 12 percent, respectively. There have been significant changes in this pattern at WPI over the last four years. Many more now are thinking about their master's than before — and many fewer are considering the doctorate. We can surmise that this reflects both increased awareness of the need for postgraduate education continuing through life, and the difficulties that new Ph.D. holders have had on the job market in recent years.

Over two-thirds of our students plan to major in engineering (the trend has been somewhat upward over the four-year period), another 8 percent in the physical sciences, and 4 percent each in mathematics and biology. As they look ahead to working after college, two-thirds plan to be engineers and 10 percent research scientists. Only 4 percent are undecided, against a national average of 12 percent.

8 percent expect to fail at least one course in college. The national figure is less than 2 percent, which seems to indicate that our students are more realistic about their programs.

#### Attitudes, values, and what they think about themselves

WPI students seem more oriented toward goals than the national average of students, and they are somewhat more liberal in their views. Politically, 29 percent consider themselves liberal, 50 percent moderate, and 17 percent conservative. They are distinctly more concerned about freedom than the national norms: they are opposed to college regulation of students off campus, college regulation of student publications, the banning of speakers by colleges, and they favor the legalization of marijuana.

Their attitudes about sex are somewhat freer, too. 55 percent feel that living together before marriage is a good idea, and 62 percent agree that premarital sex is all right so long as the people involved like each other. For both questions, the men are more in favor than the women, but both are above the national figures.

One part of the questionnaire asked students to rate themselves in several different traits. In areas where they differed from the national sample WPI students rated themselves above average (on the test scale) in academic, mathematical, and mechanical abilities, drive to achieve, intellectual self confidence, and stubbornness. They considered themselves below par in public speaking ability. Some differences between male and female students appeared here: the men rated themselves higher in leadership ability, mechanical ability, and originality. The women considered themselves higher in cheerfulness, drive to achieve, mathematical ability, sensitivity to criticism, and stubbornness.

On the whole, the WPI student seems to be a more private person than the national "average" student. Asked about the importance of various listed objectives, our students were noticeably less concerned with influencing social values or helping others in difficulty. The women were more concerned with community action than the men, and less interested in money, business, or raising a family.

#### So who cares about statistics anyway?

That's a lot of facts and figures about WPI students, but it isn't the whole picture by any means. Remember that these represent students at the point of entering WPI.

To help round out this profile of the student body, the *Journal* interviewed nine students. We asked about their lives out of class, and found an incredible variety of activity. We hope you'll enjoy reading about them.



She's 5'2", has worked as a bartender and assistant manager at WPI's Goat's Head Pub, and in her spare time offers her services as a church organist and pianist.

Versatile, diminutive **Kathy Molony, '77**, isn't afraid to try her hand at almost anything. She thrives on challenges. For instance, as assistant manager, it was her duty to keep unauthorized persons from entering the Pub.

"My size and sex didn't seem to enter into the situation at all," she says. "When I told people they had to leave, they rarely gave me a hassle. Everything worked out fine."

For five years she served as organist at her church. She still plays the organ at weddings and performs occasionally as a pianist. Her current part-time job is helping to set up Control Engineering, a course taught by Prof. Kenneth Scott, '48 and working in the campus TV studio. (Prof. Scott is also director of Instructional Television at WPI.)

The daughter of John Molony, '39, who passed away last year, Kathy has shown considerable responsibility in helping to earn her way through WPI, one of her major assets being that she inherited his musical gifts. (He, too, was an accomplished pianist.) In spite of her involvement with musical activities and part-time work, she still leads an active campus life. She has served as class secretary since her sophomore year, as a member of the commencement speaker's selection committee, as sub-committee chairman for the junior prom, and as a member of the faculty awards committee.

Kathy is an electrical engineering major, has accepted a position with Clairrol, and plans to take management courses some time in the future. She enjoys sewing, skateboarding, and bicycling. She was on the women's bowling team last year.

"I've always wanted to go to WPI ever since seventh grade," she reports. "I had to convince my parents that it was the right thing to do, though. They were very skeptical at first. In the end, WPI was the only school I sent an application to."





Rick Poole, '78, flew to Milwaukee in January to bone up on what would be considered by many undergraduates as a part-time dream job.

With the Miller Brewing Company picking up the tab, Rick learned in Milwaukee how to become the company's campus representative for its national can recycling contest. Now organizing the contest at WPI, he advises campus groups on how to win cash awards, pool tables, saunas, etc. by recycling cans. "Naturally those who recycle the most Miller's cans win the most points and prizes," he says with a grin.

Rick is a director of the Pub. "The board of directors is a policy-making group," he explains. "We exist to serve the students. If they make valid suggestions, the board tries to see that they become part of the Pub's official rules and regulations in accordance with the liquor laws."

He serves as a member of the WPI financial aid committee, which also helps set policy in cooperation with Edgar Heselbarth, director of financial aid. He participates in intramural sports, serves as class treasurer, and was recently tapped for Skull.

An electrical engineering major, who works part time in University Relations, Rick specializes in systems and controls. Like many of his classmates, he expects to work in engineering and then get his MBA.

He lives at Phi Gamma Delta, where he is a member of the public relations committee. "Fiji" is strategically located right next door to a church social center that runs weekly bingo games. Rick has been known to leave the center with more money than he had when he went in —.

When Sophomore Joan Bolduc sees a problem, she does something about it. The problem at WPI, according to Joan, is the absence of a sorority.

"There are 200 women on campus," she explains, "and we don't have any special social clubs, such as the men do with their fraternities. Some of us feel that WPI can support a sorority now, so we're trying to get one started."

About 25 to 30 women have shown interest in joining a sorority. That's more than enough to start the ball rolling, she believes. "If we are successful in forming a sorority, then we may be able to find a place on campus of our own where we can lounge and socialize," she says. The interested group is corresponding with a newly-formed sorority at RPI, getting tips and pointers on how to organize a sorority from the ground up. (Editor's note: As we go to press over 20 WPI women have pledged Phi Sigma Sigma and will be initiated in May.)

Joan is one for getting things done. She is a member of the student alumni relations committee and recently ran a seminar for the seniors called "Managing Your Salary." She plays on the girls' volleyball team. During her spare time she works in the placement office scheduling interviews for company recruiters.

The first WPI student to come from Winslow, Me. (there have been several since her arrival), Joan currently resides in Sanford Riley. She recalls that as a freshman woman, she found the going a bit tough at WPI.

"It gets better as time goes by, though," she admits. "You get to make a lot of friends, both men and women, and that makes a big difference."



"I ran a paper route for five years so I could go to WPI," says **Bruce Leslie**, a freshman from West Boylston, Mass. He finally made it to WPI, almost entirely through his own efforts. He continues to live at home and drives to classes.

"Commuting means that I can still live a familiar life style, but I have to go into Worcester for most of the educational facilities," he continues. "I do own a car, though."

Always busy, the young commuter needs a car. He ushers at Lincoln Plaza Theater, participates in Air Force ROTC at Holy Cross twice a week, and plays trumpet in a local jazz band. Currently he is rehearsing for his chorus part in the Worcester County Light Opera production of "Camelot," along with his mother, and his brother, John, a senior at Worcester State. Previously he appeared in "Music Man" and "Bye, Bye, Birdie."

Bruce comes by his musical and dramatic talents naturally. His mother, Grace Leslie, has starred in dozens of local theatrical productions and was featured in a one-act play entry in Monaco several years ago, which walked off with first prize honors. His brother, John, a gifted pianist, worked with Eddie Mekka of "Laverne and Shirley" and "Blansky's Beauties" fame in a recent summer actors' workshop held in Worcester.

Presently Bruce, along with several others, including a doctor, is helping to form a jazz group, "The Tuxedo Classic Jazz Band." "We play nightclub music at parties, mostly," he says. "We're just getting started and we've already had one club date." Jazz is becoming popular once again, Bruce thinks. "It's more sophisticated than rock," he comments. "And it appeals to a lot of people."

A conscientious computer science major, who earns top grades, and who recently was awarded a 3½-year Air Force ROTC scholarship, Bruce hopes to graduate in three years and then study for his MBA. He belongs to the Data Processing Management Association.

**Mark Cioffi**, '78, a management engineering major from North Springfield, Vermont, will be a head resident advisor at WPI next year. As chief advisor, he will have charge of the Stoddard complex and be responsible for three or four assistant RA's.

Although busy as a current RA, he still participates in intramural sports, including volleyball, basketball, and softball, and serves as president of the Society for the Advancement of Management. He doesn't belong to a fraternity, but contends that an independent can get as much out of WPI as a fraternity man. "It depends on the person," he explains. "Opportunities are here for the asking."

"For my IQP I taught emotionally disturbed children from kindergarten through the fourth grade in Worcester," he says. "I taught eight six-through-ten-year-olds ten hours a week the first term and twenty hours a week the second term. It was very challenging."

Mark was the first student to work in any one classroom with eight children for a whole term. Since then, others at WPI have followed in his footsteps.

He has worked at Springfield (Vt.) Hospital during the summers and is doing his MQP there in Hospital Management. He hopes to get a graduate degree in the future, perhaps finishing off at Vermont Law School. "Vermont Law opened just a few years ago in South Royalton," Mark reports. "It is accredited and ready to grow. Some of my friends go there and they like it."

Mark is considering a people-oriented career, not one that is strictly engineering. Something in the field of organizational behavior appeals to him. His cousin, *Mike Graham*, '74 (also a management engineer), is in industrial relations at Albany International in Albany, New York. He works with people and does a considerable amount of traveling both in and out of the country.

Thinking of Mike and his job, Mark smiles. "Now that's the kind of job that I'd like," he confesses.





Two years ago when **Raul Matamoros** first entered WPI, he spoke very little English. This winter he passed his competency exam and expects to graduate in the spring.

In 1975, Raul, his sister, Silvia, '78 and brother Gustavo (who has also passed his competency), came to WPI along with 22 other students from Venezuela. "We came on a special scholarship program sponsored by the Venezuelan government," he explains. "Our government pays all educational expenses for promising engineering students who will enroll at U.S. colleges, graduate, and then return home to work."

Before coming to WPI, Raul studied one year at Simon Bolivar University. "I had had five years of English," he says, "but did not have much of a chance to speak it often. My first months at WPI I learned more English than I'd learned in the previous five years at home. I had to learn English in order to keep up with my studies."

Because his expenses are paid, Raul does not need to have a part-time job. "I am not allowed to work in this country, anyway, because I'm a foreign student," he says. He does a good deal of studying, however, as evidenced by the fact that he has been elected as a member of IEEE and Eta Kappa Nu. He also likes a good time. He is on the Venezuelan bowling team and enjoys what to him is a "new" sport — skiing.

Raul, his brother, and a friend share an apartment near campus. They take turns cooking, but usually eat lunch at the school cafeteria with other students.

As for his immediate future, Raul wants to earn his MSEE, and, perhaps, travel America from coast to coast. He and his brother and sister are eager to return to Venezuela, too. They manage to get home only a couple times a year, most often during summer vacation and over the Christmas holidays.

"Active" is the adjective for **Cyndy Gryniuk**, '78, of Waterbury, Connecticut, resident advisor for the third floor of Sanford Riley. Socially or athletically, Cyndy is always on the scene.

She is chairperson of the Goat's Head Pub entertainment committee; has managed men's outdoor track; served three years as a football and basketball cheerleader; worked on the freshman orientation committee; and been elected class secretary twice.

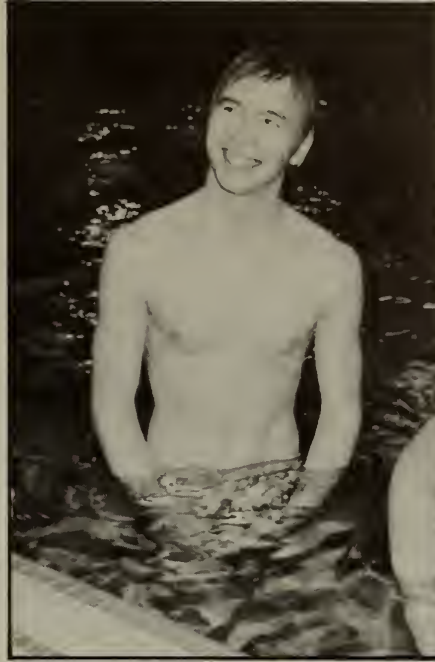
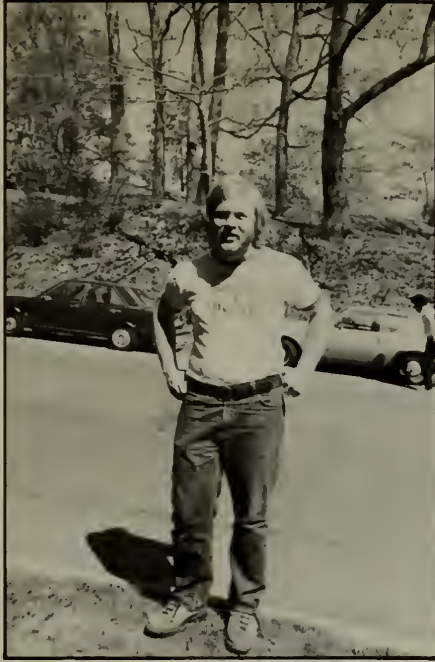
"Being a resident advisor means that I'm responsible for what goes on on the third floor of Riley," she says. "Whether it's personal or academic problems, I'm usually the first person the students turn to. I am also responsible for keeping the general behavior of the floor in line. It can be an exasperating job, but most of the time it's a good one."

As chairperson of the Pub entertainment committee, Cyndy helps select the various groups or solo entertainers who perform there throughout the year. "You can meet a lot of interesting people this way," she jokes.

