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WPI journal

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Father Scanlon

"Father Abraham, help me," said the distraught young voice into the telephone. "Our flag pole is bent and the president is upset. He wants us to fix it. Father Abraham, how do you fix a bent flag pole?"

Within the hour Worcester aerial ladder truck No. 2 pulled up in front of the old AEPi house. The ladder was extended, a fireman climbed it, and in short order the listing section of the flag pole was disconnected and eventually straightened. The fraternity was happy. The president was happy. Father Peter Scanlon, alias Father Abraham, had done it again.

Father Scanlon has the right connections to help solve a variety of perplexing problems. (In the AEPi case, the fact that he is the official Worcester City fire chaplain was a definite plus.) Although the Catholic students at WPI are the first ones to learn about the Father's "connections," the Protestant students, and also the Jewish students (who have dubbed him Father Abraham) are not far behind. The word at WPI is, "if you've got trouble, call Father Scanlon."

The Reverend Peter J. Scanlon arrived on the WPI campus as Catholic chaplain in 1961. In 1966 he was named the first full-time priest in the Newman division serving Worcester State College, Becker Junior College, Salter Secretarial School, and WPI. In 1968 he was assigned full time to WPI and Becker Junior. He was appointed trustee of Worcester Area Campus Ministry, which is the Protestant Campus Ministry, as well as Diocesan Director of Campus Ministry in 1969.

"As Episcopal (or Bishop's) Vicar for College Communities, I am empowered to delegate any priest to perform a Catholic or non-Catholic wedding on any campus in the diocese," explains Father Scanlon, who has held the post since its inception in 1971. "This means that the students don't have to return to their home parishes to be married."

Since 1971 some 394 couples in the local diocese have been married by various priests and clergymen under this unique plan. Variations of the plan, which originated in Worcester, are now being copied in other areas of the country.

Father Scanlon is ever the innovator, always looking for new ways to help the college students in his diocese. "I see my role as a supportive one," he says. "The students indicate to me what they want to do, and I try to help them."

When a group of coeds at WPI wanted to form a sorority, Father Scanlon served as an advisor during the preliminary negotiations. "I had my reservations," he admits, "but everything seems to have worked out."

In May, over 20 WPI women were initiated into Phi Sigma Sigma Sorority. The newly-formed group entered the Miller Brewing Company's can recycling contest, collected discarded beer cans around campus, and left them with Father Scanlon at a collection point in the religious center on Shussler Road.

"The beer-can collecting served a two-fold purpose," says Father Scanlon. "First, the more cans they collected,

the more points the girls earned toward prizes. Second, and perhaps more importantly, the competition proved a great asset in the cleaning up of the campus. Everybody won!"

Although Father Scanlon is available to advise any student, regardless of race, color, or creed, it is usually the incoming Catholic students who meet him first. In July he sends out letters to all freshmen welcoming them to WPI and explaining his role on campus. It is his custom, once the freshmen have arrived, to invite the women to dinner and the men to lunch. "I tell them they are perfectly welcome to bring along their Protestant friends, too," he says, smiling.

On Saturday and Sunday Father Scanlon conducts weekly Masses in the Janet Earle Room in the basement of Alden. Nearly every weekday he spends some time at the religious center.

"However, most of the time I just go right out on campus and talk with the kids wherever they may be," he confesses. "Sometimes it's in a dormitory room, down at the Pub, or at a ball game. I tell the priests and advisors that work with me to do the same. It's the best way to get to know the students."

Father Scanlon appears to have a winning game plan. Attendance at Mass has grown steadily each year. "We have come out of the rejection of the 60's into an age of renewal," he reports. "We have become a parish to the students on campus. The future looks very hopeful to me."

As might be expected, there are still some skeptics around, but their number is diminishing. "Whenever I run into a student who tells me that he or she left the Catholic Church when he started high school, I tell him to look at today's church with his more mature knowledge," says Father Scanlon. "I advise him to learn more about the current church. It has changed and so have the students. I tell him not to approach today's church with a high school mentality."

Father Scanlon is a living example of how things have changed in church social mores of late. He freely mixes with students at fraternity parties where drinking is permitted. A few years ago, before the drinking age was lowered, there was a rush to hide the beer cans as he approached. Now, as mentioned earlier, students don't hesitate to take their discarded beer cans directly to him — for a good cause, of course!

And, he has unorthodox ways of explaining religion. No stuffy lectures for him. Because WPI students are so involved with engineering subjects, he draws diagrams dealing with religious issues especially for them. "It makes it easier for them to understand," he says.

As for the new breed of students, Father Scanlon finds them considerably more concerned with their fellowman than some of their predecessors. A growing number of them become involved with blood drives, Big Brother programs, and United Way Fund efforts. One young woman, all on her own, started a program to help the elderly by planning special events such as cookouts and motor tours.

Although Father Scanlon carries a full schedule with his campus ministry, he still pursues his regular parish duties as pastor of Our Lady of Fatima, and as Worcester city fire chaplain.

The latter post has proved to be especially hazardous. Several years ago at a bad fire on Green Street, he fell 25 feet through a tottering second floor porch, landing on his feet. "I sustained several injuries," he says. "Nothing too serious, however."

Few people have ever seen him in his finest role . . . the tower of strength in a disaster. In the last several years, there have been a few instances in which students have been seriously injured in accidents. Father Scanlon is always among the first on the scene, thanks to the fire department radio in his car and in his rectory.

Often, his primary concern is the grief and shock of the family and friends of the victim. His comfort is often of a very practical nature. The mother of a fall victim, for example, was a guest in his rectory for several days, about a block from the hospital, so that she could be as close to her son as possible during those critical days. When a student died in a dormitory a few years ago, he stayed at the dorm almost all night talking with the residents trying to help them understand and accept that death takes even the young.

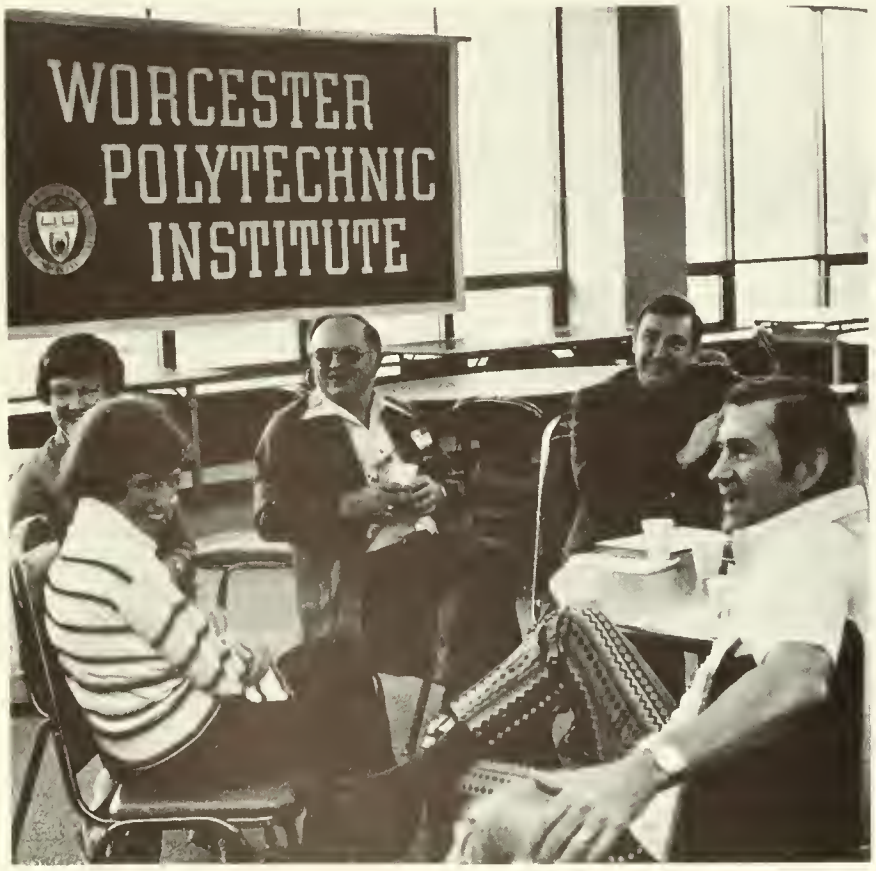
His aid may be the comfort of religion or the cutting of official red tape. He's adept at both.

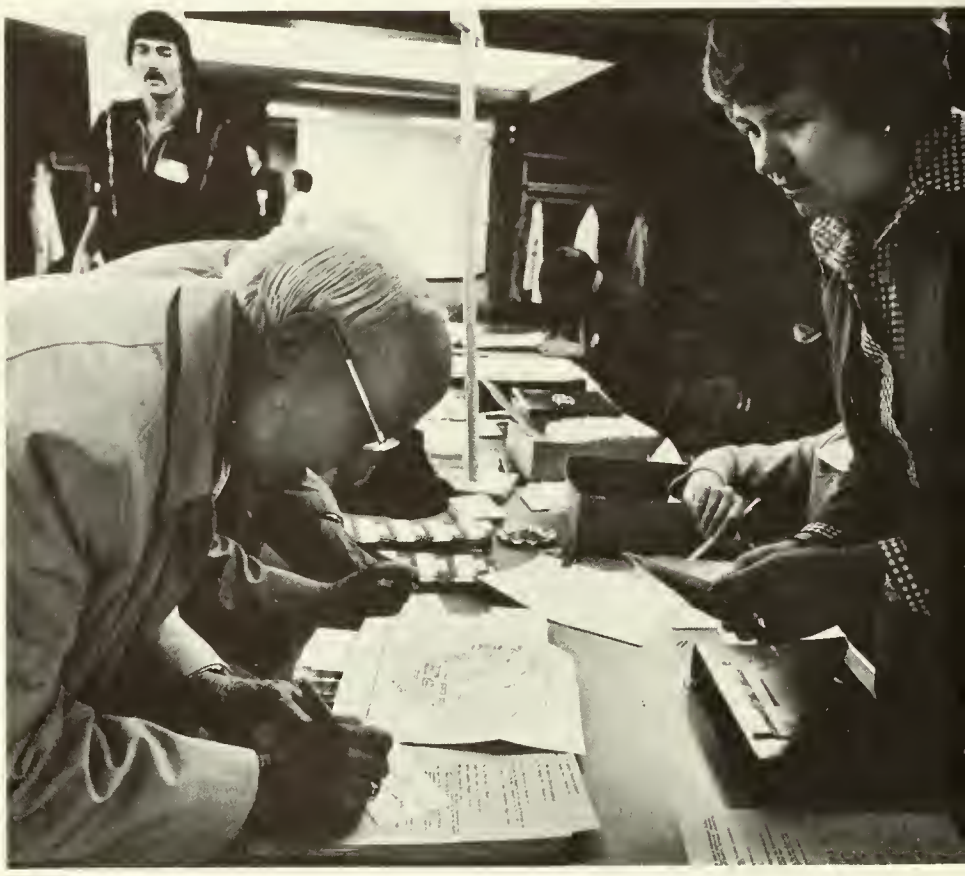
Nothing, it seems, can keep Father Scanlon from his duty, no matter where it may lie. Currently he serves as regional director of Region I of Campus Ministry and as a member of the National Directors of Campus Ministry. He has been reelected to the Becker Junior College Board of trustees for three years.

His numerous activities have not gone unnoticed outside of his immediate diocese. He was listed in the first edition (1975-76) of *Who's Who in American Religion* as well as in last year's edition of the *Dictionary of International Biographies*, Volume 13. Previously he had won the "For God and For Youth Award."

He's a Catholic priest, a student advisor, a city fire chaplain. His laugh is hearty; his stature, commanding. He is Father Peter J. Scanlon — a man of many parts.

REUNION 1977





CLASS OF 1952 — 25th REUNION

Despite some of the worst June weather imaginable, 37 members of the Class of '52 returned to Boynton Hill for our 25th Runion. The wind and rain failed to dampen our enthusiasm and all activities went on as scheduled.

An optimistic foursome of Dick Bennett, George Borski, Mike Essex, and Ed VanCott started things on Friday as they teed off just after noon at Pleasant Valley C. C. under threatening skies. The weatherman kept his promise and after 11 holes the soggy group was forced to call it quits. Meanwhile, back at the school, activity picked up in the afternoon as others signed in and spent their time touring the campus or visiting with classmates at our hospitality room in Ellsworth.

On Friday evening a group of about 25 made its way down to Lincoln Square and Worcester's newest restaurant, Maxwell Silverman's Tool House, where Jack Tracy had made arrangements for a private dining room. The good food, liquid refreshment, and steady conversation was enjoyed by all so much that it wasn't until three hours later that we returned to Morgan Hall for the all-classes "Good Old Days" get-together. Here activity had all but ended, but the Class of '52 quickly picked up the tempo by starting a singalong, accompanied by the Ragtime Rowdies Banjo Band. In between sets John Feldsine and Bob Favreau relived their experiences as officers and gentlemen in the service of the U.S. Navy.

On Saturday, the expected clearing failed to materialize and the Reunion picnic was moved indoors to Morgan Hall, where Dick Boutiette presented to the school our class gift of just under $25,000. After the luncheon, we adjourned to the hospitality room where it was voted that we wished our gift be applied to the renovation of Boynton Hall and that Harry Althen's approval of its specific application would be necessary before the money was spent.

Saturday evening, joined by our faculty guests for the occasion, the Pritchards, Grogans, and Kranichs, we gathered at the home of President and Mrs. Hazzard who were our gracious hosts for a marvelous cocktail party. Upon leaving the Hazzard home we moved across Park Avenue to the impressive Higgins House where our Reunion banquet was held. Manny Pappas and his new bride were last-second arrivals as we assembled for our class picture before sitting down to dinner. A word of praise should be given to the Ladies of the Class of '52 who, dressed in their finest for the occasion, stood amiably outside in the heavy mist while the photographer set up the group and took his picture.

Thirty-six alumni with thirty-two wives and invited guests then sat down to a delicious roast beef dinner. A short and very informal business meeting followed with Harry Althen, Dick Boutiette, Mike Essex, Reunion chairman, and Steve Hebert of the Alumni office extending greetings. A telegram from Dan Stoughton was read wishing all a happy reunion.

Following the meeting, the rest of the evening was spent dancing, touring the upstairs of the beautiful mansion, and just plain talking with friends. It was a truly magnificent setting for what all agreed was a successful conclusion to our Reunion weekend.

All who were present are looking forward to our next reunion. To those who were unable to attend this year, please join us for the thirtieth in 1982.

A final note of thanks is extended to the school and especially to the people in the Alumni Office who did an outstanding job helping to make our reunion a tremendous success.


MAIN PLAZA

CLASS OF 1937 — 40th REUNION

The 40th Reunion of the Class of 1937 this past June turned out to be a very successful affair in just about every possible way.

First and foremost, we feel that we can say, without reservation, that everyone in attendance had a great time. From the first official event — the informal reception at the President's home Friday evening — until the last goodbyes Saturday evening and/or Sunday, we all enjoyed the opportunity to renew acquaintances, reminisce, and in general, enjoy each other's company. In addition to the special events for the class and other alumni at school, we had a hospitality room at the nearby Sheraton Lincoln Hotel; this was a popular gathering spot, not only for the out-of-towners who were staying there, but for many of the local folks who dropped by.

The Reunion was also very successful for WPI because we surpassed the goal for our Class Gift, and Chairman Mort Fine, in behalf of the class, presented the school with a check in the amount of $50,019.37, which, we understand, is the second largest class gift in Tech's history.

From an attendance standpoint, we also did quite well. Out of a current total class membership of less than 100, 36 were on hand for the Reunion, 34 with their wives plus one daughter. In fact, we had such a good turnout that we were the recipients of the Attendance Trophy (best percentage attendance), an honor that customarily is won by the 50th Reunion Class.

Friday evening was certainly very special — first the social hour at 1 Drury Lane where (President) George and Jean Hazzard made us all feel so much at home, and then an excellent roast beef dinner (sponsored by the Alumni Association) at the Higgins House, an elegant recent addition to the WPI campus.

Although we very much enjoyed that evening, as well as other events on campus, the climax of the weekend was, of course, the Class Banquet at the Sheraton-Lincoln Hotel Saturday evening, preceded — with a certain amount of confusion — by our class photograph (which, incidentally, we think came out quite well). The meal was very good, the surroundings first-class, and with the exception of one item of business, it was truly an evening of good fellowship. In the spirit of the occasion, we had several "fun" awards for members of the class, which provoked some good laughs, particularly from those that were not "honored."

The only real negative aspect of the Reunion Weekend was the weather — it rained most of the time. However, with the exception of the Saturday luncheon, which had to be rescheduled indoors, the weather had very little effect on our activities and even the luncheon turned out to be quite a big event for the Class of '37. Not only did we win the competition for the Attendance Cup and receive commendations for our sizeable Class Gift, but as President of the Alumni Association, Fran Harvey conducted much of the luncheon program, and Gordon Crowther was one of two winners of this year's Herbert Taylor Award "for distinguished service to WPI." Certainly everyone knew that the Class of 1937 was back on campus celebrating its "Fortieth."

Making up this group were the following:

Erving Arundale, Phil Atwood, John Balsavage, Allen Benjamin, Bill Bushell, Bill Carew, Harold Cox, Gordon Crowther, Chapin Cutler, Mort Fine, Bill Frawley, Larry Granger, Herb Grundstrom, Caleb Hammond, Fran Harvey, Dan Hastings, Wes Holbrook, Ralph Holmes, Harris Howland, A. Hallier Johnson, Vin Johnson, Carl Larson, Ray Linsley, Dick Lyman, Sam Mencow, Charlie Michel, Maxwell Marshall, Jim Moore, Foster Powers, Bob Powers, Ray Schuh, Art Schumer, Morrison Smith, Paul Stone, John Willard and Bill Worthley.

A) President Hazzard accepts a check from E. Carl Hoglund after it was announced that gifts from the Class of 1927, including a special gift of over $100,000, totalled $123,318 on the occasion of their 50th reunion.

B) Award recipients, from left to right, were Gordon L. Crowther, '37 (Taylor), Julia Graham, accepting a Taylor Award for her husband, the late Thomas B. Graham, '38, O. Vincent Gustafson, '29 (Goddard), Norman Feldman, '47 (Goddard), and Paris Fletcher, who received the second WPI Award, given occasionally to non-alumni who have rendered exceptional service to WPI.

C) Outgoing president Fran Harvey, '37, accepts the thanks of the Association as his successor, William A. Julian, '49, presents him with a memento. Edwin B. Coghlin, Jr., '56, is in the foreground.

D) Prof. Emeritus Kenneth G. Merriam is congratulated by Prof. Donald Zwiep and Prof. Emeritus Albert Schwieger, on the announcement of the Kenneth G. Merriam Professorship in Mechanical Engineering.

(A)

(B)

(C)

(D)

THE FAMILY CAR

Even with a set of license plates, it's not the kind of wheels you could take for a leisurely Sunday drive.

Not with the turbocharged Cosworth Ford DFX, 8 cylinder twin overhead camshaft engine producing 800 horsepower at 9000 RPM that sends this Penske-prepared McLaren M24 down the chute.

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NORTON

1902

Over the years, the Rev. **Winthrop G. Hall** and the late Mrs. Hall opened their home to some 25 live-in foreign students at nearby Clark University. In recognition of this important role that the Halls played at Clark, the university recently honored them by establishing the Madeline T. and Winthrop G. Hall International Fellowship. The income from a permanent endowment fund will be used to provide a Clark fellowship for a foreign student of good character and high scholastic ability deserving of financial aid. The first of the annual fellowships will be awarded for the 1977-78 academic year.

1915

Frederick Church is a proud grandfather of six: one at McMasters in Hamilton, Ontario; one entering music education at Western Ontario University in London, Ont.; one at Mt. St. Joseph Academy, also in London; one attending Banff School of Fine Arts this summer; and another preparing for a medical degree. The Churches have been married for 47 years.

1916

Wellen Colburn writes that his doctor reports that he is "disgustingly healthy." He remains active raising his apples, working for the Red Cross Bloodmobile, and serving as moderator of his church, where he is also with the choir. Other interests include the YMCA, World Service, and Shirley Historical Society.

1919

Edwin Bemis has moved to a new house in the Greenbriar development in Brick Town, N.J. His current address is: 10 Dryden Rd., Brick Town, N.J. 08723

1920

In December Mr. and Mrs. **John Q. Holmes** spent Christmas with their son in California. On Dec. 28 they sailed on the S. S. Fairseas for an eleven-day cruise to Acapulco, Mexico, returning to Los Angeles for the flight home. In May they attended Mrs. Holmes' 55th class reunion at Smith College in Northampton, Mass.

1921

Recently Mr. and Mrs. **Edward Rose** celebrated their 55th wedding aniversary.

1925

Mr. and Mrs. **Hyman Friedman** celebrated their fiftieth wedding anniversary at Beth Israel Synagogue in Worcester. The recent party was hosted by their children. The Friedmans have 13 grandchildren and one great grandson. Mr. Friedman was employed by Morgan Construction Co. prior to his retirement. . . . **Leonard Sanborn** has been appointed clerk of works for the construction of the new middle school for the Sanborn Regional School District in Kingston, N.H. He is a registered professional engineer in Massachusetts and New Hampshire. Formerly with Fay, Spofford and Thorndike, Inc. of Boston, Sanborn is now retired. He has specialized in construction layout, supervision, materials testing, specifications and estimates. A state representative, he has also served as Kingston Town and School District moderator and as a member of the planning board. Currently he does part-time civil engineering work for Hamilton Engineering Associates, Inc. in Nashua, where he serves as director.

1926

The **A. H. Wendins** spent the winter in their travel trailer in an "active" park in Mesa, Arizona, "where everyone is so busy that you have to schedule loafing time." This summer they hope to travel to San Diego.

1928

Over 300 friends of retired Holyoke (Mass.) Gas & Electric Department manager **Francis King** attended a cocktail party given in his honor in May. King, who had served as department manager since 1945, was presented with a lamp and portrait. During his career he received many awards including the American Public Power Association's (APPA) 1967 Distinguished Service Award and a number of civic awards. He has served as president of APPA and the Massachusetts Municipal Wholesale Electric Co. He has also been affiliated with IEEE, Society of Military Engineers, International Committee on Large Dams, American Society for Public Administration, Municipal Finance Officers Association and American Public Works Association. Last year he was the program speaker for the Holyoke Memorial Day observance. In 1970 he was marshal for the St. Patrick's Day Parade.

1929

Wayne Berry currently writes an educational column for the *Independent Press* of Brooksville, Fla. He and his wife reside in Spring Hill. "We like it here," he writes, "and I think it is easier living here than most other places in the U.S." . . . **Stephen Donahue,** known as "Worcester's first public relations man," was honored at the annual meeting in May of the Worcester County Public Relations Association for the high standards he set and maintained in working with the news media. A retired city editor of the *Worcester Evening Gazette,* he continues as manager of the WPI News Bureau, a post he initiated 39 years ago. Formerly, he also served as a colonel in the Air Force Reserve, where he was a public information specialist.

1932

Emanuel Athanas retired last January after 30 years of service with the U.S. Information Agency as commentator and radio program director for the Voice of America. Previously he had retired as president of Elviana (Hellenic Industrial Development) Enterprises. He and his wife plan to "commute" between his summer home in his native island of Rhodes, Greece and his permanent home in Virginia during his retirement years.

1933

Having retired from Raytheon Co., **Harry Clarke** says he is now working hard to become a golfer as a second career. . . . **John Henrickson** has purchased a retirement home in Sun City Center, Fla. "on the 18th fairway of a golf course." His new address is: 1406 Fox Hills Drive, Sun City Center, Fla., 33570. . . . In spite of the cold Florida winter, **H. Edward Perkins** and his wife made it to the golf course a total of 195 times! . . . **James Rafter** writes that he has "retired from the steel business and love every lazy moment of it."

1934

Kenneth Bennett's daughter, Fredricka, a magna cum laude graduate of Drew University, has a fellowship and is studying for her doctorate in mathematics at the University of Massachusetts in Amherst. . . . **Everett Sellew** retired May 1st from DuPont Co., Wilmington, Delaware, where he was in inventory management. He finds retirement great but busy. . . . **George Stevens** retired last year as field manager for the Pittsburgh territory of Industrial Risk Insurers.

1935

▶*Married:* **Frederick Swan** to Carolyn Miller on November 27, 1976.

Since retiring from the Bureau of Reclamation in Denver, Colo., **Maurice Day** has been engaged in foreign consulting work on dams, water conveyance structures and navigation locks. He has worked in Lebanon and Manila and leaves shortly for South Korea. . . . Last year **Phillip Dean** retired from Northeast Utilities Service Co. He was with the firm nearly 41 years. He keeps busy with sailing in the summer, skiing in the winter, and church activities. . . . **Sam Hakam** is currently active in product liability corrective legislation. He spoke at a seminar in Palo Alto, Calif. in March which was sponsored by New Jersey Institute of Technology. . . .

Kenneth Linell, who has been taking courses at the Tuck Graduate School of Business Administration at Dartmouth writes: "I notice that WPI graduates enrolled there do very well in competition with their classmates from all over the country and are highly regarded." . . . **Howard Nordlund** is in his fourth year of retirement and is "happily settled in the beautiful Northwest," Seattle, "rather than in the east, my birthplace." He writes that in retrospect he has been the recipient of more than his share of good fortune. For many years he was manager of the engineering department at Safeco Insurance Co. of America.

George Makela has returned from a trip along the Alcan Highway to Fairbanks, Alaska. He visited Pt. Barrow and the Kenai. "Wonderful scenery and fishing," he reports. . . . **Homer Morrison** says he is "sloughing off the big mantle of being general manager of an $8 million collection of corporate service groups to become director of special projects." Morrison, who expects to retire soon, explains that his new post at Union Carbide is like being editor-in-chief of ten *Peddlers* simultaneously.

1937

W. Robert Powers has been elected one of the first two fellows of the Society of Fire Protection Engineers. Election as a fellow is made "in recognition of significant accomplishment and stature in engineering." During his 30 years as a fire protection engineer, Powers has been associated with Industrial Risk Insurers, U.S. Air Force, Air Reduction Research Corporation, and the Furriers' Customers Reinsurance Syndicate. Among his extensive published fire reports is one on the World Trade Center in New York, a version of which appeared in the August 1975 **Journal**. He helped found the New York chapter of SFPE and was elected first president. He is also active with NFPA and serves as chairman of the board of governors of the Advisory Engineering Council, American Insurance Association. Currently he is superintendent of the Bureau of Fire Prevention and Public Relations for the New York Board of Fire Underwriters.

1940

Albert Howell is convalescing from open heart surgery performed in March. . . . **Benedict Kaveckas** is employed by Gould, Inc., Newburyport, Mass., where he is with the circuit protection division. . . . **Judson Lowd,** president of C-E Natco Company, has been appointed to the board of trustees at the University of Tulsa in Oklahoma. He also serves as a director of the Metropolitan Tulsa Chamber of Commerce and the Tulsa Area United Way. . . . **Sumner Meiselman** does consulting relative to all aspects and types of motor vehicles. His work ranges from concern with causes of accidents to defects in design, manufacturing and operation, to concern with fuel economy. Previously he was director of engineering and technology for the American Automobile Association and was also involved with government work.

Lawrence Neale, former professor of hydraulic engineering and director of the Alden Research Labs at WPI, has joined the staff of Chas. T. Main, Inc., Boston, as a flow specialist. His background includes flow measurement and fluid machinery related to power generation and industrial processes. He has written over thirty publications on flow design and testing of structures and machinery. Currently an adjunct professor at WPI, Neale is a registered professional engineer in Massachusetts. He is a fellow of ASCE and ASME, a member of the Boston Society of Civil Engineers and the International Association of Hydraulic Research. He also belongs to Sigma Xi, Pi Tau Sigma, and Chi Epsilon.

1941

Bob Dean's daughter Julie has completed her Peace Corps tour in the Philippines and is now on her way home via Southeast Asia, India, Greece, and Israel. Bob owns Dean Machinery Corp., Framingham, Mass.

1942

Harold Crane, who is completing his 35th year at NASA Langley Research Center as a flight research engineer, is currently working with a modified Piper twin engine Seneca.

1943

Henry Durick tried to retire from FMC Corporation four years ago. He planned to relax with his sailboat, his motor boat, and his wife at their home in the Florida Keys. Somehow things didn't work out. After three months of relaxation, FMC asked if he'd supervise the installation of a grapefruit packing house in Dominica. "My first mistake was saying 'yes'," Durick says. The next thing he knew he was managing the grapefruit plant through its first working season "at the request of the Dominican government."

Meanwhile, FMC invited him to supervise the installation of a grapefruit juice cannery in Dominica, "because I was so familiar with Dominican suppliers, etc." Of course he didn't refuse. Next, he could not refuse FMC when it asked him to manage the installation of a cannery in Cyprus.

As soon as he returned from Cyprus, the Minister of Economic Affairs in Suriname phoned (at FMC's suggestion) asking that he help reactivate an old tropical fruit juice cannery in his country. So, currently, Durick is working in Suriname under a two-year contract. His wife and he have rented out their Florida home and sold their boats.

"There goes our retirement," he writes. "We do find living and working in the developing nations very rewarding in many ways, however." The Duricks enjoy meeting the local people as well as working with engineers from many other nations who are also in the area on short-term contracts.

Glennon Hill holds the post of regional sales manager for Garlock Inc., a division of Colt Industries. Daughter Kim is a junior at Ohio State.

1944

John Underhill has been with Exxon for thirty years. Presently he is nurturing the scheme of having 50,000 barrels of petroleum products in the right places at the right times throughout the six westernmost states. He is located in Southern California.

1945

Dr. **Carl Clark** and his wife Betty recently returned from a trip to England where they visited their son, Austin, who is completing his second year at Oxford on a Marshall Fellowship. Clark serves as director of the Community Health Resources Project and as principal investigator of the Health Satellite project for Monsour Medicine Foundation, Baltimore, Md. Some of the objectives of the project are to enrich emergency medical technicians in Appalachia through refresher courses given via satellite video broadcasts; to inform the public about developments in emergency medical services; and to gain experience in satellite broadcasting in health and medical education.

William Densmore retired from the Massachusetts Board of Education in March following seven years of service. During his years as a board member, his service was characterized by a concern for education on the state and local levels, support for increased citizen involvement in the operation of the schools, and by a commitment to the implementation of Chapter 766, the special education law. In June he received the Worcester Public Schools Administrators' Association annual civic award in recognition of his contributions to education. He now intends to concentrate on his duties as vice president (and general manager of the grinding wheel division) at Norton Co. and continue his involvement with the Citizen Resource Center and Career Education Consortium.

Densmore is a member of the board of advisors for the department of management at WPI. He served as chairman of the Organizational Study Commission of the WPI Alumni Association and was responsible for the far-reaching report, which has come to be known as the Densmore Report, which has led to an increased level of alumni involvement and interaction. Last year he received WPI's Schwieger Award for professional achievement.

William Howard, vice president of the Abrasives Marketing Group at Norton Co., Worcester, has been elected a member of the executive committee of the American Supply and Machinery Manufacturers' Association, Inc. He participated in the Advanced Management Program at Harvard Business School and has been associated with numerous technical and civic programs. Recently he has been a member of the ASMMA board of directors. The association has 525 members which are manufacturers of a wide variety of products used in industry and which are located throughout the U.S.

Formerly manager of the engineering research laboratories, **Charles Oickle, Jr.** is now assistant director of research for division coordination at United Technologies Research Center in East Hartford, Conn. He is responsible for directing and coordinating research programs involving the corporation's divisions and subsidiaries. Oickle has been with the Research Center since 1946.

ARP

THE NEXT TIME you listen to the Rolling Stones, Dave Brubeck, or Joni Mitchell and hear what you consider to be a conventional orchestra in the background, you could be wrong. Dead wrong. Chances are the "orchestra," or at least part of it, is an ARP music synthesizer.

Rock and pop celebrities such as the Stones and Joni Mitchell, and many "average" musicians too, are snapping up the synthesizers like hot cakes. ARP Instruments, Inc. in Lexington, Massachusetts, can barely keep up with the orders. All of this makes ALAN PEARLMAN, '48, very happy. And well it might. Last year his company cornered 40 percent of the $13 million U.S. manufacturers' sales of synthesizers to domestic dealers and foreign distributors.

Why all the fuss about Al Pearlman and ARP Synthesizers? Well, from the point of view of historical fact, it all started in the year 1948 at WPI when Al Pearlman was a senior E.E. student working on an undergraduate project. His experiments in electronic music led him to present a paper entitled, "A New Approach to Electronic Musical Instruments" at a Northeast District Meeting of the AIEE (now merged with IEEE). Although his interest in musical instruments continued, Al Pearlman worked for a number of years in the field of industrial electronics and founded an earlier company, NEXUS Research Labs, which was subsequently sold to a large conglomerate.

During the 21 years between graduating from WPI and founding ARP Instruments, Inc., Pearlman maintained a strong interest in music, and kept an eye open for opportunities to work in the field as a technological entrepreneur.

By 1969 there were a number of small companies making advanced electronic systems called "synthesizers," which were used by experimenters and avant-garde composers to create unusual music on recording tape. Feeling that synthesizers could be improved to the point where they could be used as "live" performance instruments by average musicians, Al talked his ideas up with a number of technical, musical, legal, and financial associates, and started a small company in Newton, Massachusetts, to develop, manufacture, and market improved music synthesizers.

Al Pearlman and a number of talented engineers, including cofounder David Friend (and Executive Vice President) first developed a large modular synthesizer to compete with the earlier Buchla and Moog Synthesizers of the 1960's. By mid-1970 they began to manufacture and market their own first "magnificent music monster." The Model 2500 system had a main console two feet high by five feet long by one foot deep, not including optional half-size "wing cabinets" for housing extra modules and stackable keyboards. The cost of the deluxe version with "all the extras" was a whopping $20,000.

The Pearlman/Friend synthesizer, however, had some vastly improved features compared to earlier units. For example, through "human engineering" the instrument was designed for musicians to play, instead of a laboratory machine for avant-garde composers to experiment with. The controls were arranged logically so that functions were readily apparent at a glance. In contrast, earlier competitive units were a "patchcord jungle" in which interconnections and control settings were lost to sight.

A major improvement over earlier synthesizers was the stability of the voltage controlled oscillators, which had to be able to be swept, *if desired*, over the entire range of audio frequencies, and yet had to be stable enough to stay in tune within a fraction of a musical semitone for long

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periods of time. Earlier synthesizers drifted so badly that they could only be used for making short sections of tape recordings lasting a few minutes.

To further "humanize" their creation, Al Pearlman and Dave Friend decided to change its name. Model 2500 sounded too cold. ARP 2500 was better. The letters ARP stand for Alan Robert Pearlman. They also sound like "harp."

Dave Friend, who has valuable contacts in the upper strata of the music world, carted the first ARP down to New York where he installed it in a plush suite at the posh St. Moritz Hotel. All sorts of big names dropped by. An Italian film producer bought the first unit, a stripped down, economy version, for $10,000.

Proceeds from the sales of the first Model 2500 units went into the development of the second product, the ARP 2600. Proceeds from the 2600 sales went toward the development of the third product, the ARP Odyssey. Before long, the tiny outfit, then headquartered in Newton, was selling ARP Synthesizers about as fast as it could make them. Currently, the company, now headquartered in a modern, 50,000 square foot building in Lexington, Massachusetts, makes five relatively compact keyboard model synthesizers which are available in prices ranging from a modest $995 to $3195 for the top-of-the-line 2600 model.

Recently, ARP Instruments, Inc. has come out with an entirely new kind of synthesizer which may have an even greater impact on the musical instrument industry than the present line of keyboard-operated synthesizers. At a recent trade convention, ARP unveiled the "Avatar," which is a synthesizer played from a guitar rather than from a keyboard. With it, a guitarist can sound like a flute or clarinet or trumpet player or a "way-out" instrument unlike any other, or (of course) a fine guitar.

When you ask Al Pearlman about the "guitar synthesizer," he usually says, "In all honesty, I didn't have anything to do with developing it . . . but it's great!!! Since Dave Friend and the other ARP engineers conceived of it and developed it on their own without any inputs from me, I feel more like a proud grandfather than like a father."

Where is this all leading? If you ask Al Pearlman he might say, "Technology has always played an important role in the fine arts. Music is no exception. Many 'traditional' instruments such as brass wind instruments, pianos, and organs depended on relatively advanced mechanical technology such as metallurgy, metal-fabrication techniques, etc. Sophisticated electronic instruments are evolutionary in the sense that they are outgrowths of both acoustical instrument technology and audio communications and recording technologies. In a way, however, sophisticated electronic musical instruments are revolutionary when we consider that for the first time in the history of music we can have instruments played by different techniques which can make the same sounds. In other words, we find that we can make *musical instrument controllers,* some of which are played with a keyboard, some of which are played by plucking a string, and others which are played by blowing into a mouthpiece; all of which can be designed to make a wide range of timbres (sound qualities), *independent of the type of instrument controller used.* This allows a musician who develops one kind of skill (say keyboard or wind instrument or string instrument) to play a musical part written for another kind of instrument *and to sound like that other instrument.* All of this will make musicians change their ways of thinking about instruments, but will not, in any way, make musicians obsolete."

1946

Walt Bank has been elected first vice president and member of the board of directors of the National Energy Resources Organization (NERO), headquartered in Washington, D.C. . . . **Walter Muller** was recently promoted to regional plant manager in charge of four Chevrolet manufacturing facilities in New York, Indiana, and Ohio. Formerly he was product program manager on Chevrolet's Central Office Manufacturing staff, a post he's held since 1975. In his new position he is responsible for the operations of the Massena (NY) aluminum die casting plant, the Parma (Ohio) transmission and prop shaft plant, and the transmission plants at Muncie, Ind. and Toledo, Ohio. He joined the firm in 1949 at the Toledo transmission plant.

1947

Leo Geary's three older daughters have each presented him with a grandson. Son Kevin is a junior in college. Son Sean is with Future Farmers of America. Only two children now live at home. . . . **Vincent Zike** is now manager of controls engineering at KHC Industries, Inc., in Bloomfield, Conn. He assumed his new position in February.

1948

Paul Anderson holds the post of southeast regional environmental engineer in the Massachusetts Department of Environmental Quality Engineering, Lakeville. . . . **Malcolm Hinckley** recently received his professional engineer's license for the state of Connecticut. He has been a registered land surveyor since 1959.

1949

Paul Beaudry and his wife are enjoying life in the Texas "hill country," where he is now the IBM project manager for new construction in Austin. The Beaudrys have four grandchildren. . . . **Russell Bradlaw** is currently in Karachi, Pakistan supervising the construction of a 670-bed hospital and medical center for the Turner Company. On a recent visit to Norwich, Conn., he reported that although Pakistan's political crisis has forced the imposition of martial law in some cities, the hospital project is moving ahead with a minimum of difficulty. . . . **Arthur Dinsmoor,** who is district superintendent for Marshall R. Young Oil Co., Midland, Texas, was on campus June 9th and visited Prof. Donald Zwiep, head of the department of mechanical engineering. Mr. Dinsmoor was interested in a follow-up of the 1970 Clean Air Car Race in which WPI participated.

Harold Gruen has been named general manager of the California-based Felker Operations of Bay State Abrasives. He joined the company in 1955 and most recently was chief engineer. Gruen, who is also a graduate of WPI's School of Industrial Management, belongs to the National Society of Professional Engineers and the Environmental & Safety Committee of the Grinding Wheel Institute. He is a past vice president of the Massachusetts Society of Professional Engineers. . . . **John Saunier** is with CEA Associates, consultants and executive recruiters, and Clarke Employment Agency, Inc. in Metuchen, N.J. CEA deals mainly with executive engineering and scientific personnel for the chemical pharmaceutical specialties industries. Clarke serves local industry at all levels. Mrs. Saunier is an employment counselor with Snelling & Snelling in Plainfield. . . . **Donald Weikman's** correct position is vice president of customer relations and marketing for Tennessee Gas Transmission Co., not president, as previously reported. The company is a subsidiary corporation in the Pipeline Division of Tenneco, Inc. in Houston, Texas.

1950

Henry Styskal's son Gary will be a freshman at WPI this fall. . . . Presently **Joseph Toegemann** is a member of the development department of Goodyear Tire & Rubber in New Bedford, Mass., where he works in the polymer chemistry field.

1951

Vung-Kwan (Victor) Chun has written and published a book titled *American PT Boats in World War II,* a comprehensive documentary volume on U.S. PT boat operations. The story is told through 100 excellent photos and many fold-out scale drawings of deck plans and profiles. The material was recently declassified for the author. The book may be obtained by writing: Victor Chun, 2584 Wellesley Ave., Los Angeles, CA 90064. . . . **Carl Johansson,** who had been with Pfizer, Inc. for 24 years, is currently a staff specialist for A. G. McKee & Co., Chicago, Ill. He and his wife Nilla have two daughters and two sons. One daughter is studying mathematics at Stanford.

1952

Prof. **Robert Goff** has been appointed acting dean of the University of Rhode Island College of Engineering. He has been with the department of mechanical engineering at URI since 1958 and was named associate dean of the college in 1975. Earlier he had taught at Cornell University. . . . **Stuart Hettinger** is now deputy manager of the fire control systems program office at Raytheon Company's equipment division in Wayland, Mass. He will be responsible for assisting the fire control systems program office manager in directing and controlling of Tartar-C, Tartar-D and other related programs. Since joining the firm in 1966, Hettinger has managed Tartar-C, signal data converter, and Tartar-D programs. He is a graduate of Raytheon's advanced management program.

Chester Inman, Jr. has been named manager of facilities in the Kodak office, Rochester, N.Y. He joined the company in 1955 as an industrial engineer at Kodak Park. He is the son of Chet Inman, Sr., '14. . . . **Lee Tuomenoksa,** who is with Bell Laboratories, Naperville, Ill., was recently appointed director of No. 4 ESS Switching System Laboratory. Following graduation from WPI and MIT, Tuomenoksa started at Bell Labs in the development of the Morris Experimental Electronic Switching System. In 1974 he was named assistant director of No. 4 ESS Switching System Laboratory. He says that the present No. 4 ESS system uses time division switching and required 2500 man years and cost $400 million through the first installation. About one half the cost was for the development of manufacturing for new technology. System enhancement and additional features will continue through complete conversion to No. 4 ESS scheduled for 1990.

1953

Richard Davis, president of the Thermos Division of King-Seeley Thermos Co., Norwich, Conn., has been named a co-chairman of the Major Firms Corporate Division of the 1977 United Way Campaign. Currently a member of U.W.'s executive committee and board of directors, Davis also serves on the board of directors of the Norwich Area Chamber of Commerce and as vice president of WPI's Alumni Association. . . . Prof. **Robert Fitzgerald** of the civil engineering department at WPI conducted a five-day seminar covering new engineering methods for evaluating building fire safety at Gordon Library in March. Twenty-five industrial and government fire safety and fire protection specialists attended the seminar, which was devised to help participants develop skills in fire safety analysis and design.

1954

Astilleros Espanoles, S.A. (AESA) with headquarters in Madrid, Spain, has announced the appointment of **Wesley Wheeler,** president of Wesley D. Wheeler Associates, Ltd., International Maritime Consultants, as its exclusive U.S. representative for ship construction and repair. AESA is the largest shipbuilder and fourth largest employer in Spain. It has 16 separate divisions, including eight shipyards and eight other facilities which include a slow-speed diesel manufacturer and producers of steam turbines and forgings. Wheeler, who lived in Spain for nearly four years, has had a relationship with Astilleros dating back to 1961. His firm is located in New York City. His son Wesley is a senior at WPI. Son Jonathan is an incoming freshman.

1955

Alan Ede continues as associate professor of industrial education at Oregon State. He says he "moonlights" as president of Dirigo Electronics Engineering and "starlights" as banjo, guitar, and mandolin instructor for the Corvallis Parks and Recreation Department. . . . Recently **Robert Holden** was reelected to the Democratic county central committee in the 77th assembly district coming in first in a field of nine candidates. A professor at Grossmont College, Holden resides in San Diego, Calif.

Tarek Shawaf, who ten years ago set up the first local consulting engineering firm in Saudi Arabia (Saudconsult) was in Seattle, Washington in May seeking American business investors for his country. Shawaf, visiting Seattle at his government's request, is "almost" the only Saudi delegation member from the private sector. He was asked to join the group because he does consulting engineering business with many American firms and because he graduated from WPI. Shawaf's company employs more than 200 people, including 75 graduate engineers, and designs and supervises projects such as roads, hospitals, dams, bridges, sewerage and water systems, and irrigation and drainage systems that run into billions of dollars.

1956

Richard Hajec serves as development engineer at Spencer Turbine Co. in Windsor, Conn. . . . **Lawrence Horrigan, Jr.** has been promoted to construction manager with Ebasco Services, Inc. He will relocate to the firm's regional office in Houston, Texas.

Let's see . . . you put tab A into slot B . . . no, wait a minute . . . .

To most people a bottle stopper is a bottle stopper. To Bob Brass, '57 however, the common rubber stopper has become a springboard to a creative new construction toy which is expected to become a big seller this Christmas.

"It all started four years ago when I was having a cold drink on a hot day," he says. "I was fiddling with one of those plunger stoppers that you use to cap half-empty soda bottles, when I got an idea. Why not make a construction set with plunger-type rubber rivets for kids?"

When Brass gets an idea, he doesn't daydream about it. He does something about it. Over a period of eighteen months he worked in his home studio developing a plastic construction system utilizing a revolutionary new reusable joining mechanism—a hollow rubber rivet which expands and contracts like a bottle stopper.

"The system is practically guaranteed not to frustrate kids who are all thumbs," he reports. "It's a lot easier to manage than the conventional metal nuts and bolts sets. Also, parts may be assembled and taken apart quickly."

Parker Brothers, famous for games (*Monopoly*) and Nerf products, was equally enthusiastic about the new toy when Brass demonstrated the prototype to company officials. They had been looking for a different item to expand their line, and Brass and his construction set came along at just the right time. They were especially impressed with the set because it uses a nutless, boltless building process consisting of a hand-powered tool which fastens multicolored plastic parts with small, reusable, rubber rivets. Three months after the demonstration, the firm contracted with the inventor to produce the set by 1977 under the name RIVITON.

Leaving nothing to chance, Parker play-tested several versions of the set with 125 Boston boys and girls, with a tally of some 5,000 children and adults ultimately being involved in home and/or laboratory testing situations. Problems such as a temperamental riveting tool and click lock were soon discovered and corrected. Both Parker Brothers and Brass were encouraged by the play-testing survey.

"We found out that many of the kids didn't even have to read the instruction book," says Brass. "They made whatever they wanted without having to follow directions of any kind." He smiles. "And the parents, well, they thought that Riviton was a great babysitter."

A Parker Brothers spokesman paid the part-time inventor (he's a full-time executive in a multinational corporation) the supreme compliment when discussing the commercial possibilities of his creation. "We feel Riviton will capture a significant share of the construction toy business," he said. "And that's a $100 million-a-year market."

Brass, who as a free-lancer currently has about 30 popular toys, games, and magic sets licensed for production and sale at various companies throughout the world, is considerably buoyed up by Parker Brothers' enthusiasm. In fact, everyone associated with Riviton is hoping that another Monopoly-style success story is in the making.

1957

Dr. **Robert Crane** wrote "Ionospheric Scintillation" which appeared in a recent issue of *Proceedings of the IEEE.* He currently serves as manager of the Atmospheric Sciences Section of the Earth Resources and Atmospheric Physics Division of Environmental Research and Technology, Inc., Concord, Mass. He was elected vice chairman of the U.S. Commission F Wave Phenomena in Nonionized Media, International Union of Radio Science. . . . **Ronald Samiljan** and his family have returned from West Germany after an eight-month stay. Samiljan represented Scientific Design, which together with a West German firm, is building a plant in the U.S.S.R. He served as a consultant on the project. . . . Formerly a vice president at Bundy Corporation, **Richard Silven** has now been appointed vice president of corporate planning and development at Harvey Hubbell, Incorporated, Orange, Conn. He will be responsible for the company's acquisition and corporate development activities. From 1957 to 1966 he was with Texas Instruments in various positions. Hubbell is a major manufacturer of quality electrical products for commercial, industrial, and utility markets in the U.S. and abroad.

1958

Dr. **Frank DeFalco** has been named Outstanding Teacher for 1977 at WPI. He is associate professor of civil engineering. . . . **Bradley McKenzie** is now general manager of Masoneilan Regulator Co., Norwood, Mass. . . . **Fred Rossi,** SIM, has been appointed production superintendent at Bay State Abrasives, a division of Dresser Industries, Inc. Previously he had been general foreman of the truing and bushing area at the plant. Starting at Bay State in 1935, he was later promoted to foreman, then to general foreman in 1954. . . . **Stu Staples** helped to put on the Tucson Open golf tournament. He owns Staples Building and Development, Inc.

GE's Gas Turbine Marketing Department recently announced the appointment of **Douglas Todd** as manager of STAG market development. Todd will have multi-divisional responsibilities for developing the STAG business on a worldwide basis. He joined GE as a sales manager in the heat transfer products department in South Portland, Me. in 1966. Later he was with GE in Lynn, Mass. before going to Schenectady.

. . . **Dick Wiinikainen,** coordinator of plastics flammability activities at Foster Grant Co., Leominster, Mass., serves as the chairman of the sections committee for *Plastics Engineering.* The committee monitors section intercommunication and policies with a view toward achieving uniformity. He is also the present chairman of the engineering properties and structures division and has been named president of the Pioneer Valley section, as well as the section's councilman. He is technical committee chairman of SPI's furniture division.

1959

Commander **Robert Allen** was scheduled to become the commanding officer of VAW-123 in April. VAW-123 is an Airborne Early Warning Squadron flying the Grumman built E-2C "Hawkeyes" and is assigned to the airwing aboard the carrier USS Saratoga. . . . Dr. **Joseph Bronzino,** director of the joint biomedical engineering program of Trinity College and the Hartford (Conn.) Graduate Center, has been named the first incumbent of the Roosa Chair at Trinity. A professor of electrical engineering, Bronzino also serves as codirector of the Clinical Engineering Internship Program at the Hartford and St. Francis Hospitals and is a clinical associate at the University of Connecticut Health Center. He is a research associate at the Institute of Living and a licensed professional engineer. Dr. Vernon D. Roosa, the noted inventor and industrial designer who established the professorial chair of applied science, is an adjunct professor at Trinity and holds over 300 patents.

V. James Cinquina serves as executive vice president of Gary S. Bell Associates, executive search consultants in the health care/life sciences field. . . . **David Daubney** holds a new post as manager of mechanical engineering at Astra Pharmaceutical Products, Inc. in Worcester. . . . Home & Land Co., Realtors, has announced the appointment of **Anthony Engstrom** of Terra Linda, Calif. as the firm's new vice president of marketing. Engstrom belongs to the Marin County Board of Realtors Million Dollar Club. Formerly he was manager of Fox & Carskadon's San Rafael office. . . . **William Shumway,** SIM, was recently elected vice president of Woodbury & Co., Inc., Worcester. Woodbury is the largest U.S. company devoted exclusively to the custom design and production of engraved and lithographed commercial stationery. . . . **Ed Wysocki's** son Ed, Jr. will be entering WPI this fall. Ed is an assistant design project engineer at Pratt & Whitney Aircraft.

1960

John Czertak is a project engineer with Della Construction (highway) in Enfield, Conn. . . . **Frank Droms** is president of F. A. Droms Associates, Dallas, Texas. . . . **John Haavisto** serves as a teaching fellow in the physics department at Boston University. He is completing research in theoretical physics and expects to receive his Ph.D. in December. . . . LTC **Robert Mulholland, Jr.,** USA, has been reassigned to the U.S.—European Command in Stuttgart, Germany. . . . **Dave Reilly,** all 6'3" and 384 pounds of him (including equipment), became the world's champion heavyweight skier in his fourth competition at Sugarloaf Mountain, Carrabassett Valley, Maine, last winter. He ran the 35-second course in 37.5 seconds. Reilly is an instructor with the Skip Barber School of Performance Driving in Boxboro, Mass., where he teaches anti-terrorist and anti-kidnapping driving techniques to chauffeurs of corporation executives. . . . **George Schoen** has been advanced to section head of miniature and instrument product engineering at the Barden Corp., Danbury, Conn. . . . **Thomas Waage** is president of Waage Electric Inc., Kenilworth, N.J. He is interested in ocean racing and sailboats and writes: "We are doing well."

1961

David Baker has been elected a director of the Foxboro (Mass.) Federal Savings & Loan Association. He is employed by the Foxboro Company, where he is responsible for industry and application sales, power sales, education and marketing services and inter-area sales development. A member of the Instrument Society of America, he also has served on the Foxboro Advisory Committee and Personnel Wage Board. . . . **Roger Borden,** associate professor of mechanical engineering at WPI, has completed a seven-year part-time program of study and has received a "certificate of completion" for ordained ministry from the Methodist Department of Education, Board of Ordained Ministry at Nashville. This current status qualifies him for ministerial membership in full connection with the Southern New England Conference of the United Methodist Church.

John Buckley, president of Buckley & Co., a management consulting firm in Wellesley Hills, Mass., spoke on "New Products: The Promise and the Pitfalls" at the April meeting of the Rhode Island Chapter of SBANE. . . . **Ronald Dufries** has transferred to the wire machinery department as sales engineer at Morgan Construction Co., Worcester. . . . Major **Norman Ginsburg** has left Germany for an assignment at Ft. Monmouth, N.J. Along the way he'll be attending a five-month course at the Defense Systems Management College at Ft. Belvoir. . . . Continuing with Bristol Meyers as director of business planning, international division, **Svend Pelch** still manages to take some time off for one of his favorite pastimes, sailing. He is located in Westport, Conn.

Richard Taylor holds the post of New England manager for Colorado Video, Inc., a company that manufactures video products for research and development, education and manufacturing, and narrow band video. . . . **David Youden** was recently promoted to quality control manager at Cone-Blanchard Machine Co. in Windsor, Vt. In 1973 he joined the firm as a product development engineer. Formerly he was employed for twelve years at Heald Machine Co., Worcester. He had also worked for two years with Ocean Systems in Reston, Va.

Four WPI alumni were elected to head the Worcester Engineering Society at the annual meeting held last spring in Leominster. **Richard Leonard,** '37, manager of the proposal engineering department at Riley Stoker Corp., was elected president. Other officers elected were: **Lawrence Neale,** '40 (currently a flow specialist for Chas. T. Main), first vice president; **Francis S. Harvey,** '37 (president of Harvey & Tracy Associates, Inc.), second vice president; and **Anthony Ruksnaitis,** '53 (WPI college engineer), treasurer.

The Worcester Engineering Society is composed of members of eight professional engineering societies with a total membership of about 2,000 members.

1962

Dr. **Michael Davis** is assistant professor of radiology at Harvard Medical School and clinical associate professor of medicinal chemistry and pharmacology at Northeastern College of Pharmacy and Allied Health Professions. Also, he is director of Harvard Medical School's joint program in nuclear medicine central radiopharmacy supplying six Harvard affiliated hospitals with all their daily needs in radiodiagnostic drugs. . . . **M. Philip DeCaprio** has been promoted to staff engineer in the system engineering department of Northeast Utilities, Berlin, Conn. He had been a senior engineer in the system engineering and construction department since 1973. He serves as chairman of the Charter Revision Commission in Hamden. . . . Major **Jay Hochstaine** is currently reassigned to Ft. Huachuca, Arizona.

William Krein has been named manager of the newly established finance and division support operation in GE's Installation and Service Engineering Division (I&SE). He will be responsible for managing the financial operations of I&SE and the division's projects engineering operations. Also, he will manage support activities including contract administration, marketing communications, training, quality and safety assurance, and management information systems. Krein joined GE in 1966 and later had assignments in the steam turbine-generator department, power circuit breaker section, and the corporate audit staff. In 1972 he was appointed manager of financial operations analysis in the group finance operation of the power generation business group. Prior to his promotion he was manager of the finance operation at I&SE.

John Matson was promoted to the post of district sales manager in the machinery and systems division of Carrier Air Conditioning, Falls Church, Va. Previously he was branch manager for Carrier Air Conditioning in Syracuse, N.Y. . . . **Stephen Winer** has assumed the post of manager of market development for fine and industrial chemicals at J. T. Baker Chemical Co., Phillipsburg, N.J. Formerly he was manager of product development for the chemical division of Mallinckrodt, Inc. and was responsible for several product lines with the Food Products Division. At Baker Chemical he will help develop major new business emphasing proprietary products and/or processes in growth markets. He belongs to the Institute of Food Technologists and the Chemical Marketing Research Association.

1963

Ralph Gelling has just joined Avco Corporation as patent counsel to several divisions. He is headquartered in Wilmington, Mass. . . . **Charles Goddard** continues as associate sanitary engineer with the New York State Department of Environmental Conservation. He, his wife Karen, and three boys work hard keeping up their "old" house. . . . **Bob Gowdy** serves as assistant professor at the University of Maryland in the theoretical general relativity group of the physics department. He was a Sloan fellow from 1974 to 1976 and spent six months at the Mathematical Institute of Oxford University two years ago. . . . **Edward Kalinowski** recently took a new position with Eli Lilly International Corp. as manager of personnel for the United Kingdom and Scandinavia. Earlier he was manager of European requirements for Elizabeth Arden Corp., a subsidiary of Lilly Co. The Kalinowskis have lived in London since 1973.

Robert Mellor was recently promoted to district superintendent at Massachusetts Electric. Formerly he was assistant superintendent at the Hopedale office. He is now working out of the Attleboro base of the company. He is a professional engineer in Massachusetts. . . . **Ed Polewarczyk** currently holds the post of president of materials management for the space division of Rockwell International, Downey, Calif., and is stationed at Hamilton Standard. He is involved with environmental systems for the space shuttle orbiter . . . . **David Woodman** of Wayland, Mass. operates his own consulting business. He is concerned with pollution and energy saving work.

1964

▶*Married:* **Ralph F. Bedford** and Elaine C. Ward on February 19, 1977 in Colorado Springs, Colorado. The groom is a loan officer for School District II Federal Credit Union in Colorado Springs. . . . **Larry Hull** to Miss Irena L. Voigt of Greenbelt, Maryland on April 2, 1977. Hull is with the Goddard Space Flight Center in Greenbelt.

Harry Cunningham, SIM, has been promoted to vice president of manufacturing at Bay State Abrasives Division of Dresser Industries in Westboro, Mass. He began work at the firm in 1956 and has been production superintendent since 1965.

While vacationing in Honolulu, **Joe LaCava,** got in touch with **Ken West,** "who is enjoying his island paradise by coaching schoolboy soccer and entering a few marathons." West works for Hawaiian Electric Co. LaCava, who is with Bell Labs in Reynoldsburg, Ohio, says that he is trying to convince his colleagues that good man/machine interfaces are more important than development schedules. Sometimes he considers it a trying task because the payoff is not immediately measurable.

Thomas McGee and his partner have built a new plant for their firm, Petroleum Meter & Pump Co., in Avon, Conn. McGee, who is vice president writes: "Our business has been doing very well."

1965

Recently **Marvin Berger** became product manager at American Used Computer Corporation in Boston. . . . **Henry Schneck** serves as a senior civil engineer in charge of highway and bridge construction projects for the Suffolk County Department of Public Works. He resides in Holbrook, Long Island, N.Y.

1966

▶*Born:* to Dr. and Mrs. **Donald Foley** a son Tom on Father's Day 1976. "Dad assisted," Foley writes. The Foleys now have three children. Foley's company, Pattern Analysis & Recognition, has grown from 6 to 112 personnel. He serves as vice president for research and development. . . . to Mr. and Mrs. **Brendan Geelan** a son, Matthew, on February 6, 1977. Matthew has a sister, Christa, 5. Geelan is a research engineer for Uniroyal Chemical in Naugatuck, Conn. . . . to Mr. and Mrs. **Paul Malnati** their first child a son, Brian Paul, on March 16, 1977. Malnati, who lives in Delran, N.J., is a self-employed consultant involved with computer systems and peripheral hardware. . . . to Mr. and Mrs. **Earl Sparks III** their third child, a daughter, on November 30, 1976. Sparks is a project manager for IMC Chemical Group and will be in Boston this fall to handle a multi-million dollar project for the company.

Edward Bilzerian, SIM, has been named as a member of the Worcester Airport Commission for a three-year term. A division controller at Bay State Abrasives in Westboro, Mass., he has served as national director and recent past president of the Worcester chapter of the American Society of Management. He has been president of the Interfraternity Foundation at Clark University, past director of the Jesse Burkett Little League, and incorporator of Boy Scout Troop 48.

Dr. **Thomas Curry** is the current science advisor to Rear Admiral Charles H. Griffiths, commander of the submarine force in the Pacific. A supervisory electronics engineer at the Naval Underwater System Center (NUSC), he was selected for the post because of his broad experience with submarine sensors. He is also an expert in total weapon system procurement and development process. In his new position, Curry will serve as the prime interface between the fleet command, NUSC, and the Naval Laboratories on science advisory programs and command research, development, test, and evaluation. He, his wife, and three daughters will reside in Hawaii for approximately a year.

Dr. **Fred Erskine III,** visiting assistant professor of astronomy at Villanova University, received his Ph.D. in physics from the University of Iowa last December. . . . **John Sherrick** was recently promoted to professor in the department of mathematics, science and technology at Schenectady (N.Y.) County Community College. He had been associate professor. Prior to joining SCCC in 1970, Sherrick had taught at State University Agricultural and Technical College at Alfred and at WPI. He is a former vice president of the Schenectady Professional Engineering Society and belongs to IEEE, ASEE, New York State Society of Professional Engineers, New York State Engineering Technology Association, and the National Society of Professional Engineers. He is also a member of Tau Beta Pi, Etta Kappa Nu, Pi Delta Epsilon, and Sigma Xi. . . . **Ronald Swers** works as an industrial applications engineer at GE in Lynn, Mass. He, his wife, Gwen, and two sons live in Salem.

1967

▶*Married:* **James C. Lefevre** and Miss Patricia E. Currie on May 7, 1977 in Dalton, New Hampshire. The bride graduated from Bryant & Stratton College, Boston, and is employed at Littleton Stamp & Coin Co., Inc. The bridegroom is a self-employed civil engineer.

▶*Born:* to Mr. and Mrs. **Bradford A. Johnson** a daughter, Melissa Ann, on September 22, 1976. Johnson has been transferred to Cincinnati as an attorney with the regional counsel's office of the Internal Revenue Service. . . . to Mr. and Mrs. **Robert Shen** a daughter, Olivia, on November 5, 1976. Shen works for National Cash Register in Ithaca, N.Y.

Earl Berry, SIM, was recently named treasurer of Woodbury & Co., Inc. in Worcester. . . . **Robert Dashner** is now a senior systems analyst for Amdahl Corp. in Sunnyvale, Calif. . . . **Joseph Ferrantino** has been promoted to process engineering specialist at Monsanto Co., Birchem Bend plant, where he is in charge of pilot plant operations. Also, he has been elected to a five-year term on the planning board of Ware, Mass., and reelected president of Beaver Lake Club Corporation. . . . **Carl Gilmore** presently holds the post of city engineer in Pinellas Park, Fla. . . . **Lawrence Gooch** serves as assistant sales manager in the process engineering department at Farrel Co., Ansonia, Conn. The Gooches have a son James, 3½, and a daughter Jennifer, 1.

Ron Gordon, who was a staff instructor for IBM in Los Angeles, has moved to New York where he is now in charge of education development in operating systems for future systems. . . . **Paul Granquist**, SIM, has been appointed vice president at Thomas Smith Co., Worcester. He was named assistant treasurer and vice president of administration. Formerly he was controller. In his new post he will be responsible for accounting, office management and personnel. He joined the firm, which makes metal stampings and industrial fasteners, in 1959. . . . Currently **Robert McAndrew III** is with the nuclear service department at Babcock & Wilcox.

1968

▶*Married:* **John Colognesi** to Patricia M. Roy of Southbridge, Massachusetts last June. The bride, a graduate of Anna Maria, is a special education teacher in Southbridge. The groom is now vice president of Southbridge Sheet Metal Works, Inc. The company builds weldments, machine parts and turnpike toll booths.

▶*Born:* to Mr. and Mrs. **Kenneth Battle** a son, Hans Paul, recently. The family is enjoying life in Belgium where Battle is a senior engineer for Monsanto. . . . to Mr. and Mrs. **David A. Swercewski** their third child, a son, Michael, recently. Michael has a sister, Katherine, 7½ and a brother Robert, 6. David is with Electric Boat in Groton, Conn. . . . to Mr. and Mrs. **Kenneth Turnbull** a daughter, Kelly Lee, on July 31, 1976. Turnbull is with Texaco, Inc. in Beacon, N.Y.

George Bazinet has been promoted to manager of systems programming at United Nuclear Corporation. . . . **Paul Beaudet** continues with J. A. Jones Construction Co. and is now working at ERDA's Hanford Reservation. He is in construction management of various projects. . . . **Kurt Benson** has joined his uncle, Henry Anderson, in the general practice of law at 390 Main St. in Worcester. . . . **Bob Demers** is now a research/teaching assistant in the division of pulmonary medicine at Rhode Island Hospital in Providence. . . .**Leif Erickson** recently received a Ph. D. in chemistry from the University of Massachusetts. He did his dissertation on the molecular structure of the human erythrocyte membrane. Presently a captain in the USAR program, Erickson has served with the 173rd Medical Group at Westover AFB for the last five years. He has also been active in counselling and in directing programs for mentally retarded individuals and senior citizens at Camp Grotonwood in Groton, Mass.