Cyndy is a mechanical engineering major specializing in thermal-fluid engineering. She is a student member of the Society of Women Engineers.

For her interactive qualifying project (IQP) she taught reading and math and served as a special tutor to slow learners at Freeland Street School in Worcester.

"I came to WPI," she says, "because I compared it to other colleges and liked the atmosphere here the best."



Whenever **Bill Cunningham, '77**, does something, he does it "big," like last summer when the Tall Ships sailed into Boston. The proprietor of a prosperous silk screening business, Bill sold 120 "Tall Ships" shirts down by the docks inside of two hours.

"Then my partner and I bought 250 blank tee shirts (an entire rack!) in Jordan's basement, printed them, and sold out in four hours the next day," he says. On the Fourth of July they sold 60 "Boston '76" shirts at the Esplanade concert, just to keep their hands in. Bill managed all this super salesmanship while holding down a full-time summer job as a specialist for Medical Information Technology in Cambridge.

Still thinking big, Bill returned to WPI as chairman of the social committee, which administers \$65,000 in student social fees. Through his efforts such name entertainers as Judy Collins and Dave Mason were booked on campus. This year the lion's share of the college's entertainment came under his jurisdiction, including Homecoming festivities and Spectrum.

The current president of Skull, Bill also has been a representative to the Phi Sigma Kappa national convention, an American Heart Association certified instructor of cardiopulmonary resuscitation (CPR) at the University of Massachusetts Medical School, a resident advisor, an Intersession course ski instructor, an Explorer troop advisor, and a teacher for the Pennsylvania Association of Student Councils. He has accepted a job with A. T. & T. and will be in the Management Development Program in the Northeast region.

A couple of years ago he developed a vascular research data base because there was a need to analyze statistically the patient data record at St. Vincent Hospital's vascular research laboratories. The object of the project was to develop a data base and computer programs so that the information processing and handling would be more efficient.

Drawn to WPI by the flexibility of The Plan and his interest in biomedical engineering, Bill declares, "WPI gave me a lot more than I bargained for."

**Jack Craffey, '79**, isn't able to compete on the college swimming team this year, which is a great disappointment not only to him, but to the WPI sports community as well. "A torn shoulder tendon kept me off the present team. The doctor gave strict orders for me not to swim this season," Jack says. "The tendon is taking a long time to heal, but I hope to be back in action again before long."

Next year can hardly come soon enough for WPI swim team boosters who like nothing better than to cheer on a winner. As a freshman, Jack broke five school records: the 200, 500, 1000, and 1650-yard freestyles and, also, the 200 individual medley. In the New England Jack placed seventh in the 500-yard freestyle and eighth in the 1650 freestyle. At the annual sports banquet, not surprisingly, he was named "Freshman Athlete of the Year."

When not breaking school records, Jack studies chemical engineering, participates in a wide variety of intramural sports, and holds the post of secretary at his fraternity. He is a student member of the American Institute of Chemical Engineers.

It wasn't too hard for Jack to decide where he wanted to go to college. His brother, Paul, was already at WPI. "Paul is a senior and we both have the same major," Jack says. "But we're not in the same fraternity. Paul belongs to Delta Sigma Tau. I joined Sigma Pi." Both students live at their respective fraternities. Vacation time finds the brothers at home in Bridgewater, Mass.



# Mike Murphy — Marathon Man

by Christopher D. Baker, '77

WPI has an outstanding athlete. To look at him you wouldn't know it, however. He stands about 5'8" and weighs only 122 lbs. A few have probably seen him and scratched their heads as a lone figure strode silently through new fallen snow. Still others may feel perplexed to see the same man running when they return from work as they did when they left in the morning. The man is Mike Murphy. And running is a major part of his life. The soft-spoken WPI sophomore says, "I guess I enjoy it, but it's something I just do . . . like a job." Run he does and will continue to do. Mike runs every day of the year and will do so for a number of years to come. The Marathon is now his penchant which one can easily see. Murphy did extremely well in Marathons this year . . . all two of them in which he was entered. There was this event on Patriots' Day, uhh, the Boston Marathon I think it's called. Something like 3,000 official entries, 5,000 or so runners, heartbreak hill! Heard of it? Mike finished 36th this year. His time of 2:26:22 was only 12 minutes behind the winner, Jerome Drayton, and a few minutes ahead of many top class marathon runners, including Bill Rodgers who dropped out. Mike also finished ahead of two other WPI runners, who did creditable jobs. John Osowski and Peter Kane, both seniors, finished 244th and 247th, respectively. They finished, which is no mean feat at all. But 36th on his second marathon ever. Whew! The first marathon Mike completed was another 26-mile trek through the Connecticut area. Murphy, a Cromwell, Connecticut native, competed in the Connecticut Marathon in order to qualify for the Boston Marathon. Qualify he did by placing 3rd in the race. "I really didn't push myself that hard in Connecticut; it was a nice pace," Mike reflected as he examined the blisters on his feet which would force the Sunday jogger to take a week off. The Boston Marathon was a bit different. Mike more than pushed himself.

Perhaps a few words of what the marathon is like to a 19-year-old would be in order. The day before the race you would think a runner would get a break. No way. "I had to keep limbered up so I ran the day before the race," Mike said, flashing his most pleasant smile, "and then it was spaghetti for supper the night before." The morning meal was pancakes bland with carbohydrates for reserves of energy. A friend drove Murphy to the starting point in Hopkinton. His family was present. He picked up his number — 2966. Unseeded and unnoticed, he would start in the back of the pack. Then his mind went through what would happen to him for the next few hours. The mental strain had begun. The race was to start and the runners lined up. "The top 50 or so from last year's race line up in front," recalled Mike, "then it's kind of a battle in back. Everyone is pushing and elbowing, trying not to have their shoes stepped on. After the starting gun sounded it was a full minute before the WPI math major reached the starting line. "A number of runners try to start fast and set a quick pace, but I just wanted to stay smooth." This evidently worked well for Murphy. "It does a lot for your spirits if you can continuously be passing people rather than slowing down at the end as everyone passes you." Clearly the spectator support in the Boston Marathon aided Murphy's mental stamina. "The people were great all the way." For the whole race there was a continuous line of spectators, many of whom offered oranges, water, or Mike's favorite, ice cubes. "I'd take them and put them on my body, head and face" — a tactic which might have caused him problems later. The last time Mike saw his family and friends was while passing through Wellesley, 15 miles into the race

Reprinted from *WPI Newspeak*



From these spectators must go to the finish line if they want to see the end of the race. Thus, for the last stretch of the race he would be more on his own than ever. While running Murphy witnessed other runners getting cramps, succumbing to the heat, and quitting. But Mike bore on. After a while one's feet just keep going, and the head is what one must battle with. Quitting never was one of the things that came into Mike's head. "I never felt like I wanted to give up. My legs felt good; I never even thought of it." But as the last 3 miles of the race approached it seemed that "Murph's" body might betray him. Perhaps it was the ice cubes, or the heat itself, but soon this, your marathon man, looked possessed, spaced out — or both. His head began to bob around, just looking up at the sky most of the time as he swerved from one side of the crowd to the other. "It was frightening, like running in a tunnel. I just tried to stay on the crowd line for direction, but I ended up zig-zagging back and forth." Still, Mike's legs kept moving to the finish line. . . just barely. After Mike took exactly one step over the line he collapsed into the arms of two officials who laid him on a stretcher. They gave him oxygen for 10 minutes ("I kept trying to knock the mask off because it was making me sick") and then wheeled him into the basement of the Prudential building to recover. People lined the path in and around the Prudential, congratulating all the runners, whether they were still running (amazing) or were in Mike's condition. "I think I was worse off than others I saw," reflected Mike. Still the body fought him. Chills, cold sweat, and cramps stayed with him for quite a while, though now he could think about his superlative effort. "I'd have to say I'm pleased." But despite being pleased there are still some modest goals to be met. Perhaps by the nature of his sport Mike is a patient man. He has the attitude that he should take everything as it comes. Running for a half hour and knowing two or more hours remain develops patience. He would like to run a sub-2:20 marathon; he'd like to go to the NCAA nationals this year in the 10,000 meter run — about 6 miles. But right now he isn't doing any "quality work" — speed work in track vernacular. He must qualify for the nationals, however, and since the WPI track team, of which he is a member, doesn't run the event, he must do it elsewhere. Mike has set his sights on other things, like the Boston Marathon, so this goal should be accomplished. Training for the marathon has been a 3 year



ordeal for the WPI runner. His running (since being a freshman at Cromwell High School) introduced him to a vintage marathoner from the same neck of the woods — John Vitale. John went to the Olympic trials in 1976, but just missed out on making the Olympics. His coaching proved to be more than adequate as the student (Murphy) finished well before the teacher. Vitale came in 45th in the Boston Marathon, quite respectable to be sure.

The workout for the past three years has been vigorous. Mike runs from 160-190 miles per week when a race is not pending. A month or so before a big race he steps his workout down to 120 miles per week. Still it is an everyday affair, usually twice a day. One workout will be short, another long. Workouts must be sandwiched between classes and homework which bury all math majors. Rain, sleet, or snow, winds, dogs, and Worcester drivers must all be put up with to get in the workout . . . every day. Mike seems to take it all for granted and will be dedicated to this type of schedule for years to come.

Aside from the running, the food he consumes would turn many off in this plastic age. "I try to stay away from the

junk foods" says Mike, which is evidenced by his trim frame, bright smile, and glowing face. He eats a lot of fruit and vegetables and other things that most of us know are good for our systems. But he doesn't miss the other junk. "Eating these things makes your body feel cleaner, running and otherwise."

If you push him, Mike will go so far as to tell you his goals for the next few years. He would like to graduate, naturally enough, then get a job in a business related field. But running and working are not always compatible. Marathon runners now must scrape for everything they get. Even guys of Frank Shorter's caliber must try to get by without any funds coming in other than some expenses covered by a sponsor.

All this though is in the future for Mike Murphy. The day after the marathon he ran 6 miles. Today will be more running, and tomorrow also. It won't stop for a while. Next year in the Boston Marathon Mike will wear the number 36, and will be with the top runners. But before that there will be the daily jaunts, competition with the WPI track team, and races this summer in Connecticut. And each time he starts his run he'll take each step as he's always done . . . one at a time.





# Nils

Nils Hagberg and WPI — they've been together for 42 years. Since 1935 there have been thousands of students who have graduated from WPI, and those who don't know Nils Hagberg could probably be numbered on one hand. Serving at various times as a machinist, maintenance man, campus cop, and night supervisor, Nils has also served unofficially as a genial adviser and all-around entertainer.

If justice has to be doled out, Nils generally manages to do it with a smile. "I love kids," he says. "They don't usually do anything too bad." He chuckles, remembering.

"Of course," he recalls, "there was the morning after a rope-pulling contest when we found hundreds of feet of rope tied around the flagpole on the Boynton bell tower and looped across the roofs of Washburn, Salisbury, and Atwater Kent. We never did figure out how they managed that one."

Nils has other memories: of the athletic feats of Ray Forkey, '40, Harry Brown, '53, Fred DiPippo, '60, and Hank Nowick, '56; of big Bob Pritchard being carried across the field after the undefeated season of 1954. (It took the whole squad to pick him up.)

"I try to get to most of the sports events," Nils reports. "Like to see my boys in action."

And the boys (now, also, the girls) turned graduates remember Nils as their faithful booster and confidant. Not only has he been initiated into Skull, he is on the alumni's most-wanted list of after-dinner speakers for class reunions. With his ready wit and bag full of memories, he is often the highlight of the evening.

"Oh, there's plenty to talk about," Nils allows. "I can remind them of the time that Prof. Granath was cranking up his 1923 Buick, when it suddenly started moving and nearly ran him down. Then, back in '55 at the Norwich game in Ver-

front, it snowed so hard that the field had to be plowed during the half. I can also say, 'Hey, what's your name. You know who you are. Remember the time I caught you parking behind Boynton with somebody else's girl — ?' "

He can kindle alumni memories of people like Ad Holbrook, '38, and Ken Fowler, '40, both deceased, who graduated and stayed on as superintendents of the old Washburn Shops; of Prof. Wilson, head of chemistry, who stood about 6'4" and who had one of the first compact cars on campus, an Austin. When he got into it, he really filled it.

Others, like Dean Price, '30, Prof. Holt of civil engineering, Percy Carpenter of the athletic department, and A. J. Knight, '07 (deceased), of the civil department and buildings and grounds helped make WPI what it is today, Nils recalls. "I could go on and on about all the people of the WPI family," he continues. "For example Tony Ruksnaitis, '53, Joe Gale, little Jimmy Kelley, and Leo Jansson, the first athletic trainer at WPI."

Nils can tell stories about seven WPI presidents: Admiral Earle, who picked up cigarette butts and scraps of paper as he walked along; Admiral Cluverius, who ratted oil drippings from cars and had Nils clean them up; Dean Roys, who was interim president several times; President Cormeny and his argyle socks; President Bronwell, who was always forgetting something, i.e., coat or briefcase, and had Nils go pick them up; and General Storke, who would meet Nils nearly every afternoon at 3:15 by the bubbler on the first floor in Boynton. "We'd tell the latest jokes, which were usually the oldest jokes ever told," Nils chuckles. As for President Hazzard, Nils often sees him across the baseball field, while he is walking to work, and the president is walking home. "He always has a big smile and a wave."

Nils like to keep his public speaking, whatever the topic, informal and conversational. A master of off-the-cuff speaking, he declares he's never taken a course in the subject. He's had no acting lessons, either.

"As a matter of fact," he reveals, "I was the shyest kid in high school and was really shaking when I had to play the part of Julius Caesar. Something came over me when I came to the words, 'Et tu, Brute?'" I fell to the floor. This got a great reaction from the audience. From then on I could always perform anywhere without stage fright.

And perform he did! Coming from a long line of musicians (his uncle was the headmaster of the Royal Academy of Music in Stockholm, Sweden), Nils sang, danced, acted, and "hammed" his way through 35 Worcester County Light Opera Club presentations, a feat which netted him an acting award and a merit award from the group. He received a testimonial from the Jewish War Veterans for his outstanding efforts in entertaining servicemen. As a Swedish clown, he performed at countless benefits, and had a chance to join the vaudeville circuit. (He declined, saying that he preferred to stay with his family.) In the mid-fifties he was a Swedish disc jockey for station WNEB. He, and his wife, Audrey, an accomplished organist, received a key to the City of Worcester on their 25th wedding anniversary in recognition of their charitable musical contributions to the community.

Nils' and Audrey's talents have come full circle in their son, Skippy, who plays the trombone locally, and in their three lovely daughters, professionally known as the Hale Sisters and a part of the singing group, Solid State.

With fatherly pride Nils reports, "We just learned yesterday that Dick Clark is going to produce a show featuring Solid State for NBC-TV this summer. We don't know the exact format yet, but we do know the group is definitely signed up."

He pulls out two mammoth photo albums crammed with photos of Susie, Christine, and Robin on their way to the top — pictures with Clark, Debbie Reynolds, Eileen Fulton, Tony Bennett, and Englebert Humperdink. "We feel pretty good about the girls' success," Nils says. "Solid State is a clean group. No hard rock. And," he adds, "I think it's one of the only groups around to star three sisters and three brothers."

A bouncy two-year-old trots over to the table and points to a photo. "There's Mommy and Daddy," he announces.

"This is Daniel," says Nils. "He's Susie's little boy. Audrey and I look after him and his sister while Susie and her husband, John, are on the road. Did I tell you that John directs Solid State and plays the drums?"

"Grandpa, I want to see the trains," interrupts Daniel.

The electric train layout which Nils has rigged up in a 6' x 14' area of his basement is a marvel of ingenuity. From a central panel he can control up to 80 cars and 13 engines. There are over 96 buildings of all descriptions which he has acquired or made from kits. Everything fits the HO scale: the autos; the ½ inch "people" which he paints realistic colors with a minute brush using magnifying glasses; the Swedish moss trees; and the specially clipped fabric hedges. The trains light up, as do the street lights and the buildings. Whistles blare.

The layout is especially unique in that it is divided into "theaters" of interest. There is a camping area, a downtown section, an industrial park, and a residential area, each "peopled" with characters doing appropriate things.

"The best thing about this hobby is that I am always adding something or changing something," Nils says.

If he should get bored, however, he could turn to his 1,200 lp's (no rock), or to his 1,000-plus 78's (some original Carusos). He could also make a second grandfather clock to match his first one. But Nils, with his lively interest in his "kids" at WPI, his own children's careers, his music, and his hobbies, will undoubtedly never find a single minute to be bored.

Ruth Trask





The data on which these class notes are based had all been received by the Alumni Association before March 15, when it was compiled for publication. Information received after that date will be used in future issues of the WPI Journal.

## 1922

**Fred Millard**, who officially retired 15 years ago, was still consulting as recently as last year. In May and June he was on assignment for ITT in Stamford, Conn. . . . **George Parsons** and his wife are currently located at Havenwood Retirement Community in Concord, N.H.

## 1927

**Charles Parker** is a patent attorney in Kensington, Maryland.

## 1928

**Frank Taylor** retired recently. He was a consultant and assistant vice president at Hamilton Investment Trust in Elizabeth, N.J.

## 1929

**Gale Flint** writes that he presently spends about eight months of the year in Florida. When he is home in Derby, Conn., he usually visits with friends and relatives.

## 1930

**Frank Norton, Jr.**, former director of Civil Defense for the city of Fitchburg, Mass., has retired. . . . **Alfred Vibber** is currently an attorney at law in Waretown, N.J., having recently passed the New Jersey bar exam. He continues with his practice on Madison Avenue in New York City.

Dr. **Ellis Whitaker** has retired as a professor of biology at Southeastern Massachusetts University, North Dartmouth, Mass.

## 1931

**Victor Colby** retired recently from TS Enterprises, Manchester, N.H.

## 1932

**Henry Carlson** retired last year from Kimball Associates, Hartford, Conn.

## 1933

**Allen Brownlee** retired as plant manager of the Wico plant, Prestolite Electrical Division, in January following 34 years of service. Friends and associates honored him at a testimonial dinner. He joined the company in 1942 as a research engineer, later became vice president, and has served as Wico's plant manager since 1967, the year the business was acquired by Prestolite. He is past president of Springfield Kiwanis, vice president and director of Junior Achievement of Western Massachusetts, and director of the West Springfield Chamber of Commerce and the Boys Club. A registered professional engineer, he is also a member of the Society of Automotive Engineers and IEEE.

Last year **Kenneth Farnsworth** retired from Suburban Trust Co., where he was branch manager. He is located in Washington, D.C. . . . **Leo Lajoie** retired as manager of the Lincoln Plaza Theater in Worcester. Previously he managed the old Capitol Theater for almost forty years. . . . **Carl Silverberg** retired recently as a section head at American Optical Corp. in Southbridge, Mass.

## 1934

**Allan Catheron**, retired system research engineer for the Foxboro Co., Concord, Mass., has been elected a fellow of the American Society of Mechanical Engineers. His experience has ranged from wartime work on ordnance and torpedo depth controllers to the development of pilot process equipment and individual measurement and control devices.

He holds patents on several control devices including a rate of climb (change) meter, a blast feedback technique, a self-adjusting electrical controller, and a method of stabilizing a valve positioner-volume booster loop. He has written a number of articles and books including a chapter on pneumatic components in the *Control Engineers Handbook*. A professional engineer, he currently is a member of the Policy Board of ASME's Basic Engineering Department. . . . **Lloyd Jenkins** serves as president and treasurer of Robert G. Pratt Co., Inc., in Worcester.

## 1935

**Phillip Dean** is a retired senior engineer from Northeast Utilities Service, Hartford, Conn. . . . **A. Hamilton Gurnham**, business manager of the Country School in Guilford, Conn., for the past fourteen years, retired at the end of January. He joined the school when facilities consisted of one building and he taught all of the shop classes in his spare time. Now the school has five buildings and his post as business manager proved to be a full-time job. Earlier he had been with Campbell Soup Company and Chesebrough Pond, Inc. The Gurnhams are retiring to their condominium in Pompano Beach, Fla.

## 1937

**George Maguire, Jr.** retired in January following forty years of service with New England Telephone & Telegraph, Worcester.

## 1938

**Norman "Lefty" Gamache**, who recently retired from Norton Co., is now with Ramsdell Industrial Supply Co., Worcester, on a part-time basis. . . . Dr. **Arthur Martell**, head of the chemistry department at Texas A & M University and a distinguished professor, has received the 1976 ACS Southwest Regional Award in recognition of his "professional excellence."

Since he joined the university ten years ago, the chemistry department's faculty has jumped from 23 to 60 members; graduate student enrollment has doubled; and research funds have increased sixfold. He accomplished the job by hiring established chemistry scholars and promising young scientists.

Dr. Martell was also able to acquire more than \$1 million worth of developmental funds to purchase the most modern instruments and to establish research programs. Under his administration a modern chemistry building was constructed for graduate chemical research, and a new science building is presently under construction. Prof. Martell has also helped develop the chemical community by serving industry, government, and academe.

## 1939

Now retired from Bendix Corp., **Apostle Dervos** is presently located in New Port Richey, Florida. . . . **Albert Raslavsky** has been named general chairman of the 1977 Bishop's Fund Campaign in Worcester. Speaking of the appointment Bishop Flanagan said, "Mr. Raslavsky's leadership is well known in the area of charity. Last year, under his guidance, members of the executive gifts committee contributed an average gift of \$564." Raslavsky is plant superintendent of H.H. Brown Shoe Co., Inc., Worcester. He is a member of the Alumni Sodality of Holy Cross College, where he is chairman of the Overseas Medical Aid Committee.

## 1941

**K. Blair Benson** was recently elected editorial vice president of the *Journal of the Society of Motion Picture and Television Engineers* (SMPTE). He is manager of technical operations at Teletronics International, Inc. During his career he has been employed by the Radio and Television Receiver Division of GE and the CBS-TV network engineering department. At CBS he became staff consultant of advanced technology and later vice president of technical development for the EVR division. In 1972 he joined Goldmark Communications as director of audio and video engineering. He is a fellow of SMPTE.

**Stanley Ribb**, president of the Blackstone Valley Electric Co., spoke about the energy outlook and how it relates to his company at the Greater Woonsocket (R.I.) Chamber of Commerce "745" Breakfast Club meeting in February. He is a director of Blackstone Valley Electric, Montaup Electric, EUA Service Corp., and Pawtucket Trust Co. A trustee of Pawtucket Institution for Savings, he is also a trustee of the Boys Club and Pawtucket Memorial Hospital. He has been active with the Providence Engineering Society, AIEE, and United Way. He is a registered professional engineer in Rhode Island and Massachusetts.



*Kathy Molony, '77, accepts a citation in memory of her father from Alumni Association secretary-treasurer Steve Hebert, '66. Charles F. Sullivan, '40, similarly honored, looks on.*

## High school honors two WPI alumni

At the Molony-Sullivan Auditorium, in recognition of the outstanding community services performed by **Charles F. Sullivan, '40**, and the late **John Molony, '39**, was dedicated at ceremonies held at Blackstone-Millville Regional Junior-Senior High School in Waltham.

The honorees were showered with citations, one of which was a bronze plaque now installed in the school lobby. It reads: "A recognition of John P. Molony and Charles F. Sullivan for their efforts in the organization and the construction of Blackstone-Millville Regional Junior-Senior High School."

Stephen J. Hebert, '66, secretary-treasurer of the WPI Alumni Association, presented citations written by WPI President George W. Hazzard. Mr. Molony's youngest daughter, Kathleen, a senior at WPI, accepted his certificate.

Other awards included an official citation from the Massachusetts State Senate, with congratulations being sent by Congressman Joseph D. Early and Col. John P. Chandler of the U.S. Corps of Engineers in Waltham, Mass.

Thomas J. Cullen, superintendent of schools, said at the outset of the program that the ceremonies were held at that particular time because it was the first anniversary of Mr. Molony's death. The featured speaker was Harold D. Gould, Jr., legal counsel for the regional school district. He said, "We are publicly acknowledging the significant contributions made by two men in a joint endeavor of critical importance to you — the education of our children."

It was fitting that the men be honored together. They were lifetime friends. Both graduated from Blackstone High School, and WPI, and both achieved distinction in their chosen field of engineering.

Mr. Molony had held almost every important office in Millville. He was a selectman, police chief, fireman, and Civil Defense director. For 35 years he was with the eastern division of Wyman-Gordon Co., where he had been an instrument and ultrasonic engineer. Sullivan serves as Chief of Rivers and Harbors in the New England area with the Army Corps of Engineers in Waltham. He is also a member of the Regional Planning Board and served on the building committee of the Kennedy School in Blackstone, Mass.

At the dedication ceremonies, however, both were honored for their service to the Regional Committee. Molony was secretary of the board until his death. Sullivan was chairman of the committee for its first four years. They were instrumental in the planning and construction of the school.

Of all the tributes made at the dedication, perhaps the most telling came from John P. Ryan, president of the senior class. Said Ryan, "I don't know where this school would have been if it weren't for these two men."

**Harold Robertson, Jr.**, is now an investment adviser with Wakely and Robertson in Spokane, Washington. . . . **F. William Ziegler** was recently appointed as vice president of engineering and program manager for Western Union Space Communications, a new subsidiary of Western Union Corporation. The subsidiary, which is based in Upper Saddle River, N.J., was organized to build the world's first tracking and data relay satellite system (TDRSS), which will provide NASA with communications services for a ten-year period beginning in 1980. Western Union will share the system to provide Advanced Westar satellite service.

## 1942

**Gerald Bibeault** has retired as a project weight engineer at Kaman Corp., Aerospace Division, Bloomfield, N.J. . . . **Fred Brierly, Jr.** teaches at David Prouty High School in Spencer, Mass. . . . **Peter Holz** is a development engineer for Union Carbide Nuclear Corp. at Oak Ridge (Tenn.) National Laboratory.

## 1943

**Richard Bonnet** has been promoted to the post of manager of customer service at Avtex Fibers, Inc. He will be responsible for mill customer service pertaining to the performance and quality of the company's rayon, acetate, and polyester products. Also, he will oversee the technical service representatives, resident field managers, and the manager of quality assurance.

In 1947 Bonnet joined Avtex and was named technical superintendent of the Parkersburg, W. Va. rayon plant in 1955. Later he was appointed fibers operations manager at the Fredericksburg, Va. plant in charge of tow production. The Bonnets are relocating in the Valley Forge, Pa. area.

Currently **Theodore Pierson** holds the post of vice president of the industrial division at Homasote Co., West Trenton, N.J. . . . **Donald Roun** serves as manager of the Home Products Division of the Crane Co. in New York City.

## 1944

**Roger Edwards, Jr.** is associated with Cape Cod Gas Co., South Yarmouth, Mass. . . . Recently **Carle Highberg** was appointed manager of research and development for Elgin (Ill.) Diamond Products Co. Previously he worked in developing diamond tooling for the optical industry. . . .