Charles Konopka has received his Ph.D from the University of Connecticut. He holds a master of science degree in electrical engineering-computer science from U Conn and an MS in mathematics from WPI. . . . **William Krikorian** is now principal civil engineer for the Massachusetts Bureau of Building Construction, Boston. . . . **George Landauer** is president of G.D.C. Medical Electronics, a division of Generator Development Corp., with headquarters in New Hyde Park, N.Y. Branches are located in Edison, N.J. and Cornwells Heights, Pa. The company services hospital biomedical electronic equipment. The Landauers are the parents of their first child, a son Jay Fredrik, who was born recently. . .

Cary Palulis received his MBA with concentration in management from the University of New Haven in June. . . . **Jeffrey Semmel** has assumed responsibility as lead systems programmer at Genrad in Concord, Mass.

1969

▶*Born:* to Mr. and Mrs. **Stephen Fischer** a daughter, Libby, recently. Fischer serves as manager of Hewlett-Packard's medical distribution center in Waltham, Mass. . . . to Mr. and Mrs. **Richard M. Gross** their first child, a daughter Lindsay Leyburn, on December 27, 1976. Rick was promoted to research specialist at Dow Chemical in Midland, Mich.

Arthur Katsaros has been promoted to product manager of alkylamines business area for Air Products & Chemicals in Allentown, Pa. Katsaros, who has two children, Dean, 6, and Patricia, 2, received his MBA from Lehigh University in December. . . . Active with the U.S. Navy Civil Engineer Corps, **Ronald Lewis** serves as shops engineer in Newport, R.I., where he is responsible for all base maintenance, transportation and utilities. . . . **Edward Mierzejewski,** besides working as chief transportation planner for Southeastern Virginia Planning District Commission (Norfolk), is also a part-time faculty member at Old Dominion University teaching transportation engineering to civil engineering majors. He resides with his wife, Aline, and children, Sara and Mark, in Virginia Beach. . . . Capt. **Douglas Nelson** is working for his master's degree in aeronautical engineering at the Air Force Institute of Technology. . . . **Steve Selinger** has just finished his MBA at Wayne State University.

1970

▶*Born:* to Mr. and Mrs. **Marc Schweig** their first son, Jonathan David, on January 10, 1977. Schweig is with Western Electric Co. in North Andover, Mass. . . . to Mr. and Mrs. **Bohdan Sywak** a son, Jason Bohdan, on October 28, 1976. Sywak received his M.B.A. from Temple University in January. Presently he is project engineer for General Engineering Support for small caliber training ammunition for all U.S. military forces, with the Department of the Army in Philadelphia.

Robert Cournoyer has received his M.M.T. from the University of Lowell. . . . **James Ford** recently moved to Phoenix, Arizona to work for the actuarial consulting firm of Charles Bentzin & Associates. . . . **Alan "Chip" Hassett** has been promoted from the position of senior project engineer at O'Brien & Gere Engineers, Syracuse, N.Y., to that of manager of the Dover (Del.) office of Justin & Courtney, a division of O'Brien and Gere. . . . Presently **T. J. Lelek** serves as Pittsburgh district sales manager for petrochemicals at Gulf Oil Chemicals Co. . . . **John Lyons** continues at Digital Equipment Corp., Maynard, Mass., where he is presently a senior programmer/analyst. . . . **Peter Miner** serves as a project leader at Naval Underwater Systems Center in New London, Conn.

John Pelli, who is sales manager for Berkshire Trane Air Conditioning Co., West Springfield, Mass., has received his MBA from Western New England College. The Pellis have a two-year old daughter, Jennifer. . . . **Lenny Polizzotto** has been working on developing a new instant 8 x 10 film at Polaroid. He has traveled to Europe to work with and give technical advice to European photographers, including Gunter Sachs in San Tropez. He also demonstrated the product prototype at Photokina in Cologne, Germany last fall. As a result, he appeared in a photo in the holiday issue of *Popular Photography*. . . . Formerly an industrial engineer in the corporate research and engineering division at Mohasco Corp., Amsterdam, N.Y., **Erik Roy** has now been appointed as licensing operations manager of carpet operations. He is also an adjunct professor in the Institute of Administration and Management at Union College. He received his MS in industrial administration from Union. . . . Recently **Randolph Sablich** was promoted to manager of pricing, subcontracts at Grumman Aerospace Corp., Bethpage, N.Y. . . . **M. F. Sullivan** has just been listed in *Who's Who* and *Britain's Dictionary of International Biography* for his work in chemical recovery systems at paper mills. Sullivan serves as manager of the recovery unit operation at Aztec Engineering in Louisville, Ky. . . . **Francis Vernile** is now a registered professional engineer in the State of Connecticut.

1971

▶*Married:* **Larry N. Hyman** and Sandra S. Kampf of Midland, Michigan in East Hartford, Connecticut on February 20, 1977. The groom works in the organic chemicals production department of Dow Chemical Co. in Midland, where he is a production development engineer. . . . **Robert R. Tucker** to Judith A. Chase in Brewster, Massachusetts on May 21, 1977. Mrs. Tucker attended Assumption College and Worcester State and graduated from Worcester City Hospital School of Nursing. She is a registered nurse at Cape Cod Hospital. Her husband owns Focalpoint Studio.

▶*Born:* to Mr. and Mrs. **Jack B. Greenshields** their second child, Keith Michael, on March 7, 1977. Greenshields was recently promoted to regional purchasing manager with procurement and stores responsibilities for nine locations within Monsanto's fabricated products division. He received his MBA from the University of New Haven in January. . . . to Mr. and Mrs. **John G. Plonsky** a son, John G. Plonsky, Jr., on February 10, 1977. Plonsky is with Sikorsky Aircraft in Stratford, Conn.

George Bakevich has accepted the post of supervisor of nuclear licensing and safety with the nuclear fuels manufacturing section of Combustion Engineering, Inc., Windsor, Conn. He is responsible for nuclear criticality safety analyses and health physics associated with the manufacture of nuclear fuel assemblies to be used in commercial nuclear power reactors. . . . **Glenn White** has received his MS in atmospheric science from State University of New York at Albany. He served as a predoctoral fellow in geophysical fluid dynamics at a summer colloquium on global climatology at Woods Hole Oceanographic Institute. Currently he is a graduate student in atmospheric science at the University of Washington.

1972

▶*Married:* **Mark G. Andrews** and Helen Wiener on March 25, 1977. The bridegroom has been promoted to the position of vice president of operations at C & M Wire Products in Wauregan, Conn.

▶*Born:* to Mr. and Mrs. **Dwight Allen** a daughter, Rebecca Anne, on April 10, 1977. Dwight is chief mechanical engineer at General Scanning, Inc., Watertown, Mass. . . . to Mr. and Mrs. **Joseph G. Harkins** a daughter, Kimberly Anne, on September 3, 1976. Joe has a new post at Norton Company, Worcester, where he is a systems programmer. . . . to Mr. and Mrs. **Glenn Yale** their second daughter, Kirsten Hadley, in March. (Heather is four.) Yale serves as vice president of engineering at Charles T. Morgan Co., Danvers, Mass.

Mark Fritz now works as a quality control programmer at Wang Labs. . . . **Neil Herring** is chief financial officer at New Hampshire Legal Assistance. . . . **Kenneth Kolkebeck** is employed as a sales engineer at Rosemount, Inc. . . . **Robert Pascucci,** project engineer for the Glen Cove (N.Y.) Urban Renewal Agency, is in his second year as an evening student at St. John's University School of Law. . . . **T. Richard Price** has been working in Port Arthur, Texas for Stone & Webster on construction of a Texaco oil refinery. The Prices have a daughter, Sheila. . . . **Richard Sojka** holds the post of department head of production at Clairol in Stamford, Conn. . . . **John Woodward** was recently promoted to captain in the U.S. Marine Corps. He also received a letter of commendation for meritorious service while serving as assistant motor transport and operations officer at Cherry Point, N.C. Presently he is stationed in Okinawa.

1973

▶*Married:* **Robert H. Newman** and Miss Lori R. Zitowitz on October 31, 1976 in Worcester. The bride attended Portland (Me.) School of Fine and Applied Arts and Dade College of Miami. The groom is a software engineer in the missile systems division of Raytheon Company in Bedford, Mass. . . . **Gary K. Smolen** to Miss Bonnie L. Newcomb in Gill, Massachusetts on April 24, 1977. Mrs. Smolen attended the Ethel Walker School of Fine Arts and is employed in the business office at Franklin County Public Hospital. Her husband is with Stewart's Nursery and Garden Center. . . . **Edward J. Swierz** to Rebecca Dvorak recently. The bride, who graduated from Grinnell (Iowa) College, is now working on a doctorate in Germanic linguistics at the University of Illinois. The bridegroom is with the U.S. Dept. of Commerce in Chicago. . . . **Stuart K. Wallack** and Miss Ann Vivian on February 12, 1977 in Brookline, Massachusetts. Mrs. Wallack graduated from Wesleyan University. Her husband, who received his master's degree from Lehigh University, is a sales trainee with the Torrington (Conn.) Company.

▶*Born:* to Mr. and Mrs. **Edward S. Jamro** a son, Terry Rock, on February 9, 1977. Jamro is with Monsanto in St. Louis, Missouri. . . . to Mr. and Mrs. **Ronald Lak** their first child, a son, Jeffrey John, on May 18, 1977. Lak works for Uniroyal Chemical, Inc. in Naugatuck, Conn.

Bill Carton is now a design engineer at Teradyne, Inc. in Boston. . . . **Paul Conti** has been appointed to the industrial engineering staff at Bay State Abrasives in Westboro, Mass. He will provide all industrial engineering services for second shift manufacturing operations. . . . **Tom** and **Kathy (Sawislak) Dagostino** are currently both employed by Tektronix, Inc., in Beaverton, Oregon. Tom is a design engineer in the service instrument division and Kathy is a software evaluator in the lab instrument division. . . . Airman 1/c **Jon Franson** was slated to move to North Carolina in June to provide weather support for the U.S. Army tactical units at Fort Bragg. He has been attending parachutist school to qualify as an airborne weather technician so that he can travel anywhere the Army exercises call for meteorological support, whether in or out of the country. He also plans to pursue his master's degree in meteorology. . . . **George Grunbeck** is presently employed as a test engineer for Terry Steam Turbine in Windsor, Conn. His wife, Patrice, is a systems analyst for Travelers Insurance.

Herbert Hedberg serves as a senior product engineer for Waters Associates in Milford, Mass. He designs microprocessor-based laboratory instrumentation. Last fall he went to Germany for a week to train field service personnel. . . . **David Kay** is an applications engineer for Teradyne, Inc., Boston. . . . **John Lecko** is now an electronic development engineer for NC machine tool controls at Pratt & Whitney Machine Tool Co., East Hartford, Conn. . . . **Joseph Magri** works for Bird Machine Co., Walpole, Mass. . . . Capt. **Edward Maher,** a bioenvironmental engineer, has been awarded the Air Force Commendation Medal at Hanscom AFB, Mass. for meritorious service performed previously at Brooks AFB, Texas. Currently he serves at the U.S. Air Force Clinic at Hanscom, a part of the Air Force Systems Command. . . . **Wallace McKenzie, Jr.** presented a paper at the Operations Research Society of America Conference last November in Miami. Presently he is an elected town meeting member in Saugus, Mass. and chairperson of a special committee investigating the possibility of consolidating the schools in Saugus.

Dr. **Louis Nashelsky,** professor of electrical technology at Queensborough Community College, has just published an updated version of his *Introduction to Digital Computer Technology,* which draws on his fifteen years of teaching experience. A National Science Foundation fellow in 1971, Dr. Nashelsky is also the author of *Electronic Devices and Circuit Theory* (1972). . . . **Naran Patel** is a structural engineer at Alex Tobias Associates in Toronto, Ontario, Canada. . . . **Stephen Saucier** has been appointed assistant vice president at the Hospital Association of Rhode Island in Providence. He had been working in financial systems with Texas Instruments. He earned his MBA from the University of Rhode Island.

Charles Scopelitis is completing his fourth year as a member of the Montville (Conn.) Board of Education. He serves as the computer engineer for Northeast Utilities at the Millstone Point Generating Station and conducts a work-study program at Millstone for area high school students planning to study engineering. . . . **Richard Socha** has been named United States research fellow for the U.S. — U.S.S.R. program of cooperation in research on chemical catalysis. Currently a graduate student at WPI, he will be spending six months in the Soviet Union during the program. . . . **C. Stephen Szlatenyi, Jr.** received his doctor of medicine degree from Albany (N.Y.) Medical College of Union University in May. He will serve his internship at the Mary Imogene Bassett Hospital in Cooperstown, N.Y. He plans to go into emergency medicine.

1974

▶*Married:* **Firdos N. Khericha** and Miss Judith F. MacKay in Ashland, Massachusetts on March 12, 1977. The bride is a physical therapist at St. Raphael's Hospital, New Haven, Conn. She graduated from the University of Connecticut. Her husband is a civil engineer with the Congress Building in New Haven. . . . **Alan Kirby** and Pamela Barker in Madison, Connecticut on March 26, 1977. The bride is a dental hygienist in Greenwich. The groom is with National CSS in Stamford. . . . **Stephen E. Rubin** and Tracy L. Garrett on June 18, 1977 in Westfield, New Jersey. Mrs. Rubin graduated from Smith College and will teach the first grade at the Bryn Mawr School in Baltimore, Md. Her husband, a senior systems engineer for EMC-Controls, a subsidiary of the Electronic Modules Corporation in Cockeysville, Md., is also attending the University of Baltimore Law School.

▶*Born:* to Mr. and Mrs. **Michael Kozakiewicz** a daughter, Emily, on March 14, 1977. Kozakiewicz works for Eastman Kodak in Rochester, N.Y. . . . to Mr. and Mrs. **John Martin** their first child, Steven Joseph, on March 18, 1977. Martin serves as a project engineer at Monsanto. . . . to Mr. and Mrs. **Gary Pontbriand** a daughter on December 29, 1976. Gary is with New Jersey Zinc Co., Palmerton, Pa.

The DA

"Because certain constitutional principles properly require that a person accused of crime be afforded due process of law, those charged with the prosecution and defense of the accused must act at all times to preserve this due process. As an unintended result, the victims of crime are often treated with less concern by our criminal justice system then are the defendants," says HOWARD H. SHORE, '69, who views the system from a unique vantage point. He serves as a San Diego County (Calif.) Deputy District Attorney.

"Victims are frequently the last to know what's happening in their cases, and can lose hard-earned income by having to come to court to testify," he continues. "We try to do everything we can to ameliorate the tragedy that victims of crime suffer, especially from acts of violence such as robbery, rape, and assault. The advent of 'victimology' is an important step forward in the criminal justice system."

Currently concerned with all aspects of criminal justice, just ten short years ago Shore was looking forward to a career as a mathematician. "After receiving my BS in math from WPI, however, I decided to become involved in a more people-oriented profession. I also wanted to get a taste of the Southern California lifestyle," he explains. "All at once I found myself living in San Diego and attending the University of San Diego Law School."

During his first summer in San Diego, the future Deputy D.A. worked as a night watchman at a hotel construction site from 9 PM to 5 AM and as a waiter from 10 AM to 3 PM. In the fall of 1970, he published a book of poetry entitled *Let Me Turn You On, My Friend, A Collection of Poems for the Mindandsoul.* The book combined his poems that had appeared in the *Tech News* (he was editor-in-chief) with new material he had composed in California.

"I found the writing project satisfying," Shore relates. "The book sold well locally and through the mail. More importantly, I began receiving scores of letters from readers sharing their innermost feelings with me, apparently in response to my own open expression of personal feelings. I was intensely moved by many of the letters. This communication was a perfect palliative for the overwhelming pile of legalese that formed the basis of my first year of legal education."

While in law school, Shore became involved in the school's clinical program, working one night a week at a storefront legal services office. He also became involved in numerous "moot court" competitions, arguing simulated cases to appellate court panels. In 1972 the law school fielded a team of three, including Shore, for the statewide Roger Traynor California Competition. The team won two of three possible awards, with the USD trio picking up the honors for Best Team Brief, and Shore taking the individual trophy for Outstanding Advocate. Active as a member of the San Diego Law Review, he published the first law review article on the legal implications of international marine archaeological sites.

Tops in his international law class of 75 students, his professor suggested that he consider studying abroad after obtaining his juris doctor degree from USD. Taking his professor's advice, Shore attended the master of laws (LL.M.) program at the London School of Economics and Political Science (LSE) from 1972 to 1973. In London, he pursued various aspects of international law, as well as comparative criminal law and sentencing. LSE awarded him a scholarship to attend a summer session of the Hague Academy of International Law in the Netherlands.

Shore reports, "After being awarded the LL.M. degree, I had planned to seek employment with the State Department, where I could utilize my training in international law. But I decided to return to San Diego to develop my skills as a trial attorney. I arrived in the U.S. in late 1973, was hired by the San Diego County District Attorney's Office, and have been there ever since."

Along with 119 other deputy district attorneys, Shore is responsible for the prosecution of felonies and misdemeanors covering the entire spectrum of criminal violations, making the job both stimulating and varied. In addition to gaining insight into the procedural aspects of the criminal justice system, he has been involved in a wide range of prosecutions, including rape, child abuse, fraud, burglary, robbery, and criminal homicides. He also has become deeply concerned about the victims of these crimes.

While in his present office, Shore has authored several articles for distribution to local law enforcement agencies, including articles on "bad check" prosecutions and on offenses involving disturbances of the peace. He has guest lectured at several schools and colleges, and anticipates becoming more involved in the teaching of law.

"Unquestionably," he says, "my greatest stimulation comes from battling it out in the 'pits'—my trial work." The excitement is generated by the many variables involved in prosecution: the background and attitudes of judges and jurors, the constant planning in anticipation of possible defenses and testimony of witnesses, the impact of cross-examination, argument to the jury, and sentencing of the convicted.

"Ironically, legal reasoning itself is mathematical, based on synthesis and deduction," he explains. "But, of course, law also encompasses that great unknown: human nature. It is this human factor that imbues each case with its own unique drama and tension, its own peculiar formula for what hopefully will be a just verdict."

During his leisure time Shore involves himself with writing poetry, playing basketball and racquetball (to untie the proverbial knots), body surfing, playing sax, studying Spanish, motorcycling San Diego County's superb ranch, farm, mountain, and desert roads, and just plain "carousing." "It's easy to be a hedonist around here," he says. "I love it."

Because he enjoys his work, he has no plans to leave office. He expects to complement his trial work by teaching law, publishing more poetry, and by enjoying whatever opportunities and challenges come his way.

"I'm happy with my present life style," Shore asserts. "My house has a panoramic view of San Diego's Mission Bay. I have a great many friends here and in L.A. Most of all, I feel that I'm making a positive contribution to the American criminal justice system."

Stuart Daniels has joined Teknor Apex Co. of Pawtucket, R.I., where he serves as a rubber and plastics chemist. . . . **Steven McGrath,** who recently received his M.B.A. from the Wharton School at the University of Pennsylvania, now works as a consultant for Booz, Allen and Hamilton at one of their divisions located in Florham Park, N.J. . . . Brother **James Morabito,** MNS, has been ordained a deacon of the Salesians of St. John Bosco at Christ the King Church in Columbus, Ohio. Currently he is in his third year of theology at the Pontifical College Josephinum in Columbus, where he is engaged in CCD work, parish recreational programs, and with delinquent youth in the area detention facility. . . . **Stephen Page** is now an associate of Gunster, Yoakley, Criser, Stewart and Hersey, a law firm in Palm Beach, Fla. He graduated with honor from Stetson University College of Law, from which he recently received his juris doctor.

This August **Peter Petroski** is moving to Boise, Idaho, where he will continue to serve as a development engineer with Hewlett-Packard in the Disc Memory Division. . . . **Neil Poulin** has completed requirements for a MS degree in solid state physics from the University of Vermont. His major area of research dealt with ternary metal alloy systems. He is a thin films process engineer for IBM Corp. in Burlington. . . . **Arthur Quitadamo,** SIM, has been promoted from assistant vice president to vice president at Worcester County National Bank. He holds a degree from Worcester Junior College and joined the bank in 1973 as assistant vice president in the international department. Also, he is director and treasurer of the Family Health and Social Service Corp. and vice president and director of the International Center of Worcester. . . . **Kenneth Szeflinski** is a statistician with the IRS in Washington, D.C. His wife, Diane (Laveglia), an Anna Maria graduate, is a junior high school English teacher in Maryland.

1975

▶*Married:* **William A. Johnson** and Miss Nancy M. Nesta on June 4, 1977 in Branford, Connecticut. The bride is a Becker graduate. The groom is with Bose Corporation in Framingham, Mass. . . . Lt. **Ralph F. Miller** and Miss Diana L. O'Dell on February 11, 1977 in Pirmasens, Germany, where both are stationed. Mrs. Miller graduated from the University of Oregon and currently serves as a recreation specialist for the Army Overseas Recreation Program. The bridegroom is the maintenance officer in the 546th Maintenance Company. . . . Miss **Judith B. Nitsch** to Robert H. Donnellan in Southwick, Massachusetts on May 28, 1977. Bridesmaids included **Jean Reny,** '75, and **Paula Fragassi Delaney,** '76. The bride works as a project engineer with Schofield Brothers, Inc. of Framingham. Her husband, also with Schofield, is a land surveyor. He attended Northeastern University and Greenfield Community College. . . . **Darrell S. Trasko** to Miss Judith E. Farias in Fall River, Massachusetts on June 4, 1977. Mrs. Trasko graduated from the University of Massachusetts, Amherst. The groom works for Mitre Corp., Bedford.

Karenann Brozowski is a glass forming process engineer at Corning Glass Works, electrical products division, in Central Falls, R.I. . . . **John Gabranski,** who is working for his MBA at Columbia University, has been awarded a Barr Fellowship. . . . **Jay Gainsboro** has moved back to the Boston area, where he is currently national sales manager for Opus, Inc. . . . Temporarily **John Greenstreet** is working at a space tracking station in Alaska for General Electric Co. . . . **David Kingsbury** is now a manufacturing engineer for Fisher Controls in Marshalltown, Iowa. . . . **Steven Manzi,** who graduated from MIT with a master's in mechanical engineering in February, is presently with the Corvallis (Ore.) division of Hewlett-Packard Corp. He is a mechanical design engineer in research and development.

Stephen Mealy recently spent some time on San Clemente Island doing field work with the Naval Ocean Systems Center. . . . **Michael Rocheleau,** who has received his master's in mechanical engineering from Northwestern University, Evanston, Ill., is now with Travenol Laboratories in Round Lake, Illinois. . . . **Dave Samara,** a nuclear engineer with Campus America, a team of touring-lecturing engineers from Westinghouse, addressed a meeting of the Concord (N.H.) Rotary in April. The Campus America Program was mentioned in a general article on nuclear power in the March 21st issue of *Time*. . . . **Walter Skiba** works as a metallurgical engineer for Smith & Wesson Division of Bangor Punta operations. . . . **Alexander Vogt** is now employed by Stone and Webster on the Rock Island Project in Wenatchee, Washington.

1976

▶*Married:* **Alexander L. Bowers, Jr.,** to Miss Margaret L. Boylan on May 28, 1977 in Worcester. Mrs. Bowers graduated from Becker and had been a stenographer for the Shrewsbury Highway and Public Buildings Departments. Her husband is a project engineer at General Dynamics, Electric Boat Division, Groton, Conn. . . . **Jeffrey W. Brown** and Miss Diane M. Lapierre on May 29, 1977 in Harrisville, Rhode. Island. Mrs. Brown graduated from Katharine Gibbs School and is a secretary at Bryant College. The groom is a field sales engineer for the Trane Company in Lacrosse, Wis. . . . Dr. **Jacques A. Brunelle** to Miss Helen A. Mahoney on May 28, 1977 in Worcester. Mrs. Brunelle, who holds a BS and master of education degree from Worcester State, is head of the mathematics department at Holden (Mass.) Junior High School. Her husband is in postdoctoral research at Harvard Medical School in Boston. . . . **John T. Germaine** and Miss Barbara J. Anderson in Springfield, Massachusetts on June 4, 1977. The bride, who manages the Clothes Bin, is a graduate of Becker. The bridegroom is a graduate student at MIT.

▶*Married:* **Andrew M. Kopach** and Miss Maureen H. Kelly on April 23, 1977 in Waterford, New York. The bride graduated from Our Lady of the Elms College. Her husband is employed by Liberty Mutual Insurance Co. as a loss prevention representative. . . . **Paul E. McTaggart** and Miss Susan A. Corbitt in Barrington, Rhode Island on June 4, 1977. Mrs. McTaggart attended Rhode Island College and graduated from Bristol Community College of Dental Hygiene. She is a dental hygienist in North Kingstown. Presently the groom is enrolled in URI's mechanical and ocean engineering program. . . . **Barry M. Siff** to Miss Judith A. Bailey in Oak Park, Michigan on May 8, 1977. The bride is on the public relations staff of General Motors Corporation's Pontiac Motor Division, Detroit. Her husband is a safety engineer with the Royal Globe Insurance Company's regional office in Southfield. . . . **Joseph A. Tuozzoli** and Miss Claudia A. McGrath on June 18, 1977 in Natick, Massachusetts. Mrs. Tuozzoli graduated from Worcester State and works at Framingham Union Hospital. The bridegroom is in the used car business. . . . **Michael F. Whelan** and Miss Anita-Marie Flori on May 22, 1977 in Providence, Rhode Island. Mrs. Whelan graduated from Rhode Island College.

Alfred Brewer recently received his B.S. in aeronautical science from Embry-Riddle Aeronautical University in Daytona Beach, Fla. Brewer, who accepted a position with Air Kaman, Inc., Hartford, Conn., has a commercial pilot's and flight instructor's ratings. . . . **William Gray** is with Pratt & Whitney Aircraft in West Palm Beach, Fla. . . . **Ross Greenberg** has left the medical systems group of Cavitron Ultrasonics, Long Island City, to enter the premedical program of Columbia University. . . . **Sterling Hassler** has been appointed to controller for the Norton Co. Grinding Wheel Division, Worcester. In 1964 he began at Norton as a computer programmer and has held supervisory and managerial positions in data processing and in finance. He received a master's degree in management science from WPI.

Joseph Lucchesi is a graduate student at LaSalle College in Philadelphia. . . . **Tom McAloon** is a graduate student in environmental engineering at the University of Massachusetts. . . . Dr. **David Sawyer** serves as a senior staff member in the electronic technology division at the National Bureau of Standards in Washington, D.C. Recently he returned from a four-month assignment with the Energy Research and Development Administration where he assisted in their solar cell effort. He received the 1976 IR-100 Award from *Industrial Research Magazine* in ceremonies at the Chicago Museum of Science for his work titled: "Laser Flying—Spot Scanner." The apparatus is useful for design and analysis of operation of semiconductor devices such as transistors. The IR-100 awards recognize the 100 most significant technical developments of the year. . . . Currently **Paula Stratouly** is with Exxon Corp. in Springfield, Mass. . . . **Steven Tuckerman** is a graduate student in regional planning at the University of Massachusetts.

Completed Careers

Dr. **Benjamin A. Wooten, Jr.,** a native of Opelika, Ala. and professor of physics at WPI since 1957, died June 25, 1977 at his home in Princeton, Massachusetts. He was 60 years old.

Dr. Wooten received his bachelor's degree from the University of Alabama in 1937 and his master's degree and doctorate from Columbia University. Prior to going to WPI, he taught at Columbia, Hunter College, Alabama Polytechnic Institute, Southwestern at Memphis and the College of the City of New York.

He belonged to the American Physical Society, was a fellow of the American Association of the Advancement of Science, a past president of Sigma Xi fraternity, and a member of Phi Beta Kappa, Alpha Tau Omega, and the Children's Friend Society. He had served as a former vestryman and senior warden of St. Francis Episcopal Church, Holden. For several years he taught at the Wachusett Regional High School Science Seminar.

Dr. Wooten established a research program in high energy nuclear physics at WPI and for five years served as chairman of the graduate study committee. He served on several WPI committees on the revaluation of research goals.

Luke N. Zaccaro, a former professor of mathematics at WPI, died March 19, 1977 in Roswell Park Memorial Institute in Buffalo, New York at the age of 53.

He joined the WPI faculty in 1964 and taught mathematics there until 1972. For the past four years he had been chairman of the mathematics department at Youngstown (Ohio) State University. Previously he had taught at Syracuse University, Georgetown University, the University of Rhode Island, and Hiram (Ohio) College.

Dr. Zaccaro graduated from the University of Connecticut and received his master's degree there in 1949. In 1957 he received his doctorate from Syracuse University. He was a native of Hartford, Conn.

George A. Barratt, '09, former plant engineer for American Thread Co., Holyoke, Mass., died February 11, 1977 in St. Peter's Medical Center, New Brunswick, New Jersey. He was 89.

Born in Millbury, Mass., he later graduated from WPI as an electrical engineer in 1909. He became associated with General Electric, American Thread Co., and finally Hercules Powder Co., where he was service superintendent for 24 years.

He belonged to ASME and the New Jersey Society of Professional Engineers. A consulting engineer for South Amboy and East Brunswick, N.J. water departments, he also was a charter member of the Middlesex County Personnel Club.

Leslie E. Swift, '09, of Bethlehem, Pennsylvania died in May at the age of 91.

After graduating as a civil engineer at WPI, he worked for Riter Conley Mfg. Co. and McClintic Marshall Co. prior to World War I. During the war he was with Atlantic Refining Co. and United Gas Import Co. In 1931 he retired from Bethlehem Steel. Later he joined Barrett Herrick & Co., investment bankers. For the past seven years he had been in a nursing home.

E. Donald Beach, '11, civic leader and former plant manager for General Fibre Box Co., West Springfield, died at his home in Longmeadow, Massachusetts on May 14, 1977.

Born in Orange, N.J. on Nov. 16, 1889, he later graduated from WPI as a civil engineer. He became associated with Western Union Telegraph Co., Turner Construction Co., Atlantic & Pacific Tea Co., and Worcester Salt Co. He served as manufacturing manager and plant superintendent for General Fibre Box Co. from 1928 until his retirement in 1951.

A member of Phi Gamma Delta, Mr. Beach also belonged to Tau Beta Pi and Sigma Xi. He was a member of Rotary; a trustee of the Eastern States Exposition; founder, director and first president of the Springfield Ski Club; an incorporator of the United Fund of Greater Springfield; and a director of the Mt. Tom Ski area.

Stuart P. Miller, '14, of Johns Island, South Carolina, passed away on January 26, 1977.

He was born on October 25, 1892 in East Hampton, Conn. In 1914 he received his BS in chemistry from WPI. From 1915 until 1952 he was with the Barrett Co., later the Barrett Division of Allied Chemical Corp. He retired as technical director.

Mr. Miller belonged to ACS, AICE, and New York Botanical Garden, where he was a life member. He also belonged to Sigma Xi and had served as a trustee of Charleston (S.C.) County Hospital and as a former president of the Philadelphia chapter of the Alumni Association.

Howard C. Barnes, '15, of Ashfield, Massachusetts died on April 30, 1977 at the age of 84. He was a former assessor and selectman in Ashfield for many years.

He was born on December 2, 1892 in Shelburne Falls, Mass. After receiving his BSEE from WPI he joined the American Telephone & Telegraph Co., then spent four years with New York Telephone. In 1925 he returned to A. T. & T. from which he retired in 1952.

Mr. Barnes belonged to Sigma Alpha Epsilon, Skull, Telephone Pioneers and the Ashfield Rod and Gun Club.

Walter F. Conlin, Sr., '17, passed away in Framingham (Massachusetts) Union Hospital on April 29, 1977. He was 82 years old.

For forty six years he was a project manager with Turner Construction Co. of New York City. His responsibilities included the construction of the U.S. Navy test basin in Carderock, Md., the Port Authority bus terminal in New York, the home office of State Mutual Life Assurance Company of America in Worcester, and the approach to the George Washington Bridge in New York City. He retired in 1965.

Mr. Conlin, who was a native of Hudson, Mass., belonged to the "Moles" in New York City. In 1917 he graduated as a civil engineer from WPI. He was the father of Walter F. Conlin, Jr., '46

John W. Coghlin, '19, chairman of the board of Coghlin Electric Co. and treasurer of Coghlin's, Inc., died on April 2, 1977 in Worcester.

Born in Worcester on May 4, 1897, he was associated with Coghlin's Electric for 58 years, having served for a number of years as president. In 1919 he received his BSME from WPI.

Mr. Coghlin, who received an honorary doctor of engineering degree from WPI in 1963, was a member of Phi Gamma Delta Fraternity. He was a life member and secretary of the board of trustees of the college. In 1936 and 1937 he was president of the Worcester Chapter of the Alumni Association, and from 1951 to 1954 he served as chairman of the Alumni Fund Board. In 1966 he was made an honorary cadet colonel in the Army ROTC. He received the Herbert F. Taylor Award for outstanding service to the Alumni Association in 1973.

Mr. Coghlin was a member of the board of trustees of Hahnemann Hospital, a former member of the board of Mechanics Savings Bank, and the Airport Commission. He belonged to the Worcester Club, Worcester Country Club, Rotary Club (50 years), National Association of Electrical Distributors, and the Worcester Area Chamber of Commerce.

George L. White, '20, the retired vice president of production at the former Joseph Bancroft & Sons Co., died June 1, 1977 in Wilmington, Delaware. He was 79.

A native of Springfield, Mass., he later studied at WPI, and graduated in 1920 as a mechanical engineer. During his career he was associated with Reed & Prince, Worcester; Farr Alpaca Co., Holyoke, Mass.; and Arnold Print Works, North Adams, prior to moving to Wilmington and joining Joseph Bancroft & Sons Co. He retired in 1958.

He belonged to Phi Sigma Kappa, Skull, and various Masonic orders. He was the brother of Irving S. White, '31 and the father of Donald K. White, '51.

Ernest M. Schiller, '22, of Cleveland, Ohio passed away on February 24, 1977.

He was born on February 1, 1900 in Acushnet, Mass. After receiving his BSME from WPI in 1922, he joined General Electric Co. At his retirement in 1965 he was the manager of manufacturing engineering, leads and bases, in the lamp components department of the lamp division.

Mr. Schiller belonged to Sigma Xi, the Cleveland Engineering Society, the Elfun Society at GE, the Cleveland Citizens League, and the Masons. He was a professional engineer in Ohio and a former president of the Rhode Island chapter of the Alumni Association.

Roger A. Fuller, '24, of Holmes Beach, Florida, died on October 27, 1976.

He was born on March 26, 1901 in Worcester. In 1924 he graduated from WPI with a degree in electrical engineering. For many years he was with the General Electric Co. in Fort Wayne, Ind., where he was an application engineer in the specialty motor department. He was a member of Tau Beta Pi.

Leslie J. Hooper, '24, retired director of Alden Research Laboratories, and a retired professor of hydraulics engineering at WPI, died on April 9, 1977 while visiting friends in Millington, Maryland.

Following his graduation as a mechanical engineer from WPI, he was hydraulics engineer for Canadian General Finance Co. of Brazil until 1927. Back in the U.S., be became an assistant to Prof. C. M. Allen, director of the Alden laboratory, an association which lasted until Prof. Allen's death in 1950. During the 1930's they wrote numerous technical papers. By World War II Prof. Hooper was an established hydraulics authority and conducted important secret research projects for the Navy at the laboratory. He also helped develop the Navy's Underwater and Sound Laboratory in New London, Conn.

In 1931 Prof. Hooper took a part-time teaching position at WPI and in 1938 was named an assistant professor. In 1945 he became a full professor. From 1934 to 1936 he was a Freeman Scholar of the Boston Society of Civil Engineers, reporting on hydraulics in this country and Canada. He received the junior award of ASME for his reports.

An internationally recognized authority in his field, he earned many honors. He was elected to Tau Beta Pi and Sigma Xi. He had served as a director of the Boston Society of Civil Engineers and past chairman of the hydraulics division of ASME, which elected him a fellow in 1960. He was a former chairman of the Bureau of Ordinance Hydroballistic Commission, named a fellow of ASCE, and appointed as a U.S. delegate to the International Test Code meeting in Zurich, Switzerland in 1957. In 1959 he was the chief U.S. delegate to an international conference in Madrid, Spain, and other conferences in Switzerland, Italy, Japan, Tasmania, England, and Germany. He retired from WPI in 1968, was named professor emeritus, and continued as a consultant to Alden laboratory and to numerous companies throughout the world.

Prof. Hooper, who had received the professional degree in mechanical engineering from WPI in 1928, was awarded an honorary degree of doctor of engineering at WPI's 1964 commencement. He also received the Robert H. Goddard Award for outstanding professional achievement from WPI last year and the Worcester Engineering Society's Scientific Achievement Award in 1970.

He was born in Essex, Mass. on Feb. 15, 1903. A former member of the President's Advisory Council at WPI, he also had served on the Flood Committee for the City of Worcester.

Edward J. Kearnan, '27, of Albany, New York passed away suddenly on October 28, 1976.

He was born on November 20, 1905 in Northbridge, Mass. For many years he was principal civil engineer for highway planning in the New York State Department of Public Works and in the Department of Transportation.

Mr. Kearnan, a member of ATO, studied civil engineering at WPI. He belonged to the New York State Society of Professional Engineers and the New York State Highway Engineers.

Max Hurowitz, '23, who owned the University Pharmacy in Worcester from 1924 until 1969, died in St. Vincent Hospital on March 15, 1977.

He was born in Smoleon, Russia on August 14, 1901. In 1923 he received his B.S. in chemistry from WPI. For 45 years he owned and operated the University Pharmacy on Maywood Street in Worcester. Previously he had been with Kanef Drug Co. and Arkus Pharmacy.

Mr. Hurowitz was vice president of Tifereth Israel Synagogue and belonged to B'nai Brith 600, Worcester Zionist Organization of America, the Massachusetts State Pharmaceutical Association, New England Mizarchi Organization, and Sons of Jacob Synagogue. He was a contributing member to the Jewish Home for the Aged, a past president of Yeshiva Achei Tmimim and Tifereth Israel Synagogue, and treasurer of the Talmud Association of the Synagogue. For the past ten years he played violin and viola with the Worcester State College Orchestra. He belonged to AEPi.

Joseph L. Guidi, '28, retired president and chairman of the board of the Union Gear and Sprocket Company, Quincy, Massachusetts, died on March 27, 1977. He was 69 years old.

A native of Via Teggio, Italy, he came to the U.S. as a boy and later studied mechanical engineering at WPI. For many years he was with Union Gear and Sprocket Co., becoming president of the firm in 1968. He was a member of Skull and ATO.

Russell V. Corsini, '31, former president of Denholm and McKay Co., Worcester, was stricken and died behind the wheel of his car in a shopping center in Juno Beach, Florida on April 25, 1977. He was 68.

A well-known Worcester businessman, tennis player, and teacher, Mr. Corsini retired as president of Denholm's in 1972. He joined the store staff as a floorwalker in 1938 after spending four years teaching at North High School, Worcester.

He graduated from WPI as a chemist in 1931 and received his master's degree in chemistry in 1933. A member of Sigma Xi, SAE, and Tau Beta Pi, Mr. Corsini also had served as director of the Worcester Area Chamber of Commerce and as trustee for the Bay State Savings Bank in Worcester. He belonged to the Worcester Country Club and Worcester Tennis Club.

Mr. Corsini was born on August 30, 1908 in Plymouth, Mass. Besides being an avid golfer and tennis player, he enjoyed playing semi-classical and popular pieces on the piano at home. He was a former president of the Worcester chapter of the Alumni Association.

William D. Ravenscroft, Sr., '31 of Litchfield, Connecticut, former manager of Avalon Farms, passed away on March 14, 1977 at the age of 68.

He was born on February 1, 1909 in Litchfield. Later he studied at WPI. In 1970 he retired as chairman of the Board of Finance for the town of Litchfield. He was a former treasurer of the Bantam Fire Company and belonged to the Masons and ATO.

John H. Porteus, '32, of Daytona Beach, Florida died on January 27, 1977 at Community Hospital. He was 68.

He received his BSCE in 1932. Among his employers were Jackson & Moreland, Boston; Dravco Corp., Pittsburgh, Pa.; Luria Engineering Co., Bethlehem, Pa.; and Rust Engineering Co., Pittsburgh, from which he retired as a consulting engineer.

Mr. Porteus was born in South Shields, England on September 23, 1908. In 1936 he served as assistant alumni secretary at WPI. He belonged to ASCE, ACI, AIME, AISE, Phi Gamma Delta, and Sigma Xi.

William C. Salmon, '32, of South Yarmouth, Massachusetts died on March 22, 1977 at the age of 66.

He was a retired contract specialist for the Department of the Navy, and had served in various locations either in a military or civilian capacity with the Navy since 1940. A World War II veteran, he also was a Korean War Navy veteran, and retired with the rank of commander.

He graduated as an electrical engineer from WPI. He attended Harvard Business School and graduated from Suffolk Law School. He belonged to Phi Kappa Theta, the American Legion, and the Knights of Columbus.

Waldo E. Bass, '33, of Little Falls, New Jersey died on December 12, 1976 at the age of 64.

He was born in Willimantic, Conn. on May 8, 1912. In 1933 he graduated as an electrical engineer from WPI. He had been associated with Consolidated Edison, Republic Flow Meters and Ideal Roller Co., all of New York City. In 1949 he founded West Essex Printing Plates, Inc., in Caldwell, N.J. He retired in 1974 as president of the firm.

Mr. Bass, a member of Phi Sigma Kappa, was a former president of the New York Chapter of the Alumni Association. He had also served as a delegate to the Alumni Council. He was active in many printing and flexographic organizations until his retirement.

Albert O. Bell, '33, retired plant manager and civic leader, died suddenly on April 13, 1977 in Leominster (Massachusetts) Hospital.

Four years ago he retired as a plant manager of E. I. du Pont de Nemours & Company, after forty years with the firm. He had been the manager of Du Pont's Doyle Works in Leominster.

He was a native of Fitchburg, Mass., where he was born on May 17, 1910. He belonged to Theta Chi and graduated from WPI with his BSME. Active in civic matters, he was a member of the board of trustees of the Pilgrim Congregational Church, vice president of the Leominster Savings Bank, past president and trustee of both Leominster Hospital and Public Library, a past president of the Rotary Club, and former United Fund Chairman.

George A. Northridge, '34, of Auburn, Massachusetts died on January 22, 1977.

A Worcester native, he was born on Jan. 27, 1911. He studied at WPI, became a real estate agent, then worked for Wright Machine Co. He served in the Air Force during World War II. For many years he was with American Steel & Wire Co. in Worcester (U.S. Steel Corp.).

Thomas B. Graham, '38, a WPI trustee and internationally known attorney in the field of patent law, died in the White Plains (New York) Hospital on March 25, 1977 at the age of 60.

He had been a partner in the law firm of Emery, Whittemore, Sandoe & Graham, New York City and had specialized in patents, copyrights and trademarks for 30 years. He had also served as an adjunct professor of law of industrial and technological property at the Polytechnic Institute of Brooklyn.

After receiving his BS and MS in chemical engineering at WPI, Mr. Graham attended Georgetown University from which he received his law degree in 1946. During World War II he was a patent adviser at the Naval Research Laboratory in Washington. During his career he was a technical assistant to patent counsel at Allied Chemical; assistant patent counsel with the Pure Oil Company; a partner in a large New York law firm; and a self-employed patent law attorney, reopening his own office in 1965.

Mr. Graham, a Worcester native, was a member of the bar in the District of Columbia, Illinois, and New York. He was admitted to practice before the U.S. Patent Office, the Canadian Patent Office, and the U.S. Supreme Court. He belonged to the Patent-Trademark-Copyright Section and the Anti-Trust Section of the American Bar Association; the New York Patent Law Association; the American Patent Law Association; the Chemical Practice Committee; and Sigma Xi.

He was the first president of the Bramlee Heights Association in Scarsdale and founded Boy Scout Troop 60 at the Congregational Church, where he was a trustee. He was a past president of the New York chapter of the WPI Alumni Association, a former member of the Alumni Council, Alumni Fund Board, Committee on New Students, and the President's Advisory Council. In 1968 he received an honorary doctor of engineering award from WPI. In June he was honored posthumously as an "outstanding alumnus."

Frank E. Stableford, '43, of Bethany, Connecticut died on January 3, 1977 following an automobile accident.

He was born on August 12, 1918 in Meriden, Conn. and later studied electrical engineering at WPI. During his career he was with Electronic Enterprises, Inc., Flexmir, Inc., Flora-Kel Co., Conmar Products Corp., Atlantic Casting & Engineering Corp., and Mite Corp., New Haven, Conn., where he served as vice president of manufacturing.

Mr. Stableford belonged to Lambda Chi Alpha and was a former president of the Northern New Jersey chapter of the Alumni Association.

Richard W. McGraw, '50, of Liverpool, New York recently died suddenly following a brief illness.

He was born on July 21, 1925 in Albany, N.Y. In 1950 he received his BSEE from WPI. For a number of years he was with General Electric Co. He then joined Robson & Woese, Inc., Syracuse, N.Y., where he was a consulting engineer and high voltage specialist. A member of Eta Kappa Nu, he also belonged to AIEE.

Maurice C. Gosselin, '51, died in Midland, Michigan on April 5, 1977 at the age of 47.

A native of Hartford, Conn., he was born on Dec. 8, 1929. In 1951 he received his BSME from WPI. During his lifetime he was with Roger Sherman Transfer Co., Gosselin Associates, Inc., and Wickwire Spencer Steel. He had also been employed by Dow Corning in Midland.

Mr. Gosselin belonged to Phi Kappa Theta and the American Production and Inventory Control Society. He was active in scouting and also enjoyed wood carving. His carvings were featured in many exhibits and shows.

Robert E. Rascoe, '55, president of the New Britain Specialty Co., passed away in March at the Veteran's Administration Hospital in Newington, Connecticut.

He was born in New Britain, Conn. on February 8, 1926. In 1955 he graduated as a mechanical engineer from WPI. A Navy veteran of World War II, he served in the Pacific theater. He belonged to St. Paul's Church.

Capt. **John L. Tunstall, '72,** was killed in Utah on February 17, 1977 while on a routine training mission over the Hill AFB range as the pilot of an Air Force F-4D.

He was born in Birmingham, Ala. on June 5, 1950. After graduating as an electrical engineer from WPI, he served in the U.S. Air Force at Luke AFB in Phoenix, Ariz., in Udorn, Thailand, and at Hill AFB. He belonged to Eta Kappa Nu.

Karen A. Hill, '75, of Washington, D.C., died of lupus disease on April 19, 1977.

She was born on August 14, 1953 in Washington. In 1975 she graduated as a chemical engineer from WPI. She was a chemical engineer for the Mobil Oil Research and Development Co.

HOMECOMING

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Something new and lovely on campus

In 1971, WPI officials and the Board of Trustees began making sweeping plans for changes to the campus physical plant. One thing that nearly everyone felt was desirable was to decrease the auto traffic and parking-lot atmosphere of the campus, especiallya on the east side of West Street, where the majority of academic buildings are located, and to turn this part of the campus into a pedestrian, people-centered area. With the completion of work on Freeman Plaza, the area between Salisbury, Washburn, Gordon Library, and the Project Center has become an attractive centerpiece that creates a sense of visual unity that has never existed there before. Made possible through a gift from Trustee and Mrs. Howard G. Freeman, '40, this outdoor area now offers an attractive entrance to the heart of the campus.

At one time, plans for the area included a brick-paved courtyard, but maintenance and installation costs made this unreasonable. In a clever substitution, the area was paved with alternating panels of concrete containing a red-toned aggregate. After living with the area for a while now, most people seem to prefer the present treatment, feeling that overall red brick would be too much, overpowering the area.


FREEMAN PLAZA

Intersession '78 arrives on campus January 16-27. Below is a short selection of the courses to be offered. If you'd like the whole list, please call or write the Intersession Office.

Session A January 16-18 (Mon, Tues, Wed)
Session B January 19-24 (Thurs, Fri, Mon, Tues)
Session C January 25-27 (Wed, Thurs, Fri)

ABC804*	Identification of Materials with the Polarizing Microscope
ABC806*	Clinical Engineering Internship
ABC807*	**Industrial Energy Conservation: An innovative Approach**
AB812	**Oil Painting**
*BC815**	*Energy Conservation – Solar Energy*
BC816	*Relaxation and Meditation*
BC828	*Basic Frisbee Techniques*
A834	Group Theory and its Applications to Chemical Problems
A835*	ICES-Aided Design
A838*	**Engineering Economy**
A839*	Analysis and Synthesis of Active Filters
A841*	Disinfection of Water and Wastewater
A843*	Photoelasticity and Strain Gauges
A845*	**Dragons: Their Redesign**
A846	*Games for Environmental Education*
A860	*Windmills for Power*
A868	Environmental Impact Statement Preparation
A869*	Groundwater Hydrology
A872	**Magic and Legerdemain**
B833	**BLISS-10 (A Basic Language for Implementation of System Software)**
B837*	Scheduling, Including CPM (Critical Path Method)
B838	**The Basics of Space Heating and Energy Conservation**
B855*	**Demystifying Communications: Basic Listening**
B856	*Dual Careers and Marriage*
B865	*Career Planning – Career Search – Second Careers*
B866*	Experimental Fluid Mechanics
C833	Microcomputers with Applications
C835	**Personal Income Tax Preparation**
C837*	Building Firesafety Evaluation
C839*	Programmable Pocket Calculators in Machine Design
C840	Wind Engineering of Tall Buildings
C842	**How to Write Your Way Through Life**
C858	*Parapsychology: Beyond the Frontiers of the Mind*
C860	**Marketing the Arts**
*C863**	*Urban Systems Gaming*
C865	*Writing a Living Will*
C868	**What's News? The Local Mass Media Explain**
C870*	Water Hammer and Pipelines
C873*	Transmission Lines and Filters with a Minimum of Math

*Available for credit
Courses listed in bold face type have a special tuition rate of $30.
Courses listed in italics have a special tuition rate of $10.
For other courses, rates are:
$ 80 – alumni, parents of WPI students, WPI evening students
$ 95 – regular rate (on or before December 19)
$115 – regular rate (after December 19)
Tuition rates do not include materials fees which are associated with some courses.

Intersession Office
WPI
Worcester, Mass. 01609

I would like more information about Intersession '78.
Please send me a copy of the catalog.

Name _____ Year _____

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The incredible competency exam or Why not a gorilla?

Competency exam. These two words merely crossing the average WPI student's mind are apt to make him break out in a cold sweat, reach for a bottle of Pepto Bismol, or drive him to . . . well, you know.

Ron O'Connor, '77, although he could have been properly excused for doing all of these things, did practically none of them during his exam last January. But, then Ron was not what you'd call the "average" WPI senior. He started out at Rutgers as an actuarial student, transferred to WPI, became interested in the ethics of euthanasia through a law course, and eventually landed in the Life Sciences Department.

On Sunday, January 9th, Ron handed in to the department his written competency exam. The following Tuesday he took his oral exam before members of the department. Strictly routine? For Ron O'Connor almost nothing about his competency exam was "routine."

"Actually, I was looking forward to taking my competency in January," Ron says. "I didn't want to wait until the March examination period. If I failed in March, I wouldn't have been able to graduate in June. And I definitely wanted to graduate in June. Knowing that I could get my competency over with in January got me very excited."

He told himself that the exam would be a challenge and that, after all, it would take only a week out of his life. He had a good background — six courses in the Life Sciences Department, which he considered adequate. At least, he hoped they'd be adequate.

"I had chosen physiology as my discipline in Life Sciences," he reports. "I took out my physiology books and looked them over. I read the list of concepts that the department had passed out and expected us to know for the competency. It looked reasonably familiar. Then it hit me! Studying like that was doing me absolutely no good!"

It was virtually impossible for him to remember everything that he had studied in physiology during the past two

years. The facts whirled aimlessly through his brain. Before proceeding further, he, along with other students planning to take the Life Sciences competency in January, met with Dr. Theodore Crusberg, head of Life Sciences competency exams, Dr. James Danielli, head of the department, and other members of the faculty.

"We discussed the upcoming exam," Ron relates. "It soon became apparent that the competency would not be a truly comprehensive exam as some of us had feared. We were told that a basic knowledge of our field would be necessary. At the same time, about ninety percent of the oral exam would concern our chosen discipline. What a relief!"

The week before the exam, Ron took a much-needed break. Occasionally, he glanced at his notes. "I don't know why I even bothered," he confesses. "It was a complete waste of time."

A meeting with Dr. Richard Beschle, '50, chairman of his exam committee and his former MQP advisor, put him in an easier frame of mind. Dr. Beschle asked him what he knew best.

"Cardiovascular physiology," Ron promptly replied.

"Then you'll get a hard question about cardiovascular physiology on your exam," Professor Beschle assured him. "You won't be asked something you know nothing about."

Again, relief. Ron went back to his apartment, checked a few more notes, worked on a grant proposal for the fall, and indulged in some pleasure reading. He refused to get rattled. By Wednesday, the day before he was to receive his written exam, he was so relaxed that he spent the evening with his friends at Curley's, a popular collegiate watering spot on Highland Street.

"It was the best thing I could have done," Ron insists. "I had a relaxing evening, then came home and went to bed at 1 o'clock in the morning."

At 9 a.m. on Thursday, Ron picked up his exam. "I got a very challenging question, but I liked it," he says. "I was supposed to find an animal model for human essential hypertension (high blood pressure with no apparent cause). Also, I had to be able to suggest how I would induce hypertension in the animal. The procedure should simulate the disease as it exists in humans."

Before tackling his exam, Ron checked with Dr. Beschle and then drove across town to the library at the University of Massachusetts Medical School. He worked all day. By 10:30 at night he figured something was wrong in his approach to the question. His professors wanted an animal in which they could study essential hypertension. Ron was designing a study to find the causes. The exact opposite! Again, he phoned Dr. Beschle, who told him, "Yes, you are definitely going in the wrong direction."

Undaunted, Ron plugged along at the library for another hour, then returned home. Finding the apartment empty, he assumed that his friends were at Curley's and went off to join them. They weren't there, but someone else from Life Sciences was there. He offered Ron a shot of tequila. "I rejected it," Ron says.

All day Friday he worked at the medical school library on his exam question. When the library closed at 9 p.m., Ron found himself confronted with a couple of problems that he hadn't counted on: a big snow storm and a car that refused to start! "Luckily another student who had also been studying at the library volunteered to drive me back to the apartment," he says.

The next day, Saturday, was the day before his written exam was due. "During the afternoon things got really tense," he recalls. "I wrote a rough draft, then took a break. By 1 a.m. Sunday my first draft was finished." (In retrospect, Ron feels that if he had budgeted his time properly, he wouldn't have had to stay up all night writing.)

He passed in the handwritten exam to his professors Sunday morning and typed up the final copy that afternoon. Monday morning he handed in the typed copy.

"I had the rest of Monday all planned out," he remembers. "I was going back to the med. school library (by this time his car was running), and study for my oral which was slated for Tuesday at 2 o'clock." Before leaving, however, he got some jolting news. The library was closed Monday due to stormy weather!

"This was a decided setback," he admits. "The med. school library had all the latest information in my field. No other library around could touch it for up-to-date publications. I wasted the afternoon going over my notes, shoveling snow, and spending time at Curley's.

Tuesday morning found Ron once again at the medical school library. At 1:15 he decided that it was time for him to drive back to WPI for his 2 o'clock oral exam.

"The car was going fine until I had to stop for a red light," he reports. "I hit an ice patch and suddenly I was stuck. I couldn't back up because a lot of cars were all around me and directly behind me."

Finally he managed to inch the car slowly forward. He breathed a sigh of relief. Too soon! The car stopped dead. He was out of gas!

In a sort of controlled panic he phoned his parents, who fortunately live in Worcester. They have an extra set of keys and promised to drive over to tend to his car, which by this time was blocking a considerable amount of traffic. traffic.

His next problem was trying to find a ride back to WPI so that he could take his oral. The problem solved itself, when the fellow who had been helping him with his car, offered him a lift. "Finally," Ron says, "I got to my oral, at two minutes of two!"

Ron looked at the circle of unsmiling faces and said, "First, please let me get back my composure. You see, I had this difficulty with my car —."

He explained the difficulty and soon everyone relaxed. The oral exam began.

"We had a very good rapport, Dr. Hoskins, Dr. Beschle, Dr. Danielli and I," Ron reveals. "There was absolutely no apprehension on my part. I had no reservations about talking with those who had so much more knowledge than I. We even joked toward the end of the exam."

Dr. Danielli asked, "Ron, did you consider proposing a non-human primate as the model?"

"No," Ron answered.

"Do you know enough about them to know which one you should choose?" Dr. Danielli asked.

Again, Ron replied, "No."

"Well," Dr. Danielli continued, "let me give you some advice based on my own experience. Don't pick a gorilla. They can be very difficult to work with."

The professors seemed to be interested in Ron's reaction to the competency exam as a whole. "I told them that I thought the most important thing I'd gotten out of the exam and my studies in Life Sciences were the skills I had developed," he says. "I had to learn how to apply my knowledge in a practical manner. The competency measures a person's ability for doing what he has to do when he leaves WPI."

That's why Ron O'Connor thinks his competency exam was truly worthwhile, in spite of the unexpected array of obstacles he had to overcome before he successfully completed it.

A red light. A patch of ice. A balky car. Not one could keep Ron from his goal. But if he'd chosen a balky gorilla — now, that could have been another story!

Do they still teach courses? Of course!

Once upon a time at WPI you earned a degree by accumulating a required number of credits in various areas, and you earned these credits by taking courses. So it was very clear, to both instructors and students, that courses had two purposes: ideally, they were the vehicle for transferring knowledge to the students; but from a more practical standpoint, they were a means of achieving the required credits, of getting students "certified."

Because all parties concerned knew the score, and because the system had the weight of tradition (both local and national) behind it, the professors learned how to teach and conduct a classroom to achieve the expected goals. In their turn, students learned to deal with the system — often by concentrating on the certification end (i.e., grades) at the expense of the learning portion.

And then the WPI Plan arrived. Now you don't get a degree by piling up the proper number of credit hours. You do two projects (one in the major, one relating technology to social concerns), a sufficiency, or minor (usually in the humanities), and take a final examination which tests your 'competence' in your major field. No mention of courses.

Do we still have courses at WPI? (That's a silly question, you say, but it's been asked more than once as publicity has concentrated on the project orientation of the WPI Plan.) Well of course we have courses.

But there is a differences. Courses no longer serve the same certification function. No grade-point averages, no penalties for retaking courses, no need to take courses at all . . . **except to learn.** All of a sudden the emphasis in courses is back on teaching and learning, not on grading and evaluating. And this means that the old courses won't serve anymore. With a new set of ground rules, you can't play the game the same way. Faculty have to learn new ways of giving courses; students have to learn new ways of taking them.

This problem was clear to the faculty who originally developed the WPI Plan, and it was one of the reasons behind the adoption of seven-week terms to replace fourteen-week semesters. This change in calendar forced the reexamination and redesign of nearly every undergraduate course offered at WPI. But because of the six-year transition period of phasing out the traditional program and implementing the Plan, there was still a lot of concern that the new courses fulfill the certification function for those students studying under the older curriculum. And this meant that the learning function was still compromised by a century of historical tradition.

Over the past several years, the whole issue of how teachers teach and how students learn has come under intensive scrutiny at WPI. Various faculty study groups have addressed aspects of it. A series of periodic "teaching-learning workshops" have involved faculty and students with outside resource people and brought new ideas to light on campus.

Another factor has been the increased workload on faculty. Once, faculty members taught a few courses, saw students in their offices once in a while, corrected homework and graded exams (unless graduate students) did this), and did research or consulting work. The WPI Plan added involvement with projects and student project groups; it called for faculty members to stretch their personal horizons by strongly encouraging interdisciplinary activities; it asked faculty to take a more active part in advising students who were now designing their own programs; it required that they serve on competency

exam committees, evaluating students in a new way. And, oh yes, they still had to teach courses.

Something had to give. There aren't that many hours in the day, even for the most dedicated professors. And it seemed logical that courses were the place to get some working room. This raised a delicate issue: WPI alumni have consistently reported that one thing they really liked best and remembered about the school was the close student-faculty relationships. To suggest that faculty get less involved in the traditional classroom format, to suggest larger classes taught by fewer instructors, would seem to be denying a basic value. Except that this was proposed to release time for faculty members, time they could then use for advising, project participation, and other activities where contact with students was much closer to one-on-one.

So a committee of faculty began looking at this very basic issue: what is a course? On what basis do you choose techniques and formats? How should you organize/present/confront material most effectively and efficiently? The group consisted of Professors Van Bluemel and Adriaan Walther (physics), Peter Lanyon and Dean of Undergraduate Studies William R. Grogan (electrical engineering), Paul Davis (mathematics), and Ray Hagglund, C. W. "Spike" Staples, and Jack Boyd (mechanical engineering).

They looked first at the historical development of technical education in this country, with its beginnings rooted in the firm separation of man the maker from man the thinker. The role of technical school graduates, from about the Civil War to the end of World War II, was to build a production system, not to examine the basis for growth or the cultural values on which growth was based. In addition, technical institutions then emphasized the empirical, craft approach to engineering, downplaying the application of broad general principles of physics and chemistry, and perpetuating a split between science and engineering.

After the second World War, the power of predictive science in technical applications had been recognized, and a revolution in technical education was brought about by merging science and technology. Still, even at the best-known schools which exemplified this newer approach, such as M.I.T. and CalTech, the engineer was viewed as the doer and not the thinker. It was felt that there often was not enough time for a student to acquire the necessary technical skills in the undergraduate curriculum, and any significant study in nontechnical areas was discouraged and considered not feasible.

One result of this approach was the growing split between technologists and society at large. And during the 1960s it became widely apparent that there were significant unwanted side-effects of technological growth. What was called for was a basic technological literacy on the part of non-scientists and non-engineers, and a sensitivity in those creating and developing the technologies, a sensitivity to the complex social implications of their work. Man the maker and man the thinker must be merged, and a new revolution in technical education is taking place across the nation. WPI is an acknowledged leader in this area.

Considering this background, the committee agreed that the education of the scientist or engineer must include: scientific/technical literacy; an appreciation of the experiences of mankind, which is at the root of the liberal arts curriculum; and an awareness of self coupled with a maturing sensitivity to others. They then went back and checked these feelings against the published goal of WPI, which was adopted in 1969 with the WPI Plan, and the found that all three components—tehnical, liberal, and self education—were contained in that statement of purpose.

As they began to address directly the role and design of courses to help fulfill these new objectives, they also discussed the ways in which students learn . . . and don't learn. They agreed that large numbers of students do not master techniques of analysis, cannot apply fundamental laws to unfamiliar situations, do not appreciate the unity and universality of the basic sciences, and don't recognize the relevance of their studies to their professional goals. "Although we are often tempted to blame the failures on poor motivation, insufficient time, inadequate high schools, or not enough mathematical preparation . . . an important part of the problem, and it's solution [may lie in] the stages of intellectual development.

"Authors of textbooks, designers of courses, and teachers have implicitly assumed that college freshmen can readily assimilate general abstract concepts as well as the mathematical expression of these concepts. But recent evidence indicates that only about one-third of college freshmen have reached that stage of intellectual development which makes possible the logical reasoning essential for an understanding of physical law. The remaining two-thirds of freshmen . . . can learn, and can develop intellectually, only from studying concrete examples that they have directly experienced."

Another area that causes a problem for students is the high degree of initiative and involvement required of a student. Coming from a high school environment where learning tends to be a very passive affair is not the best of preparation for the WPI Plan. Where before the classroom teacher could review the book material for the class, the student must now learn from many sources outside the classroom. Where material used to be treated in disjointed blocks, the student must henceforth learn to continually synthesize ideas. From considering problems keyed primarily to the solution methods of a particular chapter in a particular textbook, the student now meets open-ended problems that prevent routine "cranking out" of answers and call for investigating many possible ways of solution. Where the student used to react, following the lead of the instructor, now the student is an independent agent, actively directing and advancing his or her own learning program. And because of all these changes, it is obvious that most students need some help in making the transition from passive to active learner.

The Goal of Worcester Polytechnic Institute

It is the goal of the Worcester Polytechnic Institute to bring into the second century of its existence a new, dynamic version of its "Two Towers" tradition.

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 Faculty, December 17, 1969

Coming back to the issue of how to design courses, the group defined the following set of criteria:

In courses at WPI, in order to master a given body of material, students should participate in learning:

1. To read effectively in the literature of a given field
2. To write effectively using the vocabulary of the field
3. To talk effectively using the vocabulary of the field
4. To acquire pertinent data from various sources
5. To understand and use basic ideas and concepts, rather than to manipulate formulas
6. To model systems and define the limits and assumptions of these models
7. To establish a methodology of problem-solving
8. To think in terms of the system (synthesis) as well as its components (analysis)
9. To work with others

Indeed, they decided, much of the emphasis had to be on helping students learn how to educate themselves; that achieving the criteria outlined above in a course did not mean that the informational content of the course had to be diminished or lost, but that it was possible instead for the student to master it independently—a more lasting and signficant educational experience.

Now the group began to consider how to structure and organize courses so that they might meet the criteria agreed upon. Obviously, different courses have to be approached in different ways, and they explored some of the possibilities. Modularization was an important topic—the division of course material into self-contained blocks that could be put together in different ways. A Committee on Modular Education, chaired by Professor Walther, had been studying the subject for two years. They had first looked around for modular materials that had been developed elsewhere, concentrating first on the general area of engineering science. They looked to other educational institutions, commercial firms, materials from the Open University in England. They also cooperated with an NSF-sponsored study being done by Drexel University concerning the "exportability" of modules from one school to another. (A module, by the way, was defined as a package of learning materials typically covering an amount of subject matter larger than could be contained in a single lecture, but smaller than the amount of material covered in a course.) This program gave WPI faculty the chance to create modular material in close cooperation with faculty members from other institutions. And they found that the most interesting problem was not the collection and distribution of materials; it was how to make judgments as to the relative merits, qualities, and areas of usefulness of the materials in meeting the special educational criteria established for WPI.

One familiar teaching arrangement using the modular approach is the "personalized system of instruction," sometimes called the Keller plan, known at WPI as IPI, for individually prescribed instruction. In this system, the course is divided into small, self-contained parts. A student studies one part at a time and is then evaluated on his or her understanding of this part by a faculty member or teaching assistant. If the student understands the material, he proceeds to the next part; if not, he does more work on the old module and returns for another evaluation. This process can be diagrammed as in Figure 1. It allows students to work at their own pace, but there is usually little attempt to synthesize the material which has been learned. For example, it is conceivable that a student might have studied roots and stems and leaves and flowers in an IPI course . . . without being aware of the existence of plants! Because of this limitation, other formats have been developed, still using a modular approach.

The arrangement shown in Figure 2 provides a great emphasis on synthesis. It can be used whenever a course can be designed around a single, large-scale, real-life problem. For example, a course in environmental biology might center around a dead bird found in the back yard. The course goal might be to determine why the bird died. ME 2504, Continuum Mechanics, has been taught in this fashion. One central question was why a large pressure vessel in a factory had cracked. In this course there was no grading at all during the first six weeks of the term. The course grade was based on an examination taken in the seventh week and on a project report describing the student's understanding of the solution to the central problem.

A different course structure (Figure 3) was used for ME 3320, Design of Machine Elements. This course used six modules to be covered in the first six weeks. Each was introduced by a lecture, but there were no further formal presentations. Instead, question and answer periods and small-group discussions helped students assess their own progress by comparing their problem solutions against the instructor's. After six weeks there were two examinations given. Compared with IPI, this course format places greater responsibility on the students, and, through the "mini-competency exam" at the end, adds the important element of synthesis.

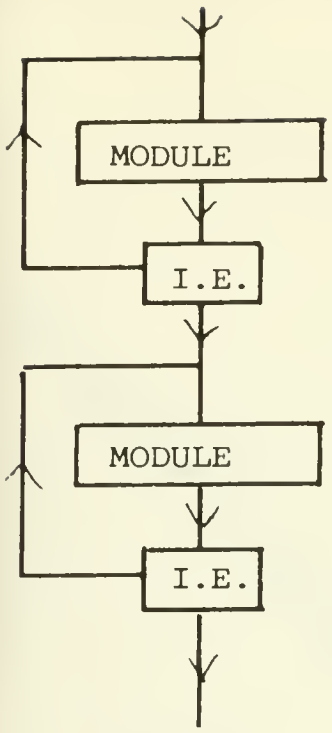


FIGURE 1

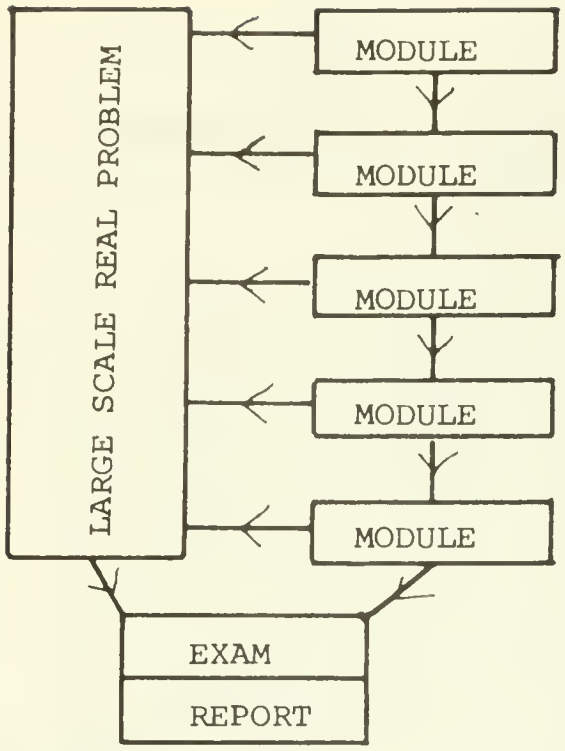


FIGURE 2

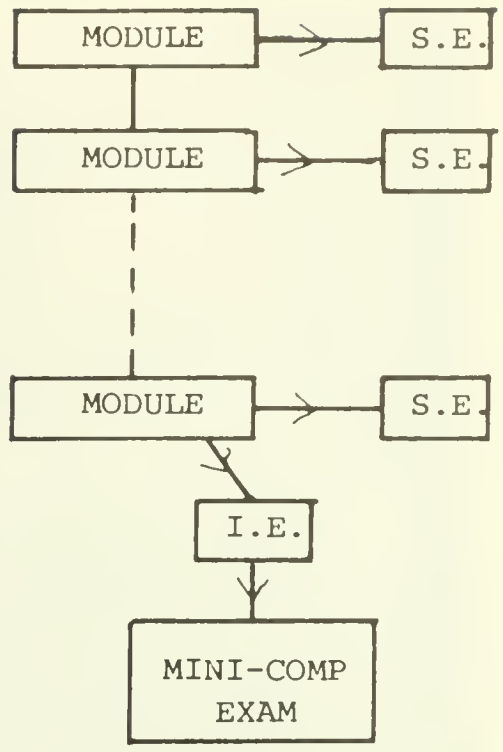


FIGURE 3

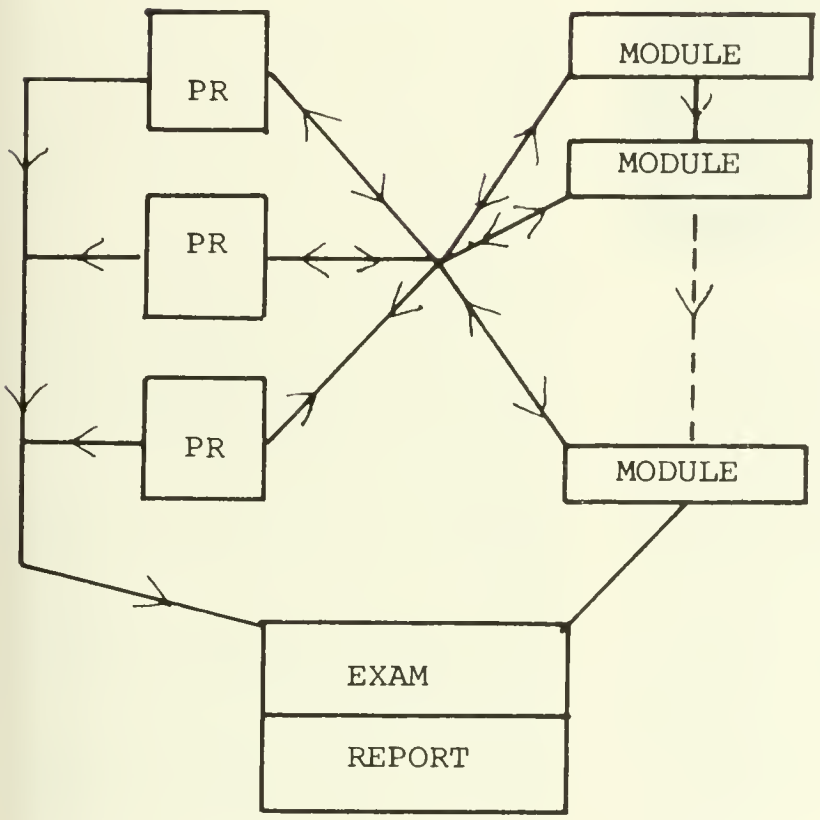


FIGURE 4

A fourth format has been used in Introduction to Dynamic Systems, ES 2503. Here each student was required to carry out four experiments, then develop a theory to cover them. Students could gauge their progress and understanding by seeing how closely their calculated results fit the experimental data. There was additional feedback through brief weekly quizzes, and students were graded on their performance in a final exam and on the report submitted on the four experimental projects.

I.E. = Instructor evaluation

S.E. = Self evaluation

PR = Practical problem, project, experiment

Experience with these new course formats—and others—has been very promising to date. The goals mentioned earlier seem much closer to being met. The faculty committee reported: "Unlike conventional courses, where almost all of the instructor's time, other than lectures, goes into examining and grading, at WPI this precious student-faculty interaction time can be used for teaching. . . .

"Another rewarding experience has been the attempt to shift information gathering and transfer to the student outside the classroom. When the students can master information, by learning how to learn on their own with growing confidence, classroom time can be used in much more exciting and beneficial ways."

They concluded: "Those of us who have been involved in the effort of establishing a new educational course process at WPI have become very excited about the almost unique opportunity for educational advance that the flexibility of the WPI Plan structure offers. This flexibility results in a real potential for achieving participatory education, in courses, that can only be dreamt of at traditional colleges.

This article is based on two faculty committee published reports: "The Use of Modular Teaching Material at WPI," by J. M. Boyd, R. R. Hagglund, H. P. D. Lanyon, C. W. Staples, and A. Walther (chairman); and "The Educational Process at WPI: A Basis for Course Design." by those listed above plus V. Bluemel, P. W. Davis, and W. R. Grogan, edited by J. M. Boyd. For further information, please contact Dean of Undergraduate Studies William R. Grogan.

Good luck, Norma

Norma Larson is listed in the *WPI Campus Directory* as director of records and services for University Relations. Unofficially she has been the "first lady" of the Alumni Office for 30 years, a friend to hundreds of alumni and their families. As of October 31st her official title will change to that of Norma Larson, private business woman.

"But I'll never forget the friendships I've made through WPI," she declares. "And don't be surprised if I turn up 'unofficially' at reunion time." She smiles. "After all, I *am* an honorary member of the Alumni Association."

For Norma the decision to leave WPI came about naturally enough. Her sister, Grace Pembroke, recently opened a specialty shop, "A Touch of Grace" at 414 Main Street in Worcester.

"Grace specializes in handcrafted gifts sold on consignment and custom made clothes," Norma explains. "She has a fast-moving line of pottery, silver jewelry, and leather goods. Although the shop has been open only a few months, the business has grown so much that she needed someone to help her. I was the logical choice."

Norma feels that branching out into business will be a real challenge, and she's looking forward to it. "I'll be dealing with the customers and with our suppliers in Boston and New York," she says. "It should keep me on the move."

Anyone who has seen Norma in action at WPI, knows that whatever the future pace might be, she's not only capable of keeping up with it, she will more than likely set it. At reunions she is everywhere: at the registration table; at the cocktail parties; and at the various dinner dances.

Norma has been the perfect kind of "take-charge" lady for reunions. Not only does she know many of the alumni by their first names, she also knows their wives and children. She knows who is registered at the Sheraton-Lincoln, what class is having its picture taken at 10 a.m., the hours that the Art Museum is open, and what the Class of 1940 is having for dinner. She smiles, shakes hands, and directs anxious alumni children to the nearest restroom. She manages to do all of these things without getting a hair out of place.

Regarding her interaction with alumni, *Irving James Donahue, Jr.*, '44, a former president of the WPI Alumni Association, says, "Norma did everything I asked her to do and more, when I was in office. Whenever I needed a helping hand, she was there to lend it. I can't say enough good things about her. She's been outstanding."

Thomas J. Denney, vice president for University Relations, says of Norma, "She's been absolutely great and has been a marvelous asset to both the college and the alumni. She takes exceptional pride in her work, and has demonstrated time and time again her concern for all alumni. She will be impossible to replace, and will be missed by her friends here on campus and throughout the world."

Francis S. Harvey, '37, immediate past president of the Alumni Association adds, "Norma has a gift for straightening things out. Whatever the problem might be, she always seems to be able to come up with the solution. She has been wonderful to work with. A true friend."

After three decades of dealing with alumni, Norma declares that "all" of the classes are her favorites, but she does reserve a special place in her heart for the Class of 1912, of which she is an honorary member. "Of course, I can't forget the Class of 1902," she continues. "They gave me Kwasind to look after back in 1952 and he's still with me."

Kwasind, a big-horned Indian war club, the mascot of the Class of 1902, broods in a corner of Norma's office. He is distinctly unlovely, but Norma confesses that she has developed a fondness for him, sour-puss and all. "He sort of grows on you," she says.

The same thing could be said of Norma's job. That sort of "grew" on her, too. "When I first came to WPI, I worked for *Donald Smith,* '41, who was Alumni Secretary-Treasurer at the time," she says. Before she knew it, she became Alumni Fund secretary and found herself recording fund gifts, as well as doing her regular work, keeping thousands of alumni names and addresses up to date.

Later, with *Warren Zepp,* '42, she was promoted to administrative assistant. When Thomas J. Denney became vice president for University Relations in 1971, Norma was subsequently named director of records and services, and an official member of the administration. Since 1969 she has also worked with *Steve Hebert,* '66, the current alumni director.

In her present capacity, Norma serves as reunion coordinator, plans homecoming events, acts as liaison for the Tech Old Timers, takes charge of Alumni Association financial records, publishes a monthly mailing calendar, and coordinates all computer programs with WACCC. She also reviews monthly gift reports with the gift recorder, works on department budgets, and maintains a cost analysis on department projects.

Although much of her time is spent on alumni-related projects, Norma is on friendly terms with a number of students who work part time in University Relations.

"As a matter of fact, it was the students, themselves, who provided me with one of the highlights of my career at WPI," she declares. "In 1976 they tapped me for membership in Skull. I was completely surprised and perfectly delighted. (She is the first WPI woman staff member to be so honored.) I'm not sure that I'm over it yet, and it's been more than a year!"

Norma's schedule off campus follows a familiar whirlwind pattern. She has served as a delegate to Republican state conventions. As a member of the Worcester Ward I City Committee, she also worked tirelessly for Republican candidates, and has served on various other political committees.

At home she tends 100 house plants. She has a 1000-volume library, mostly political and history books, all fully catalogued. "I've got hundreds of records, and they're catalogued, too," she says laughingly. "Even at home I can't stop keeping records of everything."

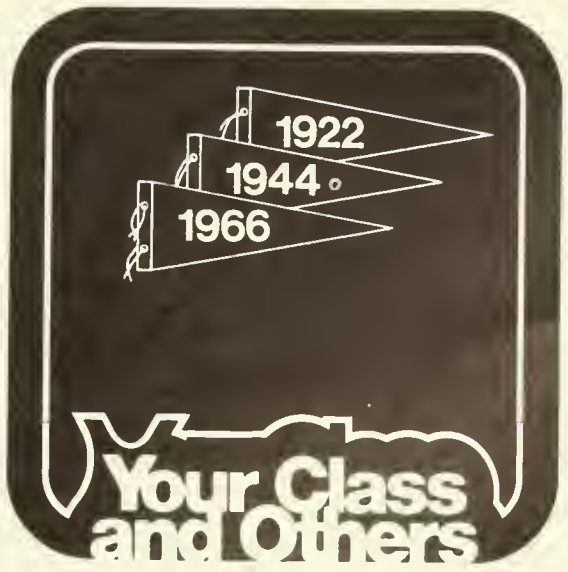
She loves music and belongs to the Worcester Music Festival and the Mechanics Association. She does many of her own home repairs, "sometimes with a Girl Scout handbook in my hand, when I need to tie a certain knot," she says.

There are other things that Norma would like to do some day soon — like getting a new dog. "Ginger died last May. I miss her," she admits. (Ginger was 16.) She hopes to go back to her acrylic painting, renew her interest in tennis, and attend more baseball games and ballet performances. She wants to spend more time with her nieces and nephews. ("I dote on them.")

Norma is looking forward to pursuing new pastimes, a new job, and a challenging future. But what goes on at WPI will always be of interest to her.

"You can't erase thirty years of memories and friendships overnight, and I wouldn't want to try," she says. "I'll be back. At reunion. Or homecoming."

(Whenever, Norma. WPI will always welcome you and wish you well!)



1905

Ernest Morse recently fell and broke his hip. He writes that he is now "doing OK."

1916

Arthur Nutt, class president of the class of 1912 at Classical High School, Worcester, spoke at his 65th reunion in June. The former class president distinguished himself by designing aircraft engines on the B29 and other aircraft which set world speed records. His father, Charles Nutt, was publisher of the *Worcester Spy*.

1921

Lincoln Thompson, retired chairman of the board of the Raymond Precision Instrument Co. of Connecticut and founder of the Sound Scriber Corp., which manufactured the first electronic dictating machine, attended his 60th class reunion (Old English High School) in Worcester in June. He was president of the class of 1917.

1924

The **Godfrey Danielsons** celebrated their golden wedding anniversary last October. Mr. Danielson is chairman of the Utilities Commission of the Sun City (Ariz.) Home Owners' Association. He sings in a 100-voice male chorus and church choir, serves on four church committees, and plays tennis and bridge. . . . **Willard Gallotte** and his wife recently served as acting managers of a small rest home. They are located in Bellevue, Washington.

1933

Robert Blake retired last year following 43 years of service with New York State Electric & Gas Corp. (a private investor-owned company). He now belongs to RSVP (Retired Service Volunteer Persons) and enjoys golfing, gardening, and traveling. . . . **John Shabeck,** since retiring from Raytheon last year after 28 years, is presently working nearly full time as a Raytheon consultant. He is concerned mostly with the design and development of a laser gyro for missile navigation, but also does consultant work on gas lasers and laser systems.

1934

H. Raymond Sjostedt recently retired as Connecticut state director of Civil Preparedness and as vice president of the National Association of Civil Preparedness Directors. Currently he is involved in church fund raising and Republican politics on state and local levels. Previously he had worked 34 years for Watertown Mfg. Co.

1935

Now retired from Liberty Mutual Insurance Co., **James Healy** is serving as president of Newburyport Maritime Society, Inc. (Custom House Maritime Museum). . . . **Osmond Kinney** has retired. He was area engineering superintendent for the Potomac Edison Co. in Waynesboro, Pa.

1938

The American Numismatic Association has awarded its prestigious Heath Literary Award to **A. George Mallis** for excellence in numismatic writing for his article entitled: "Notes on English Coin Weights" published in the August 1976 issue of *The Numismatist. The Comprehensive Catalogue and Encyclopedia of U.S. Morgan and Peace Silver Dollars,* a book which Mallis co-authored, was selected for "the Numismatic Book-of-the-Year Award" for 1976 by the Numismatic Literary Guild.

1939

Keith McKeeman retired in April from J. C. Penney Co., Inc., where he had been chief industrial engineer. He and his wife, Evelyn, have retired to "Our favorite spot in a new home at Lake George, N.Y. and plan to coast for six months." He may do consulting work in the future. . . . **Norman Packard** has been named manager of engineering at Robertshaw Controls Company in Independence, Va. A professional engineer, he joined the company's Milford, Conn. Division in 1975. The Independence facility was acquired by Robertshaw earlier this year. Initial production items to be manufactured there will include refrigeration and air-conditioning related devices and systems.

1940

William S. Brooks retired in May from Rocketdyne Division of Rockwell International. . . . **Judson Lowd,** who has spent much of his career outside of the U.S. in the petroleum producing areas of Europe, South America, and the Middle East, recently spoke at a meeting of the Desk and Derrick Club of Tulsa, Oklahoma. His topic was "Imbue, Ascribe, and Ratify," He is president of C-E Natco. . . . **Richard Ryan** is with John Hancock Mutual Life Insurance Co. in Falls Church, Va. . . . **Francis Stone** has been named director of manufacturing for the shearling division at A.C. Lawrence Leather Company, Inc., Peabody, Mass. He has been with the company for more than thirty years, and prior to his most recent promotion, was superintendent of the shearling division. He is a trustee of the Cheshire Hospital and a director of the Cheshire County YMCA.

1941

After thirty years with GE, **John MacLeod** has retired and is living on Cape Cod. . . . Dr. **Herman Medwin** is co-author of *Acoustical Oceanography: Principles and Applications* recently published by John Wiley & Sons Inc. of New York City. This volume in the Wiley Series on Ocean Engineering is a comprehensive overview of the theory and applications of sound propagation and measurement in the sea, including remote acoustical sensing of marine life and the ocean floor. Dr. Medwin is professor of physics at the Naval Postgraduate School in Monterey, Calif. He is a fellow of the Acoustical Society of America and a former researcher at the Hudson Laboratories.

1942

Prof. **Roy Bourgault** of WPI's mechanical engineering department took part in the 85th annual conference program of the American Society for Engineering Education in Grand Forks, ND this summer. He participated on two panels on the "First Course in Materials Science."

Lex Carroll's 13-year-old daughter Kristen was crowned overall winner in the Junior Girls Division of the National Waterski Championships held recently in Berkeley, Calif. She won the title by finishing first in jumping, third in slalom, and third in tricks. Her proud father, an eastern waterski expert, feels her achievement was especially notable because western and southern contestants generally have a longer season in which to prepare.

Carroll operates one of the finest championship water skiing courses in the world at Adams Pond in Oakham, Mass. International stars, including Olympian Bruce Jenner, have trained at Carroll's "mud puddle," which measures about 2,000 by 300 feet. The Can-Am (Canadian-American) championships were held there in July.

Carroll, who still water skis, is vice president of the American Water Ski Association, a member of the board of directors, one of five selectors of the team that will represent the U.S. in international events, manager of that team, and a sought-after judge.

The Carroll family, including the parents, son Blake, 24, and daughter Kristen, have collectively won about 500 water skiing titles.

1943

Leonard Hershoff is a grandfather for the first time. On June 8, 1977 his daughter, Andrea, who is married to **Kenneth Johnson, '73,** presented him with a granddaughter.

1944

Harrie Rowe's son Richard is a freshman at WPI.

1945

John Hegeman continues with Chemetics Int'l Ltd., Vancouver, BC, where he is vice president and manager of the pulp and paper division. The firm is a wholly owned subsidiary of Canadian Industries Limited (Canada's largest chemical company). Chemetics and its associate companies operate worldwide specializing in design, engineering, and supply of high technology systems. . . . **Daniel Katz** is now located in Maine, where he is senior project engineer for Marine Colloids, Inc., Rockland.

1948

Robert Houghton, formerly with GE in South Walpole, Mass., has retired. . . . **Clark Poland** has been elected senior vice president of consumer businesses for the American Can Company. In his new capacity, Poland will provide guidance to the company's Towel and Tissue, Dixie Consumer, and Dixie Marathon products. Previously he had served as vice president and general manager of Consumer Towel and Tissue products, and had spent one year as vice president of operations development. Earlier he was with Howard Johnson Company and General Foods Corporation.

Poland has assumed the national chairmanship of the corporation contacts program recently inaugurated by the WPI Alumni Association, and he also serves as a member of the WPI Alumni Association Executive Committee.

Formerly the dean of the College of Pharmacy and Allied Health Professions at Northeastern University in Boston, Dr. **Albert Soloway** has now become dean of the College of Pharmacy at Ohio State University. . . . Currently **Prescott Stevens** holds the position of chief of preinvestment planning in the World Health Organization Division of Environmental Health in Geneva, Switzerland.

1950

Kenneth Parsons has been appointed product engineer for grinding wheel products in the abrasives marketing group at Norton Co., Worcester. Since joining Norton, he has held several engineering and supervisory positions, his most recent being that of chief inspector for organic products in the grinding wheel division. He is a registered professional engineer.

1951

William Cunneen is again serving as a section chairman in the central business division of the 1977 campaign of the United Way of Massachusetts Bay. He assists in the fund-raising efforts of businesses located in the central division, which includes Boston and twenty adjacent communities. Cunneen is assistant chief control systems engineer with Stone & Webster in Boston. . . . **Robert Mongilio's** son is a freshman at WPI. . . . **Ramsey Sheikh,** a former vice president of Riley Stoker Corp. of Worcester, is buying Boiler Engineering & Supply Co., Inc. and its subsidiary, the Leighton Tube Co. of Phoenixville, Pa. Since December, he has been executive vice president of BESCO, a privately held company that makes steam generating equipment. He is a registered professional engineer in New York and Connecticut.

1952

Richard Boutiette, director of the department of public works in Wakefield, Mass., has been named "Man of the Year" by the New England chapter of the American Public Works Association (APWA). He received the award at the chapter's annual banquet held in Chatham on June 22nd. He was presented with an inscribed Paul Revere Bowl and commended for his "untiring efforts on behalf of the chapter and his dedication to upgrading the image of the municipal public works official."

Boutiette has served on national committees of APWA and as president of the local chapter. He began as DPW director in Wakefield in 1961. Previously he had been town engineer in Reading. Also, he had worked for the Massachusetts Department of Public Works, District 3, and served as senior highway engineer with Edward and Kelcey, Boston.

During his 16 years in Wakefield, he has achieved national recognition for innovations in the local department, including the inauguration of a unique snowplowing school, which has been adopted by other communities. A registered professional engineer, he belongs to ASCE, the Massachusetts Municipal Engineers Association, and the New England Waterworks Association.

He is past president of the Norfolk Bristol Middlesex Association, past president of the New England Public Works Association, and a former chairman of the technical Advisory Committee of the Metropolitan Area Planning Council.

Norman Frank has been appointed vice president for Europe, the Middle East, Africa, and the Far East by Elliott Company, a division of Carrier Corporation. He joined Elliott in 1952, progressing to district manager of the Dallas, Kansas City, and Los Angeles offices, and was named western regional manager in 1966. Most recently, he was vice president of Far Eastern operations. Frank is a registered professional engineer and a member of the board of Elliott's Japanese licensee, Ebara Manufacturing Company, Ltd. Elliott is a leading international manufacturer for turbomachinery for the oil and gas, chemical, petrochemical and steel industries.

Dr. **Richard Zeleny** was recently named manager of the process development department of Stauffer Chemical Company's Western Research Center in Richmond, Calif. He is responsible for the development of commercial production processes for the firm's agricultural, food ingredients, and industrial chemicals. He also heads a team responsible for the development of pollution and environmental control facilities. With the company since 1967, he has served as a section manager at the Richmond Center, and was once at Stauffer's facility in Green River, Wyoming.

1953

Oliver Sullivan is president of United Data Services Co., Phoenix, Arizona.

1954

Francis Gamari was recently named plant manager for the Sprague Electric Company's wet and foil tantalum operations in North Adams, Mass. Previously he was manager of manufacturing engineering at the facility, department head for wet and foil tantalum capacitor engineering and chief engineer of tantalum foil capacitor product engineering. Before joining Sprague in 1957, he was with Allied Chemical. In 1975 he received a special recognition award from the National Aeronautics and Space Administration for his work in the development of a new capacitor technology, which resulted in the tantalum-cased wet-slug tantalum capacitor. He holds three U.S. Letter Patents in the capacitor field.

Thomas Kee has joined White, Weld & Co., Inc., as vice president of the Providence, R.I. office. He formerly was an account executive with Merrill, Lynch, Pierce & Fenner, Providence. White, Weld & Co. is an international investment banking and securities marketing firm with 28 offices in the U.S. and seven abroad. . . . **David LaMarre** is now director of Electronics-Electromechanical Laboratory, research and development, for the Optical Products Division of American Optical. In 1954 he started at the firm as a junior physicist. Most recently he was manager of lens development. He belongs to the American Optical Society of America, and serves as chairman of the technical working group of the Optical Manufacturers Association. His published materials include numerous papers on laser research.

1955

After completing 18 years in various engineering and production assignments at the Warners plant of American Cyanamid Co. at Linden, N.J., **Gerald Backlund** has transferred to the agricultural division in Princeton, N.J. He is manufacturing manager of pesticides.

Peter Morgan, SIM, has been elected a director of Associated Industries of Massachusetts. Associated with Morgan Construction Co., Worcester, since 1948, he is presently vice president of the firm. Formerly he was a metallurgical observer with American Steel & Wire, Worcester. Currently he is director, president and treasurer of Morgan-Worcester, Inc. He is also a director of the Worcester County National Bank and a trustee of both old Sturbridge Village and Becker Junior College. He serves as a director of the Worcester Taxpayers Association, a member of the town of Leicester Advisory Board, and vice president of the Worcester YMCA.

Albert Pollin is the newly elected president of the District of Columbia Society of Professional Engineers.

1956

▶*Married:* **Hans H. Koehl** to Miss Peggy L. Olaski on July16, 1977 in Waltham, Massachusetts. The bride is an adult nurse practitioner in the office of Arthur A. Wills III, M.D. She graduated from Heywood Hospital School of Nursing and Peter Bent Brigham Hospital Adult Nurse Practitioner Program. The groom graduated from Stanford University School of Law and is president of Connecticut Engineering and Manufacturing Co.

John Burns holds the post of regional manager for Shell Chemical Co. in West Orange, N.J. . . . **John Nash** is energy coordinator at Koppers Co., Inc., in Chicago. . . . **Richard Rodin** is the current chairman of the Montclair (N.J.) High School Science Department. He is also marketing a game with Science Kit Inc. called "The Great Periodic Table Race."

1957

On January 1st **Edward Dennett** became the national sales manager of the Sangamo Energy Management Division of Sangamo-Weston, Inc., Atlanta, Georgia. He has been with the firm for twenty years and previously was southeast regional manager. . . . Bay State Abrasives, Westboro, Mass., has announced the promotion of **Aram Sohigian** to manager of project engineering. He joined the division in 1959 as a project engineer, and has since been senior project engineer.

A Retread who keeps on rolling

During the daytime, ROY BAHARIAN, '44 is vice president for engineering, purchasing, and traffic at Diamond International Corporation. At night he's just a "retread," but he loves every minute of it!

Baharian is a trombonist with a group of executive musicians who have dubbed themselves "The Retreads," and who play for charity benefits and fun in and around Greenwich, Connecticut.

"We rehearse once a month, and perform about six times a year," Baharian says. "For example, we play for the Greenwich Community Fund Kick-off Dance, an annual block party in which the main street is blocked off, filled with card tables, and lighted only with candles. Such charity benefits are usually well attended because the Retreads are so well known locally."

One of the highlights of the year for band members is performing at the ice skating rink at Rockefeller Center in New York City. "We've played there once each summer for the last three years," Baharian reports.

Although Retreads members consider themselves to be primarily a local group, they attained national recognition in the July issue of *Fortune* magazine when mention of them was made in the article, "Tuning in on the Jazz Revival." The story covered the activities of various executive-staffed bands across the country. Sidelights on the Retreads were included.

Originally, the Retreads started out as a six-piece Dixieland group that played mostly by ear. In 1971 the group was expanded into a Glenn Miller style, seventeen-piece band, including five saxophones, four trumpets, and four trombones.

According to *Fortune*, "inspired leadership . . . and superior musicianship have been able to keep the collection of busy executives and entrepreneurs coming to monthly (Retreads) rehearsals."

Baharian feels that a dozen or so rehearsals a year may not really be enough, but as far as he is concerned, he can do little about it. "My job keeps me traveling about fifty percent of the time," he explains. In order to maintain the "lip" required to play the trombone for hours at a time, or to hit the high notes, he takes the mouthpiece along with him on business trips, and blows while he drives around the country!

Basically, the Retreads is a fun group, but a professionally excellent one. Members include alumni of the Benny Goodman, Tommy Dorsey, Jimmy Dorsey, Lawrence Welk, Ted Fio Rito, Al Donahue, and Charley Parker orchestras. Baharian, himself, is a "graduate" of the Vaughan Monroe organization.

While at WPI, Baharian played trombone in the Tech marching band and in the Boyntonians, the campus dance band. Classmate L. Howard Reagan, who hasn't seen Roy for 33 years, but who recalls those days fondly says, "Alas! How many hearts have been won to the sensuous sounds of the vibrato emanating from the bell of the slippery, slithering, cornucopia-esque moans from Roy 'Slushpump' Baharian's slide-trombone?"

After the war, in 1952, Baharian played for two summers, six nights a week in the Heywood-Wakefield Furniture Company Concert Band. "At the time, I was assistant chief engineer of Riley Stoker Corp., in Worcester, but because it was the furniture company's proud boast that every player was an employee, I was listed as a Heywood-Wakefield shipping department employee on the programs," he explains.

Later he became musically active in the Norwalk, Conn., area. For twelve years, until 1974, he was in the Stamford Symphony Orchestra and the Westchester County Oratorio Society Orchestra. For ten years he played in theatrical groups for musicals such as "Guys and Dolls," "My Fair Lady," "Carousel," and "Gypsy."

For the last fourteen years he has played in the orchestra for the Darien Troupers' Gilbert and Sullivan productions, served as Sunday School superintendent at the Darien United Church of Christ, and played the organ for "relaxation."

Even a Retread has to stop rolling once in a while!

Why did Phil Nyquist, '50, join the Peace Corps? Well, why not?

By Phil Nyquist, '50

In 1972 I accepted an invitation to join the Peace Corps as a volunteer lecturer teaching mechanical engineering in Malaysia. Shortly after I joined, I received a note from the Publications Department at Worcester Tech inviting me to write an article on why I joined the Peace Corps; more specifically, why a man of my age would join the Peace Corps. In retrospect I can answer that in a very precise, engineering manner by saying, "Why not?" It was the greatest experience of my life and I have no regrets about my decision.

In the early 1970's I found myself a victim of the unemployment problem which seemed particularly acute on the west coast. In making the rounds and looking for a job, it appeared that there were always many more applicants than jobs. Now, I am not particularly disturbed by competition, but I thought it might be well to look in a broader field to see if there were some areas in the world with many jobs to do and very few to fill them. I investigated through my church denomination's mission headquarters and they made several good suggestions, but most of these jobs dealt with immediate or "ground floor" type activities. They did need the basics, such as roads, dams, water systems, improved sanitation facilities, etc., but since I'm not a civil engineer, I didn't see myself capable of fulfilling these particular needs. I had worked for most of my career as an industrial engineer and there seemed to be no direct need for skills along these lines in the undeveloped countries.

At this point I had a discussion with the local Peace Corps Office in San Francisco and was pleased to learn that they have now expanded their mission to include assistance not only for the "basics" but also for developing countries where the skills of an industrial engineer would be of value. I filled out the application, and then I waited.

In February of 1972 I was appointed to a permanent position with the City of San Francisco and at that point I decided that "fate" had decreed I should stay home instead of going overseas. One month later I was invited by the Peace Corps to join a technical education project in Malaysia. Now, bear in mind that I was a life-long Republican (still am, by the way) and I had never made a non-conservative decision in my life. I pondered the idea of leaving such a "secure" position as civil service in San Francisco. But then I considered the many fringe benefits on the other side. Not too many folks get the chance to travel to (literally) the other side of the world, and if they do, it is usually after they retire or if they are particularly successful in their business, so I was being offered a very unique opportunity. I had no pressing financial obligations I couldn't take care of. After weighing the facts as accurately as I could, and after sifting through much kind advice from friends, I resigned from my job in San Francisco and accepted the Peace Corps assignment. I will admit to some second thoughts, particularly when that hot humid air hit me as I got off the plane at Kuala Lumpur, Malaysia. I am very sure, however, that if I had decided the other way I would have been forever nagged in my own mind as to what the possibilities were on this overseas assignment.

I was assigned as technical lecturer in mechanical engineering at the Politeknik Ungku Omar in Ipoh, Malaysia. There they have a two year course roughly similar to our junior or community college system back home. I taught 28 hours per week; and when you couple that with the fact that I had to spend about two hours preparation time for each hour in class, it added up to a somewhat impossible task, wherein was some of the frustration. The result was something of a compromise; much better than nothing but not up to the quality that I would like. My teaching experience previous to joining the Peace Corps was limited to assisting with some company sponsored courses in "Industrial Engineering Techniques." In view of this, my first reaction when I received the invitation from the Peace Corps was to call them in Washington to see if they had inadvertently contacted the wrong man. They assured me that no mistake had been made and that there was a big need in teaching in the technical field for people with practical industrial experience. Outside of having to get bi-focals the transition from industry to classroom was quite painless.

Preparing for class →

Engineering Science lab, ↑
Phil in center

A "minor danger when hiking — a pit viper! ↓

Lots of these oxcarts in Malaysia, too — along with the trucks

Subjects that I was responsible for were workshop management (basic industrial engineering), workshop practice, mathematics, and engineering science (physics). I learned that not only is it difficult to teach an old dog new tricks, but it is difficult for an old dog to teach old tricks. I found myself during the first year literally about two days ahead of my students, as I sought to re-learn and then teach that which I once was taught (many years ago) at WPI. This is particularly true of the theory part of the subject material. The second year was somewhat easier. The students at the Politeknik are 17 to 20 years of age, quite reserved and somewhat difficult to involve in class discussions), pleasant, and growing in responsiveness. Average classroom temperature was 85° to 95°F with very high humidity all year.

A very important fringe benefit was the delightful group of fellow Peace Corps volunteers I was privileged to work with. We ranged in age from 19 to 74, with the average age about 24. Never have I been associated with such a great bunch. The area around Ipoh (pronounced eepō), Malaysia, has some of the best scenery I have ever seen (and I have lived in both New England and California). Ten minutes by motorcycle from the city and you can be right out in the cool, damp jungle in delightful hiking territory. The pay is not impressive. I got a "salary" of a little more than one hundred dollars per month for three years, but you will be surprised to learn that you can ALMOST live on that in Ipoh.

The editor of the Journal, in corresponding with me about this article, summed up his own Peace Corps experience in Brazil as follows: "Frustrating, somewhat rewarding, and above all, eye-opening." It is strange that more than ten years later, and on the opposite side of the globe from where he had his experience, I would say that that is still an accurate description of our Peace Corps assistance program.

Actually, I intended to send in these thoughts on the Peace Corps many months ago, but now that so much time has elapsed I can look at things in proper perspective. One of the most important lessons that I learned was that "compromise" is not a dirty word *providing* that you are moving in the right direction. There is a lot to be done and I believe that the Peace Corps can continue to make a big contribution. I am pleased to note that the Peace Corps has apparently ceased to be the political football it was a few years back. There is much to be done to improve the organization and there is much that the Peace Corps can do in underdeveloped and developing countries. Overall it is definitely on the plus side.

Unfortunately the Peace Corps cannot guarantee continued official friendship of other countries for the United States. Although the Peace Corps is invited into the countries where they serve, and as volunteers we are guests of the government, the Peace Corps volunteers work down at the *people* level in assisting, teaching, and general cooperation. As you know, the government and the people are apt to be two different entities in developing countries. For that reason some governments at times get disenchanted with the Peace Corps, but the people are almost always our friends. That is why, too, that the Peace Corps will not have an immediate favorable effect on our foreign policy. The Peace Corps does not yield quick dividends in that respect, but people who need help *are* being helped. It will show up way down the line. But, on the other hand, the entire budget for the Peace Corps is a pittance compared with the rest of our foreign aid. It is well worth keeping.

In June of 1975 I got back from my Peace Corps assignment in Malaysia just in time to attend my 25th anniversary at WPI. I was happy to note that my classmates had become successful executives over the 25 year stretch, and I would like to direct a word to them and to other successful alumni. (Are there any other kind?) Since you are in a position to influence company policy, if not actually make it, I would like to suggest that you make it easier for people to donate two years or so to an organization like the Peace Corps. Right now about the only ones who can do it and keep their seniority are teachers and, in some cases, civil servants. I don't think that a person should continue to get a fat salary during this volunteer time, but it would be nice if he or she could be sure of getting the job back. People from industry are especially needed in developing countries. And a further word to all of you: In case company policy doesn't change to make it easier for you — quit anyway and go overseas for two years. You will never regret it, and you will be surprised at how little you lose, how much you can give.

I did get to feel somewhat obsolete, being away from modern industry for so many years. I appreciated having trade magazines available to keep me in touch, particularly the Industrial Engineering Journal. My AIIE chapter in California, the Peninsula Chapter, very kindly paid my membership dues while I was in the Peace Corps. And of course it is always nice to hear occasionally from WPI.

I had no job to go back to when I left the Peace Corps, but I was fortunate in being able to secure a position with the International Labour Organization of the United Nations. I am now assigned to the Vocational and Managerial Training Center in Bandung, Indonesia as UN adviser in work simplification and methods improvement. In Indonesia they speak the same language as in Malaysia, which is convenient. During a three-month training period with the Peace Corps in Malaysia we were required to get a 1+ language rating on the international scale. For those of you who are not familiar with this rating, a 1+ indicates that I am able to say (with reasonable proficiency in the native language), "Hello! My name is Phil. Where is the bathroom?" But in spite of having advanced somewhat from my 1+ rating, I'm still not up to delivering a technical lecture in the native language. And since the folks in Indonesia are not proficient in English, now I have to go through an interpreter. (Puns go over like lead balloons through an interpreter). But language difficulties notwithstanding, the people of both Malaysia and Indonesia are delightful to associate with. They are really friendly; it is not just something that you read in a book. The girls are very beautiful and I guess the boys are handsome, but I haven't noticed them so much.

It is unfortunate that people tend to form opinions of the United Nations and its various agencies based on what they observe to go on at headquarters. The United Nations organizations have distinguished themselves with outstanding performance in assisting developing countries around the world. Notwithstanding some disappointments and some frustrations, my present assignment with the International Labour Organization of the United Nations, like my previous assignment as a Peace Corps volunteer, I find very stimulating and rewarding.

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Air Force ROTC—Gateway to a great way of life

1958

Donald Inglis, the assistant to the president of Berkshire Gas Co., has been promoted to vice president for planning and supply. He has worked for the Pittsfield, Mass. firm for 19 years. A member of the Kiwanis Club and active in scouting, Inglis has also taken courses in management and finance at the University of Massachusetts. . . . Recently **Howard Painter, Jr.,** was appointed vice president of GenRad Company of Concord, Mass. Earlier he was general manager of the electronic instrument division.

Howard Pritz was among thirty inventors honored at a recognition banquet for patents they received during 1976 at Battelle Memorial Institute's Columbus (Ohio) Laboratories. Pritz was cited as a co-holder of three patents: (1) a method for forming and ion exchange strengthening a chemically durable glass ampule suitable for dual use as a medicament storage container and a pressurized cartridge that is compatible with a novel unit-dose injection system; (2) a gas-operated device for jet injecting medicaments at precise pressure and energy levels; and (3) a unit dose medicament system for use in a jet injector featuring a strengthened glass ampule and a breakaway plastic cap and locking device. Pritz was one of seven persons accorded special recognition for receiving at least three patents in the last two years.

Richard Wiinikainen has been appointed as a member of the executive committee of the Society of Plastics Engineers, having previously served in many capacities at the local and national levels. The Society has over 19,000 members. Wiinikainen, who has been with Foster Grant in Leominster, Mass. since 1960, is listed in *Who's Who in the East* and the *Dictionary of International Biography.* He received his MS in engineering management from Northeastern University in 1975.

1959

▶*Born:* to Mr. and Mrs. **Joseph B. Vivona** their second child, a daughter Juliana on November 10, 1976. Juliana's sister, Marissa, was born four years previously on the same day.

The Reverend **Harvey Egan,** S.J. currently serves as assistant professor of mystical and systematic theology at Boston College in Chestnut Hill, Mass. He has published a book, *The Spiritual Exercises and the Ignatian Mystical Horizon.* . . . **Michael Hertzberg,** principal of the firm Michael A. Hertzberg Consulting Engineers, Warren, Vt., has been reappointed chairman of the American Consulting Engineers Council committee on interprofessional relations. The committee handles relations and information on a national level of significance to consulting engineers and architects. Hertzberg has also served as chairman of the nominating and education commitees of the Vermont chapter of the American Society of Heating, Refrigeration, and Air Conditioning Engineers and has been president of the Consulting Engineers Council of Vermont twice. . . . Lt. Col. **Robert Smith** was recently appointed chief of the operations office at Rome Air Development Center, Griffiss AFB, N.Y. Previously he was with RADC as chief of the Resources Control Branch. He is also a soccer and lacrosse official.

1960

Dr. **Robert Bearse,** a professor at the University of Kansas in Lawrence, is also associate dean of research administration, and a staff member at the Los Alamos Scientific Laboratory. . . . **Arthur LoVetere** has been appointed president of MacDermid, Inc., of Waterbury, Conn. Since joining MacDermid in 1957, he has served as technical sales representative, regional sales manager, vice president of marketing, and chief operating officer of the firm. He is a trustee of the Metal Finishing Suppliers Association. . . . **Peter Zilko** is now the sales manager of Eagle Signal in Davenport, Iowa.

1961

Gerald Casiello serves as corporate purchasing agent at Union Carbide in New York City. . . . **Theodore Cocca,** manager of the fire control section of the Advanced Missile System Project of the Navy's Sea Systems Command, has graduated from the program management course at the Defense Systems Management College at Fort Belvoir, Va. The 20-week graduate level course is designed for mid-career officers and civilians pursuing long-term careers and seeking future key assignments in defense systems acquisition management. Cocca began working for the government in 1961 as an employee of the Federal Power Commission in Washington.

Kenneth Parker switched jobs in February. Now he is director of marketing for Fletcher-Thompson, Inc., an architectural-engineering firm based in Bridgeport, Conn. . . . **Stuart Troop** is a senior analyst at GE in Bridgeport, Conn.

Dr. **William Wolovich** was recently promoted to full professor of engineering at Brown University in Providence, R.I. Prior to joining the Brown faculty in 1970, he served as a ground electronics officer in the U.S. Air Force and was subsequently associated with the NASA Electronics Research Center in Cambridge, Mass. Prof. Wolovich is recognized as a leading authority on multivariable control, having written over forty technical articles and the textbook, *Linear Multivariable Systems.* He and his family have just returned from a one-year sabbatical at the University of Warwick in Coventry, England, under a Fulbright-Hayes Fellowship.

1962

Dr. **Kenneth Anusavice** has received his doctor of dental medicine degree from the Medical College of Georgia. In 1970 he received his doctorate in metallurgical engineering from the University of Florida. Presently he is an assistant professor in restorative dentistry at the Medical College of Georgia in Augusta. . . . **Clifford Engstrom,** manager of the Middleboro (Mass.) Gas and Electric Department, was elected president of the Northeast Public Power Association (NEPPA) at NEPPA's annual conference held in Rockport, Maine in August. He has served as manager in Middleboro since 1975 and has been a municipal employee since 1970.

Xidex Corp. has announced the appointment of **John Meregian** as new director of manufacturing for its Holyoke plant. At one time he was with Kendall Corp. of Charlotte, N.C. . . . Cdr. **Brian J. O'Connell** has transferred to the Naval War College in Newport, R.I. for a year. . . . **Prabodh Shah** has been named manager of market development for Commercial Development in the Science Products Division at Corning Glass Works, Corning, N.Y. Previously he was manager of planning for Commercial Development. He joined Corning in 1972. . . . **Stephen Wells** holds the post of director of operations planning at Lever Bros., New York City.

1963

John Lojko is director of material planning at F & M Schaefer Brewing Co., in Allentown, Pa. . . . **James McKenzie** is a partner in DW Construction & Development Co., Richland, Washington. . . . Presently **Phillip Parmenter** holds the post of senior product engineer for Split Ballbearing, a division of MPB, in Lebanon, N.H.

1964

▶*Married:* **Peter Dornemann** to Miss Beth Ziegler recently in Princeton, New Jersey. Mrs. Dornemann graduated from Allegheny College and currently attends Rutgers. The groom graduated from Wharton Graduate School and is manager of strategic planning with NL Industries.

Dr. **J. Richard Lundgren** has been promoted from assistant professor to associate professor of mathematics at Allegheny College, Meadville, Pa. He joined the faculty in 1971 and is a specialist in group theory, a branch of algebra. Last year he received a National Science Foundation grant for a summer research conference at the University of Minnesota. He has had two articles published in the *Journal of Algebra.*

John Macko serves as supervisor, government contracts liaison, for Pratt & Whitney Aircraft in the government products division, West Palm Beach, Fla. . . . Dr. **Robert Peura** moderated a discussion in the biomedical division at the 85th annual conference of the American Society for Engineering Education this summer at the University of North Dakota in Grand Forks. He serves as acting director of biomedical engineering at WPI. . . . **F. Barry Sylvia** currently holds the post of senior project engineer at Polaroid in Waltham, Mass.

1965

▶*Born:* to Mr. and Mrs. **Peter F. Behmke** a son Peter John on February 7, 1977. Behmke is a staff engineer at Fram Corp., East Providence, R.I. . . . to Mr. and Mrs. **Leo R. Berendes** a daughter Sharon Margaret on July 26, 1977. Berendes is now an account executive at Hornblower, Weeks, Noyes & Trask, Inc., in Providence, R.I.

James Gustafson is presently manager of data center operations at Stanley Works in New Britain, Conn. . . . **John Jacobson** serves as an ocean engineer for Yankee Atomic Electric Co., Westboro, Mass. . . . **Kenneth Johnson** has been named sales engineer at Natgun Corp., Wakefield, Mass. He had been chief engineer of the water, wastewater section of Cullinan Engineering, Inc., of Auburn. Natgun designs and constructs concrete tanks for the water and wastewater industry. Johnson, a registered professional engineer, belongs to many professional groups, including the Water Pollution Control Federation, the Massachusetts Water Works Association, the Association of Land Surveyors and Civil Engineers, and the New England Water Works Association. . . . Continuing with DuPont in Wilmington, Delaware, **Charles Seaver** is now a senior financial analyst.

Peter Kirschmann was recently named manager of the mechanical components and bushings subsection in the power transformer department at GE in Pittsfield, Mass. He is a graduate of the manufacturing management program and has held positions as foreman, advanced manufacturing engineer, shop unit manager, production control supervisor, and manager of manufacturing engineering. The holder of a master's degree in production management from Syracuse University, Kirschmann joined the GE power transformer department in 1975.

1966

▶*Married:* Miss **Beverly G. Singleton,** MNS, to Mark S. Zivan in Boston, Massachusetts on June 25, 1977. The bride, who graduated from Wheaton, is a faculty member at Bentley College. She is also director of development of education for Management, Inc. and a director of the American Management Association's Extension Institute. Her husband holds degrees from Fordham and Harvard University. He is president and general manager of UPC Resources Inc., and, also, a faculty member at Bentley College.

▶*Born:* to Mr. and Mrs. **Robert S. Sternschein** a daughter Rachel Michelle on June 7, 1977. The Sternsheins also have two sons, Jesse, 4½, and Saul, 1½. . . . to Mr. and Mrs. **Robert D. Wilson** a son Stephen Robert on February 28, 1977. Wilson serves as an advanced process engineer for GE in Evendale, Ohio.

B.H. (Woody) **Adams,** a lead hydraulic engineer on power plants for Stone & Webster, is presently a member of the site selection team working with Boston Edison in locating possible sites for a future nuclear or fossil power plant. He is also doing a study for Great Northern Paper Co., concerning the hydroelectric development potential of a river in Maine. Woody is active in the New England Trail Rider Association, which encourages responsible off-road motorcycling. The Adamses, who reside in Wellesley, have three sons. . . . LCDR **James Cocci** is presently a software support officer at USNSGA Skaggs Island in Sonoma, California.

1967

▶*Married:* **Robert P. Tolokan** and Miss Catherine A. Burke in West Haven, Connecticut on July 30, 1977. The bride earned her BS and MS degrees from Southern Connecticut State College. The groom is studying for his master's degree at the University of New Haven.

Dan Coifman has just formed his own company, Able International Corporation, in San Juan, Puerto Rico. The firm will specialize in the plastics industry and do business with the Caribbean and Latin American countries. . . . **Richard DeGennaro.** assistant manager of strategic planning at Consolidated Rail Corp., Philadelphia, has been named as new cochairman of the Chestnut Hill Community Association's transportation Committee. He will be primarily interested in the areas of community traffic, i.e., rails, buses, trolleys, and maintenance of buildings. Parking and traffic flow controls will also be his concerns. DeGennaro has been with the transportation group since his arrival in Chestnut Hill two years ago. . . . Presently **Steven Schumer** serves as a project engineer in applied technology in the energy division of Raychem Corp. at the home office in Menlo Park, Calif. . . . **Alan Suydam** has been promoted to the post of service program development engineer with Ford Motor Co. in Dearborn, Michigan.

1968

▶*Married:* **Paul A. Zendzian,** MNS, to Miss Susan M. MacGillivray on August 5, 1977 in Worcester. The bride, a graphic designer for Commonwealth Stationers, Inc., attended the Art Institute of Boston. The groom teaches at Paxton Center School.

Richard Collins has been promoted to assistant actuary within the actuarial organization at State Mutual Life Assurance Company of America in Worcester. He recently completed the examination requirements of the Society of Actuaries and has received the designation, fellow of the Society of Actuaries, one of the highest professional achievements in the insurance industry. He earned his master's degree at Northeastern University and joined State Mutual in 1968. . . . **Donald Holden** is a corporate noise control engineer in the motor wheel division of Goodyear Tire & Rubber, Lansing, Mich.

John Hoyt has entered the master of architecture program at the University of California in Berkeley. . . . **C. David Larson** has been named marketing specialist for the Weldmaster line of curable acrylic adhesives in the Bondmaster Department of the National Adhesives Division at the National Starch and Chemical Corp. He started work at the company as a technical development chemist in 1971. Previously he was a process development engineer at Union Carbide. Presently he is attending the Graduate School of Business Administration at Rutgers. He holds an MS in chemical engineering from New Jersey Institute of Technology. . . . **John Simonds** works for Raymond Engineering, Inc., Middletown, Conn., where he is a marketing representative.

1969

▶*Married:* **Richard P. Romeo** to Miss Louise K. Thomas in Westbrook, Maine on August 6, 1977. Mr. and Mrs. Romeo graduated from the University of Maine School of Law in June. The bride also had graduated from Cornell University, with the groom previously earning his MBA from the Amos Tuck School of Business Administration at Dartmouth.

Robert Barnard, who recently received his PhD in metallurgy and material sciences at Case Western Reserve University, has been awarded an official citation from the Massachusetts House of Representatives in recognition of his outstanding academic achievements. Currently he is associated with Reliance Electric Co., Cleveland, Ohio. . . . **Lee Bradley** holds the position of senior methods analyst at Melville Corp. (Thom McAn) in Worcester. . . . **Charles Doe** has been promoted to assistant actuary at State Mutual in Worcester. A fellow of the Society of Actuaries, he received his master's degree in actuarial science from Northeastern in 1973. He joined State Mutual as actuarial assistant in the group statistical records organization in 1969. In 1975 he was named senior actuarial associate. . . . **Ronald Jones** and his wife Wanda are building a new home in West Hartford, Conn. The couple has a two-year-old daughter Tamara Lea. Jones is with Jones' Enterprises, Inc., in East Hartford.

Steven Leece has been promoted to the post of manager of manufacturing engineering for vacuum coating at Bausch and Lomb's Scientific Instrument Optical Products Division. He joined the firm in 1969.

James Walker has joined the Industrial Ceramics Division as product engineer in the metallurgical and heating products group at Norton Co., Worcester. Most recently he was a field sales engineer with the metal products division of Koppers Company. In his new post he will assist in achieving the sales and profit objectives for refractory cements in assigned product-market segments. He will carry out various marketing programs aimed at increasing market share and provide necessary application engineering service to ICD field sales engineers and customers.

1970

▶*Married:* **Peter J. Billington** and Miss Maryann I. Grusetskie on July 23, 1977 in West Hazelton, Pennsylvania. The bride graduated from Boston College and earned her master's degree from Northeastern. She is a marketing research analyst at Corning Glass Works, Corning, N.Y. Her husband, who also has his MBA from Northeastern, is currently working for his doctorate at the Cornell University Graduate School of Business and Public Administration in Ithaca, N.Y.

Dom Forcella has been named executive assistant to the deputy commissioner for environmental quality in the Connecticut Department of Environmental Protection. Last year he taught at the Briarwood School for Women in Southington, Conn. . . . **Chet Napikoski** is presently with Arizona Public Service Co., Phoenix. He is working on start-up coordination for four units of a cholla coal-fired power plant in Joseph City. He and wife Karen have two daughters; Lesley, 4½ and Linda, 2.

1971

▶*Married:* **Bruce A. Hillson** and Miss Elizabeth C. Waterhouse on July 31, 1977 in Melrose, Massachusetts. Mrs. Hillson graduated from the University of Maine, Portland and has been teaching in Augusta. The groom is a civil engineer for the State of Maine. . . . **Steven P. Johnson** to Miss Sandra L. Wood on August 6, 1977 in Hanover, Connecticut. The bridegroom, who graduated from the University of Bridgeport, is a civilian employee of the U.S. Navy working on the Trident Missiles Program at the Dahlgren, Va. Naval Weapons Testing Area.

▶*Born:* to Mr. and Mrs. **Robert Trachimowicz** a son Timothy Robert on March 25, 1977. Robert works for EBASCO Services, Inc., as an office engineer and is currently in Houston, Texas, where he is involved with various projects for Houston Lighting and Power Co. He is presently supervising a chemical effluent compliance implementation project at the W.A. Parish plant in Thompsons, Texas.

John Capitao, design engineer in GE's mechanical drive turbine department, Fitchburg, has been awarded GE's Young Engineer Award. He has been with the company eight years. He is currently working for his PhD in mechanical engineering at Northeastern University. . . . **Robert Ewing**, SIM, has been named district superintendent of the Gardner and Leominster districts for the Massachusetts Electric Co. He has worked for the company since 1947 and has held various classifications in the distribution department. Prior to his recent promotion, he was district superintendent in the Leominster district. . . . **Douglas Holmes** has received his PhD in the department of materials science and engineering at MIT. He is now conducting research pertaining to preparation-structure-property relationship of electronic materials at Hughes Research Laboratories in Malibu, Calif. . . . **Paul Popinchalk** and wife **Nancy Wood Popinchalk,** '73 have started their own company, Aeonic Energy. The firm distributes a solar heating system with eutectic salt storage. The Popinchalks have a year-old-son, Seth Andrew. . . . **Robert Stein** is a planning engineer for the Massachusetts Municipal Wholesale Electric Co., a public corporation building a 390 MW combined and simple cycle plant at the Stony Brook Energy Center for use by 28 Massachusetts municipal light departments. . . . **David Winer** has been employed as an electronic project engineer at Damon Corp., IEC division, in Needham, Mass.

1972

▶*Married:* **Vincent J. Colonero, Jr.** to Miss Gloria J. Paradis in New Britain, Connecticut on May 21, 1977. Mrs. Colonero, a graduate of Southington (Conn.) High School, works for Northeast Utilities Service Co. Her husband is also employed by Northeast Utilities, Berlin, Conn. . . . **Richard G. Ellis** to Miss Carol L. Gdovka on June 11, 1977 in Upper St. Clair, Pennsylvania. The bride graduated from Pennsylvania State College. The groom works as a field engineer for General Electric Co.
▶*Born:* to Mr. and Mrs. **Patrick Lafayette** a son James Patrick on November 3, 1976.

Steven Bauks has been with the power systems division of United Technologies fuel cell facility for five years. He and his wife Jane are the parents of Jesse, 3½ and Sarah, 1½. . . . **Wesley Pierson** recently joined Norwich (N.Y.) Pharmacal Company's medical department as assistant project coordinator. He has studied at the University of Connecticut Health Center at Farmington. Norwich Pharmacal Company is a division of Morton-Norwich Products, Inc., a Chicago-based company engaged in the manufacture and sale of salt and food, pharmaceutical, consumer, specialty chemical, and industrial products throughout the world.

Don Polonis works as an industrial engineer at Hamilton Standard in Windsor Locks, Conn. . . . **Edward Schrull** has joined GE's nuclear energy division, San Jose, Calif., where he is with the transient systems design unit. Previously he worked for Westinghouse Hanford Company in Richland, Washington. He has a master of science degree in nuclear engineering from the University of Arizona. . . . **Jay Simpkins** is with the oceanographic department at the University of Oregon in Corvallis.

1973

▶*Married:* **Richard Belmonte** and Miss LuAnne Dimler on June 4, 1977 in Bel Air, Maryland. The bride graduated from Edgewood (Md.) High School and is an executive secretary for the Board of Education of Harford County. Her husband has a graduate degree from Texas A & M University and is with the Chemical Systems Laboratory of the U.S. Army. . . . **Frederick J. Kulas** to Miss Susan M. Ratkiewicz on July 16, 1977 in South Grafton, Massachusetts. **Bruce J. Baker** and **Eric P. Bergstedt** were ushers. Mrs. Kulas graduated from Assumption College and teaches high school (foreign languages) in Hudson. The bridegroom recently received his MBA degree from Harvard and is now a marketing representative for IBM in Waltham. . . . **Kenneth C. Muccino** and Miss Mary A. Caporaso in Waterbury, Connecticut on June 25, 1977. The bride graduated from St. Joseph College with a BA and MA in special education. She is a learning disabilities teacher in Waterbury. The groom, who holds an MBA from the University of Connecticut, is an associate engineer with the Connecticut Light and Power Co. in Norwalk. . . . **Jan H. Pierson** to Miss Mary B. Becker in McMurray, Pennsylvania on May 21, 1977. Mrs. Pierson graduated from Peters Township High School. She is employed by the Mellon Bank in Pittsburgh. Her husband is with Industrial Risk Insurers.
▶*Born:* to Mr. and Mrs. **Kenneth M. Johnson** a daughter on June 8, 1977. The baby is the first grandchild of **Leonard Hershoff, '43.**

The Abrasives Marketing Group at Norton Company, Worcester has named **William Ault** as regional product supervisor. In his new post, he will supply the Norton sales force with technical assistance in the uses of abrasives products. His territory will include the middle southern states, with headquarters in St. Louis, Missouri. Ault joined Norton as a product engineer in 1973. He served as a sales representative in the St. Louis district prior to his recent appointment. . . . Currently **Ronald Bohlin** holds the post of senior manufacturing engineer at Digital Equipment Corp., in Acton, Mass. He received his MBA degree from Harvard this year.

Ray Cherenzia has been named full-time engineer for the town of Westerly, R.I. He will be working out of the Public Works Department at White Rock. Most recently he was with Seaboard Engineering in Niantic, Conn. . . . **Philip Ciarlo** now holds the post of manager of production control for the medium DC motors and generators department at GE in Erie, Pa. . . . **Richard Brontoli,** U.S. Army, was recently promoted to captain. He is attending an officer's advance course for engineers at Fort Belvoir, Va. . . . **Robert DiGennaro** is a senior test engineer for GTE/Sylvania in Waltham, Mass.

Presently **Mark Erasmus** is a surgical intern at Eastern Virginia Graduate School of Medicine. He received his MD from the University of Connecticut. . . . **John Flynn,** SIM, has been promoted from industrial relations manager to administrative vice president at Heffernan Press, Inc. Before joining Heffernan, he was with Warner & Swazey Co. as coordinator of employee services and with Crompton & Knowles Corp. as labor relations manager. He is chairman of the Insurance Committee for the Printing Industry of New England, a director of the Worcester Personnel Managers Association, and has been a committeeman for the United Way of Worcester County.

Michael Lucey is a field engineer for Stone & Webster in Shippingport, Pa. . . . **Wallace McKenzie, Jr.,** has been reelected president of Saugus (Mass.) Action Volunteers for the Environment (SAVE). He is also town meeting member from precinct 1, chairman of the town's school building study committee, growth policy committee, and finance committee. He is a research analyst at Converse Rubber Co., in Wilmington. . . . **Stuart Roth** has accepted employment with Texas Instruments in Sherman, Texas. . . . **Henry Siegel** recently received his MBA from Rutgers, New Brunswick, N.J. . . . **Robert Tougher** is a sheet metal estimator for Tougher Industries in Albany, N.Y.

1974

▶*Married:* **James W. Bowen** and Miss Judith K. O'Dell on July 2, 1977 in Salisbury, Connecticut. Mrs. Bowen graduated from Mishawaka High School and is employed at the Savings and Loan Institute. The bridegroom is with the Torrington Co. . . . **Kurt H. Lutgens** to Miss Gretchen M. Allen in Harpswell Center, Maine on August 20, 1977. The bride holds a BS degree from Cornell University. Both she and her husband are seniors at New York State Veterinary School at Cornell. . . . **Irvin S. Press** to Miss Marian Compagnone recently in Wrentham, Massachusetts. The bride, a graduate of Wheelock College, Boston, is a first grade teacher in Milford. The groom serves as a research analyst for the Gillette Company in Boston. He is also enrolled in the MBA program at Boston University. . . . **Lawrence A. Webster** to Miss Ronie R. Renner in West Springfield, Massachusetts on July 16, 1977. Mrs. Webster, a foreign language teacher at Monson (Mass.) Junior-Senior High School, graduated from Westfield State College and continued her education at McGill University in Montreal, Canada, and at Worcester State College. Her husband is with George Webster & Son Construction Co., Agawam.

James Briggs, who is with the Department of the Navy, recently relocated from the Northern Division in Philadelphia to the Chesapeake Division in Washington, DC., where he serves as a design engineer. . . . Magician-comedian **Steve Dacri** is on a 75-city tour in which he will entertain at over 50 colleges coast-to-coast. During his tour he will also appear at the world-famous Magic Castle in Hollywood and participate in a number of artist-in-residence programs on college campuses.

Edward Dlugosz will soon be rotated to the construction inspection unit at the State of California Water Resource Control Board. He will be responsible for inspecting the constructional activities and operations of the various wastewater treatment facilities built under the clean water program. . . . **Alan Judd,** who has graduated from the GE manufacturing management program, is now a process control engineer at GE in Hickory, N.C. . . . . **James Kudzal** has accepted a position as a physicist to do research at the Naval Ordnance Station at Indian Head, Md.

John R. Mason III, who has received his master's degree in mechanical engineering from WPI, is currently a design engineer with the Electric Boat division of General Dynamics Corp., in Groton, Conn. . . . Recently **Joseph McGinn** was named technical director and assistant program manager of the (Boston) Metropolitan Area Planning Council's 208 water quality program. He has been with MAPC since 1974. . . . **Hunt Sutherland** has joined GE's Research and Development Center in Schenectady, N.Y. Presently he is doing thesis work for a master's degree in electrical engineering from RPI, while concurrently completing GE's advanced course in engineering. Prior to his present appointment, he worked in GE's Ordnance Systems Department in Pittsfield, Mass. . . . **Richard Takanen** is now a quality control engineer-systems at GE in Fitchburg, Mass. . . . **Peter Thacher** is currently a refining engineer with ARAMCO in Saudi Arabia.