**Arthur Pingatore** has been appointed as a trustee of the Vocational School Department in Worcester. He is director of training for Cincinnati Milacron-Heald Corp. and was formerly employed by General Electric Co. A vice president of Worcester's Human Services Advisory Board, Pingalore is also a member of numerous civic and professional organizations. . . . **Alfred Larkin**, president of Rexnord International, has been named corporate vice president of Rexnord, Inc. He joined Rexnord in 1947 as a student engineering trainee and held supervisory positions with Rexnord's Roller Chain Division in Worcester and Springfield. He will help to centralize responsibility for the company's worldwide operations. . . . **Leonard Porter** is director of research at Parker Mfg. Co., Worcester.

## 1946

**Donald Gilmore** was recently appointed controller for Rodney Hunt Company in Orange, Mass. Since joining the firm in 1952, he has been involved with product development and process equipment. He has served as assistant manager of the process equipment division and as assistant product manager in the water control equipment division. In 1972 he was appointed division sales manager. Earlier he was with WPI's Alden Hydraulic Laboratory. He is a registered professional engineer.

**Edmund Oshetsky** has been named general manager of manufacturing for Erving Paper Mills. This is a new position with this paper manufacturer and converter, which has operations in five states. Prior to joining Erving, Oshetsky had been with Lincoln (Me.) Pulp & Paper, Scott Paper Co., and Boise Cascade. . . . **Robert Russell** serves as marketing development manager at Thermatool Corp., Stamford, Conn. . . . **Charles Whitcomb** is retired. He was an aerospace technologist for NASA at Langley Research Center in Virginia.

## 1947

**H. Edwin Johnson** presently works for Honeywell Information Systems, Inc., Phoenix, Arizona. He is manager of programs and marketing. . . . **Robert Miller** has retired as manager of cable engineering at U.S. Steel in Worcester.

## 1948

**Robert Beauregard** is with Babcock & Wilcox/Bailey Meter, Wickliffe, Ohio. . . . Currently **Arthur Davis** is a self-employed attorney-at-law in Fresh Meadows, N.Y. . . . Also self-employed is **John Wolanin, Jr.** of Worcester, who works as a consulting engineer.

## 1949

**Karl Berggren, Jr.**, who is with National Gypsum Co., Buffalo, N.Y., is a licensed professional engineer and a registered corrosion specialist.

**Franklin Emerson** serves as assistant manager at Connecticut Paperboard Corp., Uncasville, Conn. . . . **Daniel McQuillan** is now with Diano Corp., Woburn, Mass. . . . **Henry O'Donoghue, Jr.** holds the post of sales manager at Decitek, a division of Jamesbury Corp., Worcester. . . .

**Robert Smith** has resigned from Westinghouse after 23 years and has opened his own consulting electrical engineering office in Eugene, Oregon. . . . Presently **Donald Weikman** serves as president of Tenn Gas Transmission of Houston, Texas.

## 1950

**Hammond Robertson, Jr.** now works as a staff engineer for Hercules, Inc., in Glens Falls, New York.

## 1951

**Walter Anderson** holds the position of executive vice president at DTI Data Terminals Corp., Dayton, Ohio. . . . **Joseph Gwiazdowski** recently received a U.S. Department of Transportation award for his work on a study of the future environmental effects of the supersonic transport. The DOT Award for Superior Achievement recognized his efforts in organizing and coordinating the biological studies of the department's Climatic Impact Assessment Program. His report determined and evaluated the possible environmental impacts of future fleets of various kinds of aircrafts, including such supersonic transports as the Concorde and the Soviet Union's TU-144. The final report submitted to Congress said the current level of SST's scheduled to go into service would cause climatic effects so small they could not be detected.

**Walter Finneran** holds the post of principal engineer at Polaroid Corp. in Waltham, Mass. . . . **Andrew Freeland** serves as a staff engineer for the R. F. Comm. Division of Harris Corp., Rochester, N.Y. . . . **Leo Lemere, Jr.** is a vice president at Badger America, Inc., Cambridge, Mass.

## 1952

**Harold Manley** was one of five employees in GTE Sylvania's ESG Eastern Division named to share in a \$10,000 award in the research and development category of the Leslie H. Warner Technical Achievement Program. The award was given for the development of a speech encoder, which by means of a computer, codes speech in a digital manner. The employees' scientific accomplishments made important contributions to the growth and profitability of the GTE companies.

Manley, manager of East's systems engineering department, started at GTE in 1954. He is responsible for the invention of a revolutionary voice encoding system and for adapting it to practical application in an electronic data processing system. He belongs to the American Institute of Physics and the Acoustical Society of America, and holds several patents for his work in speech compression.

**Paul Spaulding** has started his own business, Spaulding Devco, Inc., Engineers & Builders, with an office in Wallingford, Conn. . . . **Daniel Stoughton** has joined Synergo Co., Philadelphia engineers, as manager of its industrial division. He will be responsible for the design of all of the firm's industrial projects. Formerly he was with Allied Chemical Corp. for 24 years. In 1970 he was named manager of project engineering for Allied's specialty chemicals division and was responsible for providing engineering services to 18 company plants throughout the country.

## 1953

**Dr. Arnold Allentuch** is the dean of research at New Jersey Institute of Technology in Newark.

## 1954

**Donald McEwan** serves as vice president and director of operations for ITT Avionics Division in Nutley, N.J. . . . Presently **Robert Milne** is vice president of G & H Decoy, Inc., Henryetta, Oklahoma. . . . **David Nygard** is the new manager of Management Information Services at Crosby Valve & Gage Company in Wrentham, Mass. His responsibilities include supervision of the data processing department and decisions involving project control, information dissemination and retrieval, and special planning. A certified data processor, he was formerly manager of the administrative staff of Price Waterhouse & Co., Boston; director of data processing, Bird & Son, East Walpole; and manager of data processing at Morgan Construction Co., Worcester. . . . **Richard Olson** was recently promoted to assistant professor of mathematics at WPI.

**Dr. John Russell** serves as pathologist and associate professor at Crouse Irving Memorial Hospital, Syracuse, N.Y. . . . **William Schoenemann** holds the post of vice president of operations at Microform Data Systems, Mountain View, Calif. . . . **Otto Wahrab** is president of John P. Slade Insurance, Fall River, Mass.

## 1956

**Nicholas Moffa**, SIM, a 26-year employee of Bay State Abrasives, Westboro, Mass., has been appointed president of the division by the parent company, Dresser Industries, Inc. The local division is the nation's third largest producer of diamond and bonded abrasive grinding wheels which are used largely in making hard steel tools. Previously Moffa was vice president for manufacturing in the Bay State division. He joined the firm in 1951 as a production foreman. Presently he serves as president of the Grinding Wheel Institute. . . . **Winslow Spofford** works for Parco Engineering in Medfield, Mass.

## 1957

**Alan Carlan** is a member of the technical staff at Aerospace Corporation in El Segundo, Calif. . . . **Elliott Heith** is a senior engineer with Hubbell Wiring Devices, Bridgeport, Conn. . . . **Norm Landry** serves as principal member of the engineering staff at RCA in Moorestown, N.J. . . . **Ralph Schlenker** holds the post of manager of the mechanical division at Exxon Research and Engineering in Linden, N.J.

## 1958

**Dr. James Demetry** has been promoted to professor of systems engineering at WPI. . . . **Clifford Pontbriand** is vice president at Warner Lambert Co. in Chelsea, Mass. . . . **Robert Simmonds, Jr.** is now a senior systems engineer for USM Corp. in the development labs at Beverly, Mass.

# WPI's man in charge at Chevrolet engineering

When *Motor Trend* magazine recently gave its "Car of the Year" award to the new, smaller, Chevrolet Caprice, they cited the efforts of several men at General Motors who helped create the car. One of them, featured on the magazine's cover, was WPI's own Robert C. Stempel, '55, who is director of engineering for Chevrolet Motor Division.

Stempel, 43, joined GM's Oldsmobile Division in 1958. He held various positions in the division until 1973, when he was made special assistant to the president of General Motors. While at Oldsmobile, he earned a master's degree in business administration from Michigan State University in 1970. In 1974, Stempel was transferred to the Chevrolet Engineering Department, which he was named to head in October 1975. In June, WPI is awarding him an honorary Doctor of Engineering degree.

Interviewed at his Warren, Michigan, office recently, Bob Stempel talked about the role of engineers today. "The world needs answers, and is looking to the engineering fraternity — second in numbers only to the teaching profession in this nation — to provide them. And engineers are providing those answers in many areas, including electric power, water supply, waste disposal, marine and space science, building and highway construction, private and mass transit, consumer products, pollution control, and highway safety."

Stempel believes that two important words in the engineering lexicon — complexity and practicality — have taken on new significance in the past decade. "Engineers have put man on the moon — perhaps the most complex engineering feat in the history of mankind," he said. "At the same time, the engineer is a practical man, shouldering civilization's mundane, day-to-day problems and, for the most part, solving them."

He talked for a while about some of the engineering projects he's been involved in at GM, projects where "practical, everyday problem-solving was absolutely essential to the success and continuance of the company's product line-up." He mentioned the front-wheel-drive project for Oldsmobile's Toronado. He mentioned the catalytic converter program, where he



worked with GM president Ed Cole in coordinating the across-the-board application of the device to all the company's major car lines. Finally, he discussed "one of the most challenging engineering development projects of my career — the building of an entire new car line from the ground up — the 1977 GM full-size car line."

Stempel said that this project "used the most advanced automobile engineering technologies available, including computer finite-element modeling, plastic model stress analysis, ride simulation, and aerodynamic wind-tunnel testing. These new cars were born of and into an energy- and raw-material-short world looking for new vehicles offering greater fuel economy, more interior and trunk space, and significant overall mass reduction."

Stempel heads a department of some 2,900 engineers, physicists, mathematicians, and technicians responsible for the engineering of some 3,000,000 cars and trucks annually. He commented that his "young engineers are happy to find themselves on the leading edge of technology," then added, "unfortunately, this has not always been the case. When I started, it seemed we used to 'follow the classroom' by quite a margin. Now, our engineers, with the widest variety of advanced technology and tools at their fingertips, are in the forefront of today's engineering knowledge. Even our summer student employees tell us they see more new things here at Chevrolet Engineering than they do back in the classroom."

*Robert Stempel, '55, shown with the 1977 Chevrolet Caprice, one of the new generation of smaller, more efficient cars he has helped create for General Motors.*

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One thing that concerns Stempel, though, is the trend toward overspecialization in the engineering profession. "Specialization to a controlled degree, and in certain engineering disciplines, is a good thing," he said. "But in specializing we must guard against becoming too narrow in our outlook. Here we're trying to make sure our engineers are moved between assignments, so that they'll have new experiences in different engineering disciplines, technologies, and environments, but they won't be locked into them forever."

"Because in the long run, the better engineer is the man who can use many disciplines to effect a better design and, ultimately, a better product." Bob Stempel certainly ought to know about that, because that's what he's spent his career working toward . . . and that's just the kind of engineer he is.



## 1959

In January **Peter Nelson** was appointed manager of works engineering in the Electro-Mechanical Division of Westinghouse Electric Corporation, Cheswick, Pa. Earlier he had been manager of testing operations. (Both departments are part of the manufacturing department.) June will mark his 18th year with Westinghouse. Pete, who is president of the Pittsburgh Chapter of the Alumni Association, having served previously as vice president and secretary-treasurer, has also served ASME as past chairman of the Westmoreland Section and as chairman of the Region V Member Interests Committee. (The region includes Western Pennsylvania, Ohio, West Virginia, Ontario, and parts of Michigan.)

Pete has been a member of the Ethical Practices Committee of the Pittsburgh Chapter of the Pennsylvania Society of Professional Engineers. Presently he is a registered professional engineer in Massachusetts, Pennsylvania, and Ohio. Pete, his wife Marjorie and sons, Craig, 3, and Scott, 6½, reside in Murrysville, Pennsylvania.

**John "Jack" Britt, Jr.** has been appointed director of Region 5 for the Massachusetts Office for Children. Besides being responsible for six area children's offices within the region, he will chair the regional interdepartmental team consisting of representatives from welfare and mental health agencies, youth services, and the department of education. . . . **Joseph Burger** holds the post of chief project engineer at Hamilton Standard in Windsor Locks, Conn.

Presently **David Daubney** serves as manager of mechanical engineering for Astra Pharmaceutical Products, Inc., Worcester. . . . **Chesster Jacobson** is principal engineer at Gillette Co., Boston. . . . **Robert Kaye** is president of Gerber & Hurley, Inc., West Haven, Conn. . . . **Orr Shepherd** is employed as chief engineer for Visidyne, Inc., Burlington, Mass.

## 1960

**Donald Cloud** holds the position of president of Country Home Development Corp., Guilford, Conn. . . . **Norman Hardy** has assumed the duties of marketing manager of Delnet for Hercules, Inc., Wilmington, Delaware. He is responsible for the medical, filtration, and food processing markets. . . . **Nathaniel Johnson** presently serves as vice president and general manager of TECO Corp., Winnisquam, N.H. . . . **Paul Jolicoeur** works for Mohawk Data Sciences in Parsippany, N.J., where he is director of marketing operations.

## 1961

**Theodore Cocca** is missile fire control systems manager for the U.S. Naval Sea Systems Command in the medium range missile systems division of the Navy Department in Washington, D.C. . . . **Brian Gartner** serves as president of Weatherguard Service, Inc., Bronx, New York. . . . **Richard Lamothe** has been promoted to associate professor of civil engineering at WPI.