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1975

►*Married:* **William R. Borek** and Miss Laurie B. Corwin on June 26, 1977 in Norwood, Massachusetts. The bride, a physical education teacher at Franklin High School, graduated from Arnold College and the University of Bridgeport. Her husband is a sales representative at Mass. Oxygen Equipment Co., of Westboro. . . . **James M. Corrao** and Miss Jeanne M. Potvin on July 16, 1977 in Worcester. Mrs. Corrao is a senior at Fitchburg State College School of Nursing. The bridegroom is employed in the pheresis department of the Northeast Regional Red Cross Blood Program in Boston and Worcester. . . . **Donald J. Taddia** and Cheryl Bickel of Sewickley, Pennsylvania on April 30, 1977. The groom is with Dravco Corporation's Eastern Construction Division in Pittsburgh, Pa.

Recently **Douglas Brown** joined Norton Co., Worcester as a toxic and hazardous materials specialist in the health, safety, and environmental services department. In his new position, he will assist Norton's divisions in implementing programs to comply with the federal Toxic Substances Control Act and Hazardous Substances Control Act. He will also be responsible for industrial hygiene and environmental projects. . . . **Stephen Coes** currently holds the post of town planner in Seabrook, N.H. He is studying growth and development trends in Seabrook under a federal grant. . . . **Edward Greenebaum** is now a design engineer in the research and development department of the Buell Division of Envirotech Corp., in Lebanon, Pa. Also at Buell are **John Fellows, '74** and **Lloyd Hemenway, '75**. . . . **Philip Keegan** has been named manager of the Friendly restaurant on Berkshire Ave. in Springfield, Mass.

Richard Mariano, former supervisor of production scheduling for the Estee Lauder fragrances group, has been promoted to area manager, distribution. He is headquartered in Melville, N.Y. . . . **Bob Simon** received his MBA from the Amos Tuck School at Dartmouth College in June. Presently he serves as a business analyst for the Allied Chemical Corp., Fibers Division in New York City. . . . In August **Oliver Smith** graduated from Case Western Reserve University with his master's degree in biomedical engineering. Now he is a design engineer in medical electronics at Gould, Inc., measurement systems division, in Oxnard, California. . . . **Claudio Polselli** has been appointed to the U.S. Army Engineer Division of New England in Waltham, Mass. In August he entered the Engineer Rotational Training Program. For eighteen months he will receive assignments in fields of engineering, construction, and operations with a permanent assignment in the Operations Division.

1976

►*Married:* **Richard K. Allen** and Miss Melody A. Voloshen on June 12, 1977 in Hyde Park, Massachusetts. Mrs. Allen graduated from Bridgewater State College. Her husband is with Kramer, Chin & Mayo in Seattle, Washington. . . . **Peter L. Barbadora** and Miss Lynn A. Smith recently in Worcester. Mrs. Barbadora, formerly employed by State Mutual, graduated from Holy Name Central Catholic High School and attended David Hale Fanning Trade High School. The groom is with Stone & Webster. . . . **Alan K. Briggs** and Miss Valerie A. LaCroix on June 26, 1977 in Marlboro, Massachusetts. Mrs. Briggs graduated from Becker and has been a physical therapy assistant at Marlboro Hospital. The bridegoom is with DuPont in New Orleans.

Jay S. Cruickshank and Miss Lori J. Miller in East Longmeadow, Massachusetts on August 7, 1977. Mrs. Cruickshank attended Becker Junior College and has been employed by the Shawmut First Bank. Her husband is a loss prevention representative for Liberty Mutual Insurance Co. . . . **Wayne C. Elliott** and Miss Sue E. Dickey in Salem, New Hampshire on July 31, 1977. The bride is attending Bauder Fashion School. The groom is a designer with Clary Corp. The couple resides in Arlington, Texas. . . . **Mark J. Filanowicz** and Miss Christine B. Schultz in New Britain, Connecticut on July 2, 1977. Mrs. Filanowicz attended Central Connecticut State College and is employed in the trust department in the Hartford (Conn.) National Bank. The groom works as a software computer programmer at the Data Center of Stanley Works.

Timothy P. Golden and Miss Margaret A. Donoghue on August 20, 1977 in Worcester. The bride graduated from Regis College. She is assistant director of admissions at Mitchell College, New London, Conn. Her husband serves as a production supervisor at Monsanto Co. in Springfield, Mass. . . . **William D. Holmes** to Miss Ingrid Davidonis in Framingham, Massachusetts on May 28, 1977. Mrs. Holmes graduated from Anna Maria College. The groom works for General Electric in Portsmouth, N.H. . . . **Roland Moreau** to Miss Jane Varnish on July 2, 1977 in Norwich, Connecticut. Mrs. Moreau graduated from Norwich Free Academy and is a secretary in the personnel department at United Nuclear Corporation in Uncasville. Her husband is also with United Nuclear. . . . **James M. Sieminski** to Miss Mary C. Nadroski in Easthampton, Massachusetts on August 6, 1977. The bride, who has a BS in medical technology from Anna Maria, is employed at Farren Memorial Hospital. The bridegroom works in the automated systems division of RCA in Burlington.

Joseph Betro is a teaching assistant in the department of electrical engineering at the University of Wisconsin, where he is attending the Graduate School of Engineering. . . . **Bill Clark** now works in the research and development department at Codman & Shurtleff, Inc., Randolph, Mass. The firm is a division of Johnson & Johnson. Bill is involved in the development of medical electronics. . . .**Vlassios Danos** serves as a sanitary engineer for the Environmental Protection Agency in San Francisco. . . . Formerly with Travelers Insurance Co., **John Highman** is now a computer applications engineer for Mobil Corporation, U.S. division, manufacturing, at the Paulsboro (N.J.) refinery.

Andrew Marcus is doing plant layout work and some basic project management for the F.L. Smidth Co., in Cresskill, N.J. The firm's primary product is Portland cement plant equipment. . . . **Robert Milk, Jr.,** continues as a systems engineer for Electronic Data System. During the past year he has been in Camp Hill, Pa. and Dallas, Texas. Presently he is in San Francisco. . . . **Conrad Orcheski,** who recently graduated from SUNY in Buffalo, is currently teaching chemical engineering at the University of Buffalo. . . . **Ed Robillard** is working in the equipment development section at GTE Sylvania, Ipswich, Mass. . . . **William VanHerwarde** is responsible for the vertical double suction pump line for Worthington Pump, Inc., Taneytown, Maryland.

1977

►*Married:* **Albert A. DeFusco, Jr.** and Miss Claire M. Brousseau on August 20, 1977 in Coventry, Rhode Island. Mrs. DeFusco graduated from Coventry High School. The bridegroom is a PhD candidate in chemistry at the University of Vermont in Burlington. . . . **Kurt A. Eisenman** and Miss Tina M. Hansen in Lexington, Massachusetts on May 21, 1977. The bride, who is pursuing a nursing career, graduated from Fitchburg State College. Her husband is with Parker Hanafin Co. of Cleveland, Ohio. . . . **Marc Meunier** to Miss **Susan Roberts** in Sturbridge, Massachusetts on June 25, 1977. The bride attended WPI. Her husband is a fire protection engineer for Industrial Risk Insurers.

Theodore A. Parker to Miss Paula Connolly in West Bridgewater, Massachusetts recently. Mrs. Parker attends Worcester State College. The groom serves as a production engineer at Polaroid Corporation. . . . **Theodore W. Pytel, Jr.,** to Miss Cheryl A. Morris on June 25, 1977 in Portland, Maine. Mrs. Pytel graduated from Becker with an associate degree in merchandising. The groom works for Niagara Mohawk Power Corp., in Syracuse, N.Y.

Daniel J. Rodrigues and Miss Maryann Lowell in Riverside, Rhode Island on August 13, 1977. The bride graduated from East Providence High School. Her husband is an electronics engineer for GE drives systems in Roanoke, Va. . . . **Bruce E. Smith** and Miss Carol Negus on July 9, 1977 in Fairhaven, Massachusetts. Mrs. Smith graduated from Endicott College, Beverly, where she majored in fashion design. The bridegroom is a loss prevention representative for Liberty Mutual Insurance Co., Lexington, Mass. . . . **Robert Stack** to Miss Suzanne D. Allison in Torrington, Connecticut on July 2, 1977. Mrs. Stack graduated from Becker. Her husband is with Estee Lauder.

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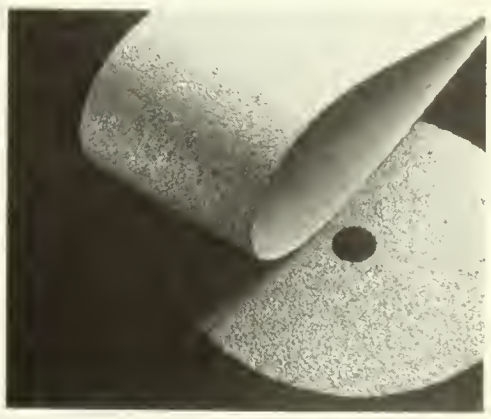

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NORTON

Frederick S. Carpenter, '13, of Tolland, Connecticut passed away last April.

He was born on March 1, 1891 at Wethersfield, Conn. In 1913 he graduated as an electrical engineer from WPI. He belonged to Skull.

From 1913 to 1956 he was with United States Rubber Company serving in a number of positions all over the world. Prior to his retirement, he was vice president and assistant general manager of the U.S. Rubber Co., International Division (Uniroyal, Inc.).

Raymond L. Mathison, '19, a descendent of four signers of the Mayflower Compact, died in Clearwater, Florida on June 15, 1977.

A native of Springfield, Mass., he was born on October 15, 1894. From 1922 to 1959 he was a tool designer for Westinghouse. He had also worked briefly for National Equipment Co., Farrel Foundry & Machine Co., and Simplex Time Recorder Co.

Mr. Mathison was a member of Sigma Xi. Civic-minded, he worked for many years for Junior Achievement and the Boy Scouts of America.

George R. Rich, '19, senior vice president, chief engineer, and a director of Chas. T. Main, Inc., passed away at his home in Wellesley, Massachusetts on June 21, 1977. He was 80 years old.

Mr. Rich, who was also a partner in Uhl, Hall & Rich, an affiliate of Chas. T. Main, was a renowned designer of hydroelectric, steam, and industrial projects. During his 57 years as a professional engineer, he was responsible for the design of such notable works as the Conowingo Hydroelectric Project; Passamaquoddy Tidal Power Project; Cape Cod Ship Canal and Locks; the Marimbondo Hydroelectric Project in Brazil; the St. Lawrence Power Project; and the Bear Pumped Storage Power Project.

Prior to joining Main in 1945, Mr. Rich worked for Stone & Webster in charge of the design of Osage and Rock Island Projects. He had also served as a hydroelectric engineer with the U.S. Corps of Engineers. While with TVA, he was chief design engineer for hydroelectric, steam power, chemical, and industrial developments.

Mr. Rich had been a guest lecturer at the graduate schools of engineering at Columbia University and Harvard. He was the author of several books and articles, including *Hydraulic Transients* and four chapters in the *Handbook of Applied Hydraulics.* He was a registered professional engineer with the National Bureau and 34 other states.

As a member of ASME, he served the publications committee, Applied Mechanics Reviews, Water Hammer Committee, and Power Test Code for Hydraulic Prime Movers. He was also a fellow of ASME, the American Consulting Engineers Council, and ASCE; an honorary member of the Boston Society of Civil Engineers; national honor member of the Chi Epsilon Civil Engineering Society; and a member of the Seismological Society of America.

He received the Rickey Medal of ASCE as well as the 1974 New England Award of the Engineering Societies of New England.

Mr. Rich graduated from WPI in 1919 with his BSCE. He received his professional degree of civil engineer in 1955. In 1948 WPI awarded him an honorary doctor of engineering degree. In 1974 he received the Robert H. Goddard Award for professional achievement from the WPI Alumni Association.

He belonged to Theta Chi, Tau Beta Pi, and Sigma Xi. A former member of the executive committee of the Alumni Council, he also served on the President's Advisory Council at WPI from 1973 through 1975.

Laurence G. Bean, '20, of Middlebury, Connecticut and retired vice president in charge of engineering at the Bristol Co., died on June 8, 1977.

He was born on November 12, 1895 in Indianapolis, Indiana. After receiving his BS in mechanical engineering at WPI, he joined the Bristol Co. as a salesman. He was subsequently promoted to sales manager and vice president in charge of engineering.

Mr. Bean, a past vice president of the Hartford chapter of the WPI Alumni Association, belonged to Alpha Tau Omega, and Pi Sigma Tau. He was a professional engineer in the state of Connecticut and a member of ASME, ISA, the Masons, Waterbury Club, and Kiwanis. Between 1918 and 1920 he was a lieutenant with the Coast Guard.

Douglas E. Howes, Sr., '20, professor emeritus of electrical engineering at WPI, died on August 31, 1977 in Worcester at the age of 78.

Prof. Howes, who joined the WPI faculty in 1947, retired in 1968. Previously he had taught at Norwich University in Vermont for 24 years, worked as a research physicist for Westinghouse, and as a special research associate at Harvard.

He was born in Ashfield, Mass. In 1920 he received his BSEE. In 1922 he received his master's in physics, also from WPI.

Prof. Howes, a member of Sigma Xi, was a former director of the Vermont Bureau of Industrial Research. He belonged to IEEE, APS, ASEE, and was a fellow of the Association for Advancement of Science.

Saul Robinson, '20, died in Toms River, New Jersey on June 4, 1977. He was 78 years old.

Born in Chicopee Falls, Mass., on November 24, 1898, he later studied as a chemist at WPI and graduated in 1920. During his career he was associated as a chemist with the City of Gloversville, N.Y.; the U.S. Treasury in New York City; American Pencil Co., Hoboken, N.J.; United Lacquer Co., Linden, N.J.; and Industrial Latex Co., in Wallington, N.J. At Industrial Latex he was made chief chemist.

He belonged to the Masons, B'nai Brith, AEPi, and the American Chemical Society.

Arthur W. Anderson, '22, died suddenly of a heart attack at his home in Brighton, New York on June 18, 1977.

He was born on February 20, 1900 in Cambridge, Mass. In 1922 he received his BSME from WPI. During his lifetime he was with Bausch & Lomb, Inc., Rochester, N.Y.; Rochester Institute of Technology; Western Electric, Chicago; and U.S. Rubber Co., Bristol, R.I. He retired from Bausch & Lomb in 1968.

Mr. Anderson belonged to ASME, ASM, and Phi Sigma Kappa. He was a member of the Masons, Methodist Church, and of the Early Settlers of Bausch and Lomb. He was a former vice president of the Rochester-Genesse Chapter of the Alumni Association.

Alfred P. Storms, '24, died in the University of Massachusetts Medical School Hospital in Worcester on June 12, 1977 following a short illness. He was 75.

Mr. Storms, who was a native of Norwich, Conn., graduated with his BS in mechanical engineering from WPI in 1924. He worked for Crane & Co., and Rice Barton Corp. From 1929 to 1967 he was with Heald Machine, Worcester, where he served as an assistant manager of grinding machine proposal engineering.

He belonged to Phi Gamma Delta, and served as secretary-treasurer of the Tech Old Timers Club, and as an officer in the Greendale Retired Men's Club, and the Concordial Lutheran Church.

Milton E. Berglund, '26, former chairman of the board of the Torrington Co., died in the Cape Cod Hospital at Hyannis, Massachusetts on July 8, 1977 at the age of 73.

Mr. Berglund began his career with Torrington in 1927. After receiving a number of appointments, he became president and chief executive officer in 1958, then chairman of the board of directors in 1968. He retired as chairman in 1972.

He was a director of the Hartford National Bank & Trust Co., Hartford Electric Light Co., and the Torrington Water Co. A member of the board of governors of Charlotte Hungerford Hospital, he was also a trustee of the YMCA, vice chairman and director of the Naugatuck Valley Industrial Council, and director of Allandale Insurance Co. of Providence, R.I. Prior to his retirement, he was a member of the Newcomen Society of America.

Mr. Berglund was born in Worcester. He graduated with a BSEE from WPI. In 1968 he received the Robert H. Goddard Award for professional achievement from the WPI Alumni Association. Formerly he was a vice president of the Hartford chapter of the Alumni Association.

Erold Pierce, '29, of Lakewood, New Jersey passed away on August 12, 1977 after a long illness.

He was born on June 23, 1907 in Worcester. In 1929 he received his BSME from WPI and began work at Curtiss Aeroplane and Motor Corporation in Buffalo, N.Y. Two years later he was transferred to Wright Aeronautical Corporation (a division of Curtiss) at Wood-Ridge, N.J. In 1970 he retired as chief scientist at the corporation following 41 years of service.

Mr. Pierce belonged to Sigma Xi. He received the Society of Automotive Engineers Manly Memorial Award in 1947. He was a professional engineer.

Frederick F. Whitford, '32, a former management consultant for the Vermont Industrial Bureau and the Vermont Department of Highways, died in Northfield, Vermont on July 14, 1977.

He was born in Pittsfield, N.H. on October 11, 1907. In 1932 he received his BSEE from WPI. For over 25 years he was with the Wright Aeronautical Corp., in New Jersey. He then served as a placement manager at Steenland Personnel from 1965 to 1967. Later he was with the Vermont Industrial Bureau at Norwich University, and the Vermont Department of Highways.

Mr. Whitford belonged to the U.S. Power Squadron and ATO, served as secretary of the Rotary Club, and as an active member of SCORE. He was a former town lister.

Joseph W. Whitaker, Jr., '41, of Troy, Michigan died on June 21, 1977.

He was born on May 15, 1917 in Boston. In 1941 he graduated as a mechanical engineer from WPI. After working briefly for Norton Co., he joined the Navy and served until 1946 when he became associated with Heald Machine in Worcester.

At the time of his death he was still with Heald, which became a division of Cincinnati Milacron in 1955. He was a regional product manager and had seen tours of duty in sales in Worcester, Chicago, Hartford, and most recently, in Detroit.

Mr. Whitaker ("Bud") belonged to Phi Gamma Delta fraternity. He was a trustee and moderator of the Pilgrim Church.

John R. Keefe, Jr., '51, of Winchester, Massachusetts passed away recently.

He was born on October 26, 1919 in Boston, Mass. After studying at WPI, he joined the Massachusetts Department of Public Works, Boston, where he worked for many years.

Mr. Keefe had served as a lieutenant in the U.S. Navy and as a communications officer with the USNR. He was a certified professional registered engineer and land surveyor, and belonged to the U.S. Naval Institute.

Robert E. Kern, '53, of Springfield, Massachusetts died on August 23, 1977 in Worcester.

He was born on June 25, 1929 in Springfield. In 1953 he graduated with his BSME from WPI. For several years he was with Hampden Specialty Co. At the time of his death he was vice president of purchasing for Coleco Industries of Hartford, Conn. He belonged to AEPi.

Dr. Edward P. Iaccarino, '64, died on August 27, 1977 in Sloan Kettering Memorial Hospital, New York City.

He had been a senior research chemical engineer for Exxon Research and Engineering Co. in Linden, N.J. for four years. During the war in Vietnam he served in the army.

Dr. Iaccarino was born on March 25, 1943 in Worcester. He received his BS in chemical engineering from WPI and his MS and PhD from the University of Wisconsin. He belonged to SAE, Sigma Xi, and the Chemical Honor Society.

John L. Clune, '68, of Trenton, New Jersey died on April 28, 1977 following an accident.

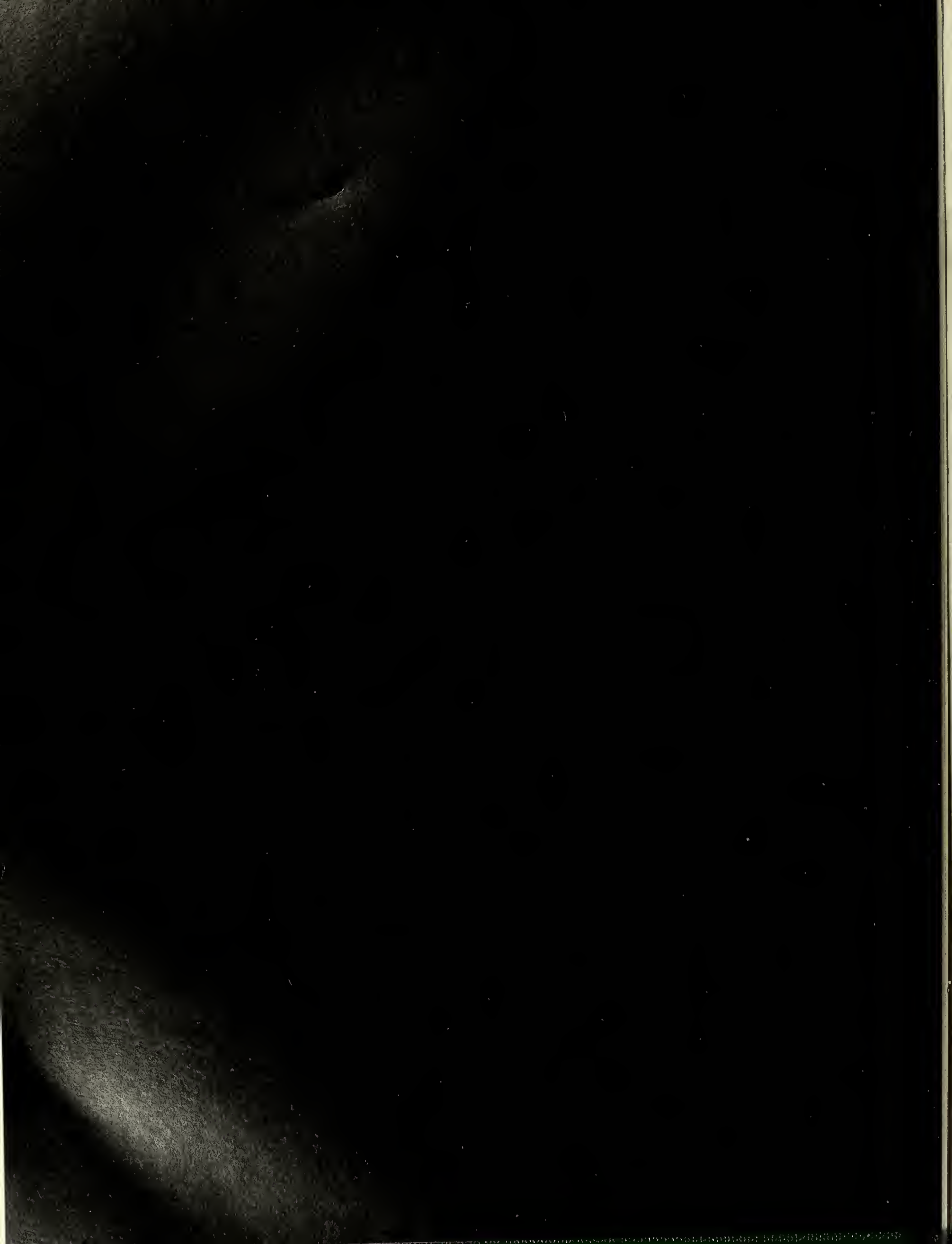
He was born on April 11, 1946 in New York City. In 1968 he graduated as a chemical engineer from WPI. Following graduation he went with Union Carbide in Charleston, West Virginia. Later he was with Stauffer Chemical in Dobbs Ferry, N.Y. At the time of his death, he was an associate cost engineer with Mobil Research & Development Corp., Princeton, N.J.

At Mobil he had been heavily involved with the firm's North Sea, off-shore platforms. Recently he became involved with Mobil's uranium mining interests.

Richard J. Orsini, '75, died in Leominster, Massachusetts on August 1, 1977 after he had been stricken while jogging.

A Leominster native, he was born on February 6, 1948. He received his degree in mechanical engineering from RPI and his master of science in management from WPI in 1975.

He was employed at GE in Fitchburg, Mass., for seven years. Two weeks prior to his death, he had joined Digital Equipment Corp., in Maynard.



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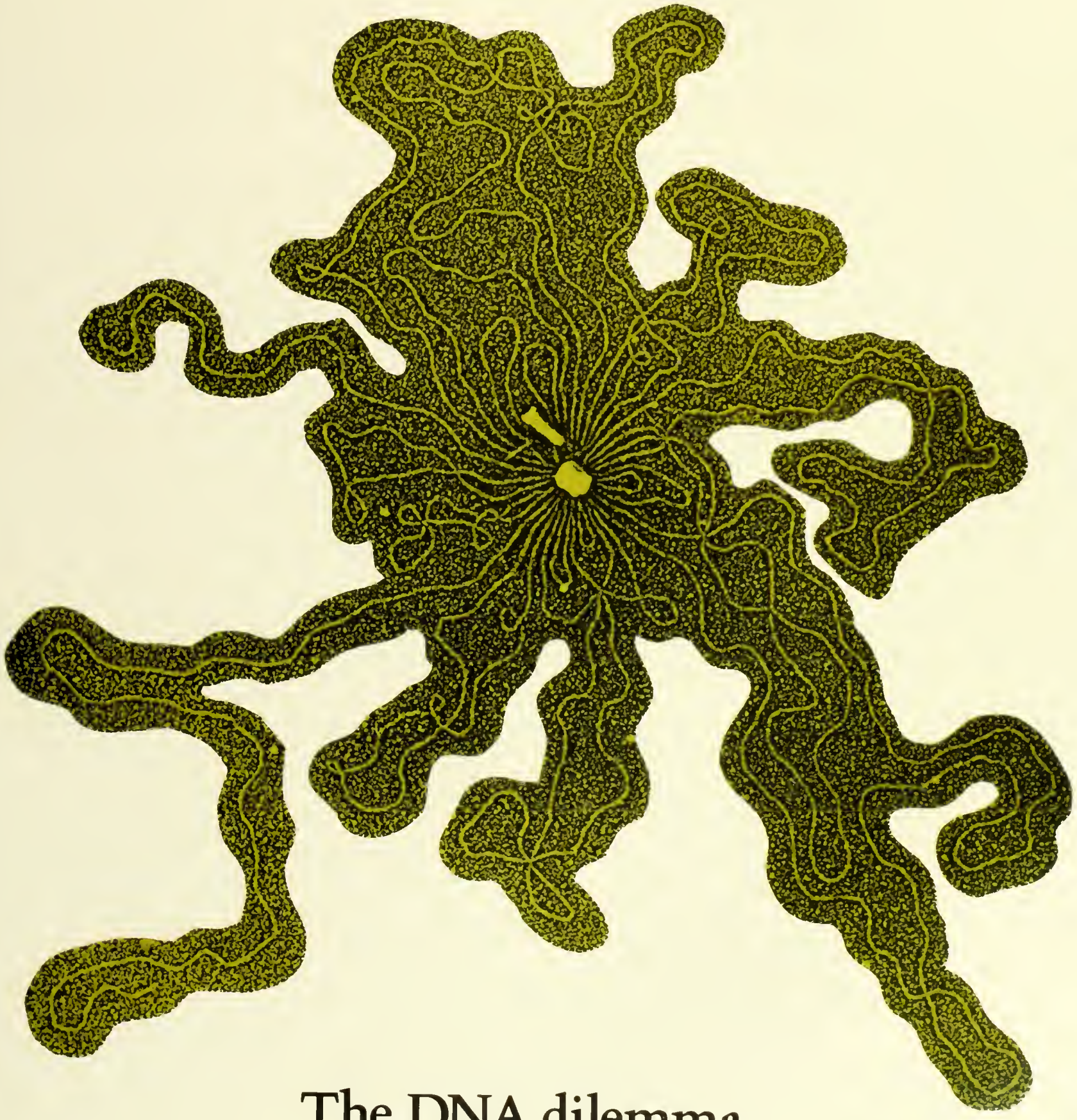

The DNA dilemma

WPI journal
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Cover: An electron microscope photograph of an *E. coli DNA* molecule. Astute *Journal* readers may recall that this photo was used, in somewhat different form, on the cover of the August 1972 WPI Journal, which dealt with the subject of genetic engineering.

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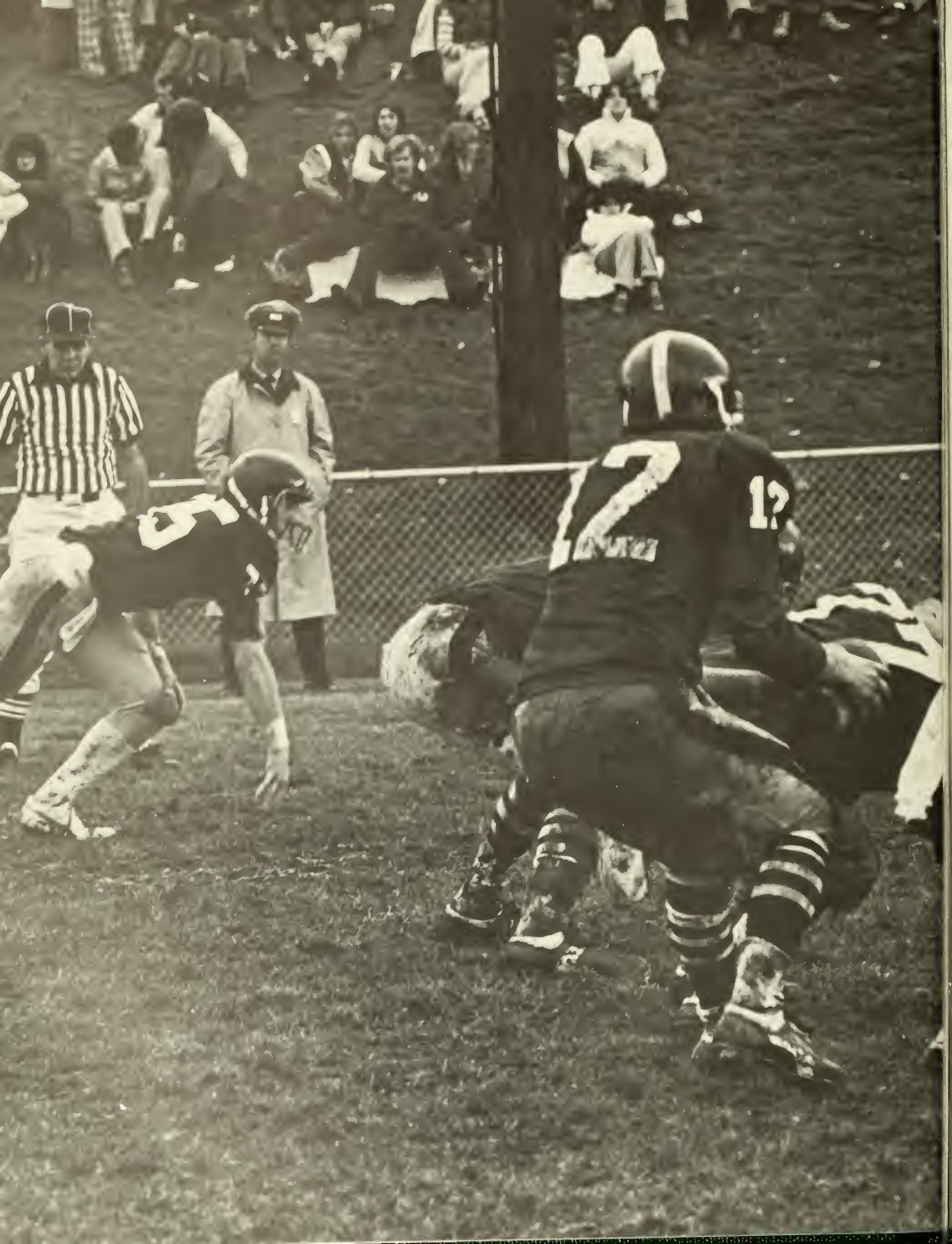


Drop back 10 yards and punt:

Trustees ponder the future of WPI football

by Russell Kay

The news release was a bombshell. In addition to announcing the resignation of Mel Massucco as head football coach after ten years, it stated that a trustees' committee had been appointed to recommend whether football ought to be continued as a varsity sport at WPI.

Drop football?? At WPI??

The story hit page one of the *Worcester Telegram* on November 17, beginning an extended period of speculation in the local press. Reaction on campus was quick and strong, mostly in favor of football. The question in everyone's mind was, Why?

To begin to answer that, we have to look first at WPI's football record. This year the football team won one game and lost seven. The last winning season was in 1968, the last one before that was in 1959. In 90 years of football, WPI teams have won half or more of their games in only 17 years, and 9 of those winning seasons were concentrated in the period from 1949-1959, while Bob Pritchard was coach.

In 1973, a trustees' committee on athletics commented that athletics should reflect the same excellence as the WPI academic program, and that WPI teams should be on a par with our traditional opponents. Two winning seasons in eighteen years obviously didn't meet these criteria, nor did the dismally consistent record of two or fewer wins in eight of the past eleven years. The losing seasons weren't even near misses.

So the new trustees' committee was formed. Chairman was Raymond J. Forkey, '40, a WPI football player on the 1938 undefeated team. Other members were Milton P. Higgins, chairman of the Board; Howard G. Freeman, '40; Robert J. Whipple; Leonard H. White, '41; and Richard A. Davis, '53.

For their second meeting, the committee called an open campus hearing for December 13, to get the views of all interested members of the WPI community. Scheduled for a seminar room in Gordon Library that could seat 100 persons, the meeting was quickly moved to Alden Memorial Auditorium when a crowd of nearly 500 students and faculty showed up.

The sentiment of the crowd was clearly pro-football. During the 90-minute session, not one person spoke in favor of dropping the sport. Students representing various groups presented the committee with petitions signed by 1,450 students, including 20 captains and co-captains of various sports, plus letters of support from numerous other campus organizations.

Perhaps the most eloquent speaker was Dean of Academic Advising John van Alstyne. "I think it's very important for this school, for any school of our size, to maintain football," he said. "You need an outlet. Some students can get it in "running or soccer or basketball. But some—the athletically inept, like myself—get it through watching people perform. It becomes a vicarious thing. Football provides that far better than anything else. Football is a sport people are attuned to.

"I went to a college that didn't win a football game for four years," van Alstyne continued. "We used to call the signals in Greek. It would give us an advantage for the first period, anyway, because the other team didn't know what we were saying. But after that, we had a couple of winning seasons, and we had a player who was a Little All-America. Now, when I go back for Homecoming, the stands are filled.

"There aren't many places left where you can see an honest football game, where you know the players out there are playing not just to win but because they love the sport. I think WPI is one of those places, and I wouldn't want to see us lose it. One cannot be a whole person unless one gets involved with more than academiics."

Also speaking at the meeting were Peter Horstmann, '55, chairman of the Alumni Fund Board, and Ted Coghlin, '56, president of the Poly Club. Both urged that football be continued and strengthened. Other speakers included Tom

Panek, student body president, who noted that "few things can bring together a campus as diverse as this. In the past couple of years, there has been a great deal of apathy about a lot of things. But this petition is signed by 1,450 students, and less than 400 usually vote in school elections."

Nancy Hargrave, of the admissions office, commented that "it's one thing to ask a 17-year-old to place academics first, but another thing entirely to ask him or her to choose between academics and athletics. And it doesn't seem fair to make a football player make that choice, but not a soccer player or a high hurdler."

Only a few at the meeting addressed the question of the quality of the team. One was Dave Ploss, '70, who serves as rowing coach. "You can't convince me that a WPI athlete is any worse than the athlete at Bates, Bowdoin, or any of the other schools we play against. We're competitive in other sports. If football continues here, it should be a quality program, and if we don't have that quality it should be dropped. It does nobody any good to go out every week and get his head beat in."

For all the uproar, though, this meeting was only a forum, a place for the trustees' group to hear what the campus had to say on the issue. As Ray Forkey said, early on, "we don't want to get into a discussion of what our attitude is, or how we feel about football. Our views will come later."

A few days later, Forkey said he was surprised at the size of the turnout. He reiterated that the committee was meeting with many groups and individuals before it began its deliberations in earnest.

The blitz

Mel Massucco, head football coach at WPI from 1967 until his sudden resignation in November, is frustratingly aware of the problems with football at WPI. Recruiting is one of the big ones. "I'm not just the football coach here," he explained. "I also teach physical education, and I have intramural responsibilities as well. Where's the time for everything?" Massucco will remain on the faculty of the physical education department, and he hopes that his resignation may help lead to the improvement of the football program at WPI.

Another problem, one not mentioned in the 1973 report on athletics, is that WPI is an engineering school, and the pool of athletes interested in an engineering school is considerably smaller than the pool attracted to the broader curriculum and more opportunities of the liberal arts colleges—schools such as Wesleyan, Bowdoin, Union, Hamilton, and Bates, which are among WPI's traditional opponents on the gridiron. "What we're looking for," said Massucco, "is a kid who's a good student, a kid who's looking for a technical education, and a kid who's a good athlete. It's difficult to get all three."

The recruiting question is a big one, for virtually everyone concedes that increased financial aid is a vital part of a serious recruiting effort. Under the rules of Division III of the NCAA, WPI is not allowed to offer athletic scholarships. All financial aid awards are based on need, and so athletes get no special consideration. There is a way of using financial aid to attract athletes, however, and still stay within the rules. If an athlete, or any student, is awarded financial aid based on need, he gets what the admissions office likes to call a "package" of scholarship, loan, and work-study grants. By offering a student a large proportion of scholarship money, still keeping within the limits of need, WPI would be offering a much greater incentive for that student to come here.

Would this be "buying athletes?" and, if so, is that necessarily a bad thing? Ted Coghlin commented that, "we feel the better kid should get better financial aid—and by that I'm not saying that we should buy an athlete any more than we should be buying a scholar who might want to go to CalTech or M.I.T.

Bob Pritchard observed that "we have have very little input (to the financial aid process). At times in the past, we had." He further noted that WPI cannot begin to match the student aid offered by such wealthier schools as M.I.T., Wesleyan, and Bowdoin.

The 1973 report on athletics recommended that 10 percent of WPI's total financial aid commitments go to student-athletes. According to financial aid officials, WPI is currently at or slightly over this level. Part of the problem is disagreement as to just whether a student is or is not a student-athlete. For example, was he recruited by athletics or admissions? Or did he drop out of athletic participation after a while, even though recruited as an athlete? It is indeed a sticky question.

Another factor is that, since the 1973 report, the WPI administration has done little to implement it. President Hazzard agreed, saying "nothing much has been done since that time. We just asked the coach to work harder." When asked whether he thought hard work was the answer, Hazzard replied, "I'm not an expert on football, so I don't know."

Bob Pritchard, head of the department of physical education and athletics (and football coach from 1947-1966), says that "upgrading a football program is harder than for other sports. You need the complete cooperation of the administration and of the financial aid office. You need that little extra effort.

"Our effort here could have been better. The money hasn't been allocated the way it should have been. We have a good coaching staff; its background is tremendous, and I'd rank it up there with anybody's. So the problem isn't entirely the staff."

Pritchard said he didn't think the committee would consider the present football program too expensive, but that it would have to decide for itself whether the money being used for the program was wisely used, or ought to be spent elsewhere. At present the football program costs WPI "slightly under $30,000" per year, according to Pritchard.

That figure ineludes meals, trips, transportation, game offieials, medieal supplies, and equipment, but does not eover salaries or the maintenanee of Alumni Field.

Defensive secondary

The importanee of football to WPI, whieh is at the heart of the question before Forkey's committee, is a touehy issue. The large turnout at the open meeting in Deeember, coupled with the faet that some 60 percent of the students signed petitions urging the retention of the sport, would seem to indieate that grassroots support for football is extremely strong. But is it?

Attendance at football games has not been very high in reeent years. With a team that seems bound to lose most of the time, that's understandable. But if students don't eome to the games, why play them? That's a question President George Hazzard touehed on in referring to the students' petition to the trustees. "If we had 1,400 students at our games, maybe we would have had more spirit. But the petition eertainly indieates that somebody eares beeause the question on football was raised.

"You can't help wondering, though," he went on, "if an equal eoneern will eontinue in years ahead. If would be niee if it did," Hazzard added, "beeause then you'd have good erowds at the football games."

Throughout the storm over the football question, President Hazzard has kept his own views to himself, refusing to support one side or the other. He has said, though, that "every student who eomes here, eomes here first of all for the academic program. Football is seeondary. Just a part of the pieture. Whether we have a team or don't have a team shouldn't make that much differenee. I would be surprised if a student transferred to another sehool just beeause football had been dropped at WPI."

On that eount, Hazzard will find a number of dissenters. Dean Arvidson, eo-eaptain of this year's team, said that in his fraternity "there are thirty football players, and 20 to 30 pereent of them think they'll transfer if there isn't any football next year." Another team member, halfbaek Mike Robinson, said that WPI has an obligation to those students it has already recruited. "We eome here to play football too, and there should be a football team. Not necessarily a winning football team, but still a football team. I don't really want to leave WPI, but I would if I had to. Without football, what good is it?"

Option plays

The trustee eommittee is due to submit its recommendations in a report in mid-January. As this issue goes to press in mid-Deeember, no one on eampus knows just what direetion the committee may be leaning in. There appears to be four possibilities open:

1. Keep football as a varsity sport, keep the present sehedule, and upgrade the performance of the team. However this might be done, it would apparently require more re-eruiting effort and, inevitably, more money.
2. Keep football as a varsity sport, but play schools whieh aren't as strong as those we've played against in reeent years. This approach is opposed by Pritehard, and it eonfliets with the stated 1973 goal of "parity with our traditional opponents."
3. Keep football, but drop it to the level of a elub sport. This would slash the "investment"—both finaneial and psychologieal — of WPI in the football team, and students would have to assume most of the work and responsibility for running the team and paying for it.
4. Drop football eompletely. The money saved might be diverted to other athletie programs, but this seems unlikely.

Options 2, 3, and 4 above are eertainly possible, but they are strongly opposed by students and faeulty. Revising the schedule, a step taken by Rensselaer Polyteehnie Institute when it was in a similar situation ten years ago, seems to be a way of admitting defeat. RPI athletie direetor Bob Dueatte, eommenting on the situation, has said: "If you know in the bottom of your heart that you're playing schools you ean't beat, then you shouldn't play them. Sometimes you have to swallow some pride." These thoughts were eehoed by Pete Carlesimo, athletie direetor of Fordham University, which dropped football in 1960 and reinstated it just three years ago. "It's diffieult for alumni, no question about it. We used to be semi-big-time. But you've got to play teams you're competitive against. That's the only way you're going to establish interest." WPI athletie direetor Pritehard doesn't like the idea at all. "We want to play sehools whieh we feel are quality institutions," he stated. "We feel we fall into that eategory. A step down would be getting into a club sport eoncept, which is something I just don't want to see happen."

Two-minute warning

Whatever the eommittee deeides—and the full Board of Trustees after them—this is one issue that has been dealt with fairly and openly, with everyone involved or merely interested having had the ehanee to address the subject. The issue is important, not so much for the sport itself, but beeause it has serious emotional overtones. Alumni often look baek nostalgieally at WPI football—thinking, perhaps, of their salad days. For students and faeulty, the team provides entertainment, enjoyment, and engages a feeling of eommunity. These things are important and worthwhile. What the trustees must do is balance these subjective values against the very real problems of the team, as they attempt to answer one very difficult question: Is it worth the commit-ment to do it right?

The DNA dilemma

by Tom Daniels, '80

IN PRINCIPLE, it's very straightforward and simple; one is concerned with taking a gene from one organism and putting it into another organism, by artificial means.

The subject which Dr. James Danielli, world-renowned microbiologist and head of the Life Sciences department at WPI, describes as "straightforward and simple" has become a hotly contested issue in the national press in the last two years. Recombinant DNA (the initials DNA stand for deoxyribonucleic acid) research has been called both a boon to mankind and a throwback to Doctor Frankenstein.

"The main quest of the biologist," one eminent researcher has said, "is to understand how an egg can transform itself into a human being. To do this, we must study the basis of this phenomenon — the nucleic acid DNA."

To study the DNA molecule, the researcher must, of course, have at his disposal a sufficient number of genes to work with. "When we have a large number of genes," the researcher continued, "our studies may be carried out in a more realistic environment. Thus, the purpose of the recombinant DNA experiments is to produce a specific gene in large enough quantities to carry out realistic research." An oversimplification to be sure, of a complex issue, but certainly not a bit reminiscent of the so-called "Frankenstein" charges of anti-DNA research forces. "Genetic engineering," said Dr. Federico Welsch of the Worcester Foundation for Experimental Biology, "is complete rubbish. We do not now possess even the slightest fraction of the knowledge that would have to be utilized for such a purpose."

Dr. Danielli agreed with Dr. Welsch, saying of the controversial research, "it's still in its infancy. Twenty years from now we may be in a position to say just what can and can't be done, but we aren't able to do so at the present time." Although its applications are still uncertain, the actual process by which the experiments are carried out is well known.

There are four basic steps that are used in recombinant DNA work: breaking up the DNA, joining together segments of two different DNA molecules, finding an organism that can reproduce the foreign DNA molecules, and, finally, introducing the new DNA molecule into a functional bacteria cell to study the results.

In 1967, enzymes were discovered that could effectively repair breaks in DNA and, under certain conditions, join together loose strands of DNA that came from different organisms. Coupled with previously known methods, whereby DNA could be "sliced" into desired sections, subsequent research produced various experimental methods by which specific strands of DNA could be linked together. Next, methods were discovered which rendered the bacteria *E. coli* able to accept the reconstructed molecules of DNA. This step produces the DNA in quantity, since the *E. coli* proceeds to reproduce the new genes in exact duplicate.

Even though the process is less than ten years old, the investigative possibilities opened by recombinant DNA research are already being actively pursued in many labs throughout the country, especially at the university level. Dr. Danielli believes that WPI will follow suit in the near future, joining the recombinant experiments with ongoing research. "It could come anywhere from a year to five years," he says. "It will be in connection with our work in blue-green algae."

Experiments proposed by the Worcester Foundation for Experimental Biology, and those discussed by Dr. Danielli, would come under the P-2 classification of containment, as defined by current National Institute of Health (NIH) guidelines. Laboratories meeting such containment standards offer suitable protection to both the researcher and the environment. Both the WFEB and WPI will, however, conduct all experiments of the P-2 level in P-3 laboratories, as they wish to have the added containment precautions in force as extra insurance in the face of a leery public, who, in general, are afraid that some new germ will escape the researcher's lab. Other steps, such as using "crippled" *E. coli* bacteria, which must have so many laboratory nutrients that it is impossible for it to live outside of the lab (or, in WPI's case, not using the controversial virus at all), will also be used.

A laboratory suitable for experiments involving recombinant DNA molecules requiring P-3 containment has special engineering design requirements and physical containment equipment. The laboratory is separated from other areas which are open to the general public. Separation is achieved through the use of closed corridors, air-locks, or other double-doored installations. An autoclave must be available in the lab area to quickly decontaminate all laboratory materials. Surfaces of walls, floors, and bench tops are specially designed to facilitate quick decontamination. Air flow is such that air may enter the lab through the access area, but leave only through a highly filtered exhaust system; this is achieved by keeping the P-3 area at a lower pressure than the rest of the lab.

Needless to say, these NIH recommendations also provide for having only those people directly involved in the experiments gaining entry to the containment room. These people may not eat, drink or smoke while in the lab; all clothes worn while experimenting must be removed before leaving the lab. Pipetting liquid materials by mouth is expressly forbidden. Animals or plants which have no bearing on the experiments may not be kept in the lab.

THESE NIH guidelines, which have been outlined very briefly, form the nucleus of the many-faceted DNA problem. Even *Time* magazine, which has one of the finest reputations in the country when it comes to journalism, carried an essay in their March 7, 1977 issue that showed the general line of attack used by the anti-recombinant camp. The author, Frank Trippet, was speaking of an awakening of morality among the nation's scientists. Toward the end of his piece, he reviewed hearings concerning recombinant DNA experiments that had taken place in Cambridge, Massachusetts. "Perhaps the most significant result so far of this new skepticism," he said, "might be called the case of the Nonexistent Doomsday Bug . . . The crucial question: Do the risks of research that could endanger a hypothetical Doomsday Bug — some new strain of bacteria that might find its way into the bodies of the people — outweigh whatever knowledge might be gained?" To top off the piece, the *Time* editors chose a *Boston Globe* cartoon that depicted an MIT scientist running into a room full of Frankenstein-like monsters, large bugs, and test tubes with eyes. Clutched in his upraised hand was a newspaper bearing the headline, CAMBRIDGE OKAYS GENETIC RESEARCH. "Crack out the liquid nitrogen, dumplings," he says in the caption, "we're on the way!"

"The main quest of the biologist is to understand how an egg can transform itself into a human being. To do this, we must study DNA."

Professor Danielli scoffs at this kind of "Doomsday Bug" prophecy. "Where I think there is a problem," he says, "as with nuclear materials, is that where you can do something for a good purpose, you can always do something analogous for a bad purpose. It would be perfectly possible to construct a pathogen which would be at least as destructive as the influenza virus, or possibly worse." Commenting on the possibility that this could happen, he hypothesized that there are much easier and much more available methods which madmen or terrorists could use to inflict harm on people. Summing up his feelings on this, he said, "Lunatics always seem to find a way of playing the fool, anyway."

Putting aside for a moment the possibility of a deliberate act, there is always the chance that an accident could occur in a recombinant DNA experiment. Dr. Robin Holliday, writing in an English publication, *New Scientist*, outlined the steps that could lead to such an accident. The doctor said that, when considering one of the so-called "shotgun" experiments, in which DNA is fragmented with a particular enzyme, the number of different pieces of DNA produced would be very large, perhaps approaching half a million. These pieces are inserted at random into bacterial plasmid DNA, whereupon it is inserted into an *E. coli* host bacteria. One careless technician could, when pipetting by mouth (something which, you will recall, is expressly forbidden by NIH P-3 guidelines), swallow anywhere between a few thousand and a few million of these altered bacteria. Even if some of these bacteria died, there would be a slight chance that some would survive in the unfortunate technician's stomach or intestine, and eventually multiply.

If — and Dr. Holliday, head of the Division of Genetics, National Institute of Medical Research, London, notes that this is one of the most unlikely "ifs" in his study — if one of the ingested bacteria proved to be harmful to the human body, and if it were to multiply, the victim could potentially turn into a carrier of a lethal unknown disease. So far, the doctor has not assigned any probabilities to these steps. After carefully studying all the conditions necessary for this to occur, however, he says that, even after assigning the highest possible probabilities, the accumulated totals represent very, very small figures. "Thus, if ten scientists in each of a hundred laboratories carried out one hundred experiments per year," he concludes, "the least serious accident (that of the technician dying and not transmitting the new bacteria to anyone else) would occur an average of once in a million years."

Dr. Holliday, who does not plan to conduct recombinant DNA research, concludes that, in fact, the real danger lies in the restriction of more conventional genetic research which has been going on since the turn of the century. Such restrictions were imposed by the British Government. England, unlike the United States, has developed unified guidelines to control DNA research. These rules are similar to those enforced by the NIH, in that they require three levels of precautionary measures to be taken: Physical containment such as has been described; biological containment, which involves using the "crippled" *E. coli* that cannot survive outside the lab; and proper training for all researchers and technicians who would be conducting the experiments. The two sets of guidelines are different in their definition of containment, the assignment of risks, and in the way in which they are enforced. The English rules apply to all scientists conducting experiments in the country, while the NIH rules apply only to those receiving NIH funding.

"It is well to remember that the hazards of recombinant DNA are only conjectural. For over a century, research with highly pathogenic organisms and other forms of genetic manipulation has quietly proceeded, with results that have been beneficial to mankind."

Disagreements exist as to which set of guidelines is the best. Dr. John Tooze, Secretary of the European Molecular Biology Organization, said in *New Scientist*, "The British and American guidelines have been criticized by some for being too stringent, and for putting unnecessary impediments in the way of research, and by others for being too slack and not putting on adequate safeguards. In reading an opinion, it is well to remember that the hazards of recombinant DNA research are, indeed, only conjectural. For over a century, research with highly pathogenic organisms, not to mention other forms of genetic manipulation, has quietly proceeded, with results that have been beneficial to mankind."

Several groups are moving, from different directions, to either control or ban recombinant DNA work. The Coalition for Responsible Genetic Research, a new organization, is urging a world-wide ban on all "genetic engineering" until issues such as safety and possible alternative methods of research have been thoroughly studied. The CRGR has many prestigious members, including several Nobel Prize winners. The announcement of their founding coincided with the start of a National Academy of Science Conference on DNA in Washington. The CRGR wants, among other things, "an immediate international moratorium on all research that would produce novel combinations between distinct organisms which have not been demonstrated to exchange genes in nature." As an example of alternatives, the group recommends instituting environmental studies to determine possible causes of cancer, in place of using relatively expensive and dangerous DNA research.

Meanwhile, the New York and California legislatures have moved to control research within their own states. Following public hearings in October of 1976, the Attorney General of New York issued restrictive guidelines for all research work being done in that state: Scientists will require a certificate of competence before beginning work; all projects will have to be reviewed by the State Board of Health; all laboratories will be periodically and frequently inspected by the Health Board; and, finally, all research personnel will have their health monitored while conducting recombinant DNA experiments. Guidelines setting levels of precautions and containment will probably be tougher than NIH rules.

The California State Assembly favors rigorous control of research, but it was undecided as to what state agency should enforce the rules. This debate ran into open confrontation between various sections of the bureaucracy, and deliberation was extended because of hearings held by such groups as the Sierra Club, Friends of the Earth, and the Environmental Defense Fund.

The previously mentioned conference of the National Academy of Science was intended to be a calm, open meeting to discuss the pros and cons of recombinant DNA research. From the earliest moments of the meeting,

"When we developed the contraceptive pill, we knew almost nothing about the possible side effects it might produce, yet millions of women used it. Polio vaccine was found to contain a cancer virus, but there has never been one reported case of cancer that could be traced to it."

however, the "sacred halls of Science" were rocked with the cries and slogans of public interest groups, such as the so-called "People's Business Commission." They claimed that the meeting was full of scientists in favor of the research, and they demanded equal time, which they got. They also charged that the issue of safety was given too high a priority of discussion, and that the overriding question of morality was being ignored.

The NAS conference did result, eventually, in legislation being introduced into the Congress which would place NIH-type guidelines into federal law. An independent regulatory commission was part of a bill introduced by Senator Edward Kennedy, but the bill was withdrawn under heavy opposition late in September. A bill introduced by Representative Paul Rodgers was scheduled for hearings in November.

The Kennedy bill was withdrawn, evidently, after the Senator reviewed the outcome of a risk assessment conference held in Falmouth, Massachusetts, earlier this year. Biologists attending the conference generally concluded that laboratory techniques currently being used in connection with recombinant DNA, pose little, if any, threat to starting an unknown epidemic. In defending this study, however, they also stressed that NIH guidelines should not be relaxed until there is a much more extensive set of data available for study. It is also rumored that a soon-to-be released paper by Stan Cohen, one of the pioneers in the recombinant DNA field, will theorize that many of the alleged "novel and unnatural" combinations of genes that have been dubbed "genetic engineering" by skeptics, happen at random in nature.

Professor Danielli endorses this view of the moral issue. Speaking of combinations of genes from two distinctly different organisms, he said, "This is going on in nature, of course, by natural means. The reason that people are interested in it now is that we've learned to do it in the laboratory, under controlled conditions. It offers the potentiality of making all sorts of organisms, including crops, that would be more valuable than the natural strains. Instead of letting organisms arise so as to fit particular ecological niches, we're going to take some things, and adapt them so they'll be more suitable for our civilization. For example, trees that grow twice as fast, to increase our supply of wood."

Perhaps the single most damaging argument presented by anti-DNA speakers at the NAS conference was that scientists aren't able to judge the social impact of their own work. "Scientists tend not to believe that something they want to do is dangerous," said Dr. Danielli. "Often people have put in twenty years to get to where they now are, and then somebody comes around and says, 'You can't do that with *E. coli!*' It might take five years to find another suitable organism. They're set back five years, and, naturally, they get mad about it."

IT IS NOT SURPRISING, with the emphasis on contact between technologists and society that is stressed on this campus, to discover that WPI, as early as May 2, 1972, was the scene of a symposium on the ethics of genetic engineering. Dr. Danielli, then professor of biochemical pharmacology at the State University of New York at Buffalo, was quoted in the *Tech News* as saying, "to reach a higher level of civilization, we must use genetic engineering." (For more information, see the August 1972 *WPI Journal.*) Moderator of the discussion was Dr. Hudson Hoagland, founder of the Worcester Foundation for Experimental Biology, who hoped that "the day's speeches would shed light on a previously obscure subject." Hoagland and Danielli were both awarded honorary Doctor of Science degrees from WPI at this symposium. Little did

"This is going on in nature by natural means. The reason people are interested in it now is that we've learned to do it in the laboratory, under controlled conditions."

Hoagland realize that, only five years later, he would find himself defending this "obscure subject" in front of a meeting of concerned citizens in Shrewsbury, as his foundation tried to start research on "genetic engineering."

Jonathan King, MIT molecular biologist, has said, "In any case, recombinant DNA work is a technocratic, not a democratic, approach to the problem," citing the experience of the Cambridge Experimental Review Board, which has set restrictions on research taking place at Harvard and MIT. The Cambridge situation, to be sure, shows a need for scientists who can communicate effectively with the layman.

The Cambridge hearings, which brought the phrase "recombinant DNA" to the lips of the general public, were triggered when Mayor Alfred Vellucci, after receiving warnings from the "Science for the People" group, placed a temporary ban on construction of a new genetic laboratory at Harvard University. The Cambridge Experimental Review Board was formed to analyze the alleged potential danger. The members, including a nun, an engineer, a heating oil dealer, a social worker, and a philosopher, thoroughly looked into the question, and recommended that the experiments be allowed to proceed. Their report, approved by the City Council, imposed restricitions slightly more stringent than the NIH rules.

Closer to home, the citizens of Shrewsbury, Massachusetts, met last March 23rd, to hear representatives of the Worcester Foundation for Experimental Biology explain their proposal to begin recombinant research. The same Dr. Hoagland, who had used the term "obscure" five years earlier, found himself in front of a capacity crowd, trying to explain such things as "P-3" and "P-4" to housewives and non-technical workers.

After briefly describing the different processes used to break apart and rejoin the DNA segments, and telling of the various containment levels, Dr. Hoagland noted that the experiments which brought on the Cambridge controversy involved using genes from human or animal-like cells. The WFEB proposes to use only those genes which are unrelated in any way with human-like structures. These experiments are classified as P-2, as opposed to P-3 and P-4 research described above. P-2 experiments have been going on throughout the country for years, without serious problems.

"Many of the actions taken by society," added Hoagland, "involve taking some sort of risk." He also said that almost every industry in the country pollutes the environment each day, but this is allowed because it has become socially acceptable. One of the biggest risks taken is in the marketing of common drugs. "When we developed the contraceptive pill," he said, "we knew almost nothing about the possible side effects it might produce, yet millions of women used it. Polio vaccine was found to contain a cancer virus, but there has never been one reported case of cancer that could be traced to it."

"Where I think there is a problem, as with nuclear materials, is that where you can do something for a good purpose, you can always do something analogous for a bad purpose."

Many people have voiced the opinion that the *E. coli* bacteria used in the DNA experiments could possibly be turned into a man-killing organism. "This, to my knowledge, would be just about impossible," said Dr. Hoagland. "When a bacteria, such as *E. coli,* is changed through this type of experimentation, the end result is, almost universally, a weaker organism than the one you started with. As an added precaution, however, a 'crippled' *E. coli* is used. This bacteria must have so many different nurients to live, that it can't survive outside of the laboratory." Research at WPI should avoid the *E. coli* question altogether, since Dr. Danielli and his team will be using blue-green algae in its place. "Blue-green algae have two advantages over the *E. coli* which is commonly used," said Danielli. "One is that the blue-greens are not inhabitants of human beings, and are, therefore, not potential pathogens. The other is that blue-green algae have enormous economic importance, where *E. coli* don't."

"You may ask why some scientists are against recombinant DNA research," Dr. Hoagland told the people of Shrewsbury. "Although this group is small, but vocal, they do represent a valid side of the matter. They see that it's important for us to take precautions, so we won't be blamed for another Legionnaire's Disease later."

Dr. Hoagland said that there were many misconceptions among laymen about recombinant DNA experiments that had been spread through the press. "The so-called claims of 'genetic engineering' made by the press are largely garbage," he said. "Cambridge looked bad at first, but it came out good because scientists and laymen communicated. They were able to evaluate the situation without letting hysterics get in the way."

Robert Cates, a scientist who specializes in hazard assessment, said that people should be informed of the possible risks. "This controversy hasn't arisen because of what's been said in the press, but, rather, because of a past record of people doing things against their better judgment." He endorses such proposals as the forming of an independent residents' committee. After assessing the situation, however, he said that, in his opinion as an expert, he felt the P-2 level experiments should be allowed to proceed.

A member of the Regional Environmental Council told the Shrewsbury meeting that she was disappointed by the lack of a balance between pro and con during the evening's discussion. Vice-Chairman of Selectmen Thomas Foley said that the meeting had been well advertised in all the local media outlets, and that opposition groups had been invited. When asked why none of the vocal groups, such as Science for the People, had bothered to come to Shrewsbury, the woman replied that the groups probably hadn't thought that the meeting was important enough to warrant the trip up from Boston.

A Shrewsbury resident questioned Dr. Hoagland on the possibility of a mutation being spread outside of the laboratory. The doctor restated his belief that it was virtually impossible for a dangerous mutant to result from the proposed experiments. Apart from that, he said, "It would be about impossible for the 'crippled' *E. coli* to live in the researcher's stomach or intestines, let alone raw sewage."

Dr. Betty Hoskins, of the WPI Life Sciences Department, addressed the meeting on possible ways of looking at the proposed research. "Much depends on the benefits versus the risks. Often we look only at the short term, instead of the long term. Even if our basic knowledge advances can we control the potential benefits? We hope that they will outweigh the risks. We could cause the risk of disease. Damage could be done to the environment, such as displacing or destroying some species. Also, by creating something artificial, we are breaking an ethical barrier. If this work proceeds, will it cloud our respect for human beings?

"Cambridge looked bad at first, but it came out good because scientists and laymen communicated. They were able to evaluate the situation without letting hysterics get in the way."

Opposite page: Dr. Hudson Hoagland, H'72 (center), addressing an open meeting of Shrewsbury citizens concerned about recombinant DNA experiments proposed by the Worcester Foundaition for Experimental Biology.

"Will the WFEB work foster the start of less desirable work elsewhere? It could become a matter of professional pride to try to outdo each other in our research.

"The community should be involved, especially those research workers not working at the top levels."

"There is an awful lot of foolish competition going on in the laboratory," echoed Danielli, "trying to do something before another laboratory does, and it's a waste of time and energy. Competent research works out better than competitive research, as a general rule." He also said that he thought that guidelines for research and containment would be observed. "I would think that anybody who didn't would be in very serious trouble with the scientific community, and they might very well have to abandon science as a career. That's a very powerful sanction."

By far, the majority of Shrewsbury residents who voiced their disapproval of the recombinant DNA experiments said they held moral opinions. These people agreed that, although they basically trusted Dr. Hoagland and his WFEB staff, they could not approve of any work in which the basic structure of a gene would be artificially altered.

Evidently, the citizens of Shrewsbury have seen some potential benefit to having DNA experiments conducted in their town, for the selectmen were ultimately to vote 4-1 against the formulation of a town bylaw to monitor research. The town's biohazards committee, formed after the March meeting, turned down a Cambridge-like ordinance on the grounds that there were "no real problems." They have chosen, as one selectman put it, to operate on "mutual trust."

Just who has the right to monitor research is, presently, up in the air. While there is no basis for a town such as Shrewsbury banning the various kinds of research that may take place in private laboratories, Dr. Danielli, while calling for much more comprehensive rules, would sanction such an action. "I think that, until we have an international policy, it's better to have a federal guideline than a state guideline. On the other hand, I don't see any reason why, if the community doesn't want a laboratory carrying out that sort of program, it shouldn't pass a bylaw against it, just as they can pass a bylaw to prevent a tannery opening in the middle of the city."

Speaking of his own work with blue-green algae, Danielli emphasized the possible benefits of the research. "The algae do quite a variety of things that are potentially useful. They fix carbon, which makes them a potential food source. But they also fix nitrogen, which is a very practical thing, because otherwise nitrogen has to be fixed by chemical means, which has become enormously expensive. If it is done by algae, by sunlight, it doesn't cost you a cent.

This is one of the P-2 classed laboratories at WPI, housed in the newly renovated Salisbury Labs. This is a "medium security" lab, with controlled environment and access, and it could be used for simple research using DNA. No such research is currently being done at WPI.

"There is an awful lot of foolish competition going on in the laboratory, trying to do something before another laboratory does, and it's a waste of time and energy. Competent research works out better than competitive research, as a general rule."

"I think that anybody who didn't follow the NIH guidelines would be in very serious trouble with the scientific community and might very well have to abandon science as a career. That's a very powerful sanction."

"At any time, we may find ourselves starting up an experiment that has to do with 'genetic novelties,' " he continued, "and we'd probably work 'round about the P-3 level, which is probably not more rigorous than is desirable to do, anyway." Danielli added that, when the time comes, he will leave the work of getting NIH approval to members of the WPI Biohazards Committee. Present committee members are Professors Roy Widdus of life sciences, Douglas Browne of chemistry, and Alvin Weiss of chemical engineering.

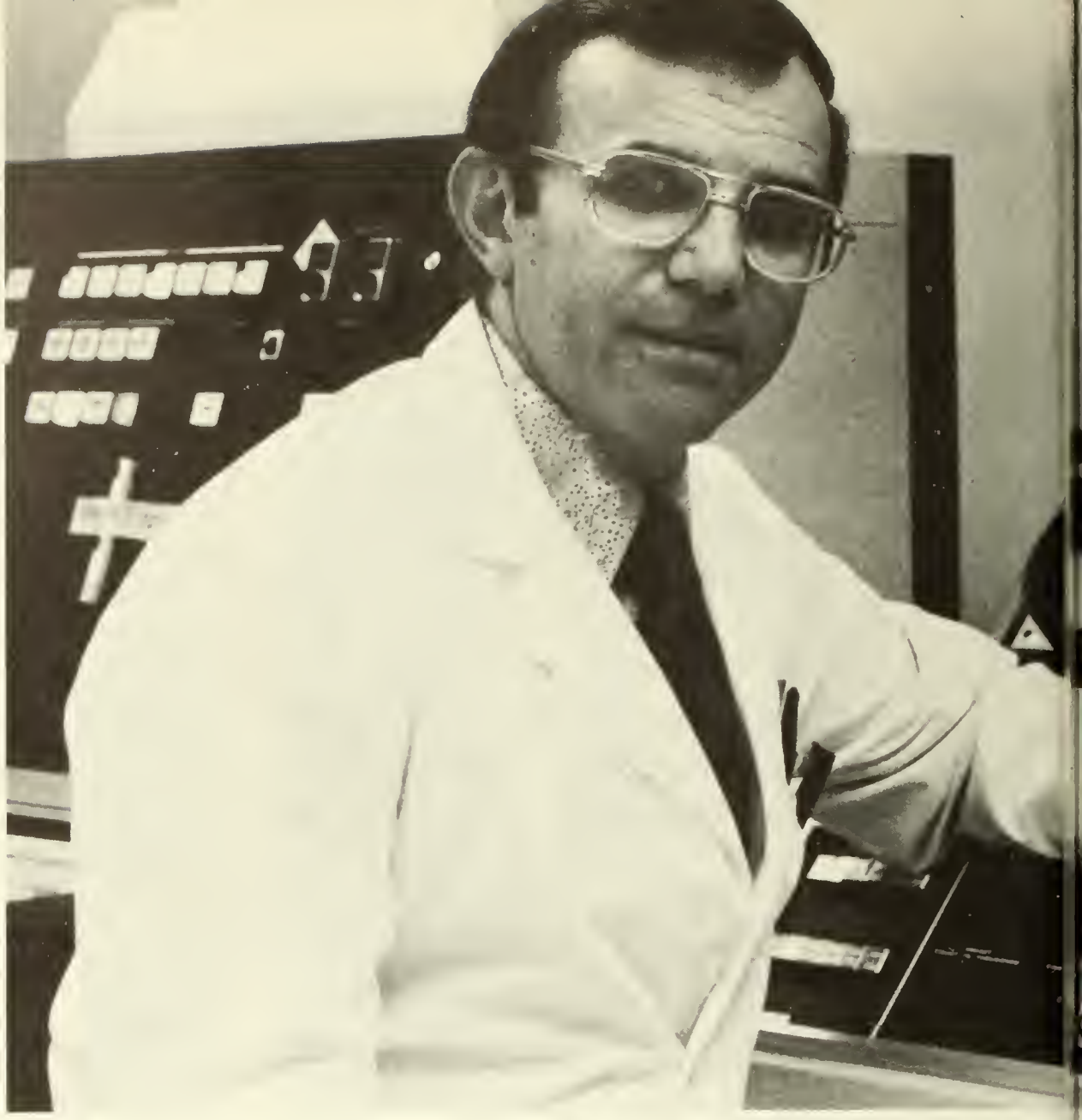
In both potential risks and possible benefits, the controversy over recombinant DNA research has outgrown national boundaries. Since it is of international importance, Dr. Danielli would like to see the United Nations step into the matter. "I think that it should be an international responsibility," he stated. "UNESCO [the United Nations Educational, Scientific, and Cultural Organization] probably should take the lead in this, working in conjunction with the national academies of science in the various countries."

MOST OF YOU reading this will, no doubt, come away with many questions, most of which can be answered only by applying your own moral and ethical beliefs. Laymen and scientists alike have become so confused over these many-faceted questions that even those directly involved with the research no longer are sure of the answers.

Consider the researchers at the University of California who, earlier this year, made a major breakthrough when they successfully produced a new virus, using recombinant DNA methods, that would reproduce insulin genes. While they and their colleagues in the scientific community were congratulating themselves on a great discovery, someone discovered that, inadvertently, they had broken the NIH guidelines by using a non-NIH approved plasmid in the experiments. Although the virus was soon replaced by another which had been approved, and the original virus was, later, given the NIH's OK, the "law" had, in fact, been broken.

Perhaps, someday, this new and exciting field will yield the ultimate result to great problems, such as how to increase food supplies to feed populations in countries with limited farm lands. Perhaps not. Although the answers are far over the horizon, the questions are here, now. They demand and deserve to be further investigated.

Nuclear medicine's Howard Dworkin



Your family doctor has ordered a brain scan. He wants to send you to the nuclear medicine facility at the local hospital.

At the word "nuclear" you freeze. You think of mushroom clouds and fallout. You worry about the possible effects of radiation and wonder if the facility can really help you.

"Doctor, can you tell me . . .," you begin.

The doctor's phone rings. After he hangs up, he turns to you and says, "Sorry. I have to leave. An emergency."

You are suddenly alone in the little office, and the worry grows. "Can't anybody tell me the facts about brain scans," you ask yourself.

Dr. Howard J. Dworkin, '55, chief of nuclear medicine at William Beaumont Hospital in Royal Oak, Michigan, can tell you just about anything you'd want to know about brain scans or any other facet of nuclear medicine. He is a qualified expert in the field.

Through him we learn that in order to diagnose your medical problems, your doctor needs information which is most easily acquired by using isotopes or radioactive compounds. This is why he has referred you to a nuclear medicine facility. The attending physician there has had special training in nuclear medicine. He has graduated from a medical college, and has completed years of intensive postgraduate training which qualify him as an expert in diagnosis. He has extensive technical knowledge of the machinery employed, as well as the chemistry of radioactive compounds, and knowledge of nuclear physics and radiation safety.

One of the most frequently performed nuclear medicine examinations is a study of the brain, according to Dr. Dworkin. This may be done either with a scanner or a camera. The scanner moves back and forth in straight lines recording images of the emitted radiation as it moves across the part of your body (in this case, the brain) in which your doctor is interested. The camera, a much larger instrument, is able to record the radiation emitted from selected body areas without moving.

Before either the scanner or camera is put in operation, a radioactive compound is injected into a vein. The injection may be done while you are seated with your head next to the camera in order to identify the blood supply to your brain. Once the compound is circulating in your brain, the front, back, each side, and sometimes the top of your head will be imaged by the camera or scanner.

The scan demonstrates both anatomical and physiological information about the brain. Changes in local brain physiology may lead to an area of increased radioactivity recognized by the nuclear physician by its pattern of dots. Different types of brain abnormalities can be identified by specific dot patterns.

Dr. Dworkin feels that the danger from radiation in such diagnostic tests is minimal. "Nuclear medicine physicians and technologists are very well trained in radiation safety procedures, and employ various methods to minimize your exposure to radiation," he emphasizes.

Radioactive compounds are kept separate from patient areas, and lead barriers are used to shield you from radiation sources. The amount of radiation used in nuclear medicine examinations is very small, and the doses for patients are selected to provide minimal exposure while still allowing for an adequate examination. In fact, the amount of radiation you will receive is less than that received in many x-ray examinations.

"There is more to nuclear medicine than the use of the brain scan," says Dr. Dworkin. "Actually, nuclear medicine may be defined as that field of medicine dealing with nonsealed radioactive materials, used for both the diagnosis and treatment of human disease." Radioactive drugs or radiopharmaceuticals may be given to the patient by mouth or injection and then pictures are taken or measurements made of various portions of the body. Radioactive chemicals can be used to assay the content of various drugs or hormones in body fluids, such as urine or blood. The latter application requires no administration of radioactivity to the patient.

"Historically speaking, nuclear medicine emerged as an identifiable medical specialty during the late 1950s and 1960s," Dr. Dworkin continues. In 1971 the American Board of Nuclear Medicine was formed, and it is this body which examines and certifies physician competence in the total field of nuclear medicine. The development of the atomic theory, the discovery of x-rays (Roentgen, 1895) and the identification of radioactivity (the Curies, 1898), all served to provide the scientific basis needed for the nuclear medicine field. The discovery and description of newer radioisotopes occurred in the 1930s, and this process has continued up to the present.

Paralleling these events was the development of medical instrumentation used to detect and display the passage and distribution of radioactive materials at some finite distance from their place of residence. The history of nuclear medicine is replete with the names of many famous scientists — many of them ultimately being Nobel Prize winners. It is therefore difficult to establish a single starting date for the day on which nuclear medicine began.

The first administration of radioactive materials to a human subject occurred in the 1930s. However, full-scale application to patients had to await better means of production, which became available after development of the nuclear reactor. The reactor is commonly used to produce the various radioisotopes used in nuclear medicine. However, another instrument, also developed in the 1930s — the cyclotron — is now being used more frequently for the production of radioactive materials for human application.

Dr. Dworkin says that currently about 20 of the 1500 known radioisotopes are actively used in nuclear medicine. Since many of these isotopes are essential to the development of new radioactive drugs in the nuclear medicine field, the discovery and production of radioisotopes and their incorporation into various drugs continue to play a major role in the expansion of nuclear medicine services.

A nuclear medicine service, such as the one which Dr. Dworkin heads at William Beaumont Hospital, performs a large variety of procedures. Which procedures tend to be performed most by a given nuclear service will depend on a variety of factors. Among these are the level of sophistication of medicine practiced in the surrounding community, the qualifications and skills of the physician in charge of nuclear medicine, the services, other personnel, the level of equipment sophistication and the financial resources available to the medical community. The size of the nuclear medicine service may also vary with certain other factors, such as the size of the hospital, the volume of tests required, and the type and level of care provided by the hospital.

Dr. Dworkin arrived at William Beaumont Hospital after following a somewhat circuitous route from WPI. "I graduated as a chemical engineer," he says, "but decided that I really wanted to go into medicine. While a senior at WPI, I was accepted at Albany (N.Y.) Medical College. Through the efforts of Col. Harris, who was head of ROTC at the time, I was able to delay my commitment to serve in the armed forces so that I could attend medical school. I'll be forever grateful for his help."

He received his MD degree in 1959 and then took a rotating internship at Albany (N.Y.) Hospital. Following that, he decided to take two years of internal medicine residency at Rochester (N.Y.) General Hospital. He completed the residency with one year of training in the department of medicine at the University of Michigan in Ann Arbor.

"Subsequently, I took a two-year fellowship in nuclear medicine in the department of nuclear medicine at University Hospital, which is also in Ann Arbor," Dr. Dworkin reports. "At the same time, I took classes on a part-time basis, and in 1965 I received a master's degree in radiation biology."

For a year he was an instructor in the department of medicine at the University of Michigan. Later he went to the University of Toronto, where he became an assistant professor, then an associate professor, and head of the department of nuclear medicine at Princess Margaret Hospital.

In 1967, honoring his military commitment, he became head of nuclear medicine in the department of radiology at National Naval Medical Center in Bethesda, Maryland, where he held the rank of commander in the Medical Corps. "I was very fortunate to obtain this position, since I had been originally drafted into the Army, but because I discovered that they needed someone skilled in nuclear medicine at Bethesda, I was able to switch from the Army to the Navy with little difficulty," he says.

Following his tour of duty, in 1969 Dr. Dworkin accepted the position that he currently holds as chief of nuclear medicine at William Beaumont Hospital, in Royal Oak, Michigan, just north of Detroit. He is the present director of the School of Nuclear Medicine Technology at the hospital, a school which trains nuclear medicine technologists. He serves as director of the nuclear medicine resident training program (part of his department), and has clinical appointments at Wayne State University, Michigan State University, and Oakland University (department of biophysics).

Active in a number of professional societies, Dr. Dworkin is president-elect of the American College of Nuclear Physicians, and a member of the national board of trustees of the Society of Nuclear Medicine. He also belongs to AMA, the American Federation for Clinical Research, the American Thyroid Association, and the Endocrine Society, as well as Tau Beta Pi, Sigma Xi, and Alpha Omega scholastic honor societies. He achieved board certification in internal medicine in 1966 and in nuclear medicine in 1972.

He has had over 31 articles published in scientific journals, completed 13 abstracts and presentations, and has been the author or co-author of chapters in several books. In 1975 he was a co-winner of the Gold Award in the educational class for "The Free Thyroxine Index by Measurement — A Single Thyroid Screening Test," which was presented before the American Society of Clinical Pathologists and the College of American Pathologists.

Among Dr. Dworkin's patents is one which he feels came about as a result of background information he received as a WPI student. "The patent is for a device which is used for tagging radioactive materials to albumin," he says. "The device is largely based on electrolysis, a subject which I remember studying well at WPI."

Although Dr. Dworkin has been associated with numerous colleges and universities throughout the years, it is WPI which he credits as having set him in the right direction. "My courses at WPI certainly influenced my choice of a medical specialty," he says, "and I haven't been disappointed. The field I work in has turned out to be a very nice blend of medicine and physical science. It is a field that has provided an enjoyable and rewarding career experience for me."

Joe Gale

One hundred and nineteen years with a single family working in one place could be some kind of record. "That's exactly how many years my father, grandfather, two uncles, and I have spent collectively at WPI since 1924," says Joe Gale, technical designer and instructional associate.

Joe arrived at WPI in 1946. It was a natural destination for him. "Dad was the first custodian at Higgins," he says. "He worked here for 22 years. My grandfather served as custodian for ten years. I had one uncle who worked at WPI for 30 years and another for 26 years."

In the beginning, Joe was the athletic field groundskeeper for Buildings and Grounds. In 1947 he was transferred to the Department of Mechanical Engineering, where he worked with the late Prof. Carl Johnson in welding and metallurgy. Currently he instructs students in casting, welding, and machine shop operations. During Intersession he is involved with forging techniques.

"We hold classes every weekday," Joe says. He gestures toward the row of machines in Washburn shops, where several students are working. "These students are on their own right now," he explains, "because it's in between class periods. They often use their free time to finish up overflow class work. Some also have to complete prototypes for their end-of-month semester projects."

Safety reminders are posted prominently on the bulletin board in the outer hall. One advises students to take off their rings and other jewelry before using the machines. "We also remind them to wear safety glasses," says Joe. "Most of all, we ask them to tie back long hair and to tuck in loose shirts. We don't want to have any accidents."

It is obvious that the students get along well with Joe, in spite of the safety warnings, and in spite of the fact that he can be exacting in his shop instruction. On the way from the shop to his office, several smile, ask him how he's doing, and engage in general banter.

"Good kids," Joe observes later. "Some of them are second generation students of mine. Take Peter Schoonmaker, '80," he says. "I had his dad, the Rev. Paul Schoonmaker, '56, as a student. I also taught Bill Cunneen, '51, the father of Richard Cunneen, '80."

Former students do not forget Joe after they graduate, either. "Alumni often drop by the office," he reports. "Most of the time I can place the face, if not the name. Anyway, I'm always glad to see them." The feeling is obviously mutual. The Class of 1951 invited him to their 25th reunion.

Joe has duties at WPI other than those in Washburn. "I've assisted at every basketball game for 25 years," he says, "and also the football games. I worked with Percy Carpenter before Coach Pritchard came."

Still under the jurisdiction of the Athletic Department, Joe serves as a general and genial host for visiting scouts. He has been in charge of the press box since it was built. "I have to see that the communications work properly and that refreshments are available," he says.

For his many years of loyal service to WPI, and for his unique contributions to the school, Joe was awarded one of its highest honors. In 1971 he became the first staff member ever elected to Skull. Last May he was honored at WPI's first long-service banquet held for 32 faculty and staff members who have served the college for 25 years or more.

Off campus Joe puts on another cap, as commanding officer of the Worcester Auxiliary Police. In this post, "Lt. Gale" heads a force of 70 men, who assist the Worcester Police

Probably Joe's favorite police duty is at Pleasant Valley Country Club in Sutton, where he has been supervisor of security for eight PGA men's tournaments and four ladies' tournaments. The job isn't easy. During the annual tournament he works up to twelve hours a day.

In 1976 some 40,000 people showed up for the last day of the tournament. The logistics of containing such crowds might intimidate some. Joe, however, always comes through with flying colors. Next summer he'll again be heading up security forces for the Pleasant Valley PGA spectacular.

"I really enjoy working the tournament," he confesses. "About 99% of the spectators are interested in golf, sports in general, and are well-mannered for the most part." To ensure security, Joe has about 30 men on active duty, some of them 24 hours a day. "Men are stationed on the periphery of the grounds, not only during the actual tournament, but the day before, too," he says.

Through his work at Pleasant Valley, Joe has become friends with several pros on the PGA tour, notably Tom Shaw, who won the AVCO tournament there. (He has been invited to New Year's parties at Shaw's home in Florida, but so far, because of his numerous Worcester duties, has had to take a rain check.) Shaw is also a friend of Joe's son, Jack (WPI '70), head golf pro at Rochester (N.H.) Country Club.

"Golf is very much all-in-the-family," Joe says. "Jack's wife is Mary Carr Gale, who was ladies' amateur champion for New Hampshire in 1976. Her brother is Joe Carr, golf pro at Holden Hills Country Club."

He laughs and opens his wallet. "We may have another golf pro on our hands in a few years," he says, pulling out a picture of a handsome, husky baby. "This is Joseph Francis Gale," he announces. Jack and Mary's son. My grandson. Born October 9th. Isn't he rugged?"

According to the photo, he definitely is. Jack Nicklaus had better look to his laurels!

WPI WORD SEARCH

by Ruth Trask

There are 56 words pertaining to WPI hidden in this puzzle. Can you find them? Look up, down, backwards, diagonally, forwards, and sideways — but always in a straight line. [Words and letters in brackets are not in the puzzle.] We have already circled one word to get you started. Happy hunting!

Word List

1. Alden
2. Arm [and hammer]
3. Atwater Kent
4. Black Student Union
5. Bong [Alden chimes]
6. Bowling Club
7. Boynton
8. Cheerleaders
9. Coffee House
10. Crew
11. Dad [the guy who pays the bills]
12. Daniels
13. Ellsworth-Fuller
14. Football
15. Glee Club
16. Goat's Head Pub
17. Goddard
18. Gordon Library
19. Harrington
20. Higgins
21. Hillel
22. Hockey C[lub]
23. IFC
24. IQP
25. Kaven
26. Lacrosse Clb.
27. Late [to class?]
28. Lens [and] Lights
29. Masque
30. Mass
31. MD [some get this after WPI. Two adjacent solutions.]
32. Nautical Clb.
33. Newman [Club]
34. Olin
35. Peddler
36. Pershing Rifle[s]
37. [Rope] Pull
38. Rule [WPI has more than one!]
39. Rush[ing]
40. Salisbury
41. Sanford Riley
42. Scabbard and Blade
43. Science Fiction Soc[iety]
44. SSC [Semi-Simple Club]
45. Ski Club
46. Social Co[mmittee]
47. SWE [Society of Women Engineers]
48. SPUD
49. Stoddard
50. Stratton
51. Student Government
52. Track
53. Washburn
54. Wedge
55. WPI Band
56. [WPI] Newspeak

S	T	U	D	E	N	T	G	O	V	E	R	N	M	E	N	T	S	S	E
K	C	B	S	N	F	H	N	K	S	L	A	T	E	A	O	A	C	A	L
I	H	O	T	E	O	O	E	C	P	U	L	L	U	C	L	I	N	N	L
C	E	W	H	W	O	C	W	A	U	R	F	T	L	I	E	O	E	F	S
L	E	L	G	S	T	K	M	R	D	I	I	A	S	N	T	D	B	O	W
U	R	I	I	P	B	E	A	T	R	C	I	B	C	N	A	U	A	R	O
B	L	N	L	E	A	Y	N	G	A	C	U	E	Y	L	L	L	E	D	R
S	E	G	S	A	L	C	N	L	O	R	F	O	B	C	E	A	S	R	T
L	A	C	N	K	L	I	C	S	Y	I	B	D	E	L	E	C	U	I	H
E	D	L	E	O	H	L	T	R	C	U	N	E	L	C	U	R	O	L	F
I	E	U	L	S	B	R	E	T	P	A	L	I	S	D	Q	O	H	E	U
N	R	B	R	N	A	L	I	D	D	G	H	S	U	R	S	S	E	Y	L
A	S	E	E	T	D	O	A	R	K	A	V	E	N	A	A	S	E	E	L
D	P	D	T	D	N	E	A	R	M	C	R	E	W	D	M	E	F	G	E
R	L	O	E	S	H	B	D	N	A	B	I	P	W	D	A	C	F	D	R
A	N	P	O	S	B	N	R	U	B	H	S	A	W	O	S	L	O	E	C
D	I	C	T	A	T	W	A	T	E	R	K	E	N	T	S	B	C	W	F
D	L	A	C	N	O	T	G	N	I	R	R	A	H	S	W	E	P	Q	I
O	O	S	N	O	I	N	U	T	N	E	D	U	T	S	K	C	A	L	B
G	O	R	D	O	N	L	I	B	R	A	R	Y	S	N	I	G	G	I	H

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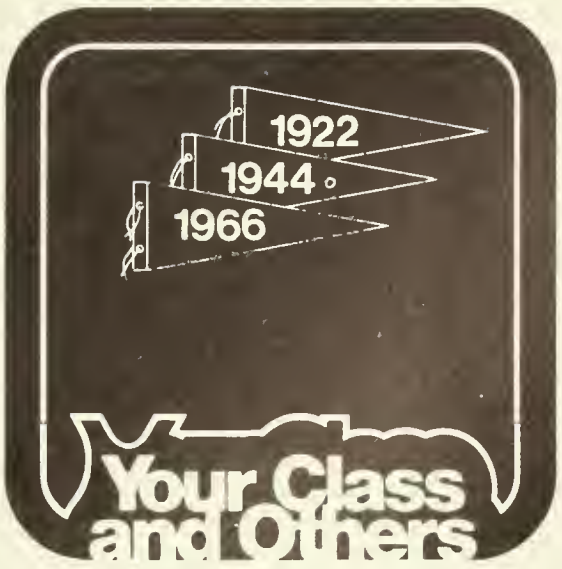

The information on which these class notes and obituaries are based was received at the WPI Alumni Office before November 21. Material received after that date will be used in future issues of the *WPI Journal*.

1933

After 37 years of public service, **A. Rodney Klebart** has retired as town engineer in Webster, Mass. He had been town engineer since 1960, having previously served as assistant engineer since 1939. He is also superintendent of the town sewer department and secondary sewage treatment plant. In addition, he serves as Webster's representative to the Central Massachusetts Regional Planning Commission, clerk of the zoning board of appeals, a member of the town's bylaw committee, and chairman of the East Village Sewer Construction Committee.

1939

Gleason Jewett works as a technical representative at Standard Mfg. Co., Inc. in Dallas, Texas.

1941

Frederick Benn, who retired as an account executive from Norton Co. in April, is now president of Frederick Benn & Associates in Carmel, Calif. Not only is he a manufacturer's representative and agent, he also teaches business courses at Monterey Peninsula College and Hartnell College.

1942

Roy Bourgault, professor of mechanical engineering at WPI, was recently elected secretary of the materials division of the American Society for Engineering Education.

1943

Everett Ambrose has taken early retirement from Monsanto Co. after 32 years of service. He has now begun a second career as a packaging staff member in the operations engineering department with the Plastic Beverage Bottle Division of the Continental Can Co. in Merrimack, N.H. He resides in Simsbury, Conn. and writes that he enjoys it there very much. . . . **Jackson Durkee,** consulting structural engineer, has joined the firm of Modjeski and Masters in Harrisburg, Pa. as a general partner. His recent experience includes ten years as chief bridge engineer at Bethlehem Steel Corporation in the Fabricated Steel Construction Division. Durkee, who resides in Bethlehem, Pa., has a visiting professorship in the department of structural engineering at Cornell University.

Victor Kohman has been promoted. Presently he is concerned with state regulatory matters in the Bell-Independent Relations section. His responsibilities lie in the mechanization of cost study settlements — that is, the dollar settlement amount between the 23 Bell System operating companies and the 1500-plus independent companies, for mutual use of each other's lines and equipment. Last year total settlements were $2.96 billion. . . . **Raymond Matthews** was recently named plant manager for the Robertshaw Controls Company Tempstat Division in Hinsdale, N.H. He will be responsible for the facility's daily operation. He has been chief engineer for Tempstat since 1974. The division manufactures temperature and pressure relief valves for gas and electric water heating and a line of ball type valves for industrial application.

1946

Dr. **John Lott Brown,** a WPI trustee and director of the Center for Visual Science at the University of Rochester, has been named president of the University of South Florida in Tampa. He received his MA from Temple University and his PhD from Columbia University. He takes over his new post at the 33,000-student university in January.

1949

Robert Amsden, formerly an electronic engineer for the Naval Electric Systems Command, Washington, D.C., retired in April and is currently residing in Las Vegas, Nevada. . . . **George Dewire** holds the post of marketing manager at Harris Corp., RF Communications Division, in Rochester, N.Y. . . . **John Snyder** has been named as a sales associate in real estate at Patrick L. Hedden Company in Warren, N.J. He had served as a marketing manager and planning coordinator for Union Carbide's chemicals and plastics division for 24 years. Most recently he was with TRW Crescent Wire & Cable and Phelps Dodge International Corp.

1950

Tejinder Singh currently serves as assistant general manager of refining at Bharat Petroleum Corporation Limited refinery in Bombay, India. He is concerned with the operations, engineering, installation, and marine work at the refinery. Singh's daughter, Kiran, is married to an opthalmologist who is an assistant professor at the University of Maryland. His son, Dipinder, is in the third year of college.

1951

►*Married:* **Selim Temel** and Mary A. Tipper in Greenwich, Connecticut on October 9, 1977. The bride attended New York School of Interior Design and graduated from the State University of New York at Purchase. She owns and operates the Decotique, a furniture and collector's consignment shop in Greenwich. The groom, who has studied at Newark College of Engineering, is co-founder, vice president, and secretary of the Microphase Corp. in Cos Cob. The company designs and manufactures microwave electronic components and subsystems for the defense and aerospace industries.

William Haslett is a research specialist for Fisher Controls in Marshalltown, Iowa.

1955

Kirby Ducayet III, administrative manager with Schweitzer Division of the Kimberly Clark Corp. since 1973, has been promoted to the Forest Products Business Division of Kimberly Clark in Redding, Calif. Ducayet is a trustee of the Lee (Mass.) Savings Bank and the Berkshire County Heart Association. He is also vice chairman of the town finance committee.

1956

Michael Gordon has been appointed director of aircraft marketing in the Kearfott Division of the Singer Company. He will be responsible for directing the division's marketing—sales efforts for aircraft-related systems. Since joining the firm in 1957, he has held a number of posts, including that of western region sales manager, supervisor of missile systems marketing, and senior development sales engineer and contract coordinator. He belongs to the American Institute of Aeronautics and Astronautics and the Association of the U.S. Army. He was cofounder of the Southern California Association of Professional Representatives.

Robert Skelton serves as manufacturing planning engineer for Information Handling Services of Englewood, Colorado.

A meeting of minds still needs some rules

by Fred Kardon of The Gazette Staff
Reprinted by permission of the Worcester *Evening Gazette*

FRANCIS WIESMAN, '29, has a way with words. The correct way.

Wiesman, 70, is a certified parliamentarian, an expert in rules, procedures and debates.

Wiesman, who taught penmanship, general science, English, business and general math and geometry in his 38 years as a teacher — from 1932 to 1970 — at North and Commerce High School, is one of only nine registered members of the National Association of Parliamentarians in New England.

He is one of five parliamentarians in Massachusetts certified by the American Institute of Parliamentarians.

"There are not," he said with a grin, "a whole lot of us around."

Wiesman said he became interested in parliamentary procedure in the mid-1960s "because I had an opportunity to attend quite a few different meetings — social groups and whatever — and I found out firsthand how poorly they were being run."

"I found that almost all the people involved with these organizations did not know how to correctly run a meeting.

"And since the members did not know the rules, most of the mistakes were never corrected," Wiesman added.

Wiesman said too often the officers of a club will say "let's get the work done; to heck with the rules" and the rights of the members are violated. It is Wiesman's job to see that these rights are not violated.

As a free-lance parliamentarian, Wiesman is consultant to several state and local organizations as a bylaws interpreter.

He attends conventions, offers advice to groups — for a fee — that are revising bylaws and in general "makes sure things are run according to the book."

Or books, in Wiesman's case. His "bibles of the trade" include "Robert's Rules of Order," "Cushman's Rules of Order," and "Demeter's Manual of Parliamentary Law and Procedure."

Wiesman said one of the problems with being hired as a parliamentarian is that "a group will ask for help in revising bylaws and when you make suggestions they tell you, 'You can't do that.' "

He said, "Everybody knows your job better than you do."

Wiesman, who also teaches night courses in parliamentary procedure, said it is the larger organizations that desperately need help in running meetings.

He said following prescribed rules is not a big problem in a small club, "but when you get a group with 200 members and $5,000 in the treasury, then you have to be pretty careful about following rules.

"I have seen situations," Wiesman said, "where the presiding officer of a club will violate every rule in the book, make up his own rules and then violate them."

Wiesman, who has consulted for the Boston Teachers Union, the Massachusetts Federation of Teachers, and the Postal Workers Union, is assisting in bylaws revision for the Massachusetts Nurses Association.

"When working with bylaws, or any kind of regulations, you have to be careful not to make them too simple," Wiesman said.

"A very simple rule is 'I am law' and that gives you a dictatorship. So simplicity isn't always beneficial," he added.

Wiesman said working with small groups is very easy. He laughed and added, "If you have a club with only two people, the biggest one is automatically the boss and it solves all problems."

Wiesman said while his advice is not always accepted, even when asked for, he enjoys the work.

Maintaining order is important, he added. He was a teacher long enough to realize that.

Quoting the late Col. Henry M. Robert, author of the original "Robert's Rules of Order," Wiesman said, "When there is no law, but every man does what is right in his own eyes, there is the least of real liberty."

If we know about it...

Alumni often ask where the news in "Your class and others" comes from. Often they phrase the question more like, "How come you didn't include this thing that happened to me (or, to my buddy)? Lots of people would like to hear about it."

The only answer to that is, we'd like to hear about it too, and until we do we can't print it. Most of the news here is based on three sources of information: newspaper (and occasionally magazine) clippings which are sent to us by an agency; press releases and other information coming from organizations and corporations; and personal notes or letters directly from alumni or their families.

This explains several things about the content of the class notes. Some alumni have complained that the section is top heavy in news of promotions, new jobs, and other business-related activity. And these are precisely the sort of news items that corporate public relations offices tell us and the newspapers about with care and regularity. The information tends to be short and somewhat impersonal, and, unfortunately, this can't help but carry over to the class notes themselves.

When we hear directly from an individual alumnus, we often have much more to tell about his family and non-business-related activities, and because we know more about the person, we can tell it with more warmth.

So the next time you ask yourself why we didn't run a note about your classmate Joe and what's going on in his life, don't stop there: Drop the *Journal* a note and then we can share the news with the rest of your classmates.

In this issue, we're including a reply card you can use to let us know something about yourself or another alumnus. With your help, we can make these class notes more lively and give broader coverage to alumni activities. **But only if we know about it.**

1957

Edward Dennett has been named vice president and director of marketing of the Sangamo Energy Management Division, Atlanta, Georgia. He joined the firm in 1957 as a sales engineer and has had several promotions since. In January he became vice president of national sales in the energy management division. The division is a leading producer of centralized load management systems, watt-hour and demand meters, capacitors, controllers, and survey recorders. It is part of Sangamo Weston, Inc., a subsidiary of Schlumberger, Ltd.

1959

►*Married:* **Thomas J. Hill** to Miss Bonita S. Mulligan in Tewksbury, Massachusetts on November 2, 1977. The bride graduated from Tewksbury Hospital School of Practical Nursing and is a licensed practical nurse at St. Joseph's Hospital. Her husband is with AVCO in Wilmington, Mass.

Dr. Joseph Bronzino, director of the biomedical engineering program at Trinity College, Hartford, Conn., has written a book, *Technology For Patient Care: Applications For Today, Implications For Tomorrow,* which was published by C. Mosby in June. The book is an introduction to technology in patient care designed for those students and practitioners who have no background in engineering or advanced mathematics. Bronzino is also under contract to Addison-Wesley to produce another text on computer applications in medical technology in the next couple of years. . . . **Morgan Ely** works as a subcontract field engineer for Bechtel Power Corp. in Pottstown, Pa. He is a lieutenant commander in the Navy Civil Engineer Corps, USNR-R.

1961

►*Married:* **Richard H. Nelson** and Kay K. Wilson last March. Nelson works for Harris ESD, Melbourne, Fla., where he serves as program manager for electro-optic programs.

Philip Crimmins has joined SCM Corporation's Allied Paper Division as lightweight paper specialty manager of Allied's New York sales office. He will be responsible for developing sales of specialty non-publishing items that use lightweight paper. Allied is the nation's leading manufacturer of lightweight papers. . . . **Doug Gladstone** holds the post of supervising structural engineer at the Boston office of United Engineers and Constructors, Inc. Currently he is involved in the design and construction of various industrial projects. He has been with the firm for ten years. . . . **Thomas Postma** is now a senior engineer at Raytheon Co. in Wayland, Mass.

1962

Dr. Charles Belanger has moved from the courtesy staff in the Department of Pediatrics to the associate staff in the Department of Emergency Medicine at Hahnemann Hospital in Worcester. He has been a member of the hospital medical staff since 1975. . . . Presently **David France** holds the post of supervisor of equipment development at GTE/Sylvania in Hillsboro, N.H. . . . **Richard Frost** was recently named division superintendent of lines for Massachusetts Electric in North Andover, a subsidiary of New England Electric. After joining New England Power Service Co. in 1965, he was located in Attleboro, Southbridge, Westboro, and at Narragansett Electric in Providence, R.I. Prior to his promotion, he was assistant district superintendent of transmission and distribution at Mass. Electric in Lowell. He is a registered professional engineer in Massachusetts.

1963

Dr. Richard Dominguez currently serves as chairman of the department of civil engineering at the University of Maine in Orono. . . . **Norman Fineberg** has been named a member of the law firm of Wiggin & Dana in New Haven, Conn. He holds a master of engineering degree from Yale and a law degree cum laude from Boston University. . . . **Arthur Goddard** now works as a systems development manager for Collins Radio in Newport Beach, Calif. . . .

Dr. **Joseph Mancuso** has been accepted as a member of Sales & Marketing Executives of greater Boston. He is with the management engineering department at WPI. . . . **Timothy Shea** was recently appointed by Westinghouse as project director for a power project in Cairo, Egypt. Previously he was a project site manager during the construction of South Korea's first atomic power plant. Shea and his wife, Susan, have a two-year-old son, Patrick.

1964

Donald Ryder was the author of "In-house aerial lift tests proved smooth, safe" in the August issue of *Transmission and Distribution.* He is with the transportation division of Philadelphia Electric Co., where he has been employed since 1964.

1965

▶*Married:* **William F. Shields** to Miss Elaine O'Sullivan recently in Canton, Massachusetts. Mrs. Shields, a graduate of Boston College, is employed by the Gillette Co. The groom is a pilot for Eastern Airlines.

Charles DeSimone, Jr., has been elected vice president of the Society for Savings in Windsor, Conn. Formerly active in private placement investments and head of the credit division, he will now concentrate on private placement activities in the Prudent Investment Division. He joined the Society in 1975 and was promoted to assistant vice president later that year. Previously he was with Hartford National Bank & Trust; Electric Boat/General Dynamics; and Hamilton Standard. Since 1971 he has been a member of the adjunct faculty at the University of Hartford. . . . **William Dolbow** was appointed to the faculty at Notre Dame College in Manchester, N.H., where he is an assistant professor of chemistry. Formerly he was a research chemist for Nashua Corporation.

William Hagar holds the post of production engineer at Davidson Rubber Co. in Farmington, N.H. . . . **George Kane,** SIM, has been appointed as assistant public works commissioner for administration in the Worcester Public Works Department. Earlier he had been production control and planning manager at Crompton & Knowles Corp. . . . **Chester Sergey, Jr.,** has received the distinguished sales award of the Sales and Marketing Executives of Greater New Haven (Conn.), a group whose purpose is the promoting of professionalism in selling and marketing. Chet has been with Enthone, Incorporated for ten years and was honored recently at the group's award banquet. In 1976 he had the highest percentage of achievement of quota, reaching 227 percent of his objective. He is active with the Cub Scouts and the Girls Scouts as a den leader and as a sponsor chairman, and serves as vice president of the Waterbury branch of the American Electroplaters' Society. The Sergeys have a son Philip, 10 and daughter Susan, 8. . . . **Dr. Peter Welcker II** is currently with DuPont's Experimental Station in Wilmington, Delaware.

1966

Capt. **Eugene Dionne** recently received the Meritorious Service Medal at Los Angeles Air Force Station, California. He was cited for outstanding duty performance as a spacecraft systems manager at Los Angeles AFS from March 17, 1974 to Feb. 28, 1977. Currently he serves as a chief engineer with the test division.

1967

Robert Dashner has been promoted to manager of finance and corporate applications development in the information services department at Amdahl Corporation in Sunnyvale, California. . . . **Duncan Vandenberg** is a process engineer at Dow Corning Corp. in Greensboro, N.C.

1968

William Belisle, who received his MS in mechanical engineering from California State University at Long Beach, is a systems programmer/analyst in Aerospace and Energy Systems at AiResearch Manufacturing Co. Bill and his wife, Belinda, who recently earned her MA in English, are both instructors at CSULB and both are also officers of Kappa Delta Pi, a national honor society in education. The Belisles have two sons, Michael, 4½ and Steven, 2. . . . **George Gamache** has been named director of engineering for Star Market Company. He joined Star in 1972 as a project engineer, and has since served as construction manager and director of construction. Currently he is pursuing his MBA at Babson College. . . . **Donald Holden** is now a product engineer at Abbott Laboratories in North Chicago, Illinois.

Dr. **Charles Konopka** was appointed to the high school mathematics department in Longmeadow, Mass. He has been a consultant to the Connecticut State Department of Education. . . . Dr. **Michael Paige** is employed as manager of software in engineering research at TASC in Reading, Mass. . . . **Stephen Pytka** serves as a senior analyst at Xerox Corp. in Rochester, N.Y. He received his MBA from Tuck School at Dartmouth. . . . Dr. **E. Wayne Turnblom,** one of the youngest professionals ever to receive such a promotion at Kodak, has been named as research laboratory head of the special materials laboratory in the photomaterials division at Kodak Research Laboratories in Rochester, N.Y. He joined the laboratories in 1974 as a research chemist, photosensitive formulations laboratory, and was named to the organic chemistry laboratory earlier this year. He received his PhD from Columbia in 1972 and spent two years at Princeton as an instructor in chemistry. He belongs to the American Chemical Society and Sigma Xi.

1969

▶*Married:* **Charles A. Kalauskas** and Carol H. Doty on October 8, 1977 in Bridgeport, Connecticut. The bride graduated from Wells College and is a member of the staff of the Boston Symphony Orchestra. Her husband is the principal transportation planner with the Central Transportation planning staff in Boston. He has a master's degree in city planning from Harvard University School of Design.

▶*Born:* to Mr. and Mrs. **Cameron Boyd** twin sons recently. Boyd is a teacher in Haverhill, Mass. . . . to Mr. and Mrs. **David E. Jervis** their third child, Amanda Anne, on July 10, 1977. Amanda has two sisters, Melissa Lynn, 7 and Katie Beth, 5. David is a principal engineer for Digital Equipment Corp. in Maynard, Mass.

Rick Follett serves as senior engineer at Raytheon in Bedford, Mass. . . . **Richard Furman** is a research coordinator at Florida Power & Light Co. in Miami. . . . **Joel Greene's** law offices are currently located at suite 400, 311 Main St., Worcester. . . . **Tom Gurney** has received his master of divinity degree from Gordon-Conwell Seminary. . . . Dr. **Robert Kusy** has received a five-year research career development award from the National Institute of Dental Health. A materials scientist at the University of North Carolina, he also serves as principal investigator in the Dental Research Center and as an assistant professor of oral biology in the orthodontics department of the School of Dentistry at the University. He was given the award to continue research in his project "Novel Uses of Materials for Health Research." His project includes the study of wear-resistant coatings for orthodontic and orthopedic uses and the design of corrective devices for treating cleft-palate infants.

Kris Nelson holds the post of field sales engineer at Texas Instruments, Attleboro, Mass. . . . **Robert Stessel** owns Advanced Marine Electronics in Beverly, Mass. He lives on the research vessel, "Kelpie."

Lost his wax??

Odds are you'd never discuss King Tut, Michelangelo, and Dr. Edward R. Funk, '46 all in the same conversation. But you could legitimately do just that. The three, paradoxically, have something in common — the appreciation and use of the lost-wax technique.

It can go without actually saying that King Tut himself never engaged in the process itself, but his contemporary craftsmen did, and he appreciated their creativity. In fact, a number of pieces so cast were found among the many treasures unearthed in his tomb. (The ancient Egyptians are credited with having invented the lost-wax technique.)

It is also believed that Michelangelo, the 16th century Italian artist, used the lost-wax process in creating several of his sculptures.

Edward Funk has combined the ancient art technique with modern metal technology and come up with a success formula for the FineCast division of Funk Metallurgical Corp. in Columbus, Ohio. The firm is one of fewer than 100 in the country which use the lost-wax technique to create precision metal parts without the expense of extensive machining.

The company was founded in 1970 by Dr. Funk and his wife Ingeborg (the first woman member of the American Foundryman's Association), while he was a professor at Ohio State University. It started out small, but has grown steadily. Currently the firm employs 45 persons full time in the foundry and machine shop.

In utilizing the lost-wax process, company employees make the part first from wax. The wax part is then dipped into a ceramic slurry which has the texture of heavy cream. After the ceramic dries, the wax is melted and removed. Molten metal is then poured into the cavity. When the metal cools, the ceramic is broken off and the resulting metal casting is an exact duplicate of the original wax object.

The technique is used to save money. It is possible to cast with precision parts which previously required extensive machining, grinding, or welding to achieve the required high degree of precision, within 2/1000 of an inch. The process makes it possible to create parts which previously could not be made in one piece.

Dr. Funk's company makes products ranging from metal hip implants for surgery to parts for Boeing 747 toilets. It also makes parts for computers, custom coaches, mining machines, and dentists' tools. Because some customers want their castings assembled further, a machine shop and assembly plant known as Borg Industries has been attached to the FineCast plant to meet their needs.

The company can create special products. Working with Swiss engineers, Dr. Funk developed a device now used worldwide by industries filling everything from beer barrels to supertankers. It operates on the principle of a tuning fork. When the tank contents rise toward the top, the operation of the tuning fork is affected. This triggers a switch which turns off the pumps.

After graduating from WPI in 1946 with his BS in aeronautical engineering, Dr. Funk attended Harvard Graduate School of Business Administration. He received his MSME and his doctorate in metallurgy from MIT.

He was employed by Goodyear Aerospace Corp., Akron, for a time and then became cofounder and president of Johnston & Funk Titanium Corp. in Wooster. The firm manufactured precision wire in titanium, zirconium, and other metals. In 1959 he sold the business and in 1960 founded Astro Metallurgical Corp., also in Wooster. (Astro Metallurgical is the world's foremost manufacturer of chemical process equipment made from titanium.) In 1965, after a corporate merger, he left the company and joined the department of welding engineering at Ohio State as an associate professor.

Dr. Funk is a member of SAE, Tau Beta Pi, Sigma Xi, and Skull. From 1969 to 1974 he was a WPI trustee. He is the father of Dan Funk, '77.

"At Du Pont you don't get lost in a big company atmosphere. It's very personal."

—George D. Peterson BS, Chemical Engineering

"Du Pont is a big company but it's broken down into satellites. So you don't get lost in a big-company atmosphere. It's very personal, and I think the people are top-notch.

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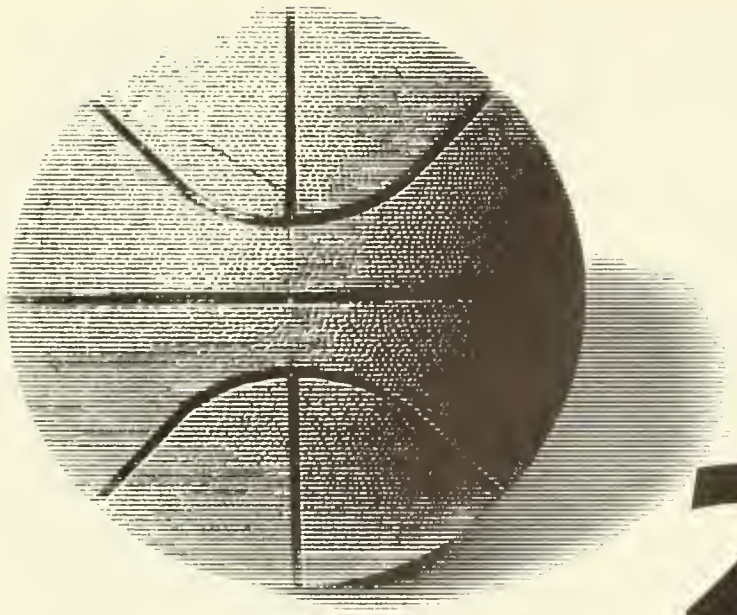

2nd Annual Basketball Alumni Night

WPI vs. COLBY

February 4th, 8 p.m.

Reception following the game

in Harrington Auditorium

1976

►*Married:* **Andre J. Bissonnette** and Miss Joan M. MacDaniel in Bridgeport, Connecticut on October 15, 1977. A registered nurse, the bride graduated from the University of Bridgeport and attended Sacred Heart University. Her husband is an assistant manager at Stamford Superior Drug Co. He is also studying for his MBA at the University of Bridgeport. . . . **Robert L. Gray, Jr.,** and Miss Shari A. Richardson recently in Essex Junction, Vermont. Mrs. Gray is a Becker graduate and a secretary at Pepsi Cola corporate headquarters in Purchase, N.Y. The groom works for Union Carbide-Linde Division in North Tarrytown, N.Y. . . . **James H. Hohorst** to Miss Barbara A. Ridlon on September 3, 1977 in Flemington, New Jersey. The bride attended Emory University and is currently completing her studies at New York University. The bridegroom works for the Foreign Exchange Department of Citibank in New York City.

►*Married:* **Steven M. Maynard** and Miss **Pamela M. Baradine** on October 15, 1977 in Stratford, Connecticut. Mrs. Maynard is a business research analyst with Southern New England Telephone Co. The bridegroom is with Field Concrete Pipe Co. . . . Miss **Elizabeth Papandrea** and **Leonard J. Lariviere,** '78 on August 21, 1977 in Worcester. Mrs. Lariviere, who received her BSCE from WPI, is an assistant sales engineer at Westinghouse Power Systems Laboratories in Framingham, Mass. The groom is majoring in civil engineering. . . . **John J. Smith** and Miss Susan Partridge in Weymouth, Massachusetts on October 1, 1977. The bride graduated from the University of Massachusetts at Amherst. The groom is a biomedical engineer working for his PhD in pharmacology at the University of Buffalo.

Paula Delaney has been named registrar of Daniel Webster College, a division of New England Aeronautical Institute. Earlier she had been with the New York Telephone Company. . . . **Johnny Dieters** works for Electric Boat in Groton, Conn. . . . **Sidney Formal** was recently transferred to the U.S. Army Corps of Engineers in the Chicago district. Formerly he was in Louisiana. . . . **James Galvin** holds the post of cost engineer at Bechtel Power Corp. in Ann Arbor, Michigan. . . . **David Graham** is a mathematics and science teacher at Blackstone Valley Regional Vocational Technical High School in Upton, Mass. . . . **Bruce Haffty** was pictured in a recent issue of the *National Enquirer* wearing a device which he, **Peter Kotilainen,** '74 and Dr. David Spodick of the UMass Medical School developed to help diagnose abnormal heart functions. The portable recording system may be worn by a patient so his heart can be monitored under real-life conditions for up to 24 hours instead of under laboratory conditions alone.

Richard Hansen is a manufacturing engineer for Westinghouse in Boston. . . .

Enjoy college

Education not only makes life more interesting but eventually brings more influence in society than can be expected by those who have never bothered to read, study, listen, and reflect on the pleasure and pain of it all. That includes influence as articulate citizens, customers, and investors.

Nevertheless, the truth in this may not be apparent right out of college when a desire for steady income leads some B.A.'s to come to us with a major in, say, political science or Romance languages, seeking a start toward an executive career. We listen and then ask, "Are you a born salesperson and how can you prove it?"

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Continuing with Clairol, **John Heid** has been transferred to Camarillo, Calif. . . . **Thomas Keenan** has been appointed director of engineering and operations at Vermont Yankee Nuclear Power Corp. in Rutland. Prior to his promotion, he had served as plant engineering department manager and was responsible for providing engineering services to a number of nuclear plants, including Vermont Yankee. . . . 2/Lt. **Steven Landry** works as an organic research chemist with the U.S. Army in Edgewood, Md. . . . **Charles Lauzon** has received his MS in chemical engineering from the University of Michigan which he attended on a fellowship. Currently he is employed by Union Carbide in Bound Brook, N.J. . . . **Michelle McGuire** serves as assistant sales engineer at Westinghouse in Hartford, Conn. . . . **Lenny Meyer** is with Sikorsky Aircraft in Stratford, Conn. . . . **Ronald Stadden** teaches math and science at Gray-New Gloucester (Me.) High School.

1977

▶*Married:* **Dana Homer** and Miss Laura Klingler on October 15, 1977 in Hudson, Massachusetts. Mrs. Homer is a sophomore at Bridgewater State College, where she is majoring in special education. Her husband is with W. R. Grace Co. of Cambridge, Mass. . . . **Gary M. Kuba** to Miss Helen R. Bostwick recently in Randolph, Massachusetts. The bride, a teacher, graduated from Worcester State College with a degree in psychology and education. The groom is a computer engineer and consultant with Online Applications in Hudson, N.H. . . . **John A. Richmond** to Miss Janet M. Dowell recently in Pomfret, Connecticut. Mrs. Richmond graduated from Annhurst College in May. Her husband, a graduate of the Computer Processing Institute in Hartford, is a computer programmer-analyst at NADS in Putnam.
▶*Married:* **William Scothon** to Miss Donna D'Ambra in Cumberland, Rhode Island on October 22, 1977. The bride graduated from Sawyer School of Business and is a legal secretary with Hinckley, Allen, Salisbury, and Parsons. The bridegroom works for J.H. Lynch & Sons, Inc. . . . **Stephen P. Russell** and Karen A. Kerr in Braintree, Massachusetts on August 6, 1977. Mrs. Russell attended Bryant College. Her husband is studying for his MSEE at the University of Colorado in Boulder. . . . Lt. **Theodore J. Tamburro** and Miss Judith A. Ruel on October 15, 1977 in Chicopee, Massachusetts. The bride graduated from Holyoke Community College. Her husband, who has completed the Officers Training School course, is presently stationed in Washington, D.C. . . . 2/Lt. **Bruce P. Wright** and Miss Maryellen T. Thornton in Northboro, Massachusetts on October 7, 1977. Mrs. Wright is a second lieutenant in the U.S. Army stationed with the Institute for Military Assistance at Fort Bragg, N.C. She graduated from Worcester State College. The groom is a platoon leader with the First Cavalry Division, U.S. Army at Fort Hood, Texas, where he was recently presented with the Expert Infantryman badge (the Army's highest non-combat proficiency award for infantrymen).

Raad Al-Awqati is a mechanical engineer for Mohamad Al-Bahan in Kuwait. . . . **Jeffrey Baumer** has joined Engelhard Industries in Plainville, Mass., where he is a mechanical engineer in melting, extrusion, wire drawing and ring fabrication. The Plainville plant is the largest precious metals facility in the United States. . . . **Robert Bowser** has accepted employment as a civilian engineer with the Navy department in Arlington, Va. . . . **William Cronin, Jr.,** is a video engineer at Andersen Laboratories, Microtime division, in Bloomfield, Conn. . . . **Bill Cunningham** is a service consultant for AT & T Long Lines in Hartford, Conn. . . . **Marc DeVoe,** who is located in Boca Raton, Fla., is employed by IBM.

James Leighton works for Raytheon missile system division in Bedford, Mass. . . . **Richard Mazmanian** has received a $250 fourth prize award from the James F. Lincoln Arc Welding Foundation for his entry in the foundation's national 1977 Student Engineering Design Competition. His entry described the analysis, design, and construction of a 17-foot boat trailer. . . . **Paul McLoughlin** is studying for his master's degree in education at Assumption College. After classes, he pedals his unicycle to work at the Holiday Inn on Southbridge Street in Worcester. . . . **Christopher Thomas** has joined Estee Lauder, Inc. as a staff industrial engineer in Melville, N.Y.

Ernest C. Morse, '05, a retired merchandising and public relations counsel for Lockhart International, died on September 24, 1977, in Montague, Massachusetts. He was 92 years old.

He was born on December 11, 1884 in Lebanon, N.H. After graduating as an electrical engineer from WPI, he was employed by Westinghouse as an industrial and sales engineer. In 1918 he was named director of sales for the U.S. War Department, and was in charge of selling items such as surplus anti-fogging gel used with gas masks, horse harnesses, and smokeless powder plants.

During 1919 and 1920 he and his staff, representing the U.S., helped supply France, Belgium, and Poland with the kinds of surplus that they wanted. As a result, Belgium and Poland gave Mr. Morse and his staff a government decoration. He also received the Distinguished Service Medal from the U.S. War Department.

Mr. Morse was president of the Foreign Trade Supply Corp. in 1921 and 1922. Later he was with the Cotton Textile Institute, American Bemberg Co., Associated Wool Industries, and Lockhart International, from which he retired in 1955. From 1951 to 1961 he did free-lance editorial work for technical magazines. He belonged to AIEE, the U.S. Institute of Textile Research, and the Masons.

Asa P. Nutter, '14, died on April 26, 1977, in Lockport, New York.

He was born on May 22, 1892 in Swiftwater, N.H. In 1914 he graduated with his BS in mechanical engineering from WPI. During his career he was with Norton Co., Parker Young Co., Brown Co., and Upton Fiberboard Co. He had also served as an appraiser for the City of Lockport, a post from which he retired in 1961.

Mr. Nutter belonged to Sigma Phi Epsilon, the Masons, and the Exchange Club.

Arthur W. Peters, '14, died recently in Concord, Massachusetts. He was 88.

On Nov. 27, 1888 he was born in Clinton. In 1914 he received his BSME from WPI. He had worked for Surface Combustion Corp., George J. Hagan Co., Ingalls Shephard, and Chevrolet. In 1960 he retired as a research engineer from Surface Combustion Corp. He belonged to Phi Sigma Kappa.

Philip C. Pray, '17, of Rye Beach, New Hampshire, passed away recently.

He was born on March 15, 1895 in Orono, Me. In 1917 he graduated as an electrical engineer from WPI. For many years he was with the New England Power Co., prior to his retirement. He belonged to Sigma Phi Epsilon, and the Masons.

Elliot W. Burbank, '20, died in Wolfeboro, New Hampshire on September 5, 1977, following a brief illness.

He was born in Sandwich, Mass. on July 8, 1896. After studying at WPI, he joined the U.S. Navy during World War I and continued his education at Harvard. In 1932 he graduated from the University of New Hampshire. From 1932 until 1948 he served the public schools of Charlestown and Hanover. At his retirement he was principal of Nute Academy in Milton.

Mr. Burbank was a charter member and past president of the Alton Historical Society and treasurer of the Harold S. Gilman Historical Museum.

Harold S. Woodward, '20, of West Redding, Connecticut died on June 20, 1977.

He was born in Worcester on July 15, 1899, and was later a student at WPI. In 1922 he graduated from Cornell University as a civil engineer. In 1923 he received his MS from Cornell.

Following graduation he worked for the Atlantic Fruit Co. in Cuba doing railroad surveying. For two years he was with Schenck & Williams, architects in Dayton, Ohio. He then joined Seelye, Stevenson, Value & Kuecht, New York City, where he was named engineer-in-charge and partner. One of the 35 buildings he designed was Payne Whitney Gymnasium at Yale University. He was also associated with Stran-Steel Corp. and served as chief structural engineer for a large chain store organization.

Ralph L. Draper, '21, died in Lawrence, Massachusetts on November 5, 1977, following a short illness. He was 81 years old.

A native of Warren, N.H., he was born on August 23, 1896. He received his BSME in 1921. From 1923 until 1962 he was with John W. Bolton & Sons (Bolton Emerson Co.) of Lawrence, Mass. During his career he served as draftsman, order supervisor, production engineer, division superintendent, and chief production engineer at the company. He retired in 1962.

Mr. Draper belonged to ASTME, Lambda Chi Alpha, and served on the board of directors of the Andover Home for the Aged and the Andover Fireman's Relief Association. He was an army veteran of World War I.

Thaddeus J. Brusnicki, '22, a developer of the M14 rifle, died on September 4, 1977, at his home in Springfield, Massachusetts. He was 79 years old.

He was born in Krakow, Poland on July 4, 1898. In 1922 he graduated as a mechanical engineer from WPI. During his lifetime he was with U.S. Envelope and Milton Bradley Co. He retired in 1968 as chief engineer at Springfield Armory.

Mr. Brusnicki was past president of the Polish Relief Association, a member of the National Association of Retired Federal Employees, and of the Pilgrim Pistol and Rifle Club. He was twice commander and manager of the American Legion in Springfield.

Freeman P. Butler, '22, died at the Veteran's Administration Center in Togus, Maine, on October 20, 1977, following a long illness.

A native of Waltham, Mass., he was born on June 11, 1896. During World War I, he served in the 5th Field Artillery. After graduating as a chemist from WPI, he worked for Atlantic Refining Co., Philadelphia; A.D. Little, Tiverton, R.I.; and U.S. Rubber Reclaiming Co. in Buffalo, N.Y. From 1933 to 1955, when he retired, he was with the U.S. Post Office in Augusta, Me.

Mr. Butler belonged to Phi Gamma Delta, the American Legion, and was a life member of the Disabled American Veterans. He was a former secretary-treasurer of the Philadelphia chapter of the Alumni Association.

Solomon Hurowitz, '22, president of Tech Pharmacy, Highland St., Worcester, died on October 10, 1977, at the age of 76.

He was born in Smoleon, Russia on August 14, 1901, and lived in Worcester for over 70 years. In 1922 he graduated as a chemist from WPI. He owned Tech Pharmacy since 1923.

Mr. Hurowitz, a member of AEPi, was a founder and treasurer of Yeshiva Achei Timimim, a life member of its board of directors, and cochairman of the Chevra Gemmorah. He was a founder of Tifereth Israel Synagogue, a member of Beth Israel Synagogue, Sons of Jacob Synagogue, Temple Emanuel, Worcester Zionist Organization, B'nai B'rith, Level Lodge of Masons, and the Massachusetts State Pharmaceutical Association.

An incorporator of Hahnemann Hospital, he was also a former member of the board of directors of the Worcester County Music Association. He enjoyed playing cello as a hobby. His identical twin brother, Max Hurowitz, '23, passed away on March 15, 1977.

Francis C. Bragg, '24, a retired professor of mechanical engineering at Georgia Institute of Technology, passed away on October 20, 1977, in Dennisport, Massachusetts. He was 76 years old.

He retired from Georgia Tech in 1969. Previously he had taught at Syracuse University and North Carolina State College. He had also been with U.S. Rubber Co., and Dwight P. Robinson & Co., Inc.

Prof. Bragg was born in Watertown, Mass. on July 1, 1901 and received his BSME in 1924. He belonged to Phi Gamma Delta, the Masons, Tau Beta Pi, and Sigma Xi. He was a member of ASME, ASEE, the Society for Experimental Stress Analysis, ASTM, and the North Carolina Society of Engineers. For many years he served as secretary-treasurer of the Southeastern Chapter of the Alumni Association.

Edward F. Kennedy,'24, of Melrose, Massachusetts, passed away on February 27, 1977.

He was born on March 10, 1902 in West Boylston, Mass. In 1924 he received his BSEE from WPI. For a number of years he was with New England Electric & Oil Co., Malden, Mass., where he was assistant to the president.

Carl G. Hammar, '26, died in Woonsocket, Rhode Island on September 24, 1977.

A native of New Britain, Conn., he was born on April 1, 1905. Following his graduation as a mechanical engineer from WPI, he joined Western Electric & Mfg. Co., and, later, Kendall Mills. He had served as assistant plant manager of the Slatersville (R.I.) Finishing Co. He retired thirty years ago.

He belonged to Theta Chi, Tau Beta Pi, and Sigma Xi. His son, C. Allen Hammar, graduated from WPI in 1954.

S. Allan Jacobs, '26, retired chairman of the board of Phelps Dodge Industries, died September 29, 1977, at his home in Fort Wayne, Indiana.

He was born on Nov. 4, 1903 in Dudley, Mass. and graduated from WPI as an electrical engineer in 1926. He joined Phelps Dodge as a salesman in 1926 and rose to several leadership positions during his 44 years with the company. He retired as chairman of the board in 1971.

Mr. Jacobs and several associates, including an uncle (George Jacobs, 1900, deceased) formed Inca Manufacturing Co., which became a division of Phelps Dodge in 1930. After serving as sales manager of the Inca Division, he was elected vice president of Phelps Dodge Copper Products Corp. in 1941. He also served the Phelps Dodge magnet wire operation as its chief executive officer from 1941 to 1970. Later he was named president and chairman of the board after the operations were incorporated as Phelps Dodge Magnet Wire Corp.

A member of Phi Sigma Kappa, Mr. Jacobs was also a director of the Fort Wayne Foundation, the Chamber of Commerce, Taxpayers Research Association, Indiana-Purdue Foundation of Fort Wayne, and Lincoln National Bank & Trust Co.

Russell J. LeBosquet, '30, of Belfast, Maine, passed away on August 11, 1977.

He was born on March 31, 1908 in Somerville, Mass. After studying chemical engineering at WPI, he later attended the University of Minnesota where he received his BEE. For many years he was with Wisconsin Power & Light Co. in Madison, from which he retired several years ago. He belonged to Theta Chi and served in the U.S. Army during World War II. He also belonged to AIEE and the Wisconsin Society of Professional Engineers.

John A. McMahon, '34, of Old Saybrook, Connecticut, died while sailing his custom-built boat, the Heritage, last summer.

A native of New Haven, Conn., he was born on August 4, 1913. He received his BSEE from WPI in 1934. During his career he was associated with Connecticut Light & Power Co., Connecticut Valley Electric Exchange, and Northeast Utilities Service Co. (CONVEX), where he had been superintendent of systems operations. He belonged to Sigma Alpha Epsilon.

Thomas M. Bonnar, '38, an assistant vice president of Eastman Kodak Company, Rochester, New York, died on May 5, 1977, at the age of 61.

He joined Kodak's credit department in 1938 and later that year transferred to Kodak Park, where he was named cost engineer of the accounting department in 1939. In 1949 he became manager of gross profit accounting. In 1956 he was named to an administrative training assignment in Canada. Subsequently he became administrative assistant, cost coordinator for U.S. plants, and comptroller for the Apparatus and Optical Division. Since 1970 he served as an assistant vice president of Eastman Kodak Company and as director of administrative services.

Mr. Bonnar was born on October 19, 1915 in New Bedford, Mass. He attended WPI and Bentley School of Accounting and Finance. A member of Phi Sigma Kappa, he also was past president of the Genesee Hospital, a member of the Rochester Chamber of Commerce, and director of Eastman Savings and Loan Association.

Kenneth G. Merriam, '35, professor emeritus of mechanical engineering at WPI, died suddenly on October 17, 1977 in Worcester only a few days after the announcement of the first appointee to the Merriam professorship. The professorship was recently established to honor him by an anonymous gift of $500,000 from one of his former students.

Prof. Merriam attended the departmental staff meeting in October when Dr. Raymond R. Hagglund, '56, was introduced as the first Merriam Professor. Hagglund was one of his students and, later, a teaching colleague.

A member of the WPI faculty from 1923 until his retirement in 1969, Prof. Merriam headed from 1927 to 1957 the aeromechanics program, which produced some of today's top leaders in the aviation and space industries.

He received his BSME from MIT in 1922 and his master's degree from WPI in 1935. In 1922 and 1923 he taught at the University of Maine. Later he taught evening classes at Worcester Junior College for fifteen years. In the 1930's he did pioneering work on pitot-static tubes, widely used in measuring aircraft speed.

He joined the Army Reserve in 1922, went into active duty during World War II when he received a Legion of Merit and the Army Commendation Ribbon, and retired as a colonel from active service in 1946. After the war he was a consultant to the Operations Research Office for the government for three years. A registered professional engineer in Massachusetts, he had operated the Curtis Flying School and the civilian pilot training program for three years prior to World War II.

Prof. Merriam was awarded an honorary doctorate in engineering from WPI in 1964 and was an associate fellow of IAS and AIAA. In 1961 he was presented with a citation for outstanding teaching at WPI by the trustees. He was a past president of the WPI chapter of Sigma Xi, a life member and fellow of ASME, a member of Tau Beta Pi, Pi Tau Sigma, and Theta Upsilon Omega. He was a life member of ASEE, was listed in "Who's Who in America," elected to the Wisdom Hall of Fame, and presented with the Wisdom Award of Honor in 1970. He belonged to Sigma Phi Epsilon and was elected as an honorary member of the class of 1926.

Prof. Merriam, 75, was a native of Belfast, Maine.