## 1962

**James Forand, Jr.** was recently promoted to project manager for the sales engineering division in Bethlehem (Pa.) Steel Corporation's sales department. Formerly he was a development engineer in the division. In his new post, he will be responsible for the activities of a newly formed interdepartmental automotive project team. Previously Forand was with Inland Steel and joined Bethlehem in 1965. He has an MBA from Lehigh University. . . . **Robert Hall**, manager of new product development at New England High Carbon Wire Co., is the current chairman of the Worcester section of the American Society for Metals.

## 1963

**Paul Cahalan** is national sales manager for Bepex Corp. of Santa Rosa, Calif. He is located in Howell, N.J. . . . **David Dunklee, Jr.** works for Molycorp, Inc. in Louviers, Colorado as an analytical chemist. . . . **Leslie Hart** is divisions patent counsel at Harris Corp. in Melbourne, Fla. . . . **Joseph Mancuso**, professor of management engineering at WPI, has been elected a director of Moore Survey and Mapping Corp., Shrewsbury and Northeast Airphoto Associates, Inc. . . . **A. Stephen Otis** was recently named an assistant vice president of Merrill Lynch, Pierce, Fenner & Smith, Inc. In 1970 Otis joined the firm as an account executive trainee, and was named a senior account executive last year. The firm is the nation's largest securities company.

## 1964

Dr. **Stuart Bowen** owns and manages the Williamsville Inn in West Stockbridge, Mass. . . . **Peter Fenner** holds the post of regional analyst manager at Systems Engineering Laboratories in Dallas, Texas. . . . **Ronald Klay** is general supervisor of material control at Polaroid Corp., Waltham, Mass. . . . **Charles Lombardo** serves as president of Wall Street Graphic Corp., New York City.

## 1965

Continuing with Fram Corp., **Peter Behmke** is currently a staff engineer. . . . **George Cordes, Jr.** is a buyer for Titeflex, a division of Atlas Corp., Springfield, Mass. . . . Dr. **Bennett Gordon** has been promoted to assistant professor of mechanical engineering at WPI. . . . **Thomas Homon** serves as an assistant marketing manager for Goodyear Tire & Rubber in Akron, Ohio. . . . **Richard Rice** is a graduate assistant at Michigan State University in East Lansing. . . . **Robert St. Pierre** has been named supervisor of machine design and development engineering in Torrington Company's Needle Division. He joined the Connecticut firm in 1965 as an engineering trainee. Since 1975 he has served as a knitting needle engineer. . . . **Martin Soja** is manager of marketing systems development for American Airlines in New York City.

## 1966

**Gary Anderson** works for Gingery Associates, Inc., Englewood, Colorado. . . . **Gerald Nimberg** is presently a market research consultant for Sun Information Services in Wayne, Pa. . . . **Raojibhai Patel**, who was formerly with E.W. Bliss Co., is presently with New York City Housing Authority. . . . **John Seferiadis** works as an

environmental engineer for Camp Dresser & McKee, Boston. . . . **Peter Singer** holds the post of manager of computer products at Electronics for Medicine in Sudbury, Mass. . . . **Robert Wilson** now serves as an advanced process engineer for GE. In his new position he is doing process development for advanced gas turbine engine materials. He is located in Cincinnati.

## 1967

**Christopher Cridge** is associated with Porcelain Button Beauties, Inc., Morrisville, Pa. . . . **John Feldman** is in research development at the U.S. Environmental Protection Agency in Boston. . . . **Richard Jewell** has accepted the position of manager of analog products at Fairchild Camera and Instrument Corp., Mountain View, Calif.

**Paul Kalinowski** was recently appointed a research engineer in the organic business group for the research and development department of the Norton Co. Grinding Wheel Division. He started at Norton in 1966 as a process machine operator. In 1968 he was named a research assistant and in 1974, an engineering assistant. . . . **J. Wayne Miller** serves as a research engineer for Union Oil of California in Brea. . . . **James Wentworth** is currently chief of program analysis for the Federal Highway Administration in Washington, D.C. . . . **Warren Zepp, Jr.** is a sanitary engineer for the Metropolitan District Commission in Framingham, Mass.

## 1968

►**Married:** **Kenneth R. Blaisdell, Jr.** to Miss Barbra R. Hand on Thanksgiving Day in Aberdeen, Scotland. Mrs. Blaisdell was educated in London and graduated from Syracuse University where she also received her master's degree in English and remedial reading. The Blaisdells teach at the American School in Aberdeen.

**Frank Alberti, Jr.** serves as an instructor in civil technology at Worcester Industrial Technical Institute. . . . **John Demeo** is taking courses leading to a sixth year certificate in education at Southern Connecticut State College. . . . **Robert Gallo** is with the Public Utilities Control Authority in Hartford, Conn. . . . **Gerald Lyons**, MNS, is head of the mathematics department at North Quincy (Mass.) High School. . . . **Paul Matukaitis** is an attorney in the patent department at Monsanto Co., St. Louis, Missouri.

**Edward O'Hara** is associated with Elcen Metal Products Company in Esmond, R.I. . . . **Roger Pryor**, senior physicist at Pitney Bowes, Norwalk, Conn., has been listed in the 1977 edition of *Who's Who in the East*. . . . Century 21 Mark IV Realty, Inc., a corporation owned by **Richard Rubino**, MNS, has become the 50th, 51st, and 52nd offices of the Connecticut Century 21 franchise system. The main office is in Plainville with two other branches being in Bristol and Southington. Rubino, who has been president of Century 21 Mark IV Realty, Inc. for two years, previously spent six years as the manager of a real estate firm in Farmington. . . . **Jeffrey Semmel** serves as a senior systems programmer at Genrad, Inc. in Concord, Mass. . . . Currently **Marshall Taylor** is with Ryder Systems in Miami, Florida.



## Working towards safer buildings

"Massachusetts has the potential for a fairly large earthquake," says **Norton Remmer, '60**, Worcester's first code inspection commissioner. "Back in the 1700's there were several in the Cape Ann area, which have been estimated by experts to have been between 6 and 7 on the Richter scale."

In 1972 a geodetic survey put Boston into the same earthquake zone as San Francisco and Los Angeles. The information spurred the state to make its own earthquake code in 1975, one which Remmer, who was then a technical director for the state Building Code Commission, helped write.

The code committee established a new level of risks and instituted new structural design provisions. "Basically the provisions made very little difference in

ordinary building costs," Remmer reports. "The so-called normal buildings were designed to resist winds anyway, so few changes had to be made.

The main upshot of the code change was to make the structural engineers learn more about structural resistance to earthquakes. Now they need more ability to design.

The Worcester County National Bank building and Mechanics Tower at Worcester Center were designed before the new code went into effect. Remmer believes that they were designed for high wind resistance and could pretty well withstand earthquakes. "There's much less risk in Worcester than in Boston," he says.

As it stands now, the new code doesn't contain any provisions for conserving en-

ergy. Several different standards have been proposed by the National Bureau of Standards and the Refrigeration and Air Conditioning Engineers. The latter group has developed four sets of standards, with the latest being generally accepted. However, until the state or local authorities make it statutory, it won't be enforceable.

"The state has a draft that it is considering concerning requirements for new buildings," Remmer says. "It will probably be another six months, however, before the commissioners have something solid."

One safety standard that is already in the code books is a fire protection provision. Many buildings, both old and new, now have smoke detectors, smoke evacuator systems, and sprinklers. "Fire prevention has become an important part of the building design industry," says Remmer.

Following graduation from WPI, Remmer won a fellowship to Yale where he received a master's degree. He also earned a master's degree at Oxford University in England. For four years he was a teaching and research assistant at Oxford. He then served as a senior research engineer for Norton Co. for five years. In 1974-75 he was president of the Central Massachusetts Chapter of the National Society of Professional Engineers.

Currently Remmer serves on the President's Science Advisor's Advisory Committee on Earthquake Prediction and Hazard Mitigation and as task group chairman in the project developing nationally applicable seismic design provisions for the National Science Foundation. He is a member of the Systems Concepts for Fire Protection in Structures Committee of the National Fire Protection Association and is on the research advisory committee for Seismic Design Decision Analysis at MIT.

Recently he was involved with several seminars, one being concerned with the development of the Massachusetts Seismic Code for the National Bureau of Standards and federal agencies, and another being "How Building Codes Address Fire Development" for the Berkeley-MIT Firesafety Program. Among his papers have been "Reports on the Developments in the Applied Technology Council Project ATC-3," ASCE, SEACC, and EERI; and "Code Concerns for Seismic Design of Non-structural Elements," AIA Research Corporation.

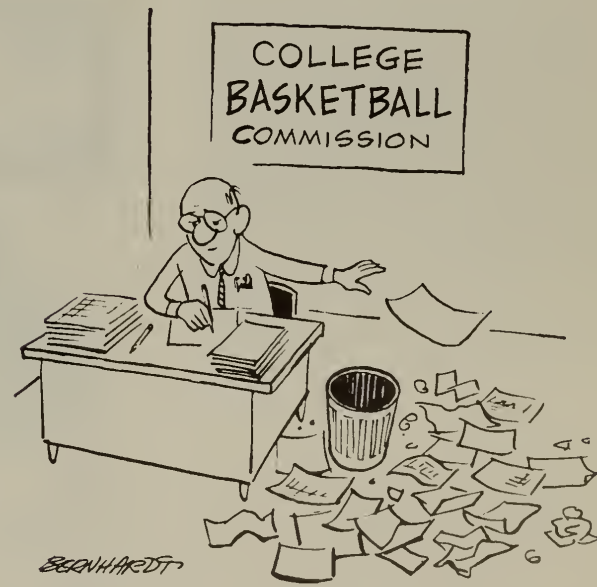


# We're missing a few people

and we'd like your help in locating them. If you know the addresses of any of these alumni, please drop a line to the Alumni Association at WPI. Thanks.