John E. Vandersea, '60, an engineering manager for IBM in Poughkeepsie, New York, for 14 years, died on October 8, 1977. He was born on July 31, 1938 in Whitinsville, Mass. In 1960, he graduated with his BSEE from WPI. From 1960 to 1962 he was with Raytheon. Later he joined IBM, where he was employed at the time of his death. He belonged to Lambda Chi Alpha.

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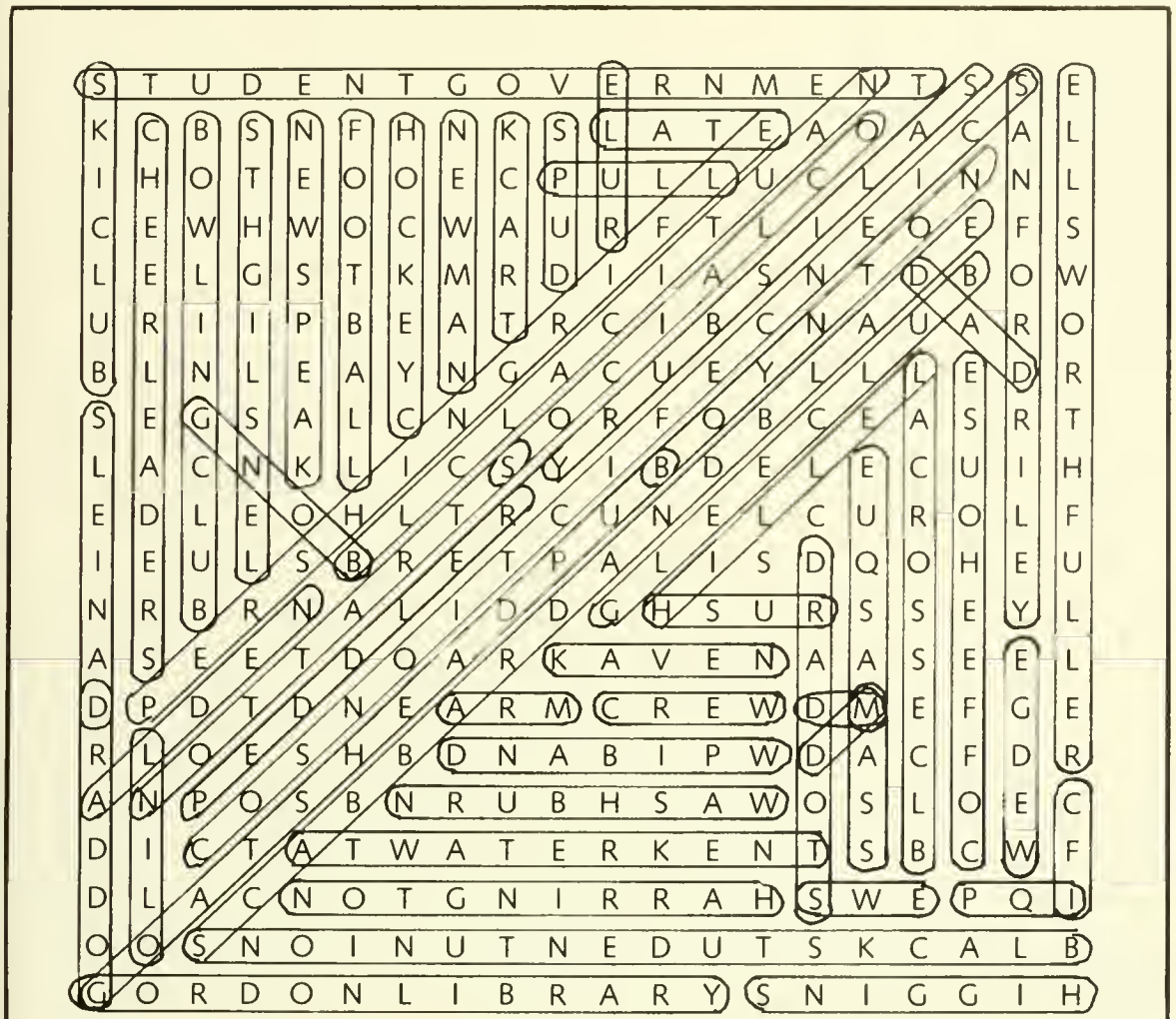

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WPI journal

The Hazzard Years

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It snowed . . .

by Russell Kay

Many cars were nearly buried by the drifting snow . . .

During the middle of Monday morning on February 6, it began to snow and the wind started blowing. Some 30 hours later the storm finally stopped, leaving over two feet of new snow behind, with the average drifts being six to eight feet high. And while Worcester was spared the devastation of the seacoast towns and the incredible traffic snow-in of Route 128, there was still an enormous volume of snow to be dealt with. Governor Dukakis declared a statewide emergency, including an absolute ban on motorized travel except for essential services, that lasted in Worcester until Friday.

According to meteorologists, the Blizzard of '78 was the biggest ever to hit New England. It managed to set another record, too. It shattered WPI's long-standing policy of never closing because of weather conditions.

(Physics Professor Ralph Heller recalls that once, during President Harry Storke's early days, he closed WPI for a snowstorm. But Storke was quickly informed of WPI's "tradition" and from then until February 7, 1978, the Institute always opened during bad weather. Staff might be let go early in the day, but the school would have been opened. Another weather incident, from the editor's first winter at WPI, occurred when President Hazzard, apparently upset by an unusual amount of absence and lateness during the heavy snows that year, issued a memorandum referring to "the recent rash of snowstorms." That brought forth an answering note, written anonymously, which said that the "rash of snowstorms" was something we usually call "winter" here in New England!)

During the late afternoon on Monday, things got to looking pretty ominous outside. The wind was howling at 40 and 50 miles an hour (in Boston they recorded gusts over 90!), the snow kept on coming (up, down, and sideways), and most people left campus early. Many didn't bother to leave, because of the distances involved. Economics professor Lyle Wimmergren decided not to try to get home to southern New Hampshire. English professor Ed Hayes didn't figure he could make it to Whitinsville. And so it went. Some others (including yr. editor) tried to drive home just within the city of Worcester and, after hours on the streets, limped back to the safety of the campus.

Many of these refugees found shelter with friends or faculty who lived nearby. Some, like physics professor Dick Tuft, spent the night on a couch in one of the campus buildings. Others found lodgings with students.

At breakfast Tuesday morning, the student dining room was unusually busy. It was, in fact, the only place around one could eat. The storm continued throughout the day, sometimes abating for a bit but never stopping. The wind blew and carved the snow into strange shapes and awesome drifts. The floor-to-ceiling windows of the Wedge were, at times, more than half covered with drifting snow. Yet other spots were completely free of snow, right down to bare ground. All according to the way that furious wind happened to blow.

Norman Rossi, food services director, was snowed in for the duration, and at times he feared that food supplies might run out as the dining rooms enjoyed a record business. But new stocks arrived, on the heels of a snowplow, before it came down to peanut butter sandwiches for all.

Fuel oil for the WPI power plant became a major concern at one point, as the stored supply ran dangerously low. Steam was cut off from all unoccupied buildings. Finally, Norton Company diverted a tank truck load of their oil to the campus so that the dormitories could remain heated.

It may be trite, but it is nonetheless true, that events such as this blizzard tend to bring out the best in most people (and the worst in just a few). Faced with the sudden shock of the storm, confronted with a common enemy, people tend to forget their differences and pull together, working to keep the common enterprise going. That was nowhere more true than at WPI.

Commenting on the storm, Dean of Student Affairs Donald Reutlinger said that "during the blizzard emergency, cooperation throughout the campus was splendid, but special thanks for providing early, essential services are due to several people who kept the campus going. Gardner Pierce and his tireless Plant Services crews, who did such a great job of clearing the snow; Norman Rossi and his dining hall staff, with hastily recruited student helpers, who kept people on campus well fed; Mrs. Brophy in Health Services; Al England, Mike Montecalvo, and George Sullivan of the campus police; Glenn DeLuca and Debby McGarry in Student Affairs; and the several people who ran the switchboard, handling all sorts of calls. Many other people were extremely helpful, but without these named here, those three days could have been a disaster instead of just an emergency."

The job of clearing the snow was handled by a grounds crew that just never quit. Beginning about 5 A.M. Tuesday, they worked around the clock for essentially the whole rest of the week. With the aid of a borrowed front-end loader, they constructed a snow mountain nearly twenty feet high at one end of the quadrangle, and the beech tree between Higgins and Alden was soon invisible from many angles. With shovels and plows, they kept pushing the snow back, clearing out entrances and walkways.

Combating boredom became a real problem for many of our resident students beginning Tuesday. The high drifts alongside the Wedge attracted innumerable jumpers to the low roof, thence to leap over the edge and see if they got stuck! Tuesday night, as the storm finally passed, students cleared a "lane" down one

This snowbank was nearly picked up by a front-end loader until the operator realized it had an antenna in the middle!

side of Institute Road in back of Sanford Riley down to glare ice. Then they started skiing down the hill . . . but without benefit of skis. Some came down on their backs, others on trays "borrowed" from the cafeteria, and many kept on their feet all the way . . . until they hit the snowbank at the end, however, when they proceeded tail over teakettle through the air. The Infirmary was kept busy treating sprains, scrapes, and a few fractures resulting from these activities. The Goat's Head Pub enjoyed its best business ever, and the Cinematech movie Wednesday night played to a packed house.

Wednesday morning came with clear blue skies and bright sun — so bright that it hurt the eyes to go outside without sunglasses or goggles. As I wandered around campus, taking the photographs that accompany this article, I was amazed at just how far the job of clearing and plowing had progressed. I went down to the parking lot below Gordon Library to see if my car was accessible, and I found that it had been pushed free and plowed out. (It wouldn't start, however, and one look under the hood gave a clue: it was packed full of snow.) Don Peterson, one of the groundskeepers, pointed out another car that was somewhat less fortunate than mine. All you could see of it was the lone spike of the radio antenna . . . and it was well that that showed, because one of the front-end loaders almost tried to pick it up until the sharp-eyed driver realized he had more than just a snowbank to contend with.

The parking lot below Gordon Library, largely cleared out and usable on Wednesday.

For the many whose cars were reluctant to get going after the storm, this was a common situation.

As my wife and I started the four-mile walk home, we went out onto Salisbury Street, which was down to about 1.1 lanes wide. Two cars could barely pass . . . if they were both small. We decided to hitchhike, and got two rides up Park Avenue and West Boylston Street. What was most amazing about this was that, while traffic was moderate under the conditions, almost nobody refused to stop and offer a ride. One driver told of spending Monday night at Food Village, one of Worcester's largest supermarkets. "It wasn't bad at all," he said. "They gave us shelter, plus coffee and doughnuts all night and eggs in the morning. The people there couldn't have been nicer."

As WPI reopened on Friday, parking was the most critical problem. At the best of times, WPI doesn't have quite enough parking spaces to accommodate faculty, staff, and the large number of commuting students. But this wasn't the best of times. The many and large snow piles had shrunk the capacity of campus lots alarmingly. The City of Worcester had apparently forgotten that West Street was a public road, for they plowed one lane through it once and never came back. That meant that another 40 spaces were unavailable.

With an estimated 60 percent of normal parking spaces available, car-pooling was an absolute necessity. And, as if tailor-made, a student interactive project came into view. Three students had been working all year on an energy-saving project designed to promote car-pooling by making it easy for people to get in touch with other staff members from the same area. The three students, Daniel Casey, James Mastalerz, and Thomas Rockwood, all '79, had reached the point of having computer printouts ready for the 131 people who had filled out their initial questionnaire. These were quickly distributed as an important way to save space on campus.

As this Journal goes to press, rather later than expected because of THE BLIZZARD, it is a week since the snow stopped. The city . . . and the campus . . . are still digging out.

West Street at the top of the hill, with Salisbury on the right. The city never did come back to finish the job, and it was left for WPI's plant services crews to widen the street.

This is the broad expanse of Salisbury Street on Wednesday morning, after the storm. Atwater Kent and Goddard are on the left side.

Here's the pitch . . .

Paul G. Josephson, '77, a star pitcher at WPI for four years, has been signed by the Montreal Expos.

"Paul is the first WPI alumnus ever to be drafted by a major league baseball organization," says Charles McNulty, WPI baseball coach. "We all wish him the best of luck."

While at WPI, Josephson, a side-arm pitcher, started 29 games and completed 22. His ERA during his last three years was 2.42, and as a sophomore it was 1.96. Over a four-year period he struck out 155 and walked 87.

Josephson was a tenth-round draft choice of the Expos. He was signed on January 15th. In late February he is slated to attend spring training with the club in Daytona, Forida.

He feels it was pure luck that he was ever seen to be signed. "I was working for General Dynamics-Electric Boat in Groton, Conn.," he says, "when suddenly I was laid off. So, in November I decided to attend a baseball camp in Clearwater, Florida."

The camp lasted five days. "And for four of those five days it rained," he explains. "I did manage to pitch two innings during an intra-squad game, however." (He is currently changing his motion to a ¾ style of pitching.)

Those two innings proved to a turning point for him. Expos scout Larry Bearnarth, who is also the Expos minor league pitching instructor and a former New York Mets pitcher, was watching. He liked Josephson well enough to recommend that he be signed and sent to spring training.

"What happens in Daytona will definitely affect my future," Josephson says. "Tentatively, I expect to play with the Expos minor Class A affiliate in Jamestown, N.Y. in the New York-Penn League after spring training."

There is always a chance, of course, that Josephson's good luck will continue. He may pitch so well in Daytona that he'll begin his professional career as a starter for Montreal.

It's happened before—with Mark Fidrych and Detroit. And Mark and Paul pitched against each other in high school. Good luck, Paul!

Kudos

Dear Friend: From time to time I have commented favorably on the splendid job you and your staff are doing. This latest issue is outstanding.

"The DNA dilemma" is well written and meaningful to me in several ways. Having lived in Shrewsbury for twenty-one years until 1962, I can appreciate some of the jumbo mumbo my friend Hudson Hoagland must have had to parry.

I am reminded of Galileo's scientific entanglement with some papal "bull" in the 1630s.

Daniels must have done a tongue-in-cheek when he stated ". . . Shrewsbury residents who voiced their disapproval . . . said they held moral reasons." Sounds like religious undertones.

The article on my respected classmate, Francis Wiesman, '29, was another highlight to us. We have known Frank since high school days.

I am enclosing a check for $5.00. Please send me two more copies of the *WPI Journal* for December 1977.

Congratulations again and keep up the good work.

Arthur W. Knight, '29
Lower Waterford, Vermont

Editor: Just a note to tell you how impressed my husband and I were with the most recent issue of the *WPI Journal.* The variety of areas and levels of interest kept my attention from front cover to back, and it was—in my opinion — one of the most absorbing alumni magazines that I have read in many moons. Your layout and photographic planning are always excellent, but the variety really added the spice. Bravo!

— from a reader of Bowdoin, Oberlin, University of Pennsylvania, and Harvard alumni mailings —

Kay Wear Draper
Groton, Massachusetts

Council has new representatives from classes

The WPI Alumni Association has taken a step in a new direction and the key word is "involvement."

As a direct result of the implementation of proposals put forth in the recent Organizational Study Report, the Alumni Association has broadened its scope of representation by reorganizing the Alumni Council to include representatives from each class.

Formerly, Alumni Council representation was done proportionately on a purely regional basis. The present Council consists of one member from each organized club and one representative from each class.

The Alumni Council is the governing body of the Alumni Association and sets policy and directions for alumni programs and activities. For instance, the Organizational Study Report, frequently referred to as the "Densmore Report" after its chairman, William P. Densmore, '45, is an example of the Council's establishing new directions so that the Association can better serve its two constituencies, the individual alumni and the college.

Recently, the first class representatives, listed below, were named to the Council by their class presidents or elected by class members themselves. "In many cases 50 percent or more of the class voted," says Stephen J. Hebert, '66, secretary-treasurer of the Alumni Association. "The response was most gratifying and reassuring. The representatives elected are super and the strong voter response has reaffirmed that alumni want to be involved with WPI."

Class	
50-Yr. Assoc.	Wayne E. Keith '22
1928	Gabriel O. Bedard
1929	Stephen D. Donahue
1930	Carl W. Backstrom
1931	A. Francis Townsend
1932	Donald W. Putnam
1933	Robert E. Ferguson
1934	Dwight J. Dwinell
1935	Thomas F. McNulty
1936	Walter G. Dahlstrom
1937	Richard J. Lyman
1938	Robert M. Taft
1939	C. John Lindegren, Jr.
1940	Kenneth R. Blaisdell
1941	Robert A. Muir
1942	Norman A. Wilson
1943	Behrends Messer, Jr.
1944	John A. Bjork
1945	Robert E. Scott
1946	George R. Morin, Jr.
1947	John G. Hambor
1948	John J. Concordia
1949	James F. O'Regan
1950	Philip A. Wild
1951	John L. Reid
1952	Philip B. Crommelin, Jr.
1953	Henry J. Camosse
1954	Roger R. Osell
1955	Ralph K. Mongeon, Jr.
1956	Edwin B. Coghlin, Jr.
1957	Alfred E. Barry
1959	Philip H. Puddington
1960	John W. Biddle
1962	Richard J. DiBuono
1963	Joseph J. Mielinski, Jr.
1964	Barry J. Kadets
1965	Patrick T. Moran
1966	Dr. Donald H. Foley
1967	Raymond C. Rogers
1968	Robert C. Gosling
1969	Michael W. Noga
1970	Domenic J. Forcella, Jr.
1971	Paul B. Popinchalk
1972	Lesley Small Zorabedian
1973	Robert R. Wood
1974	Lawrence J. Martiniano
1975	Frederick J. Cordella
1976	Lynne M. Buckley
1977	Christopher D. Baker

Pictured above are a few WPI alumni employed at Norton Company in Worcester who met in February as part of the recently launched "Corporate Contacts Program" of the WPI Alumni Association. Included in the group, clockwise from bottom left, are Lee Solaroli, '68; Dave Pryor, '76; Norm Stotz, '58; Jack Bresnahan, '68; Emmanuel Milias, '54; Greg Backstrom, '70; WPI Assistant Alumni Director, Bob Anderson; John Biddle, '60; Dorothy Franciscus O'Keefe, '73; Mark Dupuis, '72; Les Erikson, '76; Dick Kennedy, '65; and Bill Densmore, '45.

Clark Poland, '48, is the National Chairman for the program and has so far initiated activity at the following corporations: Bell Telephone Laboratories, Inc.; Combustion Engineering, Inc.; Electric Boat Division, General Dynamics Corporation; Foxboro Company; Pfizer, Inc.; Polaroid Corporation; Stone & Webster, Inc.; Torrington Company, Division of Ingersoll-Rand Company; and Pratt & Whitney Aircraft, Division of United Technologies.

The Hazzard Years at WPI

A look at the impact and achievements of WPI's eleventh president

by Russell Kay

The year was 1969. The sorrows of the past year, with its war and assassinations and the bitter election campaign, were breaking out in many ways. College campuses were in a state of turmoil, mostly political, as the antiwar movement flourished.

At WPI — then called "Worcester Tech" — the student body (including the first two women undergraduates) was relatively quiet; it was the faculty who were the activists. They had just fought for — and won — a tenure system which gave them specific rights and security for the first time. Growing dissatisfaction with WPI's academic program had crystallized in December 1968 with President Harry Storke's appointment of a faculty planning committee to draw up long-range recommendations for WPI's future.

Within the next half-year, the group published two reports, *The Future of Two Towers* and *Two Towers II.* Within another six months, a successor group had worked out the final blueprint for what was to become the WPI Plan.

Right into the middle of this came George W. Hazzard, the newly elected president of WPI. He came because he was intrigued with the directions being taken by the planning committee. "It amounted to bringing WPI into a national leadership role for the twentieth century," he later commented. But it was apparent that he would have to play a major role in bringing about the revolution.

Now, after nine action-packed years in which WPI has transformed itself from an average school into a nationally recognized innovator and leader in engineering education, George Hazzard is stepping down.

George Hazzard and WPI

In this review of George Hazzard's presidency at WPI, one has to ask the question: How do you separate the accomplishments of the individual from those of the college as a whole? The Hazzard years present such a complex texture of events that, while many individuals stand out here and there, the dominant impression is of the collective momentum of hundreds of faculty and staff.

Hazzard has commented on the difficulty of trying to place credit. "You know, the problem is that it looks as if you're arrogating to yourself credit that doesn't really belong. But if pressed, I would say that I think I've been able to open up participation in running the college. This place used to be pretty hierarchical in structure, with orders coming down from on high and everybody snapping to. Also, just before I came, the faculty put together the faculty constitution, and I think my encouragement of that probably helped release some energies and commitments to the institution."

The WPI Plan

The faculty of WPI voted full adoption of the WPI Plan in 1970, with implementation to begin in the 71-72 school year. For the next five years, one crisis followed another as the various elements of the Plan were put into operation. First it was the seven-week terms that caused the groans and screams (from both faculty and students), then came projects, competency exams, and a new advising system that seemed constantly under revision. The faculty workload increased significantly, as also did the administrative problems. The student population kept growing, up toward the once-stated goal of 2,000 undergraduates and on to reach nearly 2,400 in 1977. And all the while there was a chorus of outsiders looking on, expressing skepticism, saying that WPI had bitten off much more than any institution could chew.

But looking at all of this, how do you evaluate the contribution of any one individual, including the president? What does George Hazzard himself think he contributed to the Plan and it implementation?

"Well," he said, "the successor to the original planning committee came to me, saying they really couldn't do much if they weren't able to work throughout the summer of 1969. So, as is often the case, the presidential act was to provide money for salaries so they could work through that summer. If they hadn't done that, Lord knows whether we would have really gotten far enough along so the faculty could act. That was one critical point.

"In terms of the mechanics of implementation, full credit has to go to Bill Grogan, who was on the firing line. My role was to make Bill Dean of Undergraduate Studies — and put him on the firing line. That's a proper administrative function: getting the right people in the right place at the right time is critical." This became a real problem for Hazzard, when Dean of Faculty M. Lawrence "Cookie" Price had to retire early, for health reasons, right near the beginning of Plan implementation.

Another area where Hazzard had a significant effect was in WPI's relationship with NSF. "The contacts I made at the National Science Foundation, which then led to the million dollar funding and the NSF Visiting Committee, was certainly helpful at a critical point. If we hadn't had that million dollars from NSF, we probably couldn't have done what we did. If I take any credit there, it's just being at NSF, knowing the right people, getting their encouragement and support for us to submit a really major proposal — getting their sights up for a really large dollar figure. But don't forget, we had a great faculty team that wrote that proposal."

Implementing the WPI Plan was a staggering undertaking. Just take a look at the changes that were made at WPI during those six years of transition:

- Every course had to be reconceived and redesigned to fit a term half as long and twice as intense.
- Hundreds of student projects annually had to be created, supervised, and evaluated.
- New ties with industry and governmental agencies had to be forged to help provide project opportunities, and off-campus project centers and sites had to be set up.
- A new type of project, linking science and technology with social needs and human values, had to be conceived, tested, refined, and administered hundreds of times a year.
- A brand new type of examination — to measure competence in a student's major field — had to be created for each student.
- A new faculty advising system had to be developed to help students plan their academic programs.
- Faculty had to learn new skills, and they were strongly encouraged to extend their interests into other areas as interdisciplinary work became more common.
- Two new departments — Life Sciences, and Social Science and Policy Studies — were established to meet new needs.

Did Hazzard ever get discouraged in the face of the massiveness of the job of getting the WPI Plan going? "No, I don't think so. We have lots of committed people, and I've seen them tackle and overcome this obstacle and that obstacle. I guess I'm a perpetual optimist, and I figure that if we've done it once in one particular area, then we ought to be able to do it again in another area. We could have gotten very discouraged after listening to Harvard's David Riesman say we ought to have a revolution; but we just proceeded merrily on our way with the optimistic assumption that we could work things out. Sure, when you're trying to raise the money you can get pretty discouraged, but I don't think I ever felt more than the normal amount of work-related discouragement."

Growth

Probably the two words that best characterize the Hazzard years at WPI are *change* and *growth*. Change was a constant factor while the Plan was being created, installed, and made to work. But growth has been pretty constant too. In 1969 there were 1,659 undergraduates in a total student population of 2,176. At the beginning of the 1977-78 year, undergraduate enrollment had risen to 2,365 and total students to 3,205.

There was academic growth, too, separate from the WPI Plan. When Hazzard arrived at WPI in 1969, computer science was only a graduate department. Now, as an undergraduate program, it is the second most popular major declared by incoming students (although many, of course, will change their minds as time goes by).

Besides computer science, though, two brand-new departments have been added to WPI in the past eight years. The first of these was Life Sciences, created in recognition that WPI students needed access to more than four biology courses on campus! According to President Hazzard, "we had the graduate program in biomedical engineering, and it just seemed so important to create an awareness in our engineers of the existence and importance of the life sciences.

"Seventeen presidents have passed through the Consortium colleges since I arrived in 1969. George is the only original left. But he's not a survivor. George is really a surpriser.

"Just when I thought I had him completely figured out, he'd say or do something that made me know I had missed something else important about George. We were talking about his retirement recently, when he suddenly punched the air and said, 'But we haven't raised enough money this year.' And he meant it. He'd restored the balance, but it wasn't enough. Nearly retired, his motor is still running full throttle, and I'm sure it always will."

Lawrence E. Fox
Executive Director
Worcester Consortium for Higher Education, Inc.

President Hazzard in some of the myriad official duties that go along with the office.
Top left, receiving a donation to the college.
Above, at the dedication of a new campus building.
At left, engaged in an across-the-desk meeting.

I want to give credit to Bob Plumb, then head of chemistry, who supported the life sciences program and was very helpful in getting the whole thing started. 'Cookie' Price was also very helpful."

The second new department was Social Science and Policy Studies, created in 1974. This was an important addition to WPI because it offered our students access to the measuring and analytical tools of the social sciences, tools which have been and will be a vital part of many interactive projects carried out under the Plan. Of his role in starting this department, Hazzard has said, "I guess I was a pretty active ingredient, more than anybody else, perhaps, although it's hard to say because people like Boyd and Keil and Moruzzi saw the need."

One of Hazzard's biggest tasks relating to the new departments was political. "It meant pointing out to the department heads that if we put in a Life Sciences department and it grew, that meant less growth for the engineering departments. At the beginning, everybody had to understand that it was a matter of reallocating resources away from them." Was there serious opposition on this count? "No. Everybody agreed that, so long as we didn't reallocate *too many* of their resources, things would work out fine."

Finances

One of the most persistent and important jobs facing any college president is the raising of money and keeping the institution above water. "I don't think anybody who comes in to be a president really appreciates the amount of effort, the intensity of effort, that has to go into fund-raising." And how did Hazzard bear up? "It's like so many other things . . . when you have something you believe in, you get to be a missionary about it. We were selling a good product, and it was fun to sell it."

These have been banner years for WPI in fund-raising. The just-concluded WPI Plan to Restore the Balance, a five-year drive, exceeded its goal by raising $18.9 million, the largest ever in WPI's history. In this fund drive, orchestrated by University Relations Vice President Thomas J. Denney, WPI was supported by virtually every major national foundation involved with higher education: the Alfred P. Sloan Foundation, the Carnegie Corporation, the National Science Foundation (which alone provided more than $1.1 million), the Kresge Foundation, the Dana Foundation, the National Endowment for the Humanities, the Ford Foundation, the Andrew W. Mellon Foundation, the National Foundation for the Arts and Humanities, the Lilly Endowment, and the Rockefeller Foundation.

George Hazzard was instrumental in achieving this support. As one of the most-traveled spokesmen and salesmen for the WPI Plan, he pled our case wherever there was a chance for support. There are those who say that this was the role Hazzard did best in, representing WPI to the outside world.

But raising money is only one side of the financial picture. On the other, it is the president's responsibility to see that it gets spent wisely and well . . . and not too much, either. When Hazzard became WPI's president, he took charge of an institution which had been running deficits for several years in the wake of construction of six major campus buildings — Daniels Hall, Goddard Laboratory, Gordon Library, Harrington Auditorium, Stoddard Residence, and the Alden Research Laboratories' administration building. He wasn't too worried by this. "I felt that my time at Washington University gave me a great deal of insight into academic budgets and academic accounting, which is a weird and mysterious field to most people." After being in office for a year, Hazzard approved a one-year freeze on all salaries at WPI. However unpopular, that move, combined with increased giving, resulted in the college's first surplus in six years and freed WPI from having to borrow against endowment. In the latest

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"I've known George Hazzard as long as he's been at WPI. I was on the committee that picked him to be president, and I think we've been very fortunate in having him.

"He's a most unusual person. He seems to know how to get along with both students and faculty, and I think he's been an excellent leader for the school. George has been a great money-raiser, and that's very important these days. He's been very helpful in dealing with foundations. Perhaps his greatest asset is that he knows how to deal with people. He's kept the Board of Trustees very well informed, and he's a fine man to work with.

"I'm sorry to see him leave. I think WPI has been most fortunate in having George Hazzard as president as long as we have."

Milton P. Higgins
Chairman, WPI Board of Trustees

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annual report, it was announced that, for the seven years since 1970, income and expenses have just about balanced out, and there was over the entire period a small net surplus of $217,000. (To put that figure in perspective, the operating budget for 1976-77 was $17.5 million.)

While a final report on the WPI Plan to Restore the Balance, to be published in the near future, will detail the major expenses, they can be summarized briefly here. WPI Plan implementation was an expensive undertaking. The immense amount of work involved many faculty over the summers as well as during the year, faculty involved not in teaching but in planning and structuring elements of the WPI Plan. A study of the campus indicated that many physical changes were needed to better serve the students and to provide appropriate teaching and learning environments for the new WPI Plan. In meeting these, two new dormitory complexes were built; the student dining room and lounge areas were enlarged and enhanced by connecting Morgan and Daniels halls; Sanford Riley, the oldest dorm, was extensively refurbished; the Bookstore was enlarged and remodeled; a central campus post-box system was created for students; and the Student Affairs Office was relocated to Daniels Hall, in the center of the "main street" of the student living area.

Academic buildings received considerable attention. Salisbury Laboratories was completely redesigned and rebuilt inside, providing a commuter lounge, classrooms, laboratories, and offices for the departments of Life Sciences, Management, Humanities, and Social Sciences and Policy Studies. The old foundry building, then the home of the Buildings and Grounds crews, was turned into a center for project activity with workshops, offices, and meeting rooms. The use of instructional television increased by leaps and bounds, and a studio complex and TV classroom were built in the basement of Higgins Lab while the rest of the campus was wired for closed-circuit TV. And wired for more and more computer terminals, too, as two new large computer systems (a DECsystem-10 and a Univac 90/60) were installed on campus.

Endowment has been increased, with the emphasis on increasing student aid (some $2.4 million added here) and establishing endowed teaching positions, which provide a vehicle for attracting and rewarding talented faculty without putting an extra burden on operating funds.

As Hazzard steps down from the WPI presidency, he leaves the Institute in better health — educational and financial — than when he came. To be sure, there's never enough money, at WPI as everywhere else, to do all the things that need doing and that we want to do. The whole matter of salaries, for example, raises problems in competing with industry and other universities for talented faculty and staff. That's a problem that Hazzard has wrestled with, on and off, for years, and it's one that his successor will have to confront, too.

But the school is financially sound, and its leadership position in engineering education will be an important factor in maintaining that soundness.

Whimsy

Hazzard's sense of humor has been well known on campus, especially by the many who have felt the sharp edge of his wit. Always one to revel in the cut and slash of wordplay, his reputation as the campus's chief needler is secure. So secure that Helen Bugdenovitch, his secretary, gave him a real needle one Christmas.

One recent example is contained in the following exchange of memoranda between the president and a faculty committee secretary:

> *Minutes of the Committee on Appointments and Promotions:* . . . The Committee did not find the candidate's qualifications inconsistent with the criteria. . . .
>
> *(signed)* Secretary

Dear Professor ——: Do you always like the double negative?

(signed) President

Dear President: Our resident logicians deny that the sentence in question includes a double negative in the sense that it could be replaced logically by a positive one as an exact equivalent. The sentence "John is not unhappy" does not mean that John is happy. In brief, a positive belief was expressed with extreme delicacy of phraseology.

Such artistry permits many interpretations. For examples, the Committee may be too legalistically inclined to make any firm statement without having *definitive* proof in support of it available — or it may be too dense to find an existing inconsistency — or it may be too diplomatic (highly unlikely) to say so if it found one — or . . .

The Committe authorizes me to say that it would not assert that none of these interpretations is neither correct nor incorrect.

With apologies to M. Python, I remain

Not insincerely yours,

Secretary

Dear Professor: Given your comments, which are not entirely unclear in their implications, I am not uninclined to hope for a less than unsatisfactory elucidation for all of us at the next Flying Circus (faculty meeting).

Not unappreciatively yours,

President

George Hazzard and the broader higher education community

WPI exists in a universe of institutions of higher learning, both public and private. That universe has been an important stamping ground to George Hazzard.

The Worcester Consortium for Higher Education was created shortly before Hazzard came to WPI. It has grown and fostered cooperation among member institutions, and WPI, under first Harry Storke and then George Hazzard, has been one of its prime leaders. Consortia are difficult animals to deal with at best, because every member has his own interests at heart and is not very anxious to give up anything. In reflecting on the Worcester Consortium, President Hazzard comments: "It's sort of like trying to bring a bunch of positively charged particles together. You think you have them all in a box and they repel each other away again. But we work away at it. It's probably one of the more successful consortia, but no consortium I've ever seen is fully effective."

He sees lean times ahead. "Things are going to get worse in the Consortium because of the inevitable decline in enrollments, which means everybody will be fighting for students. When economic pressures exist, friendships tend to evaporate. I think it will be harder to make the Consortium effective in the next ten years than it was in the last ten."

For several years, the presidents of WPI, Clark University, and Holy Cross have been meeting, looking for ways in which the "big three" could cooperate. "We've tried very hard to share things, but it's been hard to do. Not from lack of good will, but simply because we've been unable to find real or apparent

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"When I first met George Hazzard, it wasn't as college president, nor was it as a person to be interviewed. He had been chosen as a faculty affiliate for my dormitory floor, a fact that had most of us wondering what the outcome would be. We weren't quite prepared for what we saw: instead of the medium-height, imposing, business-suited executive we expected, we were greeted by a tall, lanky man whose only imposition was a rather loud tie (a piece of apparel I later discovered he was uniquely fond of). Most of us bordered between calling him 'Dr. Hazzard,' or 'Mr. President,' but, when we asked him his preference he simply said 'Call me George.' I decided to take him seriously.

"Since that first encounter I have spoken with George on many occasions; some of them social, some of them not. I have interviewed him on many subjects, and actually got him to sit in front of a TV camera for one. While he was an unconvincing ham, I'm sure he has potential as a guest replacement for Johnny Carson. My universal feeling after these interviews has been that George is a politician at heart. You can feel stonewalled or you can feel your cause taken to heart, but you can never be sure. Sometimes you think he hasn't got his eyes on the important things; later you realize that he has been watching all along. His actions are not always seen, and it can be difficult to tell from the outcome of a situation what he has done. Yet, what he really believes he will say out loud, well defined. It seems a curious mixture to me.

"He had a tough job as president during the inception of the Plan. Perhaps it was a good mixture after all. At least, it has carried us to a viable point, and that reflects well on George Hazzard.

"So do his ties."

Rory O'Connor, '78
Past editor, *WPI Newspeak*

economic and intellectual benefits. It's something like Egyptian President Sadat and Israeli Prime Minister Begin: good intentions are fine, but the details tend to make life very difficult."

"George Hazzard was the right man at the right time for independent higher education in Massachusetts. During his term — 1975-76 — as chairman of AICUM, the Association of Independent Colleges and Universities in Massachusetts, he sharpened the objectives of the organization and he took the lead in implementing them. A familiar presence on Beacon Hill, he gained the confidence and respect of state officials, many of whom were bemused to find a college president who spoke briskly and unambiguously, was not turned aside by soft answers, and still believed a straight line was the shortest and best route between two points. His leadership compelled the attention of legislative leaders and the confidence of his fellow college and university presidents because it was based, as might be expected, on knowing his facts, knowing his ground, and knowing what he wanted to achieve.

"His influence was equally pervasive in the creation of the National Association of Independent Colleges and Universities. Indeed, it led to his only miscalculation, but he even turned that to triumph. He went with a group of other college presidents for lunch at the home of President Barbara Newell of Wellesley College on a snowy day in 1977. When the group adjourned after advising President Newell about her duties as a new director of NAICU, the only car stuck in the snow was President Hazzard's. He was equal to the occasion, however, and directed rescue operations from behind the steering wheel. His car was successfully freed and pushed to safer ground . . . by five of his fellow college presidents. In many ways this symbolizes the way his fellow workers in the vineyard feel about George: for anybody else they'd have called AAA.

Statewide

One of George Hazzard's major activities has been with the Association of Independent Colleges and Universities in Massachusetts (AICUM). This organization serves to coordinate the activities of the private colleges in the state, making them aware of legislative situations, both good and bad, and lobbying for the interests of private higher education in the state. George Hazzard took a major role in the organization and helped bring it into a sharp focus, seeing that it was run with a professional executive structure. Hazzard served as president of AICUM in 1975-76.

These kinds of jobs, which bring wider publicity and visibility to the individuals involved, can be a strong temptation. Says Hazzard: "I have a strong belief that too many presidents and deans get involved in professional society activities which may be useful but which don't directly serve an interest of the institution. I tried to be careful not to get mixed up with too many of these that would take me off the campus. They're fun to do, but not very useful to WPI. That's why AICUM was so important. It could really help WPI."

Indeed, AICUM has accomplished a lot. It was instrumental in getting the state's constitution amended to permit state support of private higher educational institutions. Indeed, AICUM's thrust has been primarily directed toward affording all Massachusetts students the freedom of choice and opportunity in higher education, and not to limit taxpayer support only to public institutions. As a result, the state legislature has recently passed a bill providing for grants to Massachusetts residents attending private colleges, in amounts equal to what the private college would normally award itself, and including a matching grant directly to the institution. AICUM has actively supported a continuing dialogue between public and private institutions, and in 1973 sponsored a nationally acclaimed "Public-Private Forum," which brought together presidents of both types of institutions.

Much of AICUM's work has been defensive in nature. One example occurred a few years ago when a chemical fire broke out in a Paxton school chemistry lab. The state fire marshal immediately ordered all school chemistry labs to install deluge showers at regular, closely spaced intervals. This move, which would have cost millions across the state, didn't really address the main problem, which was supervision and prevention. AICUM staffer James True and WPI chemistry head Robert Plumb worked together with the regulating authorities and finally got a solution that was good for all concerned. In another example, AICUM supported repeal of the state meals tax as it was applied to college students living in dormitories (and only students in private colleges, at that!). The organization argued that this was equivalent to taxing family meals. This fight, supported by students across the state, was lost when the legislature chose not to exempt college students.

Nationally

The other organization that has felt the presence of George Hazzard is the Association of American Colleges. "I chose that one because I felt that WPI's form of engineering education was a real basic liberal education. AAC is focused on liberal education, and they've been pretty effective in disseminating that theme around the country. By being a part of the group, I could indirectly spread WPI's philosophy and accomplishments and achieve greater national recognition for the college."

Hazzard feels very strongly about this view of liberal education at WPI. He promoted the use of Sir Eric Ashby's term *technological humanist*, which he uses to describe the kind of graduate the WPI Plan is trying to produce. Hazzard has spoken and written so many times about this that he has become a national spokesman for the new breed of engineering education that started here at WPI.

The Personal George Hazzard

Being president of WPI has kept George Hazzard busy, but it hasn't been his whole life by any means. He's been very active in working for other organizations, too. He has served as a trustee of St. Lawrence University, Memorial Hospital, People's Bank, and as a director of the Worcester Area Chamber of Commerce, Riley Company (Chicago), St. Vincent Hospital Research Foundation, and State Mutual Life Assurance Company of America.

As if this wasn't enough involvement, his wife Jean Hazzard has also been active in community affairs. She has been president of the Child Guidance Association of Worcester, chairman of the Allen Fund Committee of Community Services, and president of the Social Service Corporation, all of which relate to her training as a psychologist. Jean Hazzard has also been a trustee of the Worcester Community School of the Performing Arts and a director of Worcester County National Bank. In 1976, she was one of five women honored by the Worcester Young Women's Christian Association as being "first in her field." She was cited as being a model of a woman who can combine home and family life with a career and/or public service.

George comments: "While Jean has been a gracious hostess, opening our home to alumni, students, and faculty, her focus has been on social services in the city, where she's led an independent career. In one sense, she has relieved me of some responsibilities by picking up a lot of the community service functions which I just didn't have time to perform. Then too, we attend an awful lot of parties and other affairs as a couple, and I look on that as basically being public relations for the college. Getting to know people is important. Tom Denney has pointed out that people give to people rather than to institutions. That is, while the institution must have a good reputation, the person representing the institution is very important to the donor."

After living for nine years in Jeppson House, WPI's home for its presidents, the Hazzards will be moving to a new home in nearby Petersham, Massachusetts. Although he has nothing definite planned for the immediate future, he expects to do some part-time consulting work in the general area of higher education. He hopes also to have some more time for his gardening, and perhaps to be able to get down to serious color photography and color printing more than twice a year, which is about all he can fit in as president. He'll probably have to find a new tennis partner other than current neighbor (and dean of faculty) Ray Bolz. And now, just maybe, there'll be time enough to read all those things he wants to read.

As he retires from the WPI presidency, George Hazzard will probably relax a bit. But don't bet on him slowing down.

"Above all, politicians and educators alike have always been acutely aware of George's possession and use of one of the most finely tuned baloney (to be polite) detectors known to western man. Coupled with a mordant wit, this ability to penetrate sophistry and disperse blather made George a formidable antagonist in a variety of educational and other public arenas.

"At AICUM, when we think of George, we think of a man who gave us fresh insights, who always had time for a word of encouragement and who inspired loyalty simply because of the loyalty which he gave. I don't think we'd want to play tennis with him, but we'd follow him anywhere else.

"On the matter of tennis, one day George swung into an AICUM meeting on crutches, explaining how he had injured his knee playing tennis. Thereupon one of his fellow college presidents chided him for not knowing, after years in office, one of the first rules of college administration: a president should never play any game that puts a weapon in the hands of a dean."

Frank A. Tredinnick, Jr.
Executive Vice President
Association of Independent
Colleges and Universities
in Massachusetts

Some reflections on being WPI president

Just what does it mean to be president of a college, or president of WPI? At one time, not too long ago, a college presidency carried with it much prestige and high social status. Then, in the late 1960s and early 1970s, as the problems multiplied enormously and the prestige withered away, it became all too often some kind of bad joke: "No one wants to be a college president anymore." Presidential search committees sometimes had to reconvene their deliberations two or three times as the desirable candidates proved not to be interested in the job. The wheel seems to be turning back now, but some questions must remain.

George Hazzard came to WPI right in the middle of this period of unrest and discontent. How does he feel about his job, and how does he think WPI compares with other places?

"In the first place," Hazzard says, "being a president at WPI is somewhat different from being president at a liberal arts college or at a major university. There has been, here at WPI, a unanimity of goals that you just don't find in many of those other places. When the troubles of 1970 appeared, the faculty and administration here joined together. At most other institutions faculty members were agitating and developing student antagonisms to the way things were done. Because of that one factor, agreement on goals, my job here has been an awful lot easier in terms of getting things done.

"I think the rewards here have been unusual, too. I was here at a time when a program was developing that clearly could have a major impact if it succeeded. And there was really a lot of motivation to make it succeed because, if it did, we would be highly visible. In fact, I've always been pleased because I made the choice not to be a finalist in a liberal arts college presidency search at the time the job was offered to me here. I did that because while WPI, as an independent engineering school, is not unique (there are about a dozen others), the impact it could have could really be unique. A lot of the things that a liberal arts college president would do are aimed at maintaining the status quo; whereas here at WPI we have been creating something really new and exciting. That's all in addition to the usual kinds of rewards — satisfaction with balancing the budget, adding faculty, increasing the number of students or getting better students. Those things can happen at any institution, but WPI offered something much more. I think I've been unusually fortunate in the administrative groups and faculty groups I've had to work with, and that's made my job very, very pleasant . . . even though we've had our little tiffs and differences, of course."

But it can't all be a bed of roses, right? Even for a gardener like George Hazzard. "No one's perfect, though we don't like to admit it. I think the few things I would do over have to do with people. Also, I would like to have succeeded more in bringing Clark and WPI closer together."

The future for WPI

Last June, when President Hazzard announced his plans to retire, he commented that "these have been very exciting and very satisfying years for Mrs. Hazzard and me. When we arrived in 1969, the WPI Plan was a magnificent concept just beginning to take its final form. Ahead of us then lay the task of completing the details and implementing what is clearly one of the most significant educational innovations in our time. Today the WPI Plan is a working reality. The implementation phase is behind us. I believe that the time has come for me to step aside so that a new president may lead WPI through the next stage of its continuing development."

"The arrival of George and Jean Hazzard on the WPI campus nine years ago was the harbinger of a renaissance which has transformed engineering and science undergraduate education as never before at any institution anywhere in the world.

"Although the previous president had challenged the faculty to be innovative and daring in plotting a possible new course for the WPI curriculum, the outcome was only a hazy dream in the minds of most. That this dream has become a notable reality, titled so simply 'The WPI Plan,' is the outstanding accomplishment of the Hazzard administration, with great credit due the entire WPI team.

"For WPI to achieve this remarkable evolutionary educational breakthrough required unusually talented leadership. Who else would have coined the phrase which is exactly right for our graduates — 'technological humanists'? Only our fine president, George Hazzard."

Paul S. Morgan
Vice Chairman
Board of Trustees

Above, George and Jean Hazzard relaxing in their new home in Petersham.
At right, outdoor work in the new garden.

Just what sorts of problems does Hazzard expect his successor will have to face in that next stage ahead?

"There are three major problems. One, of course, is just to continue to raise a lot of money, in what may or may not prove to be a difficult environment. You just can't tell. All you really know is, there's never enough money! The second problem, related because it costs money, is to solve the problem of faculty renewal: more faculty, more time off, more substitute faculty. The present faculty have been putting in an incredible amount of work for years on end, and they can't be expected to keep it up.

"The third major challenge is finding the next plateau to climb to. We have innovated, we have got things on line, we have a program in place. The faculty and staff have worked very hard to reach a goal — and, in effect, we have reached it. Now we have to establish some new goals to challenge us for the future. That, I think, is going to be the big problem."

THE ULTIMATE DRAGON??!

by Ruth S. Trask

WELL, IT'S ABOUT TIME! The Chinese began talking about dragons nearly 6000 years ago and finally somebody has done something about them. Genetically speaking, that is.

It took Intersession 1978 and the colorful imaginations of Dr. James Danielli and Dr. Richard Beschle of the Life Sciences Department, who offered a unique two-day course, "Dragons: Their Redesign."

In discussing the concept of the mythical beast, the thirty students in the class agreed that there is a strong similarity between dragons and dinosaurs. There is absolutely no evidence, however, that man ever saw living, breathing dinosaurs, which became extinct about 70 million years ago. The first mention of dragons came from the Chinese around 4000 B.C., long after the demise of the dinosaurs. Dinosaur bones were not even unearthed and reassembled until the last 100 years. When the bones were first discovered, they were put together to resemble dragons, so entrenched had the idea of dragons become.

Dragons have long existed in literature throughout the world. The Western dragon has scales, can breathe fire, occasionally employs wings and mental telepathy, eats people at night, loves to guard treasure, and has been known to do hard work. The Eastern dragon can fly without wings, has skin that shines at night and a pearl fixed beneath his chin. Sometimes he is fierce, sometimes timid. The chief difference between him and his Western counterpart is that he breathes out mist instead of fire.

It is thought that no remains of dragons have been found because they probably caused their own destruction by self-immolation. Any left-over bones were crunched up and eaten by jackals. The remaining bone chips were used for baby vulture food.

Today, dragons are alive and well in literature and entertainment. Note the dragon in *The Hobbit,* the best selling modern children's classic, and the disappearing beast in the Disney production of "Pete's Dragon" which appeared at neighborhood theaters over the holidays.

Dragons, then, not only exist in the minds of millions; they are also big business. They might become even bigger business if they could be redesigned genetically to make the best use of their basic characteristics. For example, the fire belched from a Western dragon could prove to be a valuable heat source, while the mists expelled from the Eastern dragon might solve drought problems in desert areas. The beasts themselves have virtually no control over their expulsion of fire and mist. In the light of such massive lack of control by dragons over their various bodily functions, Danielli and Beschle proposed that each student design his own personal dragon so that it could best perform specific, useful tasks — with built-in, genetic controls, of course.

In order to design a proper dragon, one must have at least a thumbnail knowledge of the history of dinosaur evolution. About 450 million years ago, fish, which then had both scales and lungs, inhabited the oceans. A hundred million years later amphibians pulled themselves up out of the water and began dragging themselves across the ground on their bellies. Then, came the reptiles. Some, like the dinosaurs, had legs and grew to be fifty feet long. They had an efficient heart and lungs, a high metabolic rate, and were not nearly as cold blooded or as stupid as history has led us to believe.

Basically, the dinosaur developed from a fish which had paired fins. (So did we!) In the dinosaur, the paired fins became four limbs. Some beasts used all four legs for walking. Others assumed the upright position, then used two hind limbs for walking and two fore limbs for grasping


David non facit salvum

and balancing like the kangaroo. The kangaroo-type dinosaur began to develop a skin flap between his puny fore limbs and his body, which gave his body a gliding type of lift. Eventually the skin flap grew until the dinosaur had a wing span of forty feet. With a body mass of only sixty pounds, the giant wings, although he could not flap them, allowed the dinosaur to glide and soar in wind currents.

Although it is doubtful that the average dinosaur could produce flame, it is certain that no self-respecting Western dragon would ever step out of his den without a working flame-thrower. Dragons are *expected* to belch flame. It's a part of their mystique. Not only can the dragon flame sizzle unwary foes, its noxious fumes can make them drop in their tracks.

In a word, dragon internal combusion stinks. Among the gases produced during the process are methane, propane, hydrogen, ethylene, and ether. When superheated, H_2S makes the most repellent stench of all. Obviously, none of this gas and heat production does much for the dragon's social life. It could, however, be put to good use commercially.

For example, the ethylene could help ripen fruit; the heat could help run a cold storage plant, warm homes, or melt ice and snow. The flame-throwing mechanism could be used in warfare, in consuming garbage or stripping paint from houses. The hot air could be used by a hot-air balloon taxi service. The innate telepathic characteristic of the dragon could also be brought into play in concert with all of these uses. Intuitively the dragon would know when to start and stop doing a given task, so it could be done most efficiently.

The problem for the students was to find genetic methods of controlling the dragon's ignition and combustion systems, and to redesign his body structure, if necessary, so that form could best support function. For instance, if one really wanted his dinosaur to fly instead of merely soaring on skin flaps, the addition of feathers might be worth considering.

In redesigning the dragon, one of the first steps might be to reduce the animal's overall energy requirement. (Constant ignition and combustion must be exhausting!) This might be done by implantation of electrical wires, or the addition of nerve cells or carbon filaments with living cells. Perhaps his stomach could be removed to improve his digestion. Humans have found ways to live without stomachs.

Combustion is a very complicated process. The rate of reaction is important. It depends on temperature and is affected by a series of catalysts and inhibitors. A lot of things are happening interdependently and can produce a mess. The dragon lives with just such a mess.

The electric eel, however, has gotten his ignition and combustion problems pretty much under control. In fact, a good sized electric eel in Africa or in the Amazon, can produce 500 to 600 volts of electricity and is able to light up a 50 to 60 watt bulb through his specialized muscle cells. The muscle cells are arranged in stacks. With thousands of such cells occurring in rows, high voltage is obtained. Perhaps such a system could be introduced into dragons.

The dragon cells would have to be kept cool. Reflective material, such as layers of separated metal foil, could do the trick. Aluminum foil also might be used. Tiny bubble spheres without too many points of contact, would probably work if something agreeable could be found to keep the bubbles together.

The ultimate dragon will undoubtedly be redesigned through pure genetic engineering, rather than add-on technology. To understand how this might be done, note first that he belongs to a species, a group of organisms which have the same genetic programming principle or sets of principles. Programming, as everyone knows, can be subject to change, and there are a number of mechanisms available for changing these genetic programs. For instance, genes can transfer through loose pieces of DNA, viruses, and plasmids, spontaneously adding new genes to organisms. In mating, the process is completed with existing genes, or mutants of existing genes. It is possible to construct new genes and chromosomes, but it is generally too complicated a process to start from scratch.

In redesigning the dragon's nervous system, one must be aware of a number of things: each nerve joins at a junction called a synapse, and information can pass in only one direction at this junction; synapses never occur by themselves, but meet where a number of fibers impinge on a single nerve (convergence); while in divergence a number of different nerve cells derive information from a single source. A new substance has been found that encourages nerve growth. Possibly the use of this could be helpful in revamping the dragon's nervous system.

There are several ways to transfer genes, which are made up of DNA, from one cell to another. One very successful method is to add cells to an embryo. Another is to fuse cells with the characteristic gene which is to be emphasized or reproduced. Then there is cell uptake when little cells, with the desired characteristics, are put into larger cells. Co-growth of genes occurs when DNA is transferred by a natural process. The introduction of viruses and plasmids can shift genes to other cells, a technique which has been proved to be very accurate. Through chemical synthesis, it is possible to create brand new genes, especially when an enzyme is added to make the various groups of DNA stay together.

Before sending the students off to their drawing boards and typewriters armed with genetic information and a dragon book reading list, Dr. Danielli and Dr. Beschle reminded them to take a conventional dragon and make it better. They stressed the importance of good design, the right configuration, and the necessity of putting social restraints on their hypothetical beasts. What they wanted, they said, were some clever ways of doing new things effectively.

So informed, class members tossed around proposed uses for tamed dragons as watch dogs, air taxis, domestic heaters, snow removers, telepathic interplanetary communications centers, garbage disposals, fertilizers, street lights, fortune tellers, secret weapons, cooks, gamblers, and airport security personnel.

In this writer's view, a mid-sized dragon with feathered wings and sharp eyes, could ride shot gun for Rudolph and Santa on Christmas Eve. He would sit in a special seat at the back of the sleigh, where he could keep watch over the bags of toys. (Dragons love to guard treasure!) As the sleigh stopped above each house, the dragons's inherent mental telepathy would allow him to tell Santa exactly what gift each child wanted. Then, he would swoop down on his fine, feathered wings, and with a single blast of his flame-thrower, melt the ice off of the house top so Santa wouldn't slip.

In order to save the sleigh, the toys, Santa, and the reindeer from going up in smoke during the trip, the dragon, whose seat would be at the very back, would breathe his fire into a large, wishbone-shaped, heat-resistant glass tube, which would extend up as far as Rudolph. The tube would provide illumination brighter than Rudolph's red nose. It would also provide welcome warmth in snow country. While over the tropics, Santa could throw an asbestos blanket over the tube to cut the heat. (The dragon, by the way, would have acquired his improved flying capabilities and keen eyesight from specialized American eagle cells added to his DNA when he was in the embryonic stage.)

All in all, Christmas Eve would be run far more efficiently. Santa Claus wouldn't have to waste time worrying about poor visibility, cold feet, the Grinch's stealing his toys, slipping on icy roof tops, or mixing up gifts. He'd finish all of his deliveries much faster.

The only problem might be that, with such early deliveries, some children might still be awake when Santa arrived. They might hear a creature stirring up on the roof and investigate. Not Dancer! Not Prancer! Not even a mouse! What self-respecting parent is ever going to believe that a feathered, fire-breathing dragon is de-icing the roof on . . . Christmas Eve? Now, if it were New Year's Eve — well, maybe.

van A

Prof. JOHN VAN ALSTYNE will tell you that he came to WPI in 1961 to teach mathematics for one year only.

"I had another teaching job all lined up for the following year," he explains. "WPI was going to be a brief, interim experience. I'd never taught at an engineering school before, and I had no idea whether I'd fit in or not."

Today, seventeen years later, he not only continues to teach, he has become the Dean of Academic Advising, and was one of the original architects of the WPI Plan. The life of every WPI student, professor, and administrator has been touched by him. Although he would be the last to admit it, John van Alstyne is more than a mere campus cog. He is a prime mover.

For example, one of his current major responsibilities is setting up the complete academic schedule for WPI. This means that he has to decide at what time the various classes will be held and which of some 2500 students will be scheduled for each class section. His scheduling personally affects every student and professor on campus.

"I try very hard not to put an out-of-town commuter into an eight o'clock class during the winter months," he says. "I don't like to have to put someone who works in the cafeteria at lunch time into a one o'clock class, either." He also endeavors to tailor schedules to fit the requirements of handicapped students.

Since he still teaches 250 students a quarter of the time, and has numerous advisees, Prof. van Alstyne gets to know many of the students well. "Knowing them personally and being familiar with their needs and wishes is most helpful when I set up schedules in the spring," he says. The personalized process is more individually effective than a computer-scheduling set-up could ever be.

Prof. van Alstyne's concern for the individual student and his selfless devotion to his advisees are legend at WPI. He always makes time for everyone — whether it be at 6:30 A.M., midnight, or on weekends.

Roger Perry, '45, director of public relations, used to have an office directly across from Prof. van Alstyne's. He likes to tell this story about his colleague: "It was a typical pre-registration day. Long lines of students extended down the corridor to John's office. Finally, at noon, the hall emptied. I knew that John must be bone tired and ready for a break. Then I heard a voice saying, 'Prof. van Alstyne, could I please see you for a minute?' and John's prompt, affirmative reply. The 'minute' lasted more than half an hour. I knew that John had missed his lunch. Again. As usual, he had put the needs of a student before his own."

Missed meals mean little to Prof. van Alstyne. He thoroughly enjoys his contact with students and confesses that they help him more than he helps them. "I consider myself as everybody's great grandfather," he says, smiling. "My advisees ask me all kinds of questions: 'What should I major in?' 'Do you know a good eye doctor?' 'I'm having trouble with my parents (girl friend, siblings, roommate, etc.) What should I do?' They inquire so often about graduate schools, that I've prepared a special graduate school fact sheet for juniors."

It does not take long for incoming students to learn who is on their side, who will point them in the right direction, and who will be there to catch them should the bottom fall out. Prof. van Alstyne heads the list. Upon hearing that his freshman friend had drawn van Alstyne for an adviser, a sophomore was heard to remark, "Oh, wow! van A.? You've got it made. How did you manage to get so lucky?" The students know who has their best interests at heart.

Sometimes those best interests prove to be not strictly academic in nature. "A number of students and alumni ask me about insurance and financial planning," he reports. "That's what I get for mentioning in class that I once worked as a "ghost writer" for the First National City Bank of New York."

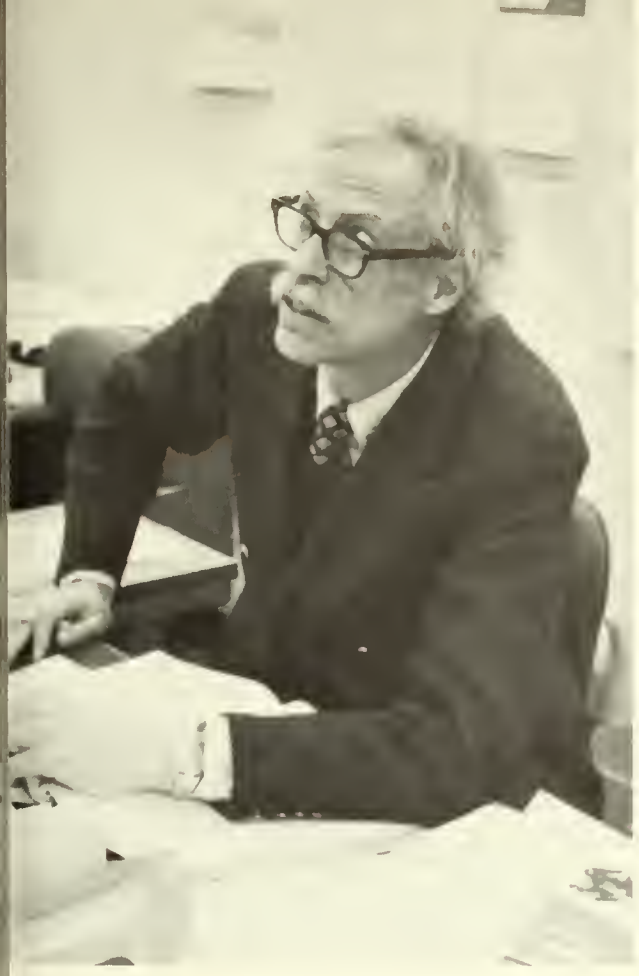
A ghost writer?

He laughs and explains. "After World War II, I was hired to write 100 letters a day for bank executives who had little writing ability. My fellow letter writers were a diverse, interesting group. They included a valedictorian from Harvard, a salutatorian from Stanford, and a couple of people who never completed high school.

"I also had eight private investigators working for me at the bank. It was our responsibility to look into the credit ratings of various companies in this country and abroad in the interest of furthering world trade.

"The job was fascinating. I earned a good salary and learned a lot about investments. In fact, earnings from my bank job enabled me financially to change my career to teaching late in the game. Switching to teaching cut my income directly in half."

So teaching hadn't always been his ultimate goal?



"Oh, no. Originally I wanted to be an architect. To design buildings to reflect the culture in which we live. However, while still an undergraduate at Hamilton, I was pushed into teaching. At the time, I thought it was the last thing that I ever wanted to do."

John van Alstyne was a senior at Hamilton College during World War II. "It took me two and a half years to get through that last year," he says, "because I was asked to teach mathematics and meteorology to Air Force students. I taught between 8 A.M. and noon, 1 P.M. and 5 P.M., and 7 and 9 P.M. five days a week. My students included farmers, coal miners, and recruits from the Chicago slums. They really wanted to learn. About 25 of them went on to advanced degrees. I still hear from several of them."

At Hamilton, he majored in mathematics, but also studied English and German. He won a full year's scholarship there in German. Later, he attended graduate school at Princeton. In 1952 he received his master's degree from Columbia.

After graduating from Columbia he joined the bank for three years, and then returned to Hamilton, where he taught for thirteen years. ("In 1961 I left Hamilton. I was the first tenured faculty member ever to quit at the college.")

"It was during my years at Hamilton that President Hazzard and I nearly crossed paths. We both belonged to professional societies and were named to separate committees to upgrade the New York State certification requirements for teachers. I was on the mathematics committee, and he was on the physics committee at precisely the same time. The two committees didn't meet jointly, however, so we never realized until years later that we had so narrowly missed meeting." Prof. van Alstyne was subsequently asked to be one of the writers of the New York State Regents Scholarship Examination.

It was after he arrived at WPI that Prof. van Alstyne discovered how the Regents exam that he had helped to prepare was working out. He learned that one of his advisees had scored high on the exam and congratulated him. "Oh, that exam," the student complained. "It was tough. A terror. The questions were awfully difficult."

"Give me some examples," Prof. van Alstyne said. The student obliged him, repeating practically word for word the questions that he had devised a few years before.

Did he tell the student that he was the author of the exam? "No. Sometimes it's better to be discreet," he confides.

He still believes in giving rugged exams. He likes to make his students think. He agrees with Alfred North Whitehead that no question requiring a yes or no answer is worth asking.

"With one notable exception," he says with a grin. "When I asked someone to marry me, I wanted a yes or no answer. Immediately."

Prof. van Alstyne's writing ability, his creative talents, and his genius for organization were noted early on at WPI. He was a member of both the appointed and the elected committees that created the WPI Plan.

"I enjoyed working on the Plan very much," he says. "It was exciting looking to the future of WPI. It was also rewarding to work with people who had such wide-ranging interests. Three faculty members on the committee could read the prologue to Chaucer's *Canterbury Tales* in the original old English. Can you imagine that—at an engineering school?" (Prof. van Alstyne can also read Malory's *Mort d'Arthur* in the original. "I learned how to do it in order to pass the time away when I was sick years ago," he explains.)

As valuable as Prof. van Alstyne has been in helping to shape the Plan, it is his service on behalf of the students that has proved to be his most valuable contribution to the school. The students, many of whom he has personally befriended, affectionately refer to him as "Chips" behind his back, sensing his similarity to the sympathetic teacher in the movie "Goodbye, Mr. Chips." They have also accorded him their highest honors by voting him into Skull and dedicating the senior yearbook to him.

He is aware that many of their academic problems are manifestations of other problems. "So often a student who is struggling academically will come to me and say, 'I have a friend who is in trouble. What would you advise him to do?' It goes without saying that he, himself, is the friend. When somebody lingers in my office after asking a few initial questions, that's a clue something is bothering him besides grades. And when someone starts to leave, and cries at the door . . . " There are nights when John van Alstyne does not sleep.

But there are rewards. He gets grateful letters from transfer students and alumni. He is proudest of the fourteen former students who have gotten best teacher awards on their respective campuses. "Currently I have more than 100 former students teaching in colleges and medical schools," he reports.

Seventeen years ago M. Lawrence Price, '30 (dean emeritus of the faculty) and Richard N. Cobb (professor emeritus, mathematics) interviewed John van Alstyne for a post as associate professor of mathematics.

"I was thoroughly impressed with both men," says Prof. van Alstyne. "I also liked the office personnel, the students, and the campus itself. WPI, I decided, would be a very nice place to teach. For a year."

1913

William Stults writes: "Still drive my car and get around some. Made three trips to North Carolina last summer and one to Florida in the spring."

1928

Francis King, who retired last spring as manager of the Holyoke (Mass.) Gas & Electric Department, currently serves as president of the Massachusetts Municipal Wholesale Electric Company (MMWEC). MMWEC, a cooperative of more than two dozen municipally run utilities, recently signed a contract with GE for $55 million worth of equipment for a new power plant which is scheduled to start generating power in Ludlow by 1982.

The oil-fired power plant is being built at Stony Brook Energy Center on land that was formerly part of the mostly defunct Westover Air Force Base. The contract is expected to provide 250 new jobs in Ludlow. The plant will be the first major power generator in New England built through cooperative efforts of publicly held utilities. Gov. Michael Dukakis said the contract would aid the state's economy and provide an efficient new source of electrical power.

1929

J. Bernard Joseph and his wife have moved into a condominium on the Gulf of Mexico at Fort Myers Beach on Estero Island. "Our health seems to be better here," he writes. . . . The **Arthur Knights** are considering moving from their 15-acre mini-estate in Lower Waterford, Vt. "We will stay in this area, however, within easy walking distance of libraries, museums, and shops."

. . . During the warm months **Carleton Nims** keeps busy gardening, mowing the lawn, and raking leaves. Recently, with another man, he built an addition to a tool shed. He says that between December and April he hibernates.

1930

Edward Milde, who retired several years ago as technical staff engineer in hydraulics at Sperry-Vickers, continues to do some hydraulic consulting work part time. He is located in Bloomfield Hills, Michigan, and keeps busy working around his house and acre lot. He also enjoys taking short trips.

1931

Joseph Bunevith has retired from the Welfare Department of the Commonwealth of Massachusetts.

1934

Luther Leavitt, who formally retired last August, currently serves as a state officer in the Sons of the American Revolution. The Leavitts maintain homes in Cleveland Heights and Ogunquit, Me. One daughter is in her second year of medical school at Case Western Reserve. "To provide her with malpractice legal protection in the future, our second daughter is completing Dickinson Law School in June," he writes.

In December, **Paul J. Sullivan,** superintendent-director of the Blackstone Valley Regional Vocational Technical High School (Upton, Mass.), was honored at a retirement party in Northboro which was attended by 350 persons. He had served in the post for fourteen years, and said that his part in the planning of the school had been most rewarding and afforded him his greatest challenge and his greatest satisfaction. During his retirement the Sullivans hope to start new interests and indulge in one of their favorite old ones, travel.

1936

Bill Maine retired in August. He had been a plant engineer for Torrington (Conn.) Co. He and his wife, Evalyn, now have a nice home close to Columbia Lake in Connecticut with ample garden area and plenty of yard to maintain.

1938

Tom O'Neil serves as a resident mechanical engineer for Kuljian Corp. and is presently helping to construct a power plant in Amman, Jordan.

1939

William Lyhne, Jr. holds the post of assistant director of reports at American Management Association, New York City.

1940

George Bingham, who was chief engineer at Bonneville, has joined Ebasco Services, Inc., Portland, Oregon, as regional manager. . . . **Zareh Martin** is an instructor in management at Northeastern University in Boston and also teaches high school courses. . . . **Dick Scharmann** is very active in his retirement. He has been doing some contract work for the Navy. . . . After 31 years with the Avionics Division at ITT, **Thomas Wingardner** has retired. He is residing in East Dennis, Mass.

1946

John Goeller presently serves as manager of the World Trade Systems Center in San Jose, California. . . . **John Lee** has received his master of arts degree in teaching from Bridgewater State College. He continues teaching at Plymouth-Carver Regional High School. His son, who graduated from Massachusetts Maritime recently, is now on a tug, "The Braden Point."

1949

Continuing with Turner Construction Co., **Russell Bradlaw** has returned from Pakistan and is now on assignment at the company's New York office. . . . **Harold Gibbons** has retired from Westinghouse.

1950

George Barna presently holds the position of director of engineering at Singer-Link in Binghamton, N.Y.

1951

John Marley was co-author of "Automotive electronics II: the microprocessor is in" which appeared in the November issue of *IEEE Spectrum.* He is a member of the technical staff of Motorola's IC Division, assigned to the automotive systems task force. For six years he has dealt with the partitioning and identification of automotive custom integrated circuits and specialized central-processor-unit chips for automotive electronic systems. Previously he had worked for ITT Laboratories and Hazeltine Research Corporation.

Class of 1927

Our FIFTIETH REUNION! It was truly a glorious regathering with no assist, may we add, from the weatherman who found fit to clobber us with a typical New England Nor'easter, presumably for the benefit of far-travelling Purdy Meigs (from New Mexico where it rarely rains) and Pete Whittemore (from California then plagued by drought). Not to be outdone by these wayfarers from remote distances came Bob Johnson from Arizona, Vic Hill and Nick Nahigian from Florida, and Charlie MacLennan arrived from River John, Nova Scotia, representing our North Country cousins of Canada.

One can suppose that every WPI alumnus entertains the honest conviction that *his* class was the very best of all classes and that *his* classmates were the salt of the earth, none better. In that conviction he would be absolutely right. It would perhaps be difficult for any God-fearing and virtuous alumnus (and the class of 1927 was particularly God-fearing and virtuous . . . or almost so) not to feel a close kinship with his colleagues with whom he spent so many happy days and years of learning together, competing together, raising a little hell together, and making the transition from youth to manhood together.

Wonderful years indeed were those undergraduate days we shared in that so-long-ago era of the mid-twenties. Perhaps more than a bit of what we have since viewed with nostalgia was recaptured in the June days of our Fiftieth Reunion.

Forgive our enthusiasm, if we sound repetitious, these few days celebrating our 50th Reunion were a very happy experience — from the Thursday evening Reception, hosted so graciously by President and Mrs. Hazzard, at their charming home (the Jeppson House), through to the Alumni Luncheon and Annual Meeting at Morgan Hall on Saturday noon. The spirit engendered at the President's home was continued, Thursday evening, in the Great Hall of Higgins House, where we were served a delightful roast beef dinner as guests of the Alumni Association. During the evening, the Association presented each member with a copy of "Two Towers" (the story of Worcester Tech 1865–1965), which is a well written history, that all Tech men will enjoy and be proud to own. The highlight of the evening was the comments by President Hazzard and his personal congratulations to each member, upon the individual delivery of a beautifully crimson colored, leather bound "presentation of Worcester Polytechnic Institute in recognition of Fifty Years of service and loyalty to his college." Cliff Fahlstrom, as chairman of the 50th Reunion Committee, expressed the thanks and appreciation of the class of '27 to the Alumni Association and to President Hazzard.

Friday was a busy day, with visits with classmates, Campus Tours (which for those who haven't been back is an eye-opener), a buffet luncheon at Morgan Hall followed by a presentation on "WPI Today" under the direction of Dean Grogan as moderator with a panel of faculty and students.

The high spot, for most, had to be our Class Reunion Social Hour and Dinner at the Isaiah Thomas room of the Sheraton Lincoln Inn, where several of our members had rooms during reunion. This festive and joyous occasion was sobered a bit, to be sure, in a pause of tribute to the classmates of old, no longer with us but whom some day we shall meet again at the river. This cheerful and happy gathering, as with all other reunion events, had added grace and charm, by the attendance of the lovely wives of the many classmates who brought their spouses.

The only class business of any consequence arose from the suggestion that the class might possibly be more easily represented by members living closer to WPI and thus be more readily available to serve the members whenever the occasions arose. The suggestion was endorsed by two former class officers. It was thus voted that to serve as Class Officers would be Cliff Fahlstrom, President; Phil MacArdle, Vice President; Ed Cahalen, Treasurer; Bill Rauha, Secretary.

As will be evident, a picture of the 50th Reunion Class was taken. Some of us, to be sure, have perhaps changed a bit and all of us have gotten a lot smarter, and some of us have gotten better looking, or heavier, or grayer, or balder, or whatever. But, basically, none of us has changed much at all and from the picture one should easily recognize (Top Row, l. to r.) Wahlin, MacLennon, Hoaglund, Rauha, Nahigyan, Meigs, Swenson, Bob Johnson, Fred Pomeroy, Manning, Eus Merrill; and (Bottom Row, l. to r.) Parmelee, Bob Parker, Dean Merrill, Bush, Whittemore, Stephenson, Hill, King, Beth, Southwick, Searle, Fahlstrom, MacArdle, Charly Parker, Lewis, Cahalen.

(Editor's Note: Because of an unfortunate series of delays, this account of the 50th Reunion, last June, of the Class of 1927 has not been ready for publication until now. We hope this story will bring back warm memories for those who were there, and we hope even more that it will be interesting and enjoyable for those class members who weren't able to make it back to campus for the reunion. Best wishes to all.)

1953

Ted Fritz, Jr. serves as a manager of product development for Armstrong Rubber in New Haven, Connecticut. . . . **Gene Kucinkas,** who has several important process control "firsts" to his credit, has joined Arthur D. Little, Inc. Formerly with LFE Corporation and the Foxboro Co., he is now a member of the Electronics Systems section of the Cambridge-based research, engineering, and management consulting firm. Among his original digital systems applications was the first industrial use of TV as a video display device for computer output and the first digital monitor and control system for the tire industry. In 1969 he founded Total Systems Computer, Inc., which was acquired in 1972 by the LFE Corporation. He is a registered professional engineer in Massachusetts.

1954

F. Raymond Anderson, SIM, is with the Heald Division of Cincinnati Milacron in Worcester. . . . **Leigh Hickcox** has been elected vice president of Capintec, Inc. and general manager of Capintec Systems Division. He will be responsible for all functions related to computer-based systems marketed by Capintec, such as the Radiation Therapy Planning System. Formerly he was product manager for the firm's radiation dosimetry product line. Before joining Capintec in 1976, he was marketing and sales manager for Science Accessories Corp. He had also been product manager for Picker Corp. (nuclear physics instruments) and Philips Electronic Instruments (nuclear products), as well as regional sales engineer at Packard Instruments Corp. He received his MBA from Harvard University. The Hickcoxes have three children.

Donald McEwan was recently named president of ITT Avionics Division in Nutley, N.J. He is responsible for organizing, planning and directing operations of the division which is engaged in design, development, and production of integrated communication, navigation, and identification systems, and electronic defense systems for aircraft, ships, and ground-based applications. In 1974 he was elected vice president. Since 1976 he has served as vice president and director of operations and has been responsible for organizing, planning, and directing activities of the engineering, manufacturing, procurement, product assurance, and program management departments. He joined ITT in 1956. The McEwans have a daughter, Pamela, and two sons, Jeffrey and Donald, Jr. . . . **Harry Mirick** presently holds the post of business manager at Digital Equipment Corp. in Acton, Mass. . . . After serving for many years with Crompton & Knowles, most recently as chief engineer, **Howard Nelson** has now joined Jamesbury Corp. of Worcester as a senior engineer. Howard also serves as a member of WPI's Alumni Fund Board and is National Phonothon Chairman.

1955

Louis Axtman, Jr. is with the Corps of Engineers in Maynard, Mass., where he is resident engineer in the support group. . . . **Stanley Clevenger** is with Spectra International, Inc. in Portland, Oregon.

1956

Robert R. Baer is a self-employed marketing consultant in Colorado Springs, Colorado.

1957

Philip Backlund serves as an environmental energy superintendent for FMC Corporation, South Charleston, W.V. . . . Susan Kimberly Beckett, 17, daughter of Mr. and Mrs. **Robert Beckett,** has been named Pennsylvania's Junior Miss for 1978. She was awarded $5,600 in scholarship money, which she plans to use this year when she enrolls at Grove City College to study management engineering. Susan, who competed against 39 other contestants, also won the youth fitness, poise and appearance Kraft Hostess Awards, and the McGlinn Photo Award during the competition. She did an interpretative dance to the music of "The Lord's Prayer" for her talent role. For community service she coaches a Little League girls' softball team and is a Leukemia Association volunteer. In high school she is treasurer of the senior class, president of the Future Business Leaders of America Club, a member of student government and the Honor Society. In May she will compete in the America Junior Miss Pageant in Mobile, Alabama.

John "Bill" Braley, Jr. is with Mosley Machinery Co. in Waco, Texas. . . . **Ralph Schlenker** holds the post of manager of engineering technology for Esso Engineering Division (Europe) Ltd. in New Malden, Surrey, England.

1959

George Fotiades owns and manages Webster House Restaurant in Worcester. . . . **Burton Siegal,** SIM, has been promoted to vice president of sales for Nylco Corporation and for its Delco Division. He has been identified with Delco since 1970, first as a field salesman, later as product manager, and most recently as sales manager. Previously he was president and general manager of Empire Rubber Corp. of Worcester until it was acquired by Worthen Industries in 1969. In his new post, he will be responsible for product development activities as well as marketing and sales of Delco products. The line consists of Del-Soft cushioning foams, Velvet-Glow counter pocket materials, Delco thermo counters, and other lining materials.

1961

Robert Hale is a specialist on the technical staff of the Aerojet Electro Systems Co. in Azusa, Calif.

1962

▶*Married:* **Ralph H. Griswold** to Miss Erenay J. Dickson in Wellesley, Massachusetts on September 24, 1977. Mrs. Griswold graduated from Penrhos College, Colwyn Bay, North Wales, United Kingdom; St. George's, Montreaux, Switzerland; and Whitehall Secretarial College, Eastbourne, Sussex, England. She is an administrative staff assistant at MIT. The bridegroom is with the Chemical Plastics Division of General Tire & Rubber Co., Lawrence, Mass.

Daniel Brosnahan, Jr. holds the post of manager of software services for the northeast region of Interdata, a division of Perkin-Elmer Corp. in Oceanport, N.J. . . . **Lawrence Compton** was recently elected a partner in Peat, Marwick and Mitchell Co., an accounting firm. He received his BS in business administration from Babson College. . . . **Giacomo Corvini** is employed as a supervisor of process design and technical service at Union Carbide Corp. in Tarrytown, N.Y.

William Krein has been reelected as treasurer of the United Cerebral Palsy Association of Schenectady, N.Y. He has served on the board of directors since 1974 and has been treasurer for the organization since 1975. Presently he is manager of the finance and division support operation in GE's Installation and Service Engineering Division. He is responsible for financial management within the division and also manages the division's projects engineering operation (power plant design) and support activities, including contract administration, marketing, communication, training, quality and safety assurance, and information systems. He has served as a coach for the Schenectady Youth Hockey Association since its inception in 1974.

Recently **Donald Mongeon** was promoted to metallurgical engineer for sheet and strip products in the metallurgical engineering section of the steel operations department at Bethlehem (Pa.) Steel Corporation. He joined the firm through its Loop management training program in 1962 and was assigned to the Lackawanna (NY) plant metallurgical department. He was promoted to metallurgical service engineer there in 1964 and in 1972 was named chief inspector in the metallurgical inspection section. He was promoted to assistant metallurgist, metallurgical inspection, in 1974. Most recently he was metallurgical supervisor in the hot strip mill and galvanize section. . . . **Stephen Phillips** is with the Hyde Park Paper Division of Diamond International in Hyde Park, Mass.

Curtis Ambler's fire trucks

E. Curtis Ambler, '42 tends "Buffalos," not the kind with four legs, but the kind with four wheels. Buffalo pumper fire trucks, to be exact—vintage 1929.

Antique fire truck tending came about naturally enough for Ambler. For thirty years he has served as a volunteer fireman in Newington, Connecticut, where he has seen his share of firefighting and resue work. Four years ago, he and another volunteer fireman, Dick Shailer, bought their own fire truck, a 1916 Seagrave pumper truck, considered a classic by fire buffs. Not long afterward they acquired a 1932 ladder truck.

"Dick and I not only liked the trucks as they were," Ambler says, "we also thought that they should be preserved to depict the history of firefighting."

Soon Ambler and Shailer discovered that they were not alone in their desire to further the fire truck preservation project. "A number of people wanted to help out," Ambler reports. "We were delighted, because we realized that we couldn't manage the job as well by ourselves."

The result of this outside interest was the formation of the Newington Antique Fire Apparatus Association (NAFA), an organization of some twenty men who are dedicated to the care and maintenance of old fire apparatus. One of the organization's first successes was the location of a more suitable garage for the two vehicles, which had been temporarily housed at Newington Volunteer Fire Department headquarters.

"There was only one problem with the new garage," Ambler says. "It was forty feet long and the ladder truck alone is fifty-five feet long. NAFA members helped to remedy the situation by building a forty-foot addition."

Now, even with the addition, the garage is a bit snug. A 1922 Model T delivery wagon, painted fire engine red and fitted up with auxiliary ladders and equipment, was recently acquired and is stored there. Also, last summer the town of Newington turned over two 1929 Buffalo pumper trucks to the care of NAFA. The Buffalos had been in service in Newington ever since the town's fire department was organized in 1929, and had recently been maintained by the Civil Defense Fire Division for emergency use. NAFA squeezed them into its garage and promised to keep them in operating condition so they could be on call should a disaster occur.

NAFA members pride themselves in their maintenance and repair of the antique vehicles. "Many replacement parts no longer exist," Ambler relates. "So we make our own whenever we can." Tires present one of the worst problems, but old firehose has been donated by the town fire department so that the trucks may be properly equipped.

In spite of obvious difficulties, NAFA has managed to keep all of the trucks in perfect working condition. The 1916 Seagrave, which was in use in Springfield, Mass. from 1916 to 1949 and later used as a standby water pump by the Springfield Water Department until the early 1960s, still pumps its 750 gpm rating. The 1932 ladder truck puts up its spring-raised ladder in six seconds. The red Model T delivery wagon runs well, and is often driven by Curt's daughter, Rosalind, in parades.

Ambler serves as chief of the Newington Antique Fire Apparatus Association. He is also manager of engineering in the Industrial Hardware Division of The Stanley Works, a Newington town councilman, and a member of the board of Newington Children's Hospital. His love of organ music led him to install a pipe organ in his home.

But NAFA is perhaps the closest to his heart. "NAFA is truly a family affair," he says. "The wives and families of association members go along with them on parade jaunts and fire brigade competitions all over New England. NAFA," he concludes, "is strictly for fun."

1963

Joseph DeBeaumont is employed as a senior associate engineer at IBM (SCD Division) in Kingston, N.Y. . . . Dr. **Robert Desmond,** head of the mechanical engineering department at Rochester Institute of Technology, has just completed an engineering textbook entitled *Engineering Heat Transfer.* Over thirty schools have already adopted it in its first year of availability. . . . **Robert Elwell** is a senior software engineer at Digital Equipment Corp. in Maynard, Mass. . . . **Lawrence Escott** has changed careers. He has left data processing and presently works as a security analyst for Fitch Investors Service. . . . **Richard Garvais** is director of materials at Wilson Sporting Goods in River Grove, Ill. He and his wife, Carol, have two children, Ricky, 11, and Susan, 8.

Dr. **Richard Kashnow** has been appointed as manager of the liaison operation at GE's Research and Development Center in Schenectady, N.Y. He will direct the activities of liaison scientists, who advise the center of the technical needs of GE's operating sectors and evaluate the programs for application to various company components. Since 1970 he has conducted research on liquid crystals which are now finding widespread application in electronic watches, advertising panels, and various instruments. He has received several patents, and has written some twenty technical publications. In 1975 he was named liaison scientist for the major appliance business group and in 1977 a staff member of the Corporate Technology Study. Dr. and Mrs. Kashnow have two sons.

John Pisinski, Jr. is now assistant general manager of the Bag Division's Plastics Group for Union Camp Corporation. He became affiliated with the firm in 1963 and was previously manager of the company's bag plant in Richmond, Va. In his new post he will be headquartered in Providence, R.I. . . . **Paul Ulcickas** has been promoted to engineer in charge of tubular high intensity discharge lamp development at Sylvania in Manchester, N.H.

1964

Major **Robert Najaka,** a flight commander with the U.S. Air Force, is currently stationed at Mather AFB in Sacramento, Calif. . . . **Michael Penti** is a project manager in the industrial division at Vappi Company in Cambridge, Mass. The Pentis have three sons, Patrick, Brian, and Paul. . . . **Bob Rounds, Jr.** is entering his third year as a manufacturers agent in Illinois, Iowa, and Wisconsin. His firm, Rounds Technical Sales, Wheaton, Illinois, sells hydraulic components to OEM's. . . . **Peter Tancredi** has been promoted to vice president of the environmental engineering division at Camp Dresser & McKee Inc., Denver, Colo. Formerly a company project manager, he has been responsible for the design of several sanitary intercepting sewers, storm sewers, and water mains, and for project scheduling, budget monitoring, specification writing, and personnel management. He is a professional engineer in Colorado and belongs to ASCE, the Water Pollution Control Federation, the Consulting Engineers Council of Colorado, and the Rocky Mountain Section of the Water Pollution Control Association. The Tancredis have three children, Karen, David, and Joseph. . . . **Thomas Zagryn,** personnel development supervisor at Pratt & Whitney Aircraft, recently served as a staff loaned executive for the United Way of Greater Hartford fund drive. He and eleven other "borrowed" executives from Hartford area organizations, helped to raise over $200,000 in the commercial sector of the campaign. From 1975 through 1977 he had served as department coordinator at Pratt & Whitney for the campaign. Presently he is financial secretary of the Bristol Polish American Citizens Club. He is past vice president and director of the Bristol Musicians Association.

1965

Nils Ericksen is now the general manager of Okemo Mountain ski area in Ludlow, Vt. He helped form the Mountain Division of Dufresne-Henry Engineering Corp. of Springfield (Vt.) and has been involved in the development of a number of ski areas, snow-making operations (including Okemo's) and real estate and industrial projects. He is a technical editor of *Ski Area Management Magazine,* a licensed tramway inspector in Massachusetts, and holds engineering licenses in Vermont, Colorado, and Virginia. He and his wife, Pam, have a daughter. . . . **Benjamin Surowiecki** holds the post of plant manager for Loctite in Puerto Rico. He resides in Mayaguez. . . . **Robert Cahill** has been appointed vice president of sales and marketing of SGL Homalite, a division of SGL Industries, Wilmington, Delaware. He had been sales manager since 1975. Earlier he was with the Navy as a lieutenant and in the Seabees. In Vietnam he was wounded in action and received the Navy Commendation Medal. He received his MBA degree in marketing from the Wharton School of Finance, University of Pennsylvania, in 1971, and joined Hilti Fastening Systems where he rose to the position of product manager. In 1975 he joined Homalite as sales manager. The Cahills have a daughter, Emma, 2, and a son, Robert, six months old.

1966

Stanley Livingston works for Watkins Johnson in Palo Alto, Calif. . . . Currently **Leonard Weckel** is a chemical engineer at Spotts, Stevens & McCoy in Wyomissing, Pa.

1967

►*Married:* **Frank T. Jodaitis** to Miss Carol A. Gass on November 26, 1977 in Kingston, Pennsylvania. Mrs. Jodaitis received her BA from Wilkes College and her MEd from Boston College. Her husband is an administrator for the town of Manchester (Conn.) Water and Sewer Department.

►*Born:* to Mr. and Mrs. **John L. Stumpp** a daughter Suzanne Beth on December 29, 1977. John is an electronic engineer with the Department of Defense in Fort Meade, Maryland.

Charles Foskett has been promoted from vice president and general manager to president of Digilab, Inc. in Cambridge, Mass. He originally joined Block Engineering, parent company of Digilab. When Digilab was formed in 1969, he became involved in the development of software systems for the new company. In 1970 he was named vice president and director of manufacturing and engineering. In 1975 he became general manager. . . . **William Pratt** serves as an outside plant associate at New England Telephone in Portland, Maine.

1968

Donald Bergstrom works as a project engineer at Westvaco Corp. in Wickliffe, Ky. . . . **Robert Gemmer** is a research chemist at American Cyanamid in Stamford, Conn. . . . **William Hawkins** holds the position of project engineer at the Naval Underwater Systems Center in New London, Conn. He is also government in-plant representative at Honeywell of West Covina, Calif. Last year he received his MS in ocean engineering from the University of Rhode Island. . . . **Tom Marmen,** MNS, serves as engineering manager at Digital Equipment Corp., Worcester. . . . **David Morris** is employed as a technical specialist at Betz Laboratories in West Springfield, Mass. . . . **Mario Zampieri** is a project engineer for Brown & Root, Inc., Oak Brook, Illinois.

1969

►*Married:* **Donald B. Esson** and Beverly J. Nash on October 15, 1977 in Lancaster, New Hampshire. The bride graduated from Bates College and the University of Rhode Island. She was employed by Weegar-Pride Book Co. Her husband is with Pratt & Whitney Aircraft, East Hartford, Conn. where he is a senior materials engineer. In 1972 he received his MS in materials science from WPI. . . . **Douglas J. George** and Miss Linda J. Cavanaugh in Norwood, Massachusetts on December 10, 1977. Mrs. George, who is employed at Massachusetts Financial Services, Boston, graduated from the Chandler School for Women and the Academie Moderne. The bridegroom earned his MBA at Babson College. He is with George Associates in Needham.

▶*Born:* to Mr. and Mrs. **Barry Shiffrin** a daughter Erica Leigh on August 4, 1977.

Normand Bachand holds the post of staff psychologist at the Clinton County Mental Health Clinic in Plattsburgh, N.Y. He was slated to receive his PhD in clinical psychology from Wayne State University in December. . . . **John Thompson** serves as vice president and controller of Stowe Woodward Co. in Newton, Mass.

1970

▶*Married:* **J. Randall Huber** and Miss Dorothy B. LaMarca on October 30, 1977 in Melrose, Massachusetts. The bride graduated from Wilfred Academy and attended Berklee School of Music. She is a co-owner of Mam'selle Hair Design and the Chop Shop in Melrose. Her husband is with Bayside Engineering in Boston.

John Cattel has been promoted to district service manager at Riley Stoker Corp. in Worcester. . . . **Paul Dresser** has completed his initial training at Delta Air Lines training school at the Hartsfield Atlanta International Airport and is now assigned to the airline's Boston pilot base as a second officer. The Dressers have a son, Douglas Paul. . . . **James Ford** works as an assistant actuary at State Mutual Life Assurance Co., Worcester. . . . **Francis Vernile** was recently named vice president of Fraioli-Blum-Yesselman of New England, a Hartford (Conn.) structural engineering firm. Frank, a registered professional engineer in Connecticut, has been affiliated with the firm since 1972. He has a master's degree from the University of Connecticut. . . . **Alan Zabarsky** has been appointed to the new position of resource manager, antenna systems, at Motorola Corp. in Rolling Meadows, Ill. Last year he joined Motorola as quality assurance manager. Previously he was with Bell Labs., Holmdel, N.J. He has a master's degree from Columbia University.

1971

▶*Married:* **Alan H. Shapiro** and Miss Deborah T. Hall on September 10, 1977 in New York. The bride graduated from Skidmore College and RIT. The couple is residing in Santa Fe, New Mexico.

Dick Arena has become associated with Martin Marietta Aluminum as an account executive. His responsibilities include sales of forging and extrusions to aerospace ordnance and commercial manufacturers in the territory bounded by Michigan and Indiana on the west, Virginia, West Virginia, and Kentucky on the south, and by Quebec and Ontario Provinces to the north.

Presently **Barry Belanger** serves as a systems design engineer for GE Medical Systems in Milwaukee. . . . **Gary Berlin** has joined Norton Co., Worcester, as a quality control engineer in the industrial ceramics division. Formerly he was a development engineer at United Nuclear Corp. of Uncasville, Conn. . . . **Nathaniel Ericson** holds the post of supervisor of systems at Continental Can, Merrimack, N.H. . . . **Thomas Kaminski** is a teaching assistant at the University of Wisconsin, where he is a PhD candidate. . . . **Ben Katcoff** has been named corporate benefits manager at Polaroid Corp. in Cambridge, Mass. With Polaroid for nearly seven years, he has charge of disability programs, workers compensation, retirement benefits, profit sharing, and pensions. He also handles medical benefits, dental insurance, Blue Cross plans, life insurance, and travel accident insurance.

Dr. **James Kaufman** has been appointed an associate professor of chemistry at Curry College in Milton, Mass., where he will also serve as head coach of the men's and women's soccer teams. For the past four years he conducted a vigorous research program in the areas of hydrocarbon oxidation, dehydrohalogenation, and thermal and photolytic halogenations at Dow Chemical in Wayland, Mass. Earlier he had taught at Westfield State College and WPI, where he was a postdoctoral fellow. He is a former Clark University varsity soccer coach and WPI junior varsity coach. A member of Sigma Xi, he also was a Petroleum Research Fund Fellow, and a member of Phi Lambda Upsilon. For the past six years, he has played for Worcester Scans Soccer Club. Previously he was a soccer-style kicker for the Nashua Colts in the New England Professional Football League. . . . **Myles Kleper,** program manager for Walden Research, a division of Abcor located in Wilmington, Mass., is currently an MBA candidate at Northeastern University. His wife, Judith Izen Kleper, is a graduate student at Harvard School of Public Health.

Schwieger Award to Nicholas Moffa

On January 24, WPI and the School of Industrial Management presented Nicholas S. Moffa, president of Bay State Abrasives, with the Albert J. Schwieger Award for outstanding achievement as a businessman and a concerned citizen.

The citation called Moffa "a modern day Horatio Alger who has successfully combined business talents and a concern for people." It further stated that "your contributions to the success of Bay State Abrasives have come in a multitude of ways during many years of superior service, both domestically and internationally. Your dedication and quiet but firm leadership, coupled with an ability and desire to explore new methods, ideas and management skills, have been an inspiration to your co-workers and a source of pride to all who know you."

Ralph Reddick, a candidate for a master's degree in music composition at New York's Eastman School of Music, presently performs in the Erhard-Reddick Double Bass Duo. Recently he and Erhard spent two days giving string bass clinics for music students at Thomaston (Conn.) High School. Reddick, who received his bachelor of music degree in composition from the University of Connecticut last year, is now studying bass with James B. VanDemark. He has written works for voice with chamber ensembles, piano, small ensembles, and solo percussion, and has composed larger orchestral and choral works. He taught theory, studied, and performed in Siena, Italy at special summer music programs held in 1974 and 1976.

Stanley Sotek is a manufacturing engineer at Anderson Power Products, Inc., in Boston. . . . **Albert Stromquist** serves as a staff geologist at Amerada Hess Corp. in New York City. He is involved with international petroleum exploration. He and his wife Elaine, a graduate of NYU and UMass, reside in New York.

1972

▶*Married:* **Thomas W. Staehr** and Miss Jean H. Keller in Scottsboro, Alabama on November 5, 1977. The groom is with Townsend and Bottum of Ann Arbor, Michigan.

Andrew Glazier is presently a graduate student at the University of New Hampshire in Durham. . . . **Bruce Hall** is an electrical engineering contract administrator (civil service) for the Navy at Portsmouth (N.H.) Naval Shipyard. . . . **Henry Greene** teaches mathematics at Salisbury (Md.) State College. . . . **Walter McIlveen** is now a project engineer at Smith, Hinchman & Grylls in Detroit, Michigan. . . . **Steven Packard,** who received his diploma in Christian studies from Regent College, Vancouver, B.C. last May, currently serves as a process engineer at Owens/Corning Fiberglas in Huntingdon, Pa.

Gary Rand works as an electrical design engineer for Compugraphic Corporation, Wilmington, Mass.

1973

▶*Married:* **Thomas Bileski** to Miss Pamela C. Bess on October 29, 1977 in Fenton, Missouri. Mrs. Bileski attended Washington University. The groom is a field and sales engineer with Texas Instruments of Dallas. . . . **Gary F. Selden** and Linda B. Freeman on October 8, 1977 in Schenectady, New York. The bride graduated from Mohawk Valley Community College and serves as a legal secretary at GE Research and Development Center in Schenectady. Her husband, who is working for his PhD in materials science at RPI, is a composite materials engineer for GE at the Center.

Theodore Covert, SIM, of Norton Company has been named manager of the Industrial Ceramics Division's new igniter plant in Milford, N.H. He joined the division in 1960 and served most recently as chief project engineer. In his new post he will be concerned with the firm's electro-ceramic igniter, which is used as an energy-saving replacement for standing pilot lights in gas appliances.

Dr. **David Hubbell** is a resident in obstetrics and gynecology at the Naval Regional Medical Center in San Diego, Calif.

Dave and Ellen **Moomaw** have taken up hang gliding. They spent part of November just three miles south of Kitty Hawk, which because of the high dunes, proved to be a fantastic site for their early flights. Dave earned his Hang II and Ellen got her Hang I. Dave has developed a new urethane prosthetic hoof-like foot for his leg that does not require a shoe. It was designed for walking the dunes during the hang gliding lessons, but has proved to be so comfortable that he continues to wear it full time. The Moomaws are incorporated as Enginique Creations. Dave is president and chief engineer and Ellen is business manager and chief "gopher."

Richard Page is a project engineer at Schneider, Inc., Pittsburgh, Pa. The Pages have a daughter, a year and a half old. . . . **John Stasaitis, Jr.** works for United Engineers & Constructors, Inc., Boston, Mass.

1974

▶*Married:* **George Ranney** and Elizabeth C. Venable of Charleston, West Virginia on August 6, 1977. **James Edwards** participated in the wedding service. Mrs. Ranney attended Fairmont State College and is a secretary for the West Virginia Department of Highways. The bridegroom is with DuPont at the firm's biochemicals plant in Belle, W.Va., where he works in environmental control. . . . **William G. Gunther** and Miss Maureen A. Corcoran on January 7, 1978 in Branford, Connecticut. The bride received a BS degree in horticulture from the University of Rhode Island at Kingston. Her husband is a plant manager with George Schmitt & Co. in Branford. . . .

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NORTON

Suzanne Haughey Carroll, MNS, has been named as the state representative to the West Brookfield (Mass.) Housing Authority. . . . **Charlie Dodd** presently serves as a manufacturing engineer at Hitchiner Manufacturing in Milford, N.H. His wife **Annie McPartland Dodd,** '75, is a project engineer for Anheuser Busch in Merrimack, N.H. . . . **Joseph Downey, Jr.** works as a technical services representative for HNU Systems, Inc. in Newton, Mass. . . . **Joseph Gaffen,** a controls engineer for UOP/Air Correction Division, Darien, Conn., is now active as a start-up engineer for UOP SO_2 Scrubbing System at Petersburg Generating Station, Indiana. . . . Brother **James Morabito,** MNS, serves as a deacon at St. Leo's Parish in Columbus, Ohio. . . . Continuing with Veeder-Root Co., **Craig Tyler** is now service manager for the petroleum division. He resides in Rocky Hill, Conn. . . . **David Washburn** is a sanitary engineer for the U.S. Fish and Wildlife Service in Newton Corner, Mass.

1975

▶*Married:* **Stephen A. Caggiano** to Deborah A. Cyr in Norwood, Massachusetts on October 22, 1977. The bride graduated from the University of Massachusetts in Amherst and is a development technician at Corning Medical, Medfield, Mass. Her husband is with AFI, Inc. in Newtonville. . . . **Glen D. Richardson** and Miss Cynthia Specht in Watertown, Massachusetts recently. Mrs. Richardson, a graduate of Ohio Wesleyan University, works for the Children's Hospital Medical Center in Boston. The groom is employed by Richardson Electric Co., Inc. of Waltham. . . . **Alexander V. Vogt** to Miss Colette L. Farland recently in Manchester, New Hampshire. The bride graduated from the University of New Hampshire with a degree in interpersonal communications. She had been employed by Amoskeag Savings Bank. Her husband is with Stone & Webster.

Karen Arbige was appointed vice president of Casher Associates, Inc. of Brookline, Mass. on October 1st. The company is concerned with data processing and management consulting. . . . Presently **Peter Arcoma** serves as a resident engineer for Stauffer Chemical Co. of Dobbs Ferry, N.Y. . . . **Robert Bradley** holds the post of product support specialist at Digital Equipment Corp., Maynard, Mass. . . . **Christopher Danker** is with Electronized Chemical in Burlington, Mass. . . . Continuing with Monsanto Co., **Mario DiGiovanni** is now taking a four-month leave of absence from his home office, while on temporary assignment at the firm's Avon plant in Martinez, Calif. He is a process engineer in the technical services department of Monsanto's Wm. G. Krummrich plant in Sauget, Ill., across the Mississippi River from St. Louis, Mo. Also, he is attending Washington University Graduate School, part time, where he is working for his MS in chemical-materials engineering.

Michael Duda is doing graduate work at Colorado State University in Fort Collins. . . . **John Greenstreet** is an engineering field representative for GE in Syracuse, N.Y. . . . **Frederick Greulich** holds the post of manufacturing manager at Procter & Gamble in Quincy, Mass. . . . **Richard Jackson** works as a community planner for CUPPAD in Escanaba, Michigan. . . . **James Reynolds,** SIM, has been appointed treasurer of Jamesbury Corp., Worcester. He joined the manufacturer of ball and butterfly valves in 1965 and has held several administrative positions including, most recently, that of assistant treasurer. He belongs to the National Association of Accountants. . . . **Todd Whitaker** is with the Naval Underwater Systems Center in New London, Conn.

David Salomaki works as a development engineer at Hewlett Packard in Cupertino, California. . . . **David Schwartz** serves as an area engineer at Daniel Int. Corp. in Fulton, Missouri.

1976

▶*Married:* **David P. Keenan** and Miss **Ruth E. Levy** on August 20, 1977 in Norwell, Massachusetts. Mrs. Keenan is a scientist with Science Applications, Inc. Her husband is stationed as a Coast Guard officer with the Bureau of Transportation in Washington, D.C. . . . **Thomas J. McAloon** and Miss Kathleen A. Coyle on January 7, 1978 in Providence, Rhode Island. Mrs. McAloon attended North Adams (Mass.) State College. The groom received his master's degree in environmental engineering from the University of Massachusetts. The McAloons are residing in the Philippines where they are serving in the Peace Corps.

David Chabot is a systems programmer at Periphonics Corp. in Bohemia, N.Y. . . . **Norman Gariepy** recently earned his master's degree in accounting from Northeastern University's Graduate School of Professional Accounting, Boston. As part of the program, he worked for the firm of Touche Ross & Co., where he is now a staff accountant. . . . **Bill Johnson** continues as a field secretary for Phi Gamma Delta Fraternity. Headquarters are located in Lexington, Ky. . . . **Paul Kalenian** is president of the G & S Mill, Inc., a new company in Northboro, Mass., which has developed a line of unique, high-efficiency wood-burning furnaces for commercial and industrial use. Created by Kalenian over the past year and a half, the heavy-duty furnaces are designed to produce from 200,000 to 1,500,000 BTU's per hour burning four foot lengths of unsplit, dried, or green wood. The furnaces have to be stoked only once every 12 hours, are thermostatically controlled, and operate at a cost reduction of 75% compared to current oil-heat rates.

Zeses Karoutas and his wife, Stephanie, have received their master's degrees from Virginia Polytechnic Institute and State University. Mrs. Karoutas is a Greek language bilingual teacher in Hartford, Conn. Her husband, who received his master's degree in nuclear engineering, is a nuclear reactor design engineer for Combustion Engineering Co., Windsor, Conn. . . . **Thomas May** is a district engineer in training at the Torrington Co. in South Bend, Ind. . . . **James Nolan** is an associate engineer at Raytheon Corporation's equipment development labs in Sudbury, Mass. . . . **Raymond Robey** works as a research engineer at Arthur D. Little, Inc., in Cambridge, Mass.

1977

▶*Married:* **Scott M. Sieburth** to Miss Colleen M. Doyle on December 17, 1977 in Cold Spring, New York. The bride attended Becker and graduated from Worcester State College. The groom is a graduate student at Harvard University.

2/Lt. **Timothy Ascani** recently completed an infantry officer basic course in the U.S. Army Infantry School in Fort Benning, Ga. . . . **Paul Avakian** has accepted a post in the manufacturing engineering department at Data General Corp. in Southboro where he is a test engineer. . . . **David Bolin** is a graduate student in the PhD chemistry program at MIT. . . . **Andrew Clancy** works for Western Electric in North Andover, Mass. . . . Currently **William Cloutier, Jr.** serves as an assistant engineer for Ebasco Services, Inc. in New York City. . . . **Asta Dabrila** is a loss prevention consultant at Factory Mutual Engineering in Norwood, Mass. . . . **Kenneth Fox** is employed as an associate systems proposal specialist at the Foxboro (Mass.) Company. . . . **Thomas Grautski** is a production supervisor for Estee Lauder in Melville, N.Y.

Jon Hammarstrom works for Polaroid in Norwood, Mass. . . . **Terry Heinold** holds the post of vice president and part owner of New England Recycling in Leominster, Mass. He serves as commissioner of the Sterling Softball League, manager of Greenmeadow Recreation Field, and superintendent of Pratt's Pond Watershed. . . . **Gary Kuba** is a computer consultant and analyst for Interactive Systems, Inc., in Boston. . . . **Gary Loeb** is presently a supervisory trainee for Niagara Mohawk Power Corp. at the Albany (N.Y.) generation plant. He holds the office of marshal at Washington Lodge No. 85, F. & A.M. in Albany. . . . **Kathy Molony** is a project engineer at Clairol, Inc., in Stamford, Conn. . . . **Richard Wheeler** holds the position of product sales representative for the Firestone Plastics Company, a division of the Firestone Fire & Rubber Company located in Pottstown, Pa. His market responsibility makes it necessary for him to travel in nearly every state east of the Mississippi River. The company is involved with polyvinyl chloride film and sheeting.

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James B. Lowell, '07, founder, president and treasurer of the former J. B. Lowell, Inc., builders and engineers, died December 16, 1977 in Oakdale, Massachusetts. He was 92.

He was born on Aug. 23, 1885 in Worcester. After studying chemistry at WPI, he went to Colorado School of Mines, graduating as a metallurgical engineer in 1908. During his career he was with George A. Fuller Co., Mills Woven Cartridge Belt Co., New England Foundation Co., and Lowell-Whipple Co. From 1939 to 1959 he owned and operated J. B. Lowell, Inc. Later he served the firm as a consultant.

Mr. Lowell belonged to Phi Gamma Delta, Tau Beta Pi, ASCE (life member), the Boston Society of Civil Engineers, and the Masons. He was a past vestryman of All Saints Episcopal Church and served on the Council of the Episcopal Diocese of Western Massachusetts. An honorary director of the Worcester Fresh Air Fund, Inc., and honorary trustee of Worcester County Institution for Savings, he also was a former board member of the Worcester Science Museum, Goddard House, and the Worcester Girl Scout Council.

He was a corporator of the Worcester Boys' Club, served on the members council of the Worcester Art Museum, and had belonged to the Worcester Club, Midas Club, University Club, and Tatnuck Country Club. An author, he had written for several technical publications on engineering. He was the father-in-law of **William P. Densmore**, '45.

William T. Donath, '11, of Pawtucket, Rhode Island passed away on September 30, 1977. He graduated from WPI as a mechanical engineer. For many years he was a night superintendent at Coats & Clark, Inc., Pawtucket. He belonged to Sigma Phi Epsilon.

Harry C. Thompson, '15, died in Hanover, New Hampshire on August 29, 1977 following a long illness.

He was born in Ludlow, Vt. on March 31, 1893. He received his general science degree from WPI in 1915. For a number of years he was in the research department at General Electric in Schenectady, N.Y.

Mrs. Jean Gras writes that her father, **Donald D. Simonds, '08,** died in Burlington, Vermont at the age of 92 on January 29, 1978. "He prepared his obituary in 1972 for future use," she says. "At the time he was still typing on his 1912 typewriter. I would also like you to know that he requested that memorial donations be made to the WPI Scholarship Fund," she continues. "WPI meant a great deal to him. If all alumni felt as strongly as Dad did, your worries would be over. I have been interested in reading the *Journal* recently. It sounds as though the college is a vibrant institution."

Simonds was born in Westminster, Mass. on October 20, 1885. In 1908 he graduated with his BSME from WPI. Following graduation, he went with Reed & Prince Mfg. Co. in Worcester, where he was machine shop foreman for four years. He then became superintendent of the fibre case division for Bird & Son in East Walpole, Mass.

In 1916 he helped form the Reed Small Tool Works in Worcester, a firm which manufactured micrometers. He served the company as secretary and manager. During the depression he withdrew from Reed and joined the George C. Whitney Co. as assistant to the president. In 1942 he returned to his old business which had merged with the Reed Rolled Thread Die Co. He retired in 1962 after having served a total of thirty-three years with the company.

Mr. Simonds belonged to Theta Chi, and for four years was a national officer of the fraternity. In 1917 he was instrumental in acquiring a home for WPI's Epsilon Chapter. In 1964 he was chairman of the fund-raising campaign to expand the facilities of the chapter house. He was a York Rite Mason and a member of the Shrine. For six years he served as superintendent of the Sunday School and for eight years as a clerk of the church for the First Baptist Church in Worcester. He was a past president of the Worcester County Chapter of the Alumni Association and a former president of the Tech Old-Timers.

During the past few years, Mr. Simonds had made his home with his daughter, Mrs. Alfred Gras, in South Hero, Vt.

George C. Graham, '13, an inventor who held over 50 patents, died in Paramus, New Jersey on October 27, 1977. He was 86.

Among his earliest inventions was a washing machine, which was produced by the Acca Corp. of Milwaukee. He also designed an electric ice box and became a pioneer in installing home refrigeration in this country. In 1959 he put a special fuel-injection system into a 1957 Chevrolet and later designed an air compressor that was sold to the Scovill Manufacturing Co. of Waterbury, Conn. His last patent (1972) was for a fuel pump for automobile engines.

Prior to the depression, Mr. Graham owned and operated Beaudette & Graham Co. of Boston, one of the largest appliance businesses in New England. After the depression he became national sales manager of W. S. Libby Co. of Lewiston, Me., from which he retired in 1956. He then turned to full-time inventing.

Mr. Graham was born on Oct. 30, 1890 in Pueblo, Colo. In 1913 he received his BSEE from WPI. He belonged to Tau Beta Pi, Sigma Xi, and was a 32nd degree Mason. He was the father of **George C. Graham, Jr.** of the class of 1939.

Frederick E. Wood, '18, died in Hingham, Massachusetts on November 21, 1977 at the age of 85.

A native of Springfield, Mass., he was born on July 10, 1892. He attended WPI and was a World War I Army Air Force veteran. Prior to his retirement in 1958, he had been employed as a mechanical engineer at National Blank Book Co. of Holyoke for thirty years. He belonged to SAE, the Masons, and the Golden Age Club.

Paul D. Woodbury, '21, of Richmond, Virginia died of cardiac arrest on September 27, 1977.

He was born on July 1, 1899 in Charlton, Mass., and received his BSEE from WPI in 1921. During his career he was associated with New England Telephone & Telegraph Co., Westinghouse, Copperweld Steel Co., Birmingham Galvanizing Co., McGraw Hill, Metro Products Co., and Buildings Equipment & Supply Corp. He was a Scottish Rite Mason, a Shriner, and an Army veteran of World War II.

Judson M. Goodnow, '23, retired president of Huntington, Goodnow, Connors, Inc. of Wellesley (insurance brokers), died in Holden, Massachusetts on December 8, 1977. He was 76.

Before entering the insurance business in 1945, he was an engineer in the New England office of the Improved Risk Mutuals Co. of Boston. He was born on August 27, 1901 in Northbridge, Mass. and later became a student at WPI.
WPI.

He was a member of Phi Sigma Kappa, the First Congregational Church of Princeton, the Princeton Historical Society, the Princeton School Committee, Organic Garden Club, the New England Mutual Agents Association, and the Independent Agents and Brokers Association of Massachusetts. A trustee of the Princeton Library, he also served as chairman of the Republican Town Committee, of Scout Troop I, and the Heart Fund. He was a 32nd degree Mason, a member of the Scottish Rite, and the Worcester County Shrine Club.

Forrest E. Wilcox, '24, died in Strong Memorial Hospital in Rochester, New York on June 20, 1977.

He was born on June 10, 1903 in Harvard, Mass. and graduated with his BS in chemistry from WPI in 1924. For many years he was with the Carborundum Co., where he served as manager of manufacturing in the Electro Minerals Division in Niagara Falls, N.Y. He also was an income tax consultant for H & R Block Co. in Rochester.

Mr. Wilcox belonged to the Society of Industrial Engineers, Sigma Xi, the Niagara Frontier Council (Silver Beaver) BSA, and the Masons. He was a past treasurer of the American Baptist Men of New York State.

Raymond C. Connolly, '26, died in Portland, Maine on December 14, 1977 at the age of 73.

He retired from the New England Telephone Co. in 1966 following forty years of service as plant manager for the state of Maine. He graduated from WPI in 1926 as an electrical engineer.

Mr. Connolly belonged to the Masons, the Shrine, the First Congregational Church, Theta Chi, and Tau Beta Pi. He had been active with church work, the Boy Scouts, the Pioneers, and the Portland Rotary. He was born on July 3, 1904 in Tilton, N.H.

Kenneth M. Finlayson, '27, former engineer for the Worcester County Engineering Department, passed away on December 16, 1977. He was 73.

He retired from the Worcester County Engineering Department three years ago after forty-seven years of service. A registered professional engineer and land surveyor, he also belonged to the Massachusetts Highway Association and the County Engineers Association. He was a director of the Association of County Engineering Personnel.

Mr. Finlayson was born on Dec. 14, 1904 in Worcester. In 1927 he graduated from WPI as an electrical engineer.

Wilbur H. Perry, '28, a retired research technician in the physics department at the John Hopkins University, died on January 4, 1978 in the Greater Baltimore (MD) Medical Center after a long illness. He was 72.

In 1973 he retired from the university after more than forty years as an expert in spectroscopy. He was honored for his work by the Optical Society of America and by the Smithsonian Institution.

Mr. Perry was a former member of the administrative board of the Towson United Methodist Church, a past president of the Methodist Men, and a former treasurer of the Washington Chapter of the Alumni Association. He belonged to the Optical Society of America and Sigma Phi Epsilon. He was born in Woodstock, Vt. on July 9, 1905 and later studied at WPI.

Milton A. Swanson, '28, of Nutley, New Jersey passed away on September 26, 1977.

He was born on June 19, 1906 in Brockton, Mass. and graduated as an electrical engineer in 1928. For forty years he was with the Public Service Electric and Gas Co. of Newark, N.J., from which he retired four years ago as a senior engineer. He belonged to Theta Chi, the American Gas Association, and served as a former president of the Northern New Jersey Chapter of the Alumni Association.

William W. Jasper, Jr., '30, retired general manager of Wickwire-Spencer Steel Co., Clinton Division of Colorado Fuel and Iron, died December 28, 1977 in Worcester. He was 71.

A Worcester native, he was born on September 8, 1906. He earned his BSME in 1930. Prior to joining Wickwire, from which he retired six years ago following eighteen years of service, he was with Athena Steel Co. He had been chairman of the Zoning Appeals Board in Lancaster, Mass.

Theodore L. Fish, '31, a retired engineer for Columbia Bicycle Manufacturing Co., passed away at his home in Chester, Massachusetts on November 20, 1977 at the age of 72.

Born in West Springfield, Mass., on April 1, 1905, he later graduated as a mechanical engineer from WPI. During his career he was with Rising Paper Co., Champion Paper & Fibre Co., Bird & Sons Co., and Brightwater Paper Co. He was chief power engineer for Columbia Mfg. Co. in Westfield, Mass.

Mr. Fish, a registered professional engineer, belonged to the National Association of Power Engineers and the Engineering Society of Western Massachusetts. He was a library trustee in Chester and a director of the Westfield River Watershed Association. He was a member of the Gateway Regional School Committee and the Western Hampden Historical Society Museum Committee, and had served as auditor of the Blandford Historical Society.

John U. Tillan, '32, of Mayfield Village, Ohio died on August 20, 1977 after a lingering illness.

He was born June 18, 1911 in Fitchburg. In 1932 he graduated as a civil engineer from WPI. During his career he was with Fuller Construction Co., Whitman, Requardt and Smith, A. G. McKee Co., and H. K. Ferguson Co. His specialty was with oil refineries, which led to varied travel assignments.

Lloyd C. Crane, '33' retired educator, died in Northfield, Vermont on December 30, 1977 at the age of 67.

He was born in Worcester on October 17, 1910 and attended WPI. He graduated from Clark University, where he also received his master's degree. In 1938 he taught and was named principal at Waitsfield (Vt.) High School. From 1942 to 1949 he was principal and a teacher at Swanton High School, and from 1949 to 1956 he held the same posts at Northfield High School. From 1956 until his retirement in 1965, he was associated with the psychology and education departments at Norwich University.

Mr. Crane was a village trustee for fifteen years, a former member of the Northfield Conversational Club, the Rotary Club, and the Vermont Headmasters' Association. He had been town moderator in Swanton.

Francis L. Collins, Jr., '36, of Somerset, Massachusetts, treasurer of F. L. Collins & Sons, Inc., died on November 14, 1977.

He was born August 14, 1912 in Fall River, Mass. and later was a student at WPI. In 1933 he joined his father in the construction business. In 1937, when the firm was incorporated as F. L. Collins & Sons, Inc., he became treasurer and a co-owner. The company has constructed many schools and churches, as well as the B.M.C. Durfee Trust Bank building in Fall River and the Sheraton-Islander in Newport.

During World War II he was a warrant officer with a Seabee unit of the Navy and participated in the invasions of Salerno, North Africa, and Normandy.

He was a past president of the Rotary Club and vice president and a director of the Lafayette Cooperative Bank.

Philip D. Bartlett, '40, a senior management engineer for Polaroid Corp., died November 28, 1977 in Massachusetts General Hospital, Boston, Massachusetts. He was 60 years old.

He had worked for Polaroid for twenty-eight years. Earlier he had been with the Torrington Co., Machine Design Associates, Wilson Engineering, Norton Co., and McGowan Engineering.

Mr. Bartlett, who was born on October 6, 1917 in Greenwich, Mass., received his BSME from WPI in 1940. He also received master's degrees from MIT and Babson Institute. He belonged to Phi Sigma Kappa, Tau Beta Pi, and Sigma Xi.

Dr. Yazbeck T. Sarkees, '47, associate professor of electrical engineering at the University of Buffalo, died on October 15, 1977 in Buffalo, New York at the age of 56.

On the university faculty since 1954, Prof. Sarkees was a member of the American Institute of Electrical and Electronic Engineers and the New York State Society of Professional Engineers.

He was born on August 26, 1921 in Niagara Falls, N.Y. and graduated as an electrical engineer from WPI. He served in the U.S. Navy. In Buffalo, the Yazbeck T. Sarkees Cub Scout Memorial Campership Fund has been established in his memory.

Dr. **Norman W. Cook, '68,** president of Cook Builder's Supply, died in West Springfield, Massachusetts on November 12, 1977 at the age of 34.

He was born on December 27, 1942 in Springfield, Mass. He received his BA degree from Middlebury College, and then earned his master's and PhD at WPI.

Dr. Cook was a former president of West Springfield Rotary Club and a member of the Chamber of Commerce. He belonged to Sigma Xi.

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Football stays!

In the December issue of this magazine, we talked about a reexamination of WPI's football program by a trustee committee. We described the passions aroused on campus in support of maintaining the sport.

It seems we hit a nerve. Alumni secretary Steve Hebert, '66, in recent trips visiting alumni, reported that only one person failed to ask him what the status of the football question was. We even received a letter to the editor about it, which is, frankly, a rare occurrence these days.

Well, sports fans, the jury is in and the verdict is: Football stays, and we're going to try to do it better.

In early February, committee chairman Raymond J. Forkey, '40, announced the group's recommendations to the Board. They proposed seven points, which were adopted by the Trustees' Executive Committee:

- Employ a qualified football coach.
- Reject the practice of tenure for football coaches, giving a three-year contract to the new football coach. At the end of that period, the coach's performance would be reviewed.
- Upgrade the quality of the football program to be more consistent with WPI's other accomplishments.
- Remain in NCAA's Division III but at the same time avoid New England's strongest teams, perhaps scheduling one or two games outside the region.
- Follow the recommendations of the 1975 Trustees Committee Report on Athletics, which recommended greater financial aid for athletes.
- Place more emphasis on recruiting of football players.
- Seek greater cooperation between the college administration and the football program.

Many questions still remain unanswered, of course. The 1975 report referred to above contained, in principle, many of the same recommendations, yet nothing much happened. The team continued to lose. So what's different about this new report?

For one thing, chairman Forkey insists that this is a total package, that it won't work unless all the recommendations are carried out. Just hiring a new coach won't make the difference, Forkey said

Emphasis is going to have to be put on stronger recruitment of players, which means more time for the coach to recruit, and more financial aid for him to offer. This seems to be at the heart of the recommendation for "cooperation between the administration and the football program." There have been, over the past few years, some differences of opinion on campus regarding the disbursement of financial aid to student-athletes. While all aid at WPI (and all NCAA Division III schools) is awarded solely on the basis of proven financial need, the aid can take many forms: direct grants (scholarships), loans, and employment, and usually a mix of all three types in varying proportions. What the trustees would like to see, apparently, is more dollars available to football players in the form of direct grants. This was clearly expressed by retiring athletic director Bob Pritchard, who said, "Sometimes the aid that they are willing to grant is not high enough to compete with the aid given by some of our opponents. I hope now that the money given will be in outright scholarships up to the full need of the athlete."

This financial aid issue has aroused some questioning opposition from certain other students. *WPI Newspeak* editor Tom Daniels argued eloquently against special consideration for football players: "What singles football players out? Why not do the same thing for basketball, baseball, and wrestling? Why don't

Student Government officers, club leaders, fraternity presidents, and, yes, newspaper editors, get extra help?

"Where is this extra financial need money going to come from? Every year, we're told that there just isn't enough to go around and fill everybody's need. All I can guess is that we'll all have to take a cut.

". . . What I'm getting at is that football isn't the matter of life and death to this campus that it's been made out to be. It plays a supporting role but, as such, is on an equal footing with a lot of other things that don't tend to get priorities."

But there's no question that, for all the fault one might find with the emphasis on and investment in football, this sport does mean a lot to a great many people. It maintains a hold on people that other sports don't seem to match. It's not everything, but it's important.

This was apparent early on to the football committee. They quickly decided that the program should continue, and then turned their attention to ways of improving it. In Forkey's words, it became "something of a financial question, whether there were things we could do to get the most out of what is WPI's most costly sport."

NOW THAT THE DECISION has been announced, two men will play important roles in making it work. One is the yet-to-be-appointed head football coach. The other, who will hire him, is George Flood, recently named to succeed Bob Pritchard and become WPI's third athletic director in 62 years.

George Flood is currently director of general physical education at the University of Massachusetts in Amherst. Before taking that position two years ago, he coached football at UMass, and spent seven years as head football coach and athletic director at Union College. He has also coached in secondary schools.

His background is very strong in football. "I've been involved with the sport since I began to play football in junior high, back in 1944," Flood recounts. "I've been directly involved in coaching in nearly all my professional career, mostly as a head coach. It means a lot to me. I picked a town to live in, near Amherst, partly on the basis that the school system offered football. I wanted my kids to have that choice."

And Flood is excited about WPI. "I hoped I might be hired before the football committee made its report, so I could give some input. When they announced the decision to improve the program, I was really happy." Asked to discuss his goals for WPI football, he said, "Well, we're not out after bowl bids! And at a small college you just can't aim for year-in-year-out undefeated seasons, either. What we want is to be competitive. I'm really concerned about what the individual players can get out of football: they should be able to get a lot of satisfaction from the team. If not, and they're trying, then we've let them down. So what we want to do is field a football team that everybody — students, players, alumni — can be proud of."

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's Trustee Search Committee, has recently announced that his committee is now receiving petitions for consideration and nomination for the terms beginning in July 1979. Alumni may submit petitions on or before May 15, 1978, and they should be mailed to Mr. Center, c/o the WPI Alumni Office, Alden Memorial, Worcester, MA 01609. Questions regarding procedures for the formal submission of proposals should be directed to Stephen J. Hebert '66, Alumni Director at WPI (617 753-1411).

Two current members of the Board are eligible for renomination this year for additional five-year terms. They are C. Marshall Dann '35, a partner in Dann, Dorfman, Herrell & Skillman, 123 South Broad Street, Philadelphia, PA 01909, and Hilliard W. Page '41, a Senior Consultant and Director of International Energy Associates Limited, 2600 Virginia Avenue, N.W., Washington, DC 20037. In addition, at least two more alumni must be proposed for the ballot which will be voted upon by the WPI Alumni Council on October 22, 1978.

REUNION

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1948
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Homecoming & Alumni Leadership Weekend

Cookie Price, 1908-1978

"For Cookie Price, WPI was his life," Dean William Grogan, '46 said recently in a tribute to his long-time colleague. "From the day he entered WPI as a freshman until the day he died, his devotion to the college was boundless."

M. Lawrence Price, '30, vice president emeritus at WPI, "Cookie" to his many friends, died on April 2, 1978 in Worcester. At the time of his death, he was still actively involved in a student research project at his home in Paxton.

"For the past two years, he had been advising some thirty students on the feasibility of alternative energy," notes Roger Borden, '61, associate professor of mechanical engineering. Prof. Borden, who worked with Dean Price on the project, recalls how Cookie had designed and built a laboratory building at his home with his advisees. Ultimately, the group developed a system for providing energy for home use by means of a windmill and solar panels. The windmill, of innovative design, is currently undergoing further tests at WPI.

Dean Price, vice president emeritus, dean emeritus of the faculty, and professor emeritus of mechanical engineering, retired in 1972 following forty-two years of service. He joined the WPI faculty as an instructor, after graduating as a mechanical engineer in 1930. He received his MSME from WPI in 1934. In 1937, he was promoted to assistant professor. He became a full professor in 1945 and head of the department of mechanical engineering in 1956. He was named dean of the faculty in 1957 and vice president of the college in 1962, positions which he held simultaneously.

Prof. Donald Zwiep, head of the department of mechanical engineering, recalls Cookie and his years of service at WPI: "From the time I first became acquainted with him in 1957, I observed that he exhibited two complementary strengths which I soon used as a yardstick to measure other professional people — his total concern for fairness in his dealings with faculty and students, and his distinctive ability to provide solutions to difficult technical problems. In the first instance, his superb handling of potentially volatile situations during the Viet Nam conflict enabled the members of the WPI community to retain a mutual respect while recognizing that a wide divergence of opinion existed. In the second instance, his pioneering work in the use of photoelasticity techniques in stress analysis was instrumental in the formation of a new professional organization, the Society for Experimental Stress Analysis.

"All of us in the mechanical engineering department who knew him and worked with him realize that we have lost a friend and colleague. But, he will not be forgotten. The basic foundations for excellence in engineering education, which he articulated in such a dedicated and understandable way, whether it was his teaching of the design of machine elements or his endorsement to the faculty of the WPI Plan, are timeless."

Also speaking of Dean Price's contributions to the college, Dean Grogan said, "He played a pivotal role in so many critical issues in the history of WPI that it is difficult to even begin to fathom their impact. A fine teacher himself, he was always deeply concerned with the quality of undergraduate education at WPI, and for years before the Plan he did everything in his power to encourage the faculty to improve the process of education. The teaching workshops of the early '60s, the first representative faculty curriculum study committee of the mid '60s, and the WPI Planning Committee of 1968-70 all benefited enormously from his active support and encouragement.

"Perhaps, in retrospect, the most

dramatic personal demonstration of his leadership and deep human understanding came during the passion-filled days of campus turmoil that followed the Cambodian invasion and Kent State shootings. Hour after hour, through one tense student-faculty meeting after another, as chairman of those meetings his great sense of fairness dominated the proceedings and set, not only then but for years to come, a tone which has marked WPI as a college where a sense of civility and fairness lies deep in its character. This sense, developed by Cookie over many years at WPI, and so dramatically climaxed during those troubled days, is one of his greatest legacies."

Dean Price's many contributions to WPI did not go unrecognized by the college. He was awarded an honorary doctor of engineering degree in 1958. In 1973 he was named the recipient of the Robert H. Goddard Award, presented annually by the Alumni Association to a WPI alumnus for "outstanding professional achievement."

Away from WPI, Cookie was also an achiever. A specialist in machine design, he served as consultant on the cold rolling of precision screw threads and other forms. He gained national recognition in the field of photoelasticity, which involves the use of polarized light to observe stress concentrations in models made of plastics. He was also involved with the analytical, experimental, and developmental aspects of machine design, stress analysis, metallurgy, prevention of fatigue failure, mechanisms, lubrication, vibration, and mechanical power transmission equipment.

He was a cofounder of the original Photoelasticity Conference, which later developed into the present Society for Experimental Stress Analysis. He belonged to ASME, ASEE, NSPE, and the American Gear Manufacturers Association. A registered professional engineer in Massachusetts, he also served as an ASME representative on the Society of Automotive Engineers committee on standardization of power chains and sprockets, and as chairman of the Diamond Jubilee meeting of the ASME Engineering Division. He delivered numerous papers before these societies. He was a member of SAE, Skull, Sigma Xi, Tau Beta Pi, and Pi Tau Sigma.

A native of Larned, Kansas, Dean Price was born on Sept. 12, 1908. For many years he was a resident of Paxton, Mass., and had served on the town finance board, the school committee (chairman for nine years), with the fire department, and the school building committee. While with the recreation committee, he designed and helped to build a 1,000,000 gallon swimming pool, a ball field, and recreation areas. He was chairman of the Massachusetts State Board of Registration of Professional Engineers and Land Surveyors and a member of the governing board of Worcester Junior College.

Dean Price is survived by his wife, Helen Tyler Price; a daughter, Gail, Mrs. Ralph Kimball, Jr.; a son, Robert, of the class of 1959; and five grandchildren. Also surviving are his brothers, Carl Price of Juneau Beach, Fla., and Dr. Galen Price of Davenport, Iowa.

Those who wish may send contributions to the M. Lawrence Price Memorial Fund at WPI. It will be used to advance those educational causes for which Cookie worked all his professional life.

WPI

Walt

Disney's technological world

by John Spolowich, '78

Is there a person alive in America today who does not know who Walt Disney was, who hasn't seen a Mickey Mouse cartoon, or who doesn't own a Disney product? Millions of people have visited the Disney parks, and millions will likely visit EPCOT, Disney's vision of the future, when it opens in 1979. However, just because Disney is so well known, does that mean he can be accepted at face value, or are there deeper meanings behind the image of Walt Disney? This article explores the Disney organization and offers some insights into what just might become a way of life for America and the world.