- Roy G. Lewis, '00  
Winfred M. Adams, '02  
Herbert W. Tufts, '03  
Elipidio de L. Werneck, '03  
Manuel G. Rosado, '05  
Ralph S. Forsstedt, '06  
Walter P. Ingham, '06  
George G. Whitney, '07  
Stephen M. Poutier, '10  
James F. Thompson, '10  
Arvid I. Peterson, '11  
William I. Randall, '11  
Charles O. Snow, '13  
Edward H. Vance, '13  
Harry D. Stephens, '14  
Warren L. Ellis, '15  
Roland D. Hawkins, '15  
Gilbert M. Ireland, '16  
Joaquim de R. Junqueira, '16  
Herbert C. Kelly, '17  
Walter I. Stearns, '17  
Edward L. Anton, '18  
Frank J. Murphy, '18  
Prof. Douglas E. Howes, '20  
George A. Bijur, '21  
Milton W. Graff, '21  
Joseph F. Scanlan, '21  
Joseph T. Fanning, '22  
Francis W. Harney, '22  
Robert M. Wilder, '22  
Sidney H. Avery, '24  
Richard F. Whitcomb, '24  
Tzu-Hzu Chou, '25  
Charles E. Crang, '25  
John J. Hynes, '25  
Charles F. Stevens, '25  
George C. Chow, '27  
Yat W. Chow, '27  
Ronald E. Jones, '27  
Maxwell L. Stoughton, '27  
Gordon N. McColley, '28  
Leo J. Melican, '28  
Alvar O. Ericson, '30  
Edward T. Fox, Jr., '30  
Arthur F. Pierce, Jr., '30  
Francis O. Carlstrom, '31  
Jay M. Harpell, '31  
Lewis S. Haskins, '31  
Arthur B. Brainerd, Jr., '32  
George E. Oman, '32  
John H. Porteus, '32  
Chester A. Werme, '32  
Ellis R. Brown, '33  
Stephen S. Haynes, '33  
Thomas A. Hyde, Jr., '33  
Wright H. Manvel, '33  
Thomas F. McLoughlin, '33  
John J. Molloy, Jr., '33  
Charles H. Newsome, '33  
William A. Michalek, '34  
Raymond G. Desrochers, '35  
Alvaro A. Silva, '35
- Louis D. Soloway, '35  
Joseph A. Sukaskas, '35  
William F. Atwood, Jr., '36  
Dr. Paul M. Downey, '36  
William Miseveth, '36  
John H. Chapman, '37  
Frank Ellsworth, '37  
Roland O. Farrar, '37  
James F. Swartwout, Jr., '37  
Fred E. Wiley, '38  
Samuel A. A. Aaron, '39  
S. Richard Abbot, '39  
Irving W. Forde, '39  
William F. Payne, '39  
Raymond B. Piper, '39  
Charles S. Stevens, '39  
Robert J. Cannon, '40  
Joseph J. Platukis, '40  
Bernard Polonsky, '40  
Willard J. Riddick, Jr., '40  
Harry E. Stirling, '40  
Alfred F. Andersen, '41  
Col. Warren S. Bradford, '41  
Burgess P. Brownson, '41  
Lyle W. Carpenter, '41  
Paul G. Nystrom, '41  
Frederick S. Sherwin, '41  
Chamroon Tishyanandana, '41  
Morris C. Chu, '42  
Burton Franklin, '42  
David L. Hartwell, '42  
Kenneth T. Hunt, '42  
George Cagen, '43  
Everett W. Dunlap, '43  
Wilmot J. Keogh, '43  
Clifford B. Moller, '43  
Harold E. O'Malley, '43  
Marshall B. Raybin, '43  
Dr. George P. Scott, '43  
Louis J. Baldini, '44  
Peter E. Talley, '44  
David M. Trotsky, '44  
Harrison Bragdon, '45  
Donald M. Campbell, '45  
Clifford E. Lanigan, '45  
Leonard F. Moore, '45  
Alvi T. Twing, Jr., '45  
Philip S. Adams, '46  
Irwin G. Benkert, '46  
Gaetano Biuso, '46  
John M. Considine, '46  
Wilton A. Ericson, '46  
Christopher A. Herbert, '46  
William J. Kelly, '46  
Dr. Myer Krulfeld, '46  
Philip R. Loshin, '46  
Dr. Karl M. Mayer, '46  
Allan W. McCoy, '46  
Elton K. Morice, Jr., '46  
Alvin M. Ross, '46  
Sidney S. Sperling, '46  
Jose R. Biamon, '47
- August E. Hottelton, Jr., '47  
Roland H. Guay, '47  
William Longmuir, '47  
Vaikunth C. Thakar, '47  
Benjamin B. Barker, Jr., '48  
David I. Caplan, '48  
David B. George, '48  
Charles A. Heyelman, '48  
Julian H. Jacobs, '48  
Birger D. Lund, Jr., '48  
William R. Olha, '48  
Shou L. Pan, '48  
Per Roed, '48  
Leonard D. Rood, '48  
Thomas H. Wyllie, Jr., '48  
Charles C. Allen, '49  
Elmer R. Griffith, Jr., '49  
Frederick S. Jenkins, Jr., '49  
John E. McCarthy, '49  
Tsu-Yen Mei, '49  
James B. Morin, '49  
Harry J. Rogers, '49  
Vernon H. Russell, '49  
Joseph T. Starr, '49  
Philip L. Barbaccia, '50  
Fred A. Carmody, '50  
Morey L. Hodgman, '50  
Robert L. Tagen, '50  
Ellsworth R. Cramer, '51  
Constantino Mustakis, '51  
Mehmet R. Ozbaz, '51  
Ratanshaw K. Patel, '51  
Richard E. Snyder, '51  
Mustafa T. Sonmez, '51  
Dick Van Den Berge, '51  
Bernard G. Ziobrowski, '51  
Robert C. Henegan, '52  
Jack Y. T. Kwan, '52  
Edmund M. Luzgauskas, '52  
Lysle P. Parlett, '52  
Bernard J. Petrillo, '52  
Richard G. Schmitt, '52  
Stanley C. Andrukonis, '53  
Carl H. Bissell, Jr., '53  
Martin R. Cohen, '53  
Ernest E. Demar, '53  
Theodore C. Fritz, Jr., '53  
Joseph A. Holmes, '53  
Nasuh M. Malas, '53  
Hugh R. McLaughlin, '53  
David C. Morrison, '53  
Richard W. Morton, '53  
Paul C. Murray, '53  
Harold G. Rackett, '53  
Philip R. Randall, '53  
Dr. Wu Mei Yao, '53  
Souren Jaffarian, Jr., '54  
Framrose M. Karani, '54  
James F. King, '54  
Haralambos N. Kritikos, '54  
Harold Lake, '54  
Jack K. Mackowiak, '54  
Robert S. Nahas, '54  
Raymond M. H. Naudin, '54  
George W. Bibber, '55  
James E. Clampett, '55  
Markar A. D. Markarian, '55  
Alan F. Petit, '55  
Antonio Aranguren, '56  
Frederic A. Highman, '56  
John H. Lillibridge, III, '56
- Thomas E. Weber, '56  
Lawrence E. Alston, '57  
Santo M. Bramande, '57  
Frank Rich Goodwin, '57  
Joseph D. Grzyb, Jr., '57  
Barrera Augusto Ramirez, '57  
Michael Spiegel, '57  
Israel Sverner, '57  
Benjamin G. Uy, '57  
Joseph L. Chenail, '58  
Robert J. Dunn, '58  
Frank K. Lind, '58  
Richard E. Lorenz, '58  
Nicholas S. Petralias, '58  
Dr. Sherman K. Poultney, '58  
Frank A. Seidel, '58  
Roberto Jaramillo, Jr., '59  
James W. Mahoney, '59  
Robert W. Milik, Jr., '59  
Robert B. Palmer, '59  
Harvey J. Rosenfeld, '59  
Ozden Aslan, '60  
William M. Cannon, '60  
Dr. Jo-Chao Chueh, '60  
Richard D. Cooper, '60  
Gungor Dagistanli, '60  
Terrence M. Dupuis, '60  
Richard S. Johnson, '60  
Capt. Joseph S. Kaye, '60  
Stuart W. Macomber, '60  
Frank R. Materese, '60  
Paul C. Miller, '60  
Kenneth Roberts, '60  
Peter H. Schneider, '60  
Capt. Howard D. Stephenson, '60  
Maung T. Swe, '60  
Ara Tutunjian, '60  
Brother Augustine Bemis, '61  
George R. Bolduc, '61  
Kayhan Boro, '61  
Douglas H. Cormier, '61  
Eduardo Cruz, '61  
Terry W. Donovan, '61  
Evan G. Duane, '61  
Suat Gonen, '61  
William C. Hayes, '61  
Richard W. Johnson, '61  
John W. Kappel, '61  
Swang Lee-Aphon, '61  
Richard A. Levendusky, '61  
Russell C. Lockwood, Jr., '61  
George Matassov, '61  
Maung T. Maung, '61  
Dr. Timothy C. Meyers, Jr., '61  
LTCDR. Leonard E. Pickens, '61  
Husein Y. Pothiawala, '61  
Donald E. Schaaf, '61  
George M. Storti, '61  
Donald W. Wilmot, '61  
Maung N. Win, '61  
Haines J. Boyle, '62  
Yigit Bozkurt, '62  
Mehmet I. Can, '62  
Victor B. Castellani, '62  
Richard D. Hartley, '62  
Capt. Jackie P. Matteus, '62  
Robert G. McDonald, '62  
Michael A. Moses, '62  
Nelson E. Parmelee, '62

- Philip S. Pilibosian, '62  
 Richard S. Price, '62  
 William H. C. Reinert, '62  
 Arve Syverud, '62  
 Yasat H. Tilkicioglu, '62  
 Paul Y. Chan, '63  
 William P. Morrison, '63  
 Pundalik U. Prabhu, '63  
 Francis E. Spring, Jr., '63  
 Dr. Paul G. Amazeen, '64  
 Stanley J. Andrysiak, '64  
 Bernard Baron, '64  
 Krishnakumar V. Chaudhary, '64  
 Alan K. Cooper, '64  
 Victor A. Dushku, '64  
 Robert A. Frenette, '64  
 George E. Hammond, '64  
 Peter C. Trombi, '64  
 John T. Apostolos, '65  
 Rajkumar K. Bajaj, '65  
 Michael W. Boyd, '65  
 Dr. Jerry C. Chen, '65  
 Arthur M. Dickey, '65  
 Mahesh S. Dixit, '65  
 Lt. Robert B. Edwards, '65  
 Antanas S. Liutkus, '65  
 Sunil M. Mehta, '65  
 Venkatesh B. N. Rao, '65  
 William L. Rosen, '65  
 George L. Rosquet, '65  
 Dennis J. Simanaitis, '65  
 Ali H. Ustay, '65  
 Dilip V. Vora, '65  
 Walter C. Baker, '66  
 Kenneth M. Bell, '66  
 Robert G. Bertrand, '66  
 Satish H. Bhatt, '66  
 David M. Burwen, '66  
 Gary P. Cassery, '66  
 Omer M. Cavusoglu, '66  
 Shailesh V. Dave, '66  
 Sharad B. Doshi, '66  
 Paul F. Flaherty, '66  
 Paul F. Glodis, '66  
 Roberto Huyke-Luigi, '66  
 Stephen K. Kaiser, '66  
 Ahmet G. Kozanoglu, '66  
 David Longmuir, '66  
 Gerald W. Lucas, '66  
 Ahmet Mavitan, '66  
 Errol F. Moody, Jr., '66  
 Chester J. Patch, III, '66  
 Edgar P. Rundlett, Jr., '66  
 Ramanik N. Savla, '66  
 Subhashchandra N. Amin, '67  
 James R. Braithwaite, '67  
 Athanassios H. Canatsoulis, '67  
 Fernando Castillo, '67  
 Mahendra K. Dave, '67  
 Lt. Wallace P. Fini, '67  
 Rein C. Freeberg, '67  
 Philip R. Gaudet, Jr., '67  
 John P. Keir, '67  
 Mitchell P. Koziol, '67  
 Leonard J. Lamberti, '67  
 Stephen R. Luber, '67  
 Mohmedjarid M. Malek, '67  
 David R. Malley, '67  
 Denis F. McQuillen, '67  
 Paul J. Milne, '67  
 Ajit M. Mody, '67  
 Rajendra M. Pandya, '67  
 Mafatbhai N. Patel, '67  
 Herbert S. Riddle, Jr., '67  
 2/Lt. Richard A. Shaw, '67  
 Vishram S. Shinde, '67  
 Niranjana N. Shridharani, '67  
 Nelson F. Thune, '67  
 Frederick M. Turcotte, '67  
 Mulraj K. Vasa, '67  
 Capt. John A. Caprio, '68  
 Robert A. Cherry, '68  
 Lt. Robert J. Ellis, '68  
 Thomas E. Fitzpatrick, '68  
 Capt. John Richard Hilyard, '68  
 Gerald G. Junevicus, '68  
 Rafik E. Kathiwalla, '68  
 Robert A. Lowell, '68  
 Sudhir M. Mody, '68  
 William C. Morse, '68  
 Bhikhabhai M. Patel, '68  
 Purushottambhi U. Patel, '68  
 Fritz Peter, '68  
 Hereesh S. Shah, '68  
 Dwight G. Shepard, '68  
 Malay C. Sheth, '68  
 Donald R. Shurtleff, '68  
 Jas P. Singh, '68  
 Robert L. Smith, '68  
 Lt. Lee J. Solaroli, '68  
 Robert J. Strople, '68  
 Gurol M. Talgar, '68  
 Huseini T. Tambawala, '68  
 Sumermal M. Vardhan, '68  
 Anthony J. Baglini, '69  
 Dr. William G. Clark, '69  
 Steven H. Leece, '69  
 Christopher J. Masklee, '69  
 Henry E. McGuire, Jr., '69  
 Bhikhubhai M. Mistry, '69  
 Dennis J. Murphy, '69  
 Harivadan R. Parikh, '69  
 Harshad K. Patel, '69  
 Rambhai J. Patel, '69  
 Alfred F. Perrone, Jr., '69  
 Ronald P. Rosadini, '69  
 2/Lt. Earl M. Spinks, '69  
 Mohammad Vakilian, '69  
 David M. Alden, '70  
 David D. Andre, '70  
 Muammer Arikan, '70  
 David B. Armitage, '70  
 Bernard J. Belouin, '70  
 John F. Campanella, '70  
 Demetrios H. Canatsoulis, '70  
 George P. Caplette, '70  
 Donald C. Connelly, '70  
 Jagdish C. Gupta, '70  
 Andrew Ann-Shong Huang, '70  
 Steven A. Lacaire, '70  
 Cyril D. Musson, '70  
 Dennis L. Novak, '70  
 Praful V. Palan, '70  
 Girish Tribhuvandas Patel, '70  
 Mahendra K. Patel, '70  
 Rameshchanora N. Patel, '70  
 Amon Rieger, '70  
 Harkant J. Shah, '70  
 Jen An Su, '70  
 Krishna S. Tahlilani, '70  
 George R. Zinser, III, '70  
 David J. Asquith, '71  
 Geoffroy N. Berg, '71  
 Sharadchandra M. Dave, '71  
 Richard J. Gioiosa, '71  
 Robert P. Hart, '71  
 Michael J. Kajen, '71  
 Chul Kim, '71  
 Joseph C. Landwehr, '71  
 Bruce E. Leffingwell, '71  
 Peter J. Markunas, '71  
 John G. Parillo, '71  
 Jayanti R. Patel, '71  
 Mahendrakumar K. Patel, '71  
 John R. Pratt, '71  
 Kenneth A. Roberts, '71  
 Timothy M. Rooney, '71  
 Anthony J. Ruscito, '71  
 Donald B. Seaton, '71  
 Paul R. Smith, '71  
 Francis Soares, '71  
 John F. Sperandio, '71  
 Prakashchand B. Surana, '71  
 David A. Bailey, '72  
 Ju Hak Bong, '72  
 Thomas G. Burns, '72  
 Stephen C. Chapdelaine, '72  
 Ramjibhai Chaudhari, '72  
 Nader Family, '72  
 James Gordon Graham, '72  
 Chandrakant H. Kansagra, '72  
 Bradshaw B. Lupton, Jr., '72  
 Anil N. Modi, '72  
 Mahendrakumar Ashab Patel, '72  
 Sudhir P. Patel, '72  
 Alain Roux, '72  
 Thiva Thanasuen, '72  
 Prakash Bhagwandas Virani, '72  
 Subhash R. Vohra, '72  
 G. Kasmasrki Chester Jr., '73  
 Michael Rice Aylward, '73  
 Paul M. Bazinet, '73  
 Edward Berman, '73  
 Vithal Kanji Bhimani, '73  
 David S. Bowen, '73  
 Joyce L. Caplovich, '73  
 Bok Nam Chung, '73  
 Lester E. Couture, '73  
 Patrick S. Daly, '73  
 Ronald P. DeFalco, '73  
 Satish P. Kamik, '73  
 Miguel Orszag, '73  
 Kiritkumar D. Patel, '73  
 Naresh K. Patel, '73  
 Francis J. Sheehan, Jr., '73  
 Sammy G. Shina, '73  
 Roberto Slimak, '73  
 Chung-Chien Chang, '74  
 Suman Chamanlal Choksi, '74  
 Per Arthur Damslet, '74  
 Robert Omer Dupuis, '74  
 Ibrahim Mohammed Jamal, '74  
 Bruce Russell Lyon, '74  
 Hirant R. Rakijian, '74  
 Houchangue Toubian, '74  
 Hooshang Azma, '75  
 Nader G. Ettehadi, '75  
 Ahmad Jelvehgaram-Isfahani, '75  
 Mohsen Kavehrad, '75  
 Michael G. Patsouris, '75  
 Narendra R. Vira, '75  
 Gunvant G. Bhakta, '75  
 Esmail Nafari, '76  
 Jalaludin Ghaemaghani, '76  
 Charles Vincent Bohling, '76





## 1969

James Alford is a partner in Salem's Motorcycles, Inc., Phoenix, Arizona. . . . Alan Chamberlain works as a senior engineer for Raytheon Co. in Sudbury, Mass. . . . Presently Bruce Green is associated with King Bearing, Inc., in West Sacramento, Calif. . . . John Payne is a consulting engineer at Mueser Rutledge, Wentworth, & Johnston in New York City. . . . John Poblocki serves as redevelopment director for the Redevelopment Agency of Woonsocket, R.I. . . . Alfred Prentice, SIM, retired chief estimator for Morgan Construction Co., Worcester, is currently residing in Clearwater Beach, Fla., with his wife, Phyllis. . . . Robert Seldon is an attorney for GTE in Waltham, Mass.

## 1970

Andrew Donaldson holds the post of mechanical supervising engineer at Burns & Roe, Inc., Los Angeles, Calif. . . . Rep. David Emery, Republican congressman representing the First District in Maine, was the principal speaker at the Greater Bridgeport (Conn.) Lincoln Day dinner. Re-elected to his second term in Congress in November, he is a member of the Committee on Merchant Marine and Fisheries and the Committee on Armed Services. He is also a fellow at the John F. Kennedy Institute of Politics. . . . George Iszlai serves as a senior engineer at Digital Equipment Corp., Maynard, Mass.

Currently Robert Kenney, MNS, is a math instructor at Keene (N.H.) High School. . . . Kent Lawson is now a senior quality engineer in the camera division of Polaroid Corp., Norwood, Mass. . . . Richard Rock has received his MBA in finance from Temple University. He is employed by United Engineers & Constructors, Philadelphia. . . . Robert Soffel recently earned his MBA from Baldwin-Wallace College in Berea, Ohio. . . . Michael Trotta works for P. Gioioso & Sons, Inc., Hyde Park, Mass. . . . John K. C. Yen has been named town engineer in Franklin, Mass. His duties will consist of setting up a town engineering department consisting of an assistant engineer, a part-time clerk and engineering co-op students. He will also be responsible for the department budget and be involved in all phases of engineering in the town. Yen, a professional registered civil engineer, was previously self-employed in Cambridge, his specialties including utility, soil, and roadways engineering. He was formerly with Geolabs of Westlake Village, Calif. He belongs to the Society of Civil Engineers.

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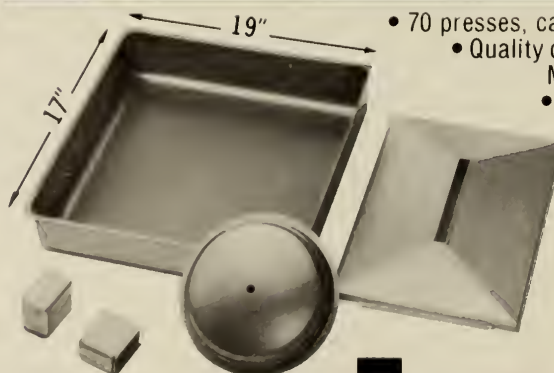
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**1971**  
**Arilton Cruff** is a manufacturing research and development engineer at Pratt & Whitney Aircraft, East Hartford, Conn. . . . **Arthur Jackman** is received his master's of mathematics for a masters degree from the University of Lowell. His article, "Metric Conversion of School Reports" appeared in the November issue of the *American Vocational Journal*. He was recently awarded a grant by the Northeastern States Metric Education Consortium to prepare a plan for conversion to the metric system in regional vocational high schools in the nine northeastern states. The Jackmans have two children, Kenneth 4, and Melissa, 1. . . . Capt. **John Johnson** is currently director of electromyographic studies at U.S. Army Aeromedical Research Lab. in Fort Rucker, Alabama. . . . **John Landall** has received an Outstanding Performance Award from the Army Corps of Engineers in New England. A project manager in the regulatory branch at Waltham, Mass., he developed a computer-microfilm management system which will increase efficiency and provide reliable action in solving violations of Corps Regulatory Laws. . . . **Larry Lyman** works as a technical director of respiratory therapy at Nyack (N.Y.) Hospital. . . . **George Nisotel** is a management sciences analyst at Gillette Co. in Boston. . . . Bay State University in Westboro, Mass. has promoted **Richard Pelletier, SIM**, to manager of operations in the Industrial Products Section. After joining the firm in 1965 he became manager of market development, a post which he held until his recent promotion. He graduated from Boston University's School of Public Relations and WPI's School of Industrial Management.

**1972**  
**Married: David B. Vine** and Miss Margot M. McNamara were married recently in Worcester. The bride graduated from Fitchburg State College and was a special education teacher in New Bedford. Her husband is a geotechnical engineer in Newark. **William O'Rourke** has been elected president of the Rhode Island Chapter of the Illuminating Engineering Society of North America. He is vice president of James J. O'Rourke, Inc., an electrical contracting firm. . . . **Steve Wilkinson** has joined Procter and Gamble as lab manager at the ringles manufacturing plant. He and his wife, Emma, from Mexico City, reside in Greenville, N.C. In October he completed a four-year term as an army engineer officer at Fort Bragg.

**1973**  
**Married: Lt. David C. Bedard, U.S.A.**, to Miss Janice M. Vitulli on January 22, 1977 in Providence, Rhode Island. Mrs. Bedard is a graduate of Manhattanville College. Her husband is stationed at Fort Bliss, El Paso, Texas. . . . **Paul A. Christian** and Miss Laima T. Pauliukonis, '77, in Worcester on January 8, 1977. The bride plans to attend Stanford (Calif.) University for graduate study in chemistry. Her husband is a doctoral candidate in chemistry at Stanford. . . . **Stephen F. Dowling** and Miss Michele A. Quinn in Fairfield, Maine on January 22, 1977. Mrs. Dowling graduated from Andrew Warde High School and serves as a sales service coordinator for the Stauffer Chemical Co. of Westport. Her husband is a sales engineer for the Nash Engineering Co.

**Edward Dykstra** is director-corporate MIS at American Optical Corp., Southbridge, Mass. . . . **Joel Loitherstein** works for the state of New Hampshire in Concord as a consulting sanitary engineer. . . . **John Ogorzalek** is staff manager for John Hancock Life Insurance Co., Norwich, Conn. . . . **Stephen Slavick** works as a transportation analyst for the New York State Department of Transportation. . . . **Russell Smith, Jr.** has been appointed assistant project engineer in the engineering department of Texon, Inc., South Hadley, Mass. . . . **Robert Torbin** serves as a hydraulic engineer for Stone & Webster in Boston.

**1974**  
**Subhash Bajaj** is a plant metallurgist at GE in Everett, Mass. . . . **Chester Kokoszka** has been promoted to associate engineer in the System Planning Department of Northeast Utilities in Berlin, Conn. He began work at Northeast in 1974 as an assistant engineer. He belongs to IEEE and the Power Engineering Society. . . . **Dennis Mailloux** serves as an associate scientist at Polaroid Corporation, Cambridge, Mass. . . . **Stephen Page**, a senior at Stetson University College of Law in St. Petersburg, Fla., has been named to the current *Who's Who Among Students in American Universities and Colleges*. Among his other Stetson honors are Outstanding Participant in Freshman Moot Court Competition; American Jurisprudence Award for Corporations; Dana Scholar; and election to the editorial board of *Stetson Law Review*. . . . **Peter Tunnicliffe** is now a construction coordinating engineer at Camp Dresser & McKee, Boston. . . . **Stanley Wood, Jr.** is a junior engineer with the Massachusetts Department of Public Works, Boston.

**1975**  
**Born:** to Mr. and Mrs. **David H. Kingsbury** their first child, a daughter, Elana Marie, on September 8, 1976. Dave is with Monsanto in Havre de Grace, Maryland. **Andrew Armstrong** is a graduate student at New England College of Optometry in Boston. . . . **Clifford Ashton** has joined GE's Electric Boat Division in Groton, Conn. . . . **Vitty Ciras** is with the U.S. Army Research & Development Command in Natick, Mass. . . . **John Gabranski** is currently on an educational leave of absence from American Can Co., attending Columbia University on the Harry S. Batten Fellowship. . . . **Robert Granger** wrote "On the Allocation of Capacity Costs" which appeared in the December issue of *Public Utilities Fortnightly*. At Chas. T. Main, Boston, Granger has been responsible for the preparation of comprehensive cost allocation studies for large electric utility systems. He has specialized in computer applications, including both digital and analogue computation, involving development of problem-solving techniques. He belongs to the National Society of Professional Engineers and AICE. **Glenn Guaraldi** serves as a mechanical design engineer at Harris Corporation in Pawcatuck, Conn. The Guaraldis, who reside in Westerly, R.I., have a son, Christopher, 2. . . . **Robert Hickey** is with Systems Architects, Inc., Arlington, Va. . . . **Richard Newhouse** is a construction engineer at Raymond International, Inc., Norcross, Ga. . . . **William Oehler** has been appointed a product specialist in the Engineered Products Group of Rogers Corporation in Wilimantic, Conn. He will be responsible for several

major computer manufacturing customers for Rogers-R-Ion drive belts and rollers, in addition to helping develop new business for the company in various types of polymeric parts. . . . **Christine Powers** recently accepted a position as process engineer for Armour-Dial, Inc., in Aurora, Illinois. . . . **Jeffrey Setlin** is employed as a project manager at Keene Corp., East Providence, R.I. . . . **Wayne Stratton** is with Penril Corp., Rockville, Md. . . . **Mikey Jan-Tai Yang** works as a system programmer for the Eye Research Institute of the Retina Foundation in Boston.

**1976**  
**Married: Marc F. Mahoney** of Hooksett, New Hampshire to Miss Joan L. Bobin on October 8, 1976. Mrs. Mahoney graduated from Worcester State College. Her husband works for Public Service Co. of New Hampshire in Manchester. **Stephen Anstey** is with GE Ordnance Systems in Pittsfield, Mass. . . . Currently **William Baker** serves as a captain in the U.S. Army. . . . In January **Alan Briggs** was reassigned to E.I. DuPont's Elastomers Division and is presently working as a maintenance engineer at their Pontchartrain works plant in La Place, Louisiana, about twenty miles from New Orleans. . . . **Bruce Dalrymple** is doing graduate work at Yale University's School of Applied Science. . . . **Mark Deutsch** works as a programmer at Norton Co., Worcester. . . . **Mark Ducharme** serves as a scientific programmer at Acushnet Company in New Bedford, Mass. . . . **Bruce Haffty**, who is a supervisor in the cardiology division at St. Vincent Hospital, Worcester, also performs with the Caravan Orchestra, a Middle East group. Besides working, and becoming known as a first class Middle East-oriental musician, Haffty is studying for his doctorate at WPI.

**Edwin Knight** has joined Union Twist Drill in Athol, Mass. . . . **Paul Lessard** is a civil engineer for the federal government in Atlanta, Ga. . . . **Mulongo Masangu** works for Consolidated Aluminum Co., Lake Charles, Louisiana. . . . **Robert Milk, Jr.**, who works for Electronic Data System as a computer system engineer, is located in Harrisburg, Pa. . . . **R. Kenneth Reece** is in the department of physics at Texas A & M University in College Station, Texas. . . . **Steven Schoen** is an actuarial trainee for Sun Life of Canada in Wellesley Hills, Mass. . . . **Kenneth Scott** has joined the Hydrospace Systems Division of States Marine Corp. He is located in New London, Conn. . . . **Gerard Trottier, Jr.** has accepted the post of quality control engineer at Norton Co. in Worcester. . . . **Mark Waddell** works as a design engineer at Valve Engineering in Alexandria, Va. . . . **William Wood** is consulting engineer for Hoyle, Tanner and Associates in Manchester, N.H. . . .





**Claude K. Scheifley**, professor emeritus and former head of the history and modern language department at WPI, died in Worcester on February 16, 1977. He was 70 years old.

Prof. Scheifley was born in Tamaqua, Pa. He graduated from the University of Pennsylvania and taught at WPI from 1928 until 1933. After teaching at Miami University, Oxford, Ohio, from 1934 to 1937, he returned to WPI, where he remained until his retirement in 1971.

He received his master's degree from Cornell University and did postgraduate work at the University of Chicago and Upsala College.

For twenty years he assisted in the direction of the fraternity system at WPI and was associated with Techniquet, which he directed from 1955 to 1961. He received the trustees' award for outstanding teaching in 1963. In 1972 he was named professor emeritus.

He belonged to Trinity Lutheran Church, Skull, the Shakespeare Club, and the Bohemians. For many years he served on the board of trustees of Upsala College.

**Joseph W. Berger**, '03, died in Akron, Ohio on February 25, 1977. He was 97.

A native of Webster, Mass., he was born on April 24, 1879. After graduating from WPI, he joined Ingersoll Rand Co. Later he was with International Steam Pump Co., Ralph B. Carter Co., Fairbanks Morse Co., The Superheater Co., and the Green Fuel Economizer Co., Inc.