This article was originally done as an interactive qualifying project, one of the author's degree requirements. For more than a year, a number of students have been involved in various projects studying aspects and implications of Disney accomplishments over the years. Mr. Spolowich concentrates on the social implications of Disney's worlds, but he has drawn on and included significant material from other projects, particularly regarding the history and animation techniques sections.

WALTER ELIAS DISNEY was born in Chicago, Illinois on December 5, 1901. Besides Walt, his father, and mother, he had three brothers: Roy, Raymond, and Herbert; and a sister, Ruth.

Since his father was not prospering as a building contractor, in 1906 Mr. Disney moved his family to a farm near Marceline, Missouri, where Walt and Roy, the remaining sons at home, worked with their father. While on the farm Walt began to draw. Using a drawing pad that had been a gift, Walt drew farm animals and small wildlife. This phase of his life did not last long, however; Mr. Disney again moved his family, this time to Kansas City, in 1910.

Once in Kansas City, Mr. Disney bought a newspaper delivery service, and once again his sons were pressed into service. Despite the hard life, Walt developed an even greater interest in drawing and theatrical expression. By the age of fourteen Walt was allowed to enroll in art classes at the Kansas City Art Institute.

In 1917, the Disney family moved to Chicago. Walt, however, remained in Kansas City to finish school, staying with his brother Roy. That summer Walt worked on the Santa Fe Railroad, developing an interest in trains that would stay with him for the rest of his life. In the fall, Walt joined his family and attended McKinley High School, where he met a newspaper cartoonist, Leroy Gossett.

By this time World War I was in progress and Roy Disney had joined the Navy. Walt would have liked to join, too, but was under-age. By pleading with his mother, his birth certificate was forged and he joined the Red Cross as an ambulance driver. Before he could be sent overseas, however, the Armistice was signed. Nevertheless, there was still a need for drivers, and he was sent to Neufchâteau, France.

In France he augmented his pay by drawing fake medals and camouflaging captured German helmets. By the time his stint was over, he had saved about 500 dollars.

When Walt returned to the States in 1919, he was determined to become a commercial artist. He moved back to Kansas City where he got a job in a commercial art studio. It was there that he met Ubbe "Ub" Iwerks, who later played an important part in Disney Studios. It soon occurred to Walt and Ub that they might make it on their own, and so they began their own business.

The business was not making enough money, though, so Walt got a job with the Kansas City Slide Company, a company which made commercials for local movie theatres. These were crude animated films, mainly stop-action photography of jointed cardboard figures. Despite the crude method, they provided the Disney team with valuable background. Walt soon borrowed a camera and attempted some animation on his own. He made several reels of short gags which he called Laugh-O-Grams. They achieved a local popularity and again Walt was able to go into business for himself.

Being ambitious, Walt began work on a series of updated fairy tales, among them: *Cinderella, Jack and the Beanstalk,* and *Little Red Riding Hood.* They were very well made, but they did not sell. Walt's staff of six was forced into other jobs. In 1923 Disney tried to save his company by making *Alice's Wonderland,* but it cost so much to make he had to close the studio.

In 1923, Walt left Kansas City for California taking *Alice's Wonderland* along as a sample of his work. He was to find a distributor, Charles Mintz, and together with Roy Disney went into business on a series of films called *Alice in Cartoonland.* He started to increase his staff, and one of those he hired, Lillian Bounds, became his wife in July 1925.

By 1927, Disney had made nearly 60 episodes of the *Alice* series, and decided to go back to full animation (the *Alice* series featured a live actress as Alice). A new series was begun about the adventures of *Oswald the Lucky Rabbit.*

This proved so successful that when Disney's one-year contract with Mintz ended, Walt made his way to New York to renew the contract. Mintz, however, surprised Disney by decreasing his fees. Mintz, by copyrighting the Oswald name, controlled it. Mintz had also convinced some of Disney's top artists to leave Disney and work for him. Disney gave up the Oswald contract, but he vowed thereafter to own full rights to all his films.

While working on Oswald, Disney had come up with a new idea for a main character. Sometime in 1927 he and Iwerks created a mouse — Mickey Mouse — who had a definite personality and could get into all kinds of scrapes. While work on the Mouse cartoons was still in progress, sound hit the film industry. Walt decided that if his cartoons were to be successful, they must have sound, and the studio began developing the techniques to synchronize sound with action for *Steamboat Willie* (1928).

This was the beginning of a successful future for the Disney Studios. More Mickey Mouse cartoons appeared in 1929, with slight changes in the character and appearance of Mickey; he became less mischievous and acquired clothes and shoes.

By 1930 Mickey Mouse was an international celebrity. Several other characters, Minnie Mouse included, had become regulars in the cartoons. Meanwhile, Disney constantly demanded improvements in the quality of the animation, and by 1931 the cost of a single cartoon was $13,000. Then, in 1932, Disney released *Flowers and Trees,* in color.

The original footage of *Flowers and Trees* was in black-and-white when Technicolor offered its revolutionary three-color process. Disney continued producing *Silly Symphonies* (his newest series, of which *Flowers and Trees* was a part), now all in color. In 1933 Disney scored again, this time with *The Three Little Pigs.* The movie was a hit — his biggest up to that time — and the title song, "Who's Afraid of the Big Bad Wolf?" hit the national charts.

The Disney Studios, by this time well known, continued to produce more and more cartoons, introducing such "stars" as Donald Duck and Goofy. By 1932, in order to maintain the high quality of the studio, Disney began an art school to train his employees. This school continues its work today.

By 1935, Disney was planning something which would revolutionize the motion picture industry — a full-length animated feature. For this new art form Disney chose *Snow White and the Seven Dwarfs.* Several things prompted Disney to produce full-length animation: one was that short cartoons could never make much money, and, two, he wanted to create a type of animation that could have a more leisurely, magical quality to it.

After nearly three years of work, *Snow White and the Seven Dwarfs* was released on December 21, 1937. It was a phenomenal success and Disney was a hero.

After *Snow White* came a number of feature-length films: *Pinocchio* (1940), which utilized new camera techniques; *Fantasia* (1940), with better colors, multiplane cameras, and "Fantasound" (stereo); *Bambi* (1942), with many special effects; and many others followed. The Disney Studios branched out into live-action motion pictures, like *Mary Poppins,* nature films (the True-Life Adventure series), and educational movies. Animation was a well-developed art by 1942, and few significant changes have occurred since.

By the 1950s Walt Disney had become a wealthy man. He had furthered his interest in railroads by constructing a miniature (⅛ scale) train in his backyard, and was looking for something new and different to develop. In 1952 plans were begun for a well-designed amusement park in Anaheim, California, to be called Disneyland. It opened in 1955, and 150 million people have since entered its gates. He kept up his work with movies and cartoons, and began plans for a new amusement park and vision of the future called Disney World.

Walt didn't see his vision complete. Late in 1966, on December 15, Walt Disney died. Disney's death shocked and saddened the world, but it didn't spell the end for Disney Enterprises. First his brother and then his brother-in-law took control, and Disney Studios has continued to work towards fulfilling Disney's vision for the future.

Animation

To follow what is going on with the Disney Organization today and where they might go in the future, it is necessary to take a short look at the past. Disney Productions grew up through the use of animation and its technological innovations. Through the use of advertising techniques and new educational processes, Disney paved the way for more startling innovations such as Disneyland and Walt Disney World.

Research shows that younger viewers are affected by Disney's animated films in a way no other medium, with the exception of television, approaches. There is no imagining needed to watch a Mickey Mouse cartoon. All the imagination is incorporated into the cartoon itself. Many teachers and psychologists believe this can help the child learn. There are no extraneous lines to read, no cartoon bubbles that distract attention as in comics, and all the symbolism needed to understand the action is built into the film. All the child has to do is watch.

Thus, in Disney's use of fairy tales the younger viewer receives the imagery and story content more passively than if that child had to read a book. Through this passivity the child neither openly accepts or rejects the story and thus is open to inner teachings. By not choosing sides the child receives a fuller understanding of the issue. As this is the primary object of education in the use of fairy tales, it cannot be but good. As the fairy tale is an important part of growing up, the animated film story can be seen as a very important part of the teaching process, if only for the fact that children (and adults) like to watch cartoons. If a person is sincerely interested in what he is learning, the learning process becomes that much easier.

Just as it is important to keep the action going in animated films, it became imperative to use color imagery as it became available. Technicolor, a company Disney has always been associated with in the use of color for films, came out with a coloring process for films in 1921. A small company at the time, Technicolor couldn't make this process available until 1923. At that time, however, film experts and critics raved. However, the first Technicolor product was nothing like the color we have today. For one thing, the process was only adaptable to certain scenes, and, two, the range of colors capable of being produced was very limited. The colors red, green, and blue predominated.

However, in the Technicolor process of 1932, light was reflected into its three component colors: red, blue, and green. Then the light was run through a prism where these three colors could be broken into as many shades as the eye can perceive. In Technicolor, instead of having one negative to contend with, there are three. Shooting a picture is done with one negative and then in the Technicolor labs that single negative is treated in such a way as to form the three component colors and three negatives which are then imprinted into the final film.

The first Disney films to use color effectively were the *Silly Symphony* series. The use of color was so striking and effective as an audience-drawer that they out-played the Mickey Mouse cartoons, which were in black-and-white. The first big hit with Technicolor, however, was *The Three Little Pigs*, released in 1933. This film had such an effect on depression-era America that Disney immediately adopted the Technicolor process for all his films. With the release in 1940 of *Fantasia* the full potential of color was realized. Disney still uses the Technicolor process today, even though there are others available.

The sound in Disney's films was done by him and his studios. In the early days of animation, all noises had to be timed to the action and reproduced on the spot, similar to drama on radio. Such things as the forest fire in *Bambi* were produced by crinkling cellophane close to a microphone. Crush a wooden box and you had the sound of splintering wooden planks. Crashes were produced by tumbling boxes. The sound of someone being hit on the head was produced by hitting a head of cabbage and horses trotting was accomplished by means of halves of coconut shells. Simple whistles, ratchets, and slide flutes were used.

Disney and his staff managed to perfect a technique that would synchronize sound with the animation. It involved a series of light flashes put on each frame of film. By following the flashes the sound track very nearly synchronized with that of the action.

For the movie *Fantasia* Disney engineers developed a series of eight speakers that could be strategically placed around a theater to reproduce a very true stereophonic sound. The effect was similar to that employed in the more recent film *Earthquake!* The setup was abandoned, however, because the cost of setup and removal prohibited its use in all but a few theaters.

Just as Disney engineers developed new sound techniques, they also developed new techniques in special effects. One of these was known as "rotoscoping." It involved filming a sequence of film with live actors that would be used in a film with cartoon characters. Then the animator would trace the outline of the human actors and use it to draw the animation figures. This was supposed to impart greater naturalism to the cartoons, but actually succeeded in producing a jerky kind of motion. This is evident in films such as *Snow White.* The effects of rain and snow were accomplished by sprinkling water or bleached cornflakes against a dark background. Unbelievably enough, this appeared very real.

Another technique, much more important, was the multiplane camera. This camera was introduced to fill a technical gap. The animators felt they had no way of producing depth. Scale distortions occur when a cel is photographed against a flat background. This camera made it possible to photograph several levels of background and action at the same time to give a proper sense of depth. Before Disney, the size of the cel determined the size of the field of action. (A cel is a drawing of a part of the scene on a transparent acetate base.) Obviously, for some of the action in a film like *Snow White,* the normal cel size, 9½ x 12 inches, was too small to accommodate all the characters. In addition to new, larger board and cel sizes that were adopted, new inking boards, checking boards, animation boards, and the camera itself had to be developed. Even so, the board size still proved too small in some instances, and a method of photographically reducing the drawings was devised. All these things led to the development of animation as a high art by 1942.

All these technical innovations are fine, but they are not alone what made a Disney animated film so different from any other producer's. For when someone thinks of Walt Disney and what he did for animation and movie-making in general, it is usually in light of the way he made fairy tales come alive. But there was one period of Disney history that was much more somber in nature — World War II. On the eve of the war we were nearly in a state of chaos. Our educational system was not equipped to instill the state of mind necessary for victory. As a result, the crippling shortages and misplaced manpower of the early stages of the war were anything but what one would expect from a nation that was supposed to play such an important part in winning the war for the Allies.

Here Disney stepped in. Although by no means responsible for our winning the war, his efforts did help overcome one critical problem: education. What Disney did for the Allied effort can be explained simply. He made propaganda films. Yet he was faced with more problems than might first meet the eye. Never before had a film producer used his talents as an educator in social change or as a major proponent of technological progress. His newfound abilities in film technology would be used to link aeronautical science to military theory, industry, trade, international relations, agriculture, conservation, health, and sanitation. He was to be used as educator of the world.

Disney held enormous power. His films were being viewed by as many as 100 million people around the

world. He was in a position where he could use his talent to control and change the attitudes of all those people. That he didn't use that power for negative ends is a tribute to the man's patriotism. He was able to use his films to tell the world how to use their armies efficiently, how to organize their industrial efforts, how to will themselves to win, to maintain order, and to make ordinary-seeming people and things appear vital to the war effort. People were taught how to ration themselves, how to promote goodwill among other countries, how to understand America's war strategy, just as they were used to arouse latent national loyalty. And Disney's films taught these things so eloquently that ten-year-olds could understand them.

By combining the same techniques used in fantasy films, i.e., the multi-plane camera, color psychology, frosted cels, animation itself, and combining this with Gallup poll surveys, maps and diagrams, and appeals to authority and human values, Disney was able to make one outstanding contribution to the war effort. This was in a film called *Victory Through Air Power.* It centered around a complex military concept, that of long-range bombing, but it was presented to the public so as not to appear too pedagogic. Disney showed that industry, on its own, had brought the necessary technology of bombing to such a state that, properly applied, the technique could end the war in two years with victory going to the Allies. One of the film's main points was that military men tended to thwart those efforts which would make their own theories defunct. The film had such an effect on the American people and on the executive branch that the concept was put into practice. The result is well known.

By proving his two main points, the cost in manpower to fight a conventional war, and that the American people had inherited the most powerful technological civilization in the world, Disney was able to implant in American minds a very important point: it was better to spill our nation's gasoline than to spill our nation's blood.

Disney's abilities in propaganda filming were so great that there is a certain horror in the recollection. If Disney had chosen personal power rather than national spirit as his motivation, he could have been a major threat to Allied victory. What the Japanese could have done with a man like Disney on their side is frightening to consider. Disney's medium of construction could easily have been turned into a medium of destruction.

Disney's educational abilities were a direct extension of his animation abilities. Just as many movements of many cartoon figures were necessary to give an air of simplicity and magic, many factors in our social institutions and technologies combined together to promote the instruction of our people. As a result, Disney directed his greatest film of all: the panorama of the construction of peace and a new Magic Kingdom.

Once Disney had perfected the theory of education in animation, he was ready to perfect the image of what we have come to recognize as Walt Disney Productions. In order to do this he had to advertise. And in this advertising, he managed to commercialize his work. There is no better way to illustrate this commercialism than to talk of the symbol of Disney Productions: Mickey Mouse.

What makes Mickey Mouse more popular than any of the other Disney characters? Was it because he was the first, or was it because he is the best known? Several decades ago perhaps one could say that many people had not been exposed to such characters as Donald Duck, Dumbo, and Goofy, but nowadays most people are familiar with these characters, too. No, I think the popularity of Mickey Mouse is due to commercialism, something which Disney, intentionally or not, has succeeded in giving us. Disneyland and Disney World are both elaborations on this theme. This is not to say that commercialism is evil; we more or less take it for granted. Commercialism is, after all, the way we sell our products. It is natural in a capitalistic society. But does Mickey have to be a part of it? I think perhaps Mickey Mouse has become so much a part of our language, and indeed is so much a part of our own fantasylands, precisely because of it.

One result of the vast commercialism that launched Mickey is that he has become an accepted part of our society, so much so that Mrs. Nixon could give Mrs. Brezhnev a Mickey Mouse watch and it would be understood as an honorable gift. Another enduring thing about Mickey is that he has stood the test of time. His creator is long dead, and yet Mickey is not yet nostalgia. At the first annual nostalgia fair held in New York, Mickey was not even mentioned. He has not gone the way of other cartoon characters, not even such recent ones as Bugs Bunny and Porky Pig, of whom no films have been made in quite a while.

Mickey endures because he was sold. So much and in so many products that a game show on television can now ask his name in Spanish and expect to get an answer. Sold enough to bring over one hundred dollars for a watch that bears his picture. It is extremely unlikely that any of us has not seen something that doesn't have a picture of Mickey on it, be it a hat with ears, a drinking glass, a magazine. He is known, and loved, worldwide. His popularity is due to the commercialism that turned an ordinarily dirty little creature into an object of fun and fantasy. His is the power to bounce back, in advertising and in "life."

Disneyland, Disney World and EPCOT

When Disneyland opened in 1955, it might have seemed like the culminating point of Disney's work. The theme park, so named because the park consists of seven areas, each with its own special theme, includes: Fantasyland, Frontierland, Adventureland, Tomorrowland, New Orleans Square, Main Street, and Bear Country. Each of these areas is designed to create a certain atmosphere and contains amusements, exhibits, and other attractions which underline the theme of the area. Many of the attractions are based on characters and stories from Disney's films.

Fantasyland is primarily the haven of the animated story. Such attractions as Snow White and the Seven Dwarfs, Peter Pan, and Dumbo are represented here, as well as the "It's a Small World" exhibit, seen by millions at the 1964 New York World's Fair. Adventureland derives from the Disney "True Nature Adventure" films and features jungle rides and the Enchanted Tiki Room, named for its robot-like audio-animatronical birds, flowers, and Tikis. Frontierland represents the United States in its Wild West days. Among its features are such things as an operating Mississippi River type steamboat. Other parts of Frontierland are geared towards the gold rush days and pioneers like Davy Crockett. Tomorrowland features the future, including: Space Mountain (a roller-coaster sort of ride that simulates space flight), Circle-Vision 360° (Disney's patented theater in the round), and an audio-animatronics production of the musical history of

America. New Orleans Square is just what the name implies, a re-creation of nineteenth century New Orleans, and features a pirate ride and a haunted mansion. Main Street is a re-creation of a typical main street in the 1890s. Bear Country is the scene of the Country Bear Jamboree, a musical revue with robot animals. In each of the areas there are themed restaurants, souvenir stands, and refreshment stands.

Several new attractions are in the works, framed around a seven-year master plan. A new area called Circusland would be a circus peopled with audio-animatronical players and animals, and featuring Mickey Mouse cartoons from the 1920s and 30s.

Disneyland is highly successful, and has become the model on which many new amusement parks are built. I stress the word amusement because Disneyland is a small park of 305 acres. It does not have the expansion possibilities that Walt Disney World has. Nevertheless, Disneyland has proved to be a consistent money-maker, increasing revenues nearly $40 million from 1972-1976 while increasing attendance 600,000. On June 22, 1976 Disneyland hosted its 150 millionth guest. Yet, the attendance is still largely composed of California residents. This makes it different from Walt Disney World, which relies on out-of-state attendance.

When Walt Disney World opened in 1971 in Orlando, Florida, many people thought it would be just another Disneyland. They couldn't have been further from the truth. Walt Disney World (hereafter called WDW) is huge, encompassing an area of about 27,000 acres, over 42 square miles. To give an idea of this size, WDW is nearly twice the size of Manhattan. The theme park itself is nearly ten times the size of Disneyland. Its principal attractions are much the same, but in WDW the Country Bear Jamboree is not a separate area, and Liberty Square replaces New Orleans Square.

Like Disneyland, WDW is extremely popular, with 1976 revenues of nearly $255 million. That same year, attendance was 13 million, some 3 million more than went to Disneyland. What is phenomenal, though, is that from 1972 to 1976 WDW nearly doubled their revenues while raising attendance by only one-fourth.

The reason for this increase is partly due to the fact that WDW is a total recreational area. Besides the Magic Kingdom, there are numerous camping facilities, such as Fort Wilderness and River Country. River Country features such things as a 260-foot water slide, rope swings, and swimming pools. When River Country opened in 1976 it hosted 420,000 guests in its first four months. (This was with 89 percent occupancy). There are also three major hotels in WDW. The Contemporary is an A-frame type building, with its center open to allow the monorail to pass through it. The Polynesian Village is a hotel themed to the South Seas and features such things as luaus and Olympic-sized swimming pools. The Golf Resort is just what the name implies; it is built around several challenging 18-hole courses. One of these, the Magnolia course, hosts a PGA tournament. These hotels have an average occupancy of 97 percent.

If there is any one thing which sets WDW apart from other amusement parks, it is the use of technology to boost the entertainment. One of the most striking uses of technology in both Disney theme parks is the intelligent use of mass transport. Such diverse means of transportation as monorails, WEDway People Movers, skyrides, steam trains, and boats are used to move people from place to place. The monorail at WDW travels the perimeter of the Magic Kingdom, giving the rider a preview of the park. The WEDway People Mover, named for Walt Disney, is essentially a train-on-wheels. It does not run on gasoline, though, but rather on electric power or altemative fuels like alcohol. The steam train also circles the park in WDW, but such rides as the skyride, a gondola strung on cables, merely provide transport from one theme area to another. The main emphasis on such transport technology is that it be clean, cheap, and effective. In WDW all these goals are accomplished.

One must remember that large sections of the parks are geared to water, and that Disney Productions maintains a large fleet. While many of the boats are small power boats, or those used in rides, WDW still has enough boats to hold claim to the *ninth largest navy in the world* (in tonnage), an incredible achievement for a single company.

The transportation shop at WDW employs some 1,200 craftsmen. There, all the various vehicles are kept in working order and new ones built. In 1975, for example, in the shop's drydock, a 150-ton ferryboat was under construction. This shop, by the way, uses more fiberglass than any other manufacturing activity in the world.

On an equal footing with transportation are the robotics. WDW "employs" thousands of them. Audio-animatronics is a complex word meaning talking robots. These can take any shape, from President Lincoln talking in the Hall of Presidents to an enchanted alligator at the Tiki Room to Mickey Mouse in the Mickey Mouse Revue. These robots are mainly stationary. They do not move by themselves, although they can "walk" across preprogrammed tracks. They are capable of as many as 11,000 separate movements, some of which are startling to viewers, such as the scratching of an itch.

Audio-animatronics are essentially a combination of wax museum figures with an inner core of microelectronics. They utilize computer-programming to make them move. They are so realistic that they even sweat (due to a type of oil in their plastic skins). Basically, the audio-animatronic figures are programmable — that is, they are programmed to sing or talk. Their lips are synched to the song or speech, and a push of a button activates them. They cannot as yet move independently, by themselves. Nor can they think. However, it is conceivable that in a few years they could be programmed to perform menial tasks in place of human employment.

Aside from such obvious uses of technology, the theme parks discreetly make use of other technology which is years ahead of its time. This is especially true with the AVAC rubbish disposal system, which features primary, secondary, and tertiary controls. The activated sludge used in the third-stage treatment is also used to fertilize fields.

This mariculture has made it possible to increase the yield of soybeans from 600 pounds per acre to nearly thirteen times that amount. In addition, the sludge has proved to be an excellent source of protein for cattle. Another use of technology is being tested in the water control center that Disney Productions manages. Projects are being devised to take waste gas (methane) and use it to drive the same turbines which treat the water in the first place.

Another planning feature of WDW is one which the public probably doesn't even realize exists. All deliveries and utilities are underground, as are all workshops, computers, electronics gear, and lighting controls. Even the fireworks which are seen every evening are set off underground. Underneath WDW is a maze of corridors which connect shops and offices, and provide access to attractions for employees, who travel long distances in electric carts when necessary.

Also underground is the unique waste disposal system. Although the garbage cans in WDW might appear normal, many of them are linked to the AVAC system by a series of tubes which act like vacuum cleaners. These suck in trash, process it through circular blades that separate organic trash from inorganic trash and also chop the trash into smaller pieces that are easier to treat.

Physically, the theme parks are marvels of engineering. They have both used canals to provide water as well as land recreation. WDW includes one of the world's largest aviaries, as well as hiking trails and fishing spots. In WDW one can buy or rent condominiums, cabins, cottages, and boats. The Lake Buena Vista complex includes some 200 homes that are water-oriented and another 18-hole golf course. The homes are located adjacent to WDW in and around a 1,200 acre area of man-made lakes, canals, and channels. In 1976 the Lake Buena Vista shopping village hosted some two million people, who visited some 29 unique shops and four restaurants. At the site the Disney people built a 150-ton Mississippi river showboat that houses three restaurants, a Dixieland show bar, and exclusive private dining rooms.

What might not be so obvious is that WDW is a marvel of efficiency and behavioral planning. The social technology involved in creating WDW ranges from studies on waiting in line to the "clean" look that WDW has. Prominent in the use of social technology is the appearance of the park. Every night, every single sidewalk, walkway, and vehicle is checked for defects and fixed if necessary. Everything is cleaned every night, and that includes removing chewing gum and washing all the windows in WDW. There are innumerable maintenance men throughout WDW, some of which follow crowds around merely to pick up trash that is littered. A striking feature of WDW is that it is spotless.

Other social technology includes the use of color, the right mix of fantasy and reality, and the friendliness of employees. Granted it is hard to look at such things objectively, but the fact remains that WDW is more than an amusement park. It, hopefully, offers something for everyone.

FINAL REPORT

The WPI Plan

To Restore The Balance

In 1970, WPI, then a four-year engineering and science college of the most rigidly traditionalist type, was transformed by vote of the faculty into an entirely new institution with a completely different goal: the education of "technological humanists," a new breed of engineers and scientists with an active appreciation of the social sciences and the humanities, with an awareness of the world's scope and complexity and with a grasp of the larger societal implications of their chosen professional roles.

To implement that goal, the faculty created a new academic curriculum based on four degree requirements. This new educational program, known as the WPI Plan, places the responsibility on each student to design his or her academic program with the help of a faculty advisor. The WPI Plan requires a demonstration of competency and successful completion of two independent problem-solving situations called "projects."

From the very outset of the WPI Plan, it was clear that the fundamental and massive changes required would be costly in both time and money. WPI's resolve to change and to grow academically, combined with an uncertain economy, the steadily rising costs of almost all goods and services, and the inability of most students to pay fully for their education, resulted in a major imbalance between WPI's ambitious goals and its fiscal posture at that point.

To surmount that ominous fiscal reality, the Trustees recognized the need to mount a major fund raising program of heretofore unheard-of proportions in WPI's long and distinguished history.

Appropriately, this five-year effort officially was designated as The WPI Plan to Restore the Balance campaign. By virtue of astute and thorough planning, many of the ingredients necessary for success were "built in" to the campaign's structure even before the first dollar was raised.

Because the '60s had seen a major expansion of our academic facilities including construction of Olin Hall, Goddard Laboratories, and Gordon Library as well as a major athletic facility, Harrington Auditorium, the Trustees' Committee for Planning and Resources quickly recognized that improving the quality of student life was one of the most pressing needs facing the college. The decision was made to increase dormitory space and create a student life center by renovating the first floors of Morgan Hall and Daniels Hall and linking these buildings together. Thus the top physical facility priorities of the Plan to Restore the Balance were established. Others included the renovation of Salisbury Laboratories and Boynton Hall.

Our architectural planners were quick to point out that we were creating vehicular traffic in the heart of our campus by locating our Buildings and Grounds Department in what was the old Foundry Building. Following their recommendations, the Foundry Building was remodeled to serve as a Project Center, and the campaign to green the campus was launched. The results of this effort are highly visible on the east campus which has been restored to pedestrians and beautified through walkways, plazas, terraces, and plantings.

Having faced a series of annual deficits, the Trustees were concerned and determined that additional funds be raised to reduce the pressure on the annual operating budget, thus an endowment objective of $4.1 million was established for the campaign. In spite of our success in raising new endowment money, a falling stock market and continuing inflation have not substantially reduced the pressures on the operational budget. We have, however, managed to increase the endowment and stay just a bit ahead of inflation.

The WPI Plan emphasis on practical experience and learning through doing in the laboratory coupled with an enlarged student enrollment created a problem of equipment replacement and upgrading. In addition, the rapid changes in technology made it imperative we update our equipment. Recognizing this need we set a campaign objective of $1 million.

When the campaign was launched, the concept of the WPI Plan was well understood by our faculty. It, however, was not clear as to what the attendant cost would be to accomplish our stated objectives. Thus, the Plan to Restore the Balance was launched knowing that we would need to raise money to implement the WPI Plan but not knowing precisely what we would need it for or when. Our success in attracting grants from major national foundations amounted to $1.9 million, which was critical in the successful implementation of the WPI Plan.

Looking at proposed plans for the campus back in 1972, at the start of the campaign, are, from left, Milton P. Higgins, chairman of the Board of Trustees; Paul S. Morgan, chairman of the WPI Plan to Restore the Balance; and Irving James Donahue, '44, national chairman of the campaign.

Physical Facilities

Goal: **$7,903,400**
Achieved: **$7,502,107**

Among the components of the campaign, the highest priority was given to improving the quality of the learning environment at WPI through construction of new physical facilities where needed and by renovating and restoring others.

Generous early grants from the Ellsworth and Fuller Foundations allowed us to raze property on Institute Road across from the campus and to begin construction of two new residence centers in 1972.

When finished in the fall of 1973, the two residence centers provided modern town-house style living accommodations for 196 students. They also became the first visible evidence of WPI's commitment to a successful campaign of unprecedented magnitude.

The Wedge, connecting Morgan and Daniels Halls, signaled the completion of a badly needed student life center, including a substantially enlarged student dining room and kitchen, a campus post office and game rooms, and larger quarters for the Bookstore. This new setting enhanced the visual appearance of the campus and created a "Campus Main Street" for students, faculty, and staff.

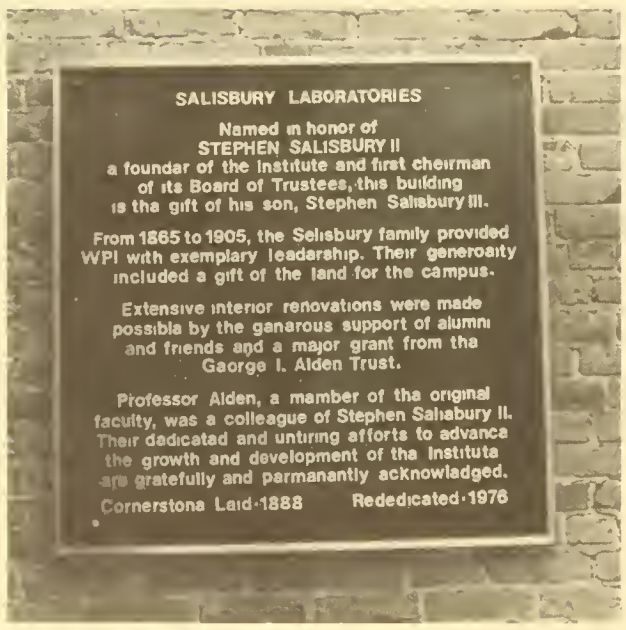
With student projects at the heart of the WPI Plan, a Project Center became a most urgent need. A grant of $150,000 from the Kresge Foundation in 1973 underwrote the cost of transforming the old Foundry Building into a useful and efficient headquarters for student projects.

One of the most extensive programs involving physical facilities was the transformation of Salisbury Laboratories into a modern academic center. Aided substantially by a major grant from the George I. Alden Trust, the interior of Salisbury was converted into a functional center for interdisciplinary learning including 4 classrooms, 25 laboratories, 3 lecture halls, 4 seminar and conference rooms, offices for 54 faculty members, and several student lounges and study areas. Built in 1888, the "new" Salisbury Laboratories were formally rededicated in September, 1976.

Sanford Riley Hall, our oldest dormitory, was completely renovated to provide comfortable and attractive student living quarters which conform to current building codes. By acting as our own contractor on this project, WPI realized cost savings of approximately $100,000.

At top, Looking through one of the courtyards in the Fuller Residence toward Sanford Riley Hall: WPI's oldest and newest student housing.
Above left, "The Wedge" connecting Morgan Hall with Daniels Hall. This link is the keystone of the student life "campus main street" concept.
Above right, the dining hall (with a refurbished kitchen) was rebuilt as a part of the Plan to Restore the Balance, and offers more capacity and increased flexibility.

At left, the magnificent central staircase/ skylight that breathes life into the new Salisbury Laboratories, and provides natural light even down into the lower levels.
Below, one of the new life sciences laboratories in Salisbury.



Top: Guess what building this is? It's Boynton Hall in an early stage of the nearly-finished reconstruction. At bottom, the pedestrian mall between Boynton, Washburn, Stratton, the Project Center, and the Power Plant. Just a few years ago, this was a crude alley used mostly for parking and jammed with cars.

Boynton Hall, constructed in 1868 as the college's first building, has undergone a complete structural, mechanical, and electrical system restoration. The building's attractive granite exterior has been preserved, and Boynton will soon house most WPI administrative offices in a comfortable, modern setting.

Extracurricular activities were not overlooked when our campaign priorities were established. Among several related projects, PTRB funds included construction of four new tennis courts adjacent to A. J. Knight Field.

Among the most conspicuously pleasing results of the campaign, "the greening of the campus" has been accomplished in several areas which make the campus attractive at every season of the year.

The once austere alley between Stratton and the power plant used to be a popular parking area for faculty and staff. Now, it is a handsome, attractive pedestrian mall with raised beds of flowers, shrubs, and trees.

Freeman Plaza, the area between Salisbury, Washburn, Gordon Library, and the Project Center, is now the attractive centerpiece of our campus. Our success in creating a better educational environment through attractive campus landscaping was recognized by a special award from the Massachusetts Office of Environmental Affairs.

One final element of the "greening" master plan — the closing and landscaping of West Street — remains to be accomplished. Following a temporary closing of the street in 1974, we withdrew our petition. Once the reconstruction of Lincoln Square is completed, we plan to resubmit and hope that favorable action by the City will allow us to complete "the greening of the campus."

Endowment

Goal: **$4,100,000**
Achieved: **$4,226,553**

The indispensable cornerstone of the WPI Plan has been the remarkable dedication of our faculty to this college. Their commitment conceived and nurtured the Plan and their boundless energy has made it workable. Building on these unique strengths, we set out to attract and to retain other superior teachers who will lead our students toward the self-reliance and self-confidence which the Plan encourages.

Our goal was to establish two endowed faculty chairs and at least two distinguished instructorships. A substantial gift from an anonymous alumnus endowed a chair in Mechanical Engineering in honor of Professor K. G. Merriam, one of WPI's best known and best liked former teachers who died in 1977. Two distinguished instructorships were made possible by generous grants from Morgan-Worcester, Inc., and the Riley Company, who funded an instructorship named in memory of Edmund Rothemich, Class of 1934. A third distinguished instructorship was funded with a bequest from the estate of Wilber C. Searle, Class of 1907. We continue to seek funding for at least one additional chair.

$2.4 million has been added to endowment for student financial aid. It's difficult to imagine a better use for these reasons: WPI currently provides more than $2.2 million in grants and loans to students each year — the equivalent of nearly $1,000 for every undergraduate enrolled.

Books and Equipment

Goal: **$1,000,000**
Achieved: **$751,075**

In a college of science and technology like WPI, the quality of education depends directly upon the availability of books and modern laboratory equipment. Fortunately, gifts of more than $750,000 helped us to secure some of the most modern equipment available, including a transmission electron microscope and important additions for the growing Life Sciences department.

Other gifts enabled us to build a modern TV studio and to create TV carrels for individual personalized instruction where each student may review a subject or problem until he or she has mastered it. Campaign funds also were used to expand collections in Gordon Library.

WPI Plan Implementation

Goal: **$2,176,600**
Achieved: **$2,533,234**

From the outset, the unique and innovative components of the WPI Plan attracted a great deal of notice both within and outside the academic community. Much of this favorable notice was translated into tangible and generous support for the considerable costs of implementing the Plan. We received the largest grant made by the National Science Foundation's College Science Improvement Program for undergraduate education. Other major grants in support of educational programs under the WPI Plan were made by the Sloan Foundation; the Carnegie Corporation; the Ford Foundation; the Andrew W. Mellon Foundation; the National Endowment for the Humanities; the National Foundation for Arts and Humanities; the Lilly Endowment; and the Rockefeller Foundation.

The aggregate total contributed during the campaign for implementing the WPI Plan and related academic programs exceeded $2.5 million.

Operational Funds

Goal: **$3,320,000**
Achieved: **$3,877,663**

When the goals for the campaign were established, the trustees recognized two related facts of equal importance: (1) that the broad scope of WPI's educational and other programs would move ahead at an accelerated pace, and (2) that the costs of day-to-day operations would not remain constant, but would probably increase significantly over the five-year period.

Accordingly, we established a minimum goal of $3.3 million to accommodate the impact of inflation and other costs. This estimate proved to be conservative: the five-year total of gifts for current operations came to nearly $3.9 million, including more than $460,000 of new endowment income.

Epilogue

The concept of a horizontal student union or "Main Street" has succeeded beyond our fondest expectations. Alden Memorial provides an excellent site for concerts, films, and lectures and is physically linked to Sanford Riley which has been completely renovated. Its lower level houses a much used pub which frequently offers weekend entertainment. Proceeding down Main Street we find the bookstore, post office, computer terminals and Dean of Students Office located on the first floor of Daniels Hall linked by the Wedge which has quickly become a campus meeting and gathering point for residents as well as commuter students. The improved dining and snack bar facilities in Morgan Hall round out our Student Union.

To the north of "Main Street" are located the athletic facilities and Alumni Gymnasium and Harrington Auditorium, while to the south are located the new Ellsworth, Fuller and Stoddard residence centers.

The decision to renovate existing buildings has been applauded by the WPI community, architects, and economists. Renovation, although plagued by restrictive regulations, has proven to be less costly than demolition and rebuilding. Salisbury Laboratories is a magnificent example of how an imaginative architect can rejuvenate an old building. Boynton Hall, which has graced the Worcester scene for over a century, will continue to do so for the next while providing modern and efficient administrative offices.

Our increased endowment which we had hoped would provide us with a new resource has been somewhat reduced because of the combined pressures of inflation and disappointing performances in the investment markets over the past five years. Our disappointment, however, is tempered by the satisfaction we have knowing we have substantially increased the endowment, and if we had not, our fiscal problems would be magnified.

The optimism of our faculty when they voted to adopt the WPI Plan has been confirmed by their hard work and generous funding from a number of foundations. Merging these interests and energies has resulted in an educational plan which has been recognized and applauded throughout the country.

No story about the Plan to Restore the Balance would be complete without full and unqualified tribute to the WPI family. Our Trustees and alumni provided visionary leadership coupled with generous support. The immediate WPI family, faculty, and administration never once stopped telling the WPI story to both on and off campus guests in a convincing and compelling way. Foundation officials often expressed incredulity when first hearing the WPI story. However, without exception, after a campus visit they left not only converted but advocates.

There is a maxim in fund raising circles that donors do not give to institutions. Never has that maxim been more visibly demonstrated than our recent campaign. People gave and gave generously to WPI because of the creative minds that conceived the WPI Plan, because of the able students who time and time again demonstrated it was working, and because of the Trustees and alumni leaders who worked without pause and gave so generously. The campaign succeeded because the WPI family believed in the Institute. As a result of these efforts, today WPI faces an uncertain future with confidence . . . confidence based on the knowledge that the real strength of the Institute is not the buildings but rather the people who are the WPI faculty.

An Honor Roll of all volunteers and donors has been placed in the WPI Archives, which are held in Gordon Library.

Where the gifts came from

Source		*Percentage of the Total*
Alumni		
Annual Fund	$ 1,055,664	5.58
Capital	1,618,242	8.56
Bequests	3,002,666	15.87
	$ 5,676,572	30.01
Corporations	$ 2,421,859	12.80
Foundations	$ 5,906,601	31.23
Friends		
Capital	$ 871,136	4.61
Bequests	689,053	3.64
	$ 1,560,189	8.25
Parents	$ 98,362	.52
Other	$ 69,328	.37
New Endowment Income	$ 462,414	2.44
Government	$ 2,720,203	14.38
Total	$18,915,528	100.00

Where the gifts went

	Revised (2/76) Goal	*Pledges & Cash Received*
Facilities	$ 7,903,400	$ 6,855,524
Endowment	4,100,000	4,275,699
Equipment & Books	1,000,000	754,075
WPI Plan Implementation	1,693,640	1,963,261
Other Restricted Gifts	482,960	589,973
Unrestricted Gifts		
Applied to Facilities		(1,893,554)
Temporarily Applied to Funds Functioning as Endowment		599,333
Current Operations	3,320,000	3,877,663
Grand Total	$18,500,000	$18,915,528

Gift Report

Size of Pledge	*Approximate Number Needed*	*Goal*	*Number Received*	*December 30, 1977*
$1,000,000 and over	4	$ 5,000,000	3	$ 4,422,214.13
500,000 to 1,000,000	5	2,500,000	3	2,032,294.00
250,000 to 500,000	8	2,250,000	6	2,063,282.01
100,000 to 250,000	13	1,250,000	20	3,081,405.65
50,000 to 100,000	25	1,250,000	19	1,287,835.02
25,000 to 50,000	40	1,000,000	27	892,177.80
10,000 to 25,000	100	1,000,000	28	417,371.22
5,000 to 10,000	180	900,000	45	283,194.14
under 5,000	Numerous	825,000	2,632	332,561.03
*Anniversary Gifts				225,530.07
		$15,975,000	2,783	$15,037,865.07
1976-77				
Alumni Fund	Numerous		Numerous	$ 284,919.62
Development Fund	Donors		Donors	288,854.16
1975-76				
Alumni Fund	Numerous		Numerous	147,137.91
Development Fund	Donors		Donors	290,930.63
1974-75				
Alumni Fund	Numerous		Numerous	191,818.52
Development Fund	Donors		Donors	200,546.34
1973-74				
Alumni Fund	Numerous		Numerous	192,693.13
Development Fund	Donors		Donors	844,353.33
1972-73				
Alumni Fund	Numerous		Numerous	240,351.98
Development Fund	Donors		Donors	733,643.13
New Endowment Income				462,414.26
		$ 2,525,000		$ 3,877,663.01
Grand Total WPI Plan to Restore the Balance		$18,500,000		$18,915,528.08

*raised through the Annual Fund credited to Capital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At left, this aerial view shows two different eras in transportation coexisting nicely.

Below, some of the "audioanimatronic" robots in the Hall of Presidents.

The question remains: Does it offer everything? Is it true that Disneyland and WDW make up a kind of Orwellian world of the present? Or did they just evolve to become a modern classic of fraud amid the rigors of one's daily life? For one thing, they cater not to the people that most need escape (the poor), but rather to the relatively affluent middle classes, who already have a great variety of escapes.

Yet going to Disneyland or WDW is a wholly different experience. One steps out of the Florida landscape into a fairy-tale world embracing almost as much of one's imagination as is possible — provided that imagination is clean and wholesome. Is this paradise? We can go to a haunted house, a pirate ship, into the Wild West, or step into the future, and still not see ourselves. We can have our own fantasies with no one bothering us. Yet there is a subtle conditioning that takes place. There can be no variation on the fantasies.

This paradise is artificial, and therefore, small. There is no hunting, wars, riots, bar brawls, terrorism, disease, vice, gambling, natural disaster, blood, gore, or death in the theme parks. And there is no sex, real or implied. The theme parks are far from approaching realism except in the heroic, second-hand accounts. In short, there is nothing in them that makes life, as we know it, interesting. There is nothing to complain about. We are only passive onlookers. The theme parks are a dream. Is this Big Brother or Brave New World? It is definitely efficiency and behavioral planning.

Yet, obviously, someone is doing something right. There are plans in the works for a similar theme park in Japan. Besides this park, to be located in Tokyo Bay, there are plans for a "World Bazaar," which would combine international shopping with fine dining and a variety of entertainment. There has also been mention of a WDW-type theme park in Egypt.

Other future plans call for the ultimate Walt Disney dream to be fulfilled. This is EPCOT (Experimental Prototype Community Of Tomorrow). Originally planned as a sort of futuristic city, EPCOT has evolved into a plan for world brotherhood and peace achieved through education and technology. Disney Productions has high hopes for EPCOT. It is hoped that EPCOT will be: (1), a proving ground for new concepts in space, health, energy, transportation, agriculture, communications and the arts; (2), a creative forum for business leaders, government and academia that would be on-going; (3), an information-education center utilizing new communication techniques; and (4), a permanent international people-to-people exchange of ideas, advancing the cause of world understanding.

A major part of EPCOT will be the World Showcase. This is designed to be a kind of permanent world's fair, with Disney-like attractions, different foods, and culture reflected in each exhibit. Each exhibit would be the same size and each would be assisted equally in planning a main attraction, a shopping center featuring the country's products, and a restaurant themed to the country. As of now, Disney representatives have visited 31 countries, and it is hoped that 50 countries will take part in the initial opening of the project.

Integral with the World Showcase is the EPCOT Future World Theme Center, which would feature technology of the future today. This would include its role as communicator of new ideas and as a research center. Also included in EPCOT would be an international youth center, a running seminar that would teach young people from around the world. The youth center is hoped to provide an educational background for tomorrow's leaders. The international exchange of ideas gained in operating EPCOT and the World Showcase would alone justify its existence.

As it is, the countries involved would take out a lease for their exhibit. In exchange they would get Disney help in planning and designing their exhibit. They would also get services and utilities free. As in the theme parks, where many leading U.S. companies maintain exhibits, the American exhibit is being offered to U.S. companies.

The Future of Disney

EARLY LAST SPRING, another member of the Disney'sWorlds IQP did a survey of Worcester residents on their feelings toward Walt Disney and his works. The reply was strong, and definite ideas were voiced as to what Walt Disney was and what Disney Productions is now. What was found out was that nearly everyone had heard of Disney, some of his animated characters, Disneyland and Disney World. Disney was well liked; in fact, no one had anything bad to say about him. He was well known, and encountered everywhere one looked. It would seem as though Walt Disney could do no wrong.

Well, I don't agree. It is interesting to note that people are in the habit of calling Disney's far-flung fields of endeavor an empire, because that is not far from the truth. Take, for example, the mystery-shrouded Mineral King project. Disney exerted enough pressure, and dollars, to convince Governor Reagan of California that the best thing he could do for a national park was to run a road through it, spoiling its natural beauty. Now Reagan is not a weakling to be pressured lightly, and certainly was not at the time of the offer. Is it merely a question of "money talks and politicians walk"? I think Disney had a lot more going for him than his money. The Mineral King project is currently tied up in litigation brought on by a Sierra Club lawsuit. Somehow, Disney is not involved.

It is safe to say that Disney Productions controls Orlando, Florida. Orlando was a somewhat sleepy southern town until Disney World invaded it. It is now one of the top tourist attractions in the entire world. But the fact remains that it is tops because of Disney, not the city fathers. It was as though a dictator took over in Florida.

The problem, however, is not the dictatorship, but the scope of its borders. What Disney did in Florida, literally, was set up a separate country. He had Orlando sewed so tight that he could go beyond normal operating procedures. He did not have to go through the exasperation of an environmental impact statement; he did his own instead. He placed WDW so as to take advantage of a separate governmental district, then force-fed it with Disney money until he effectively ran it. He and the rest of Disney Productions have managed to staff this district with Disney personnel. This is akin to giving Disney a private army, which also happened because Disney didn't trust the security of the Pinkerton Organization.

I suppose Walt felt that he owned the ultimate. Not only did he have his own police force, navy, highway department, utilities, and environmental protection agency, but he had complete control over housing, schools, and his Magic Kingdom. I think it can be argued that Walt Disney not only had a new town, but his own separate country. The laws that govern WDW are different from the surrounding area, even the state. He might not have had the firepower of a separate country, but he had the tonnage. He had a force capable of reducing the world's greatest leaders to mere children. He had the most advanced technology in the world backing him up as well as the money to attract new technologies.

I do not mean to condemn Disney for his actions, but merely to point out that Disney, the man, was much more than an imagineer of fun and fantasy. He was cold enough and shrewd enough to force his ideas onward through the use of money and power. And if this wipes out the false front of a great man, then perhaps it is time we knew the truth, that the fantasy that was created (for what?) cannot last forever. There had to be a reason why Disney Productions created a false image for Walt, and I feel it was because he had a lust for power. Walt was patriotic, but only so far as his own goals were concerned.

I have now followed Disney for many weeks; I have talked with people who have visited Disney World. I have come to understand Disney's vision for the future. It is a clean, electronic, sophisticated technological reality bolstered by amusement and entertainment, a dream world that provides an escape (maybe permanent), from the reality of today into a different sort of reality, one strengthened by technology and mechanics to provide an outlet for human creativity and education. Disney would free us from the tedium of everyday life by using technology; he wanted to institute an automated society which would allow us to emerge from the chaos of "now" into an existence of love, kindness, world brotherhood, and, one supposes, world civilization and government.

This all sounds very idealistic, doesn't it? Such world government could only happen after we were freed from having to worry about everyday things. This is not to say we could not still have jobs and individual commitments, but it would mean we would have more "free" time to be educated in the manner that Disney has been pursuing all along. One notices, except during the "duty" years of World War II, that Disney has stayed clear of war, poverty, and other bleak issues. He has concentrated instead on the pure and innocent of our world: adventure, fantasy, dreams. No one ever dreams poverty, war, and the like, not when they are dreaming about their own future. Disney's educational techniques are at best propaganda and at worst preaching. But at least this is positive propaganda.

One might well ask where this leaves such things as the human fighting spirit, soldiers, and opposing political factions, to say nothing of religion. There is obviously no place in Disney's future for anything really harmful as defined by Disney. Thus it may be necessary to channel the energy involved in such things into different areas. In order for a new reality to appear it would first have to be induced through advertising; the theme parks would have to become the new reality gradually. They are already doing this by offering the general public things which cannot be had anywhere else, and this is given as the gaudiest, most obvious, and ostentatious show ever produced. People are hypnotized by WDW; no one can complain, it is too perfect an image. As in the case of EPCOT and the World Showcase, mutual cooperation on the level that is planned must gradually replace the general view that no countries have true allies, that diplomacy is the only thing keeping us from each other's throats. This will take time, but the future is where it will happen, so there is all the time in the world.

An artist's rendering of the World Showcase planned for Disney's EPCOT.

Religion would seem to be another impediment to Disney's future. There is no reason why religion should be abolished, if indeed such a thing could be done. Rather, prejudices will have to be set aside. How can one account for the bigotry and racism in even our own society? One can't, of course, but propaganda (an old standby of world religions) will have to be used again.

What especially strikes me is the fact that although Disney Productions will make a fantastic amount of money from their projects, they are truly sincere in what they intend to do. They assume what is basically a socialistic stance, that of a classless society whose benefits are available to all, equally. The only problem with availability is that it is a qualitative concept. Apathy stands in its way, as it does in our cities today. Some will take advantage of EPCOT, some will not. The way that this might be righted remains a mystery to me, but it will have to be done, otherwise any of many situations could irreparably damage the fragile balance of the system.

Take, for example, the plight of the uneducated. In order for a world society to appear there will have to be a minimum level of education imposed on all; there must be a base to work from. The question is: Do we want Disney's vision to be our own? The answer, for this author, is yes. But what of those who have no exposure to Disney, for example, Amazonian tribesmen? Are we willing to impose our culture on all people for the sake of rewards perhaps not visible for years and years to come? The morality involved in world-scale civilization includes problems that will have to be faced. We are talking about risking all cultural individuality for a common good that is highly debatable.

It is fortunate that Disney's vision would leave cultures intact, making them subcultures only to a new all-encompassing culture. It is therefore an asset that the Disney experts have such experience in education through technology. Technology in broad terms means ease in our lives. It holds our interest because it frees our minds for other things. If this ease can be transmuted to the vision of a future society, then Disney's future world is the necessary stepping stone in man's evolution. The future might change us, but that is what we have been trying to accomplish all along. We could do a lot worse.

Finally, I feel that the EPCOT project is on the cutting edge of humanity. It is as ambitious a project as the United Nations. It combines the foremost in technology with the minds of some of the world's greatest leaders. If ever technology can be reconciled with nature, it will be done here. Disney has tried to teach our society that fantasy and reality are not so far apart. Either the gap will be bridged in EPCOT or it will be too late. While some governments have sat back and talked, a medium-sized American company founded by a poor Illinois boy is taking action. Whether Walt Disney was a businessman, animator, educator, or dream-maker has no bearing if he has indeed hatched a vision of world peace.

WPI

The Bookstore Man

"Sure. You're welcome to use the telephone, if you can find it," calls HARRY THOMPSON from the inner office adjacent to his in the WPI bookstore. "I'll be right back. Just want to tote this up on the adding machine."

Looking for the telephone on the desk of Harry C. Thompson, who is manager of college store sales and services, as well as of the bookstore, can be an adventure in itself. First, one must look through a maze of college beer mugs, around a pile of marking pens, in back of a mountain of computer printouts, and beside a stack of tumble-down memos. Finally, flushed with success, the searcher reaches for the receiver, but not before Harry returns waving an adding machine tape.

"Got your answer," he announces, a grin almost reaching his lips. "We'll be handling about 9,000 textbooks for required courses for term D."

He sits down and starts tapping on a machine that looks like a cross between a typewriter and a telephone—it has both keys and a dial.

"Be right with you. Got to get this out." In a few minutes the tapping ceases, and he says, "O.K. What would you like to know?"

Well, it would be nice to know about that machine. What is it, and what does it do?

"It's a Western Union Telex," Harry explains. "We can order from any supplier who also has a Telex just by typing out an order on the machine. The supplier gets the order right away. Speeds up delivery."

WPI had the Telex installed on a trial basis several years ago when the seven-week term was first instituted. "It turned out to be an absolute necessity," Harry reports, "because every seven weeks we have to be assured delivery of new texts. Also, it's helpful in another area. It receives every telegram that comes on campus."

Harry, himself, arrived on campus in 1964 after having spent nearly twenty years in industry. He had been assistant general sales manager for a Worcester manufacturing company. His first post at WPI was as manager of business services.

Today, in addition to his regular bookstore duties of purchasing textbooks and supplies, he also buys items for the general WPI community at the lowest prices possible consistent with good business practice. Through its combined purchasing power, the bookstore acts as a purchasing department for the acquisition and distribution of supplies.

"We are responsible for much more than a regular college bookstore," says Harry. "For example, we supply the various departments with office stationery and other paper goods. Since we have no U.S. post office, as such, on campus, we stock stamps for both students and the staff."

The bookstore also carries greeting cards, calculators, sundries, souvenirs, and the popular WPI chairs. "We always keep some chairs in stock," Harry explains. "Because of high shipping rates, we are advising prospective customers

to pick up the chairs right here at the bookstore and to take them home themselves."

The busiest days for the bookstore are the "rushes" which occur in between the five (including summer school), seven-week terms. The biggest rush usually starts with term A on Labor Day. "Inside of two days we have to furnish over 2,000 students with textbooks and supplies," says Harry. "We are on the run from early morning to late at night."

In order to keep the bookstore running smoothly throughout the year, there are four full-time employees and seven part-time student employees, who look after things. "One of the full-time employees does nothing but handle requisitions for office supplies," Harry reports. The students fill in at odd hours convenient to their class schedules.

"Say," he says, suddenly jumping out of his chair. "I'm out of cigarettes. I can't talk without smoking a cigarette." He fishes around for some change. "Be right back."

He soon returns with a cigarette in one hand and a cup of coffee in the other. He settles down, content, in his chair and takes a sip of coffee. (Barbara Hester, supervisor in the mailroom next door, says that he makes the "best darned cup of coffee on campus.")

Now relaxed, he touches on his personal life and warms to one of his favorite topics, Alpha Tau Omega fraternity. Harry is understandably proud of the WPI chapter. Presently he is chapter advisor and liaison officer of the local alumni association. For the past several years, the WPI chapter of ATO has won the national chapter efficiency award. "The award is based not only on how efficiently the house is run, but also on high academics," Harry says.

A member of Skull, and a past member of the board of the Goat's Head Pub, he is the current president of the Cluverius Society, which was originally established as a social group for alumni of all fraternities. "It's more or less an adult IFC," he explains.

Back home in North Brookfield, Harry has served as town moderator for twenty years. He is also trustee of the North Brookfield Savings Bank. "In my spare time I run my mini-farm—a vegetable and flower garden," he reveals. His fondness for plants is evident in his office. On a high shelf near a south-facing window, are several pots of ivy.

"Enough about me," he says. "Want to see the storeroom?"

The storeroom in the basement of Daniels is cavernous, windowless, and ship-shape enough for Captain Queeg. Boxes of office supplies, reams of paper, and stationery are piled neatly on steel storage shelves. WPI jackets hang in a row in a back wall cabinet. A three-foot display doll dressed in WPI shorts and shirt is stretched out on a top shelf. "Can't use that in the bookstore now," says Harry. "We don't sell that type of children's outfit anymore."

On the way out of the storeroom, he points to a hand-made sign that reads: "The WPI Dungeon Bookstore." He chuckles. "That brings back memories. When they were building the Wedge, this storeroom was the bookstore. We were down here underground for two terms. It was quite an experience. We were glad to get back upstairs."

In order to keep the paper supplies in storage in good condition, a dehumidifier is run constantly; in order to thwart fire, there is a sprinkler system overhead; and in order to deter break-ins, a sonar system has been installed. "Any unauthorized movement in either the bookstore or storeroom sets off the sonar," Harry reveals. "The high security sound waves give complete security. Should anyone try to break in, security would grab him before he got fifteen feet inside the door."

He locks the storeroom, and leads the way back upstairs to his office. Once there, he inquires, "Have we left out anything?"

How about campus authors? Does the bookstore carry their books?"

"We certainly do," Harry replies. "The WPI bookstore not only carries Dr. Harit Majmudar's book, *Introduction to Machines,* we are the sole distributors. Over a half a dozen colleges in the U.S. and Canada have ordered the book for course work."

Among other campus authors whose books are featured at the bookstore are Dr. Robert Fitzgerald, '53, associate professor of civil engineering: Prof. Joseph Mancuso, '63, associate professor of management; Dr. Arthur Gerstenfeld, head of the department of management; and Dr. Norman Sondak, department head, and Prof. Ramon Scott, associate professor of the department of computer science. "We have also carried Prof. Ray Johnson's book," Harry continues. (Prof. Johnson is with the department of mechanical engineering.)

Other publications, such as student course manuals, written by various professors and produced by the mailing and duplicating department, are on sale at the bookstore, too.

"We have just about everything that students, staff members, and alumni might wish to buy," Harry says. "We try very hard to keep popular incidental items, as well as the necessities, in stock."

He sifts through one of the stacks of rumpled papers on his desk, eventually finds a pen, and hurriedly jots something down.

Through the partially curtained window between Harry's office and the bookstore, several students can be seen walking single file through the turnstile near the entry door. The first stops by the well-stocked greeting card rack. Another shows interest in a stack of packaged graph paper. Everything orderly. Everything neat. Out there.

Focusing again on the tumbled desk top of Harry Thompson, one is tempted to remark, "Hey, Harry. Messy desk. Messy mind."

But it is probably better to keep one's mouth shut. Harry, in that sweet 'n' sour way of his might well retort, "Better a messy desk—than an *empty* one!"

WPI

Organic movements

What is new and electronic is not always the best. When it comes to pipe organs, 100-year-old models often turn out to be superior, a fact which students taking an Intersession course covering the design and structure of pipe organs found out first hand.

Take, for example, the Baldwin electronic that had been giving organist Mark Harley, '78, problems at the United Church of Shirley, Mass. A couple of years ago Mark, an electrical engineering major, approached the music committee of the church and detailed for them what was wrong with the instrument. The committee members agreed that something should definitely be done. They would have to start looking for a replacement.

"The main problem was money," says Mark. "A new pipe organ can cost between $60,000 and $100,000. An electronic one can cost over $20,000. We decided to contact the Organ Clearing House."

The Clearing House is an organ relocation service which has found homes for 1,600 old pipe organs since it began in 1959. Last fall it informed the United Church of two instruments for their consideration. One was an historic organ in Old Town, Me., which needed extensive repair. "We removed it," Mark says, "but the committee turned it down." The other organ was located in the soon-to-be-razed Sharon Lutheran Church in Selinsgrove, Pennsylvania. It was reportedly in excellent condition.

"We bought the organ sight unseen," Mark reveals. On the Thursday before New Year's Day several committee members, Pastor Leonard Silvester, and Mark rented an 18-foot Hertz truck, drove to Selinsgrove and loaded all of the parts of the organ. The next day they delivered it to the church in Shirley.

"The total price, including trucking, came to $2,520," says Mark, smiling. "We had acquired a fine, antique instrument, and we hadn't strained the church budget. We were grateful for the information that the Organ Clearing House had given us." The church was also grateful for the subsequent assistance given by Clearing House head Alan M. Laufman, president of the Organ Historical Society, Inc., and Louis J. Curran, Jr., assistant professor of music at WPI. It was under their guidance that the Shirley organ was finally installed.

"They taught a ten-day course during Intersession," Mark explains. "I was one of their students. During the course we removed two historic organs from Massachusetts churches and installed the one we had purchased for our church in Shirley."

One of the old organs saved by the eight-man WPI crew was built in Boston in 1889 by Woodberry and Harris. It consisted of two keyboards, a pedal board, and 700 pipes arranged in twelve ranks. It was located in the former Universalist Church in Melrose.

"Not all of the students helping out were musicians," says Mark. "One, however, Andreas von Huene, '78, had taken the course two years ago and was again on hand. He was a summer employee of the Fisk Organ Co. The Melrose project, in which we all participated, proved to be quite a learning experience. It was especially interesting because the organ we were removing was very similar to the one we were to install in Shirley."

Once the Melrose organ was removed, it was prepared for shipment to a church in Avalon, Calif., on Catalina Island. Interestingly, the California church had been erected in 1889, the same year the Melrose organ had been built. Also, and more unique, it had the exact space available for the size of the instrument: 13'10" high, 9'6" wide, and 8' deep. The old Woodberry and Harris organ was to replace a newer, electronic model in Avalon.

The students, having seen the insides of a large organ and taken it apart, were then ready to put together the Shirley organ. First, the troublesome electronic instrument was moved to another part of the church. (Earlier, the church had had an E. L. Holbrook tracker (direct mechanical action) pipe organ, built in 1875 and removed in 1950 when the electronic device was installed.) Next, the old pipe organ case, which had been left standing when the organ was removed, was dismantled.

"We then had to level the floor in the rear of the organ balcony," Mark reports. "We also started cleaning woodwork and organ parts with plenty of steel wool, and hot, soapy water." Felt parts and leather nuts and bushings were replaced.

At left, the Fegelmaker lying in pieces.

Above, reconstruction well underway, with the air chest in place and supporting framework over it.

Below, nearing completion, with the console complete and many of the pipes in place.

The crew took the next day off as a busman's holiday. They went to Amherst, where they moved a small, one manual William Davis tracker organ from the sanctuary to the chapel of Grace Episcopal Church — "for experience." They also drove to Williamsburg where they saw a William Baker restoration of a Johnson tracker. Meanwhile, the plasterers were finishing up in Shirley.

During the rest of the week, the group remained on the Shirley project. They erected the heavier pieces on the framework and swellbox, then connected the mechanical action parts underneath. The keyboard and valves (pallets) were connected. The stickers, which do the pushing, and the trackers, which do the pulling, were hooked up. On the final day, the pipework was set up and the blower installed, the latter being the only electric part of the organ.

"That Friday afternoon," says Mark, "I played the organ for the first time so that the rest of the students could hear what it sounded like. It proved to be in excellent condition, but just a bit out of tune. I also played it in church on Sunday."

Mark will tune the organ himself. He is familiar with tuning, because he tunes the Moller pipe organ in his home which he installed when he was thirteen.

"But helping to install this organ in our church has been more rewarding," he admits. "It was built by A. B. Felgemaker in 1905 in Erie, Pennsylvania. Opus No. 882. It has two keyboards, a pedal board, and thirteen ranks of pipes. According to the Organ Historical Society, ours is the only Felgemaker in the state of Massachusetts."

WPI

1908

George Ryan, who is currently at a rest home in Millbury, Mass., celebrated his 91st birthday on February 27th.

1915

Maurice Steele writes: "When the oldest class listed in "Your Class and Others" in the December 1977 *Journal* is 1933, something ought to be done about it! Let's have it for 1915! I have been retired for several years, but keep quite active."

1922

Each October for many years **Howard Carlson** and his wife Claire have sponsored an informal reunion of a group of classmates and their wives at their home in Sanbornton, N.H. The group has included **Roy Bennett, "Bing" Bingham, Russ Field, Carl Holden, "Deac" Parsons, J. G. Snow,** and until their deaths, **Jim Marston** and **Jack Cassie.** Last year a new recruit, **Bob Hall,** was added. "Carl's garden provides us a sumptuous banquet to highlight a day of reminiscences and new happenings," writes Mr. Bingham.

When **John A. Herr** married Mrs. Pauline Hamilton on December 12, 1977, he became the stepfather of **John M. Townsend, Jr., '42.**

1926

Charles Moran has retired as a director of the B.M.C. Durfee Trust Co. of Fall River, Mass. As a partner in the National Contracting Co., he previously was responsible for the sandblasting done during the restoration of the dome of the Capitol building in Washington, D.C. From 1945 to 1974 he was building committee chairman and president of the corporation and chairman of the board of trustees at Union Hospital. In 1971 a new hospital building was dedicated in his name. He had served as a director of the B.M.C. Durfee Trust since 1947 and will continue as an honorary director.

1928

Andrew Maston says, "The more I have talked to other guys who attended other schools