Mr. Berger belonged to ASME. He was a professional engineer in New York State.

**Nathan C. Rockwood**, '07, of Peotone, Illinois died on November 27, 1976.

He was born on September 9, 1884 in Marlboro, Mass. In 1907 he received his BSCE from WPI. After working a year for the U.S. Geodetic Survey, he became associate editor of *Engineering News-Record* in New York City. From 1917 until 1956 he was editor, vice president, then president of Tradepress Publishing Corp., Chicago.

Mr. Rockwood was an honorary life member of the National Lime Association, honorary director of the National Sand and Gravel Association, and the National Ready-Mixed Concrete Association. He belonged to the Chicago Engineers' Club and the Masons.

**Royal W. Davenport**, '08, for 46 years a hydraulic engineer with the U.S. Geological Survey, died at his summer home in Stone Harbor, New Jersey on December 18, 1976. He was 91.

A native of Colrain, Mass., he graduated as a civil engineer from WPI. He was an instructor at WPI for two years. From 1910 until his retirement in 1956, he was with the U.S. Geological Survey of The Dept. of Interior.

Before World War I he was active in steam gauging in the Pacific Northwest and Alaska. He investigated water power, irrigation, and industrial water use in various parts of the U.S. Later he worked with the International Joint Commission in conducting studies of streams along the U.S.-Canadian border. The Dept. of the Interior gave him its Distinguished Service Award.

Mr. Davenport belonged to Sigma Xi, Tau Beta Pi, ASCE, and Kiwanis International. He was a former vice president of the Washington D.C., chapter of the Alumni Association.

**Clarence A. Brock**, '13, passed away at his home in Lighthouse Point, Florida on December 12, 1976.

He was born on August 4, 1891 in Ouray, Colo. and received his BSME in 1913. He had been associated with Express Copper Mines, U.S. Reclamation Service, Detroit Steel Products, F.M.C., Newcombe Separator, and Rexair Division of Ward Industries Corp. During World War I and II he served in the Army Quartermaster Corps.

Mr. Brock belonged to ASME, SAME, Sigma Xi, and DES. He was a 50-year member of the Masons.

**Edmund K. Brown**, '13, an early developer of submarine storage batteries, died at his home in Torrington, Connecticut on January 7, 1977 at the age of 85.

A native of Taunton, Mass., he was born on October 3, 1891. After graduating with a BS in mechanical engineering, he became an instructor at WPI for two years. From 1915 to 1920 he was with the Lake Torpedo Boat Co. in Bridgeport, Conn., where at the request of President Wilson, and against his own wishes, he was deferred from Army service to aid in the development of submarine batteries.

In 1920 he joined the Torrington Company. He organized the firm's research engineering department and invented the "drawn-cup needle bearing" that has been the mainstay of the bearings division. Ultimately he held fourteen patents relative to the manufacture of bearings. In 1959 he retired as director of research, but remained as a consultant to Torrington until 1968.

Mr. Brown belonged to Tau Beta Pi, Sigma Xi, Sigma Phi Epsilon, and ASME. He had served as director of the Stanley P. Rockwell Co., Hartford, and as an incorporator of Hungerford Hospital.

**Frederic R. Cox**, '15, of Vincentown, New Jersey passed away on September 14, 1976.

He was born on January 9, 1893 in Melrose, Mass. In 1915 he graduated as a civil engineer from WPI. He was with J.S. Bache & Co., prior to forming Frederic R. Cox, Investment Securities, New Haven, Conn. He was a captain of morale and recreation officer for harbor defenses at Portsmouth, N.H. in World War II.

**Arthur C. Bird**, '17, of South Yarmouth, Massachusetts died on November 21, 1976 in Ridgewood, New Jersey.

A native of Passaic, N.J., he was born there on February 19, 1896. After receiving his BSEE from WPI, he worked for Public Service Electric Co. of New Jersey. He then joined Hardy S. Ferguson & Co., became a partner in Roderick O'Donoghue & Co., and worked as a consultant for Lockwood Greene Engineering from 1962 to 1965.

Mr. Bird belonged to ATO, AIEE, and TAPPI.

**Clinton S. Darling**, '17, died on January 14, 1977 in Santa Barbara, California.

He was born on July 25, 1895 in Windsor, Vt. In 1917 he received his civil engineering degree from WPI. From 1936 to 1960 he was with the National Automatic Merchandising Association, which he served as executive director and adviser, and the National Automatic Laundry and Cleaning Council, where he was an executive director and consultant. He was also managing editor of *Factory* and western manager of the Pennsylvania Crusher Co.

Prior to his final retirement, he was a part-time U.S. representative for SAFAA, Paris, the oldest and largest vending company in France. He belonged to ATO, Tau Beta Pi, Skull, and the University Clubs in Chicago and Washington, D.C. During World War I he was a captain with the U.S. Army Corps of Engineers. He was a past president of the Chicago chapter of the Alumni Association.

**William C. Thurston**, '17, of Clearwater, Florida passed away on December 7, 1976.

He was a retired maintenance supervisor for Bell Telephone in Philadelphia. While studying at WPI, he was a member of SAE.

**Roger B. Chaffee**, '19, a resident of Oxford, Massachusetts, died on December 24, 1976.

He was born on June 7, 1895 in Oxford and later studied mechanical engineering at WPI. From 1919 through 1960 he served as vice president of Chaffee Brothers Co.

Mr. Chaffee belonged to the Masons, the American Legion, and SAE. He was the father of *Warren H. Chaffee*, '43.

**Robert C. Sessions**, '19, a retired consulting engineer and a resident of Lakewood, Ohio, died on January 14, 1977.

During his lifetime he had been with NASA as assistant to the director of the Lewis Research Center and with the National Advisory Committee for Aeronautics; Brown Fintube Co.; Sessions & Sessions, Consulting Engineers; and Steel & Tube, Inc. From 1920 to 1926 he worked for his father, the late *Frank L. Sessions*, '89 as a consulting engineer, later becoming a partner in the firm.

Mr. Sessions, who was also a patent attorney, was born on June 18, 1897 in Fort Wayne, Indiana. In 1919 he received his BSEE from WPI. He belonged to Phi Gamma Delta, Tau Beta Pi, Sigma Xi, and Skull. A fellow of the American Scandinavian Foundation in Hydro-electric Engineering in Sweden, he also was a member of ASME, IEEE, IAS, Cleveland Engineering Society and the National Society of Professional Engineers. He was past president of the Lakewood Civic Association and of the Cleveland Chapter of the Alumni Association, and brother of *Paul Sessions*, '21.

**West P. Williams**, '22, of West Hartford, Connecticut died in Hartford Hospital on January 1, 1977.

For 42 years he worked for Bell Laboratories as mechanical and electrical engineer. He retired in 1966.

Mr. Williams, who was born on March 20, 1901, in Manchester Conn., belonged to SAE and Tau Beta Pi. He was an Army veteran of World War I.

**Philip W. Linnell**, '23, of Storrs, Connecticut passed away recently.

He was born April 14, 1900 in North Adams, Mass. In 1923, after studying as a chemist, he joined the Fuller Brush Co., where he remained until 1946. Later he was with the Stanley Home Products Co. He belonged to SAE.

**Gerald M. McMahan**, '24, retired quality control engineer for Uniroyal Corp., died February 1, 1977 at his home in Springfield, Massachusetts. He was 75 years old.

He worked at Uniroyal in Chicopee for 36 years. Previously he had worked for U.S. Rubber and Fisk Rubber Co.

Mr. McMahan graduated from WPI as a chemist in 1926. He belonged to the Forest Park Golden Age Club.

**Vin S. Webster**, '26, died in Holyoke, Massachusetts in January. He was 73 years old.

After graduating as a mechanical engineer from WPI, he was employed by the Public Service Electric and Gas Co. of New Jersey for nearly fifty years. A licensed professional engineer, he retired three years ago as a development engineer at the company.

Mr. Webster belonged to ATO, Sigma Xi, Skull, and the American Society for Testing Metals. Active in the American Gas Association as a chairman of several committees, he received an AGA Merit Award and in 1968 was given the association's Distribution Achievement Award. He was a member of the Gotham Figure Skating Club of New York, a 50-year Mason, and a former vice president of the Northern New Jersey Chapter of the Alumni Association.

**Ernest P. Wood**, '26, of St. Petersburg, Florida, retired vice president and chief engineer for Tidewater Construction Corp., died on May 20, 1976.

He was born on November 12, 1903 in Allentown, Pa. and later studied electrical engineering at WPI. During his career, he was associated with Slaughter, Saville, & Blackburn, Inc.; Ebasco Services; Stevens & Wood; Sverdrup & Parcel; Den-Rado Products; and J. F. White Engineering Corp. After retirement, he was an engineering consultant in St. Petersburg.

Mr. Wood belonged to ASME and Phi Gamma Delta. From 1942 to 1945 he was a turret officer with the U.S. Naval Reserve.

**John A. H. Crosier**, '27, died in Easton, Maryland on January 12, 1977.

Born on April 30, 1905 in Northampton, Mass., he later graduated as a chemist from WPI, where he was a member of Phi Gamma Delta and Skull.

During his career he was associated with the purchasing departments at Day & Zimmermann, Inc., Philadelphia, and Stone & Webster, Inc., Boston. He was an officer in the U.S. Army Signal Corp in World War II and belonged to the Masons and the Episcopal Church.

**Harold P. Richmond**, '29, of Durham, North Carolina, the retired president and founder of Associated Energy Systems, died on January 7, 1977.

He was born on March 10, 1907 in Bridgeport, Conn. In 1929 he received his BSEE. He also studied at Columbia University, North Carolina State College, and Duke University.

During his lifetime he was with Consolidated Edison Co.; Eastern New Jersey Power Co.; and Jersey Central Power & Light, where he became general superintendent of operations for the entire company. He also was associated with Allis-Chalmers, City Gas Co. of New Jersey, Millville (NJ) Utilities, Public Service Co. of North Carolina, and Ebasco Services, Inc. In 1963 he formed his own company, Associated Energy Systems of Madison, N.J.

Mr. Richmond, who was listed in the 1959 issue of *Who's Who in Engineering*, belonged to AIEE, ASME, AGA, the Philadelphia Engineers Club, and the Durham Engineers Club. He was a professional engineer in New Jersey and North Carolina.

**Carl G. Nordmark**, '30, of Hoquiam, Washington died on October 21, 1976.

A native of Providence, R.I., he was born on March 14, 1908. He received his BSME in 1930. He had been associated with Matthews Mfg. Co., and the L.S. Starrett Co., from which he retired as advertising and sales promotion manager.

He was a member of Sigma Xi, ASME, and the Association of Industrial Advertisers.

**Carl L. Johnson**, '33, a resident of Danville, Pennsylvania, passed away on December 8, 1976.

A native of Millbury, Mass., he was born there on January 31, 1909. For many years he was with DuPont, where he served as head of the analytical section at the firm's eastern laboratory in Gibbstown, N.J.

Mr. Johnson, who received his bachelor of science degree in chemistry, belonged to Sigma Phi Epsilon, and the American Chemical Society.

**H. Victor Stenbeck**, '34, died suddenly of heart failure in Scituate, Massachusetts on January 21, 1977. He was 64.

The co-owner of Stenbeck & Taylor, Inc., Engineers, Marshfield, Mass., he was a registered professional engineer and land surveyor.

He was born on February 20, 1912 in Scituate. In 1934 he earned his BSCE at WPI. He had worked previously for W.G. Ford, C.E. of Marshfield. From 1942 to 1945 he was with the U.S. Navy Bureau of Aeronautics.

**Edward E. Hayden**, '35, passed away in Stoughton, Massachusetts on January 9, 1977 at the age of 63. He apparently died of a heart attack after shoveling snow.

He was born on November 17, 1913 in Farmington, Me. After graduating as a civil engineer, he was with U.S. Naval Ordnance. He then became inspector for the engineering department in Panama, Canal Zone. Later he was with Foundation Co. in Costa Rica. At his death he was chief architectural engineer for E. J. Cross Company, Worcester. He was a registered professional engineer.

Mr. Hayden belonged to the Massachusetts Construction Industry Board, the National Archery Association, and the Massachusetts Archaeological Society. He was past president of the Massachusetts Archery Association and served as organist at St. Michael's Church.

**William A. Patterson, Jr.**, '40, of Worcester died on February 12, 1977.

He was born on October 9, 1917 in Worcester and later studied mechanical engineering at WPI. Since 1940 he had been with Heald Machine, where he was manager of office services.

Mr. Patterson belonged to ATO and the Masons. He was the charter president of the Worcester Young Businessman's Association, past monarch of Aletheia Grotto, and first vice president of the Worcester Commercial Travelers Association.

**Leroy A. Knapp**, '54, who retired three years ago as a lieutenant colonel in the Air Force Reserve following 30 years of service, died at his home in Worcester on January 5, 1977. He was 56 years old.

He was born in Worcester and later studied at Mount Union College, Alliance, Ohio, and at WPI. An electro-mechanical design engineer, he retired as senior design engineer at Machinery Electrification Co., Northboro, in 1971. During World War II he was a test pilot for the Air Force and officer in charge of engineering maintenance. Before the war he worked in the advertising department of the *Worcester Telegram and Gazette*.

Mr. Knapp was on the board of directors of the Worcester County Music Association and sang many years with the Worcester Chorus. He had sung with the Detroit Symphony Orchestra at Carnegie Hall and with Eugene Ormandy and the Philadelphia Orchestra in Washington, D.C.

He was a 32nd degree Mason and a member of Aleppo Temple, Boston. A senior pilot, he was communications and squad commander for the Fitchburg Air Force Reserve Squadron.





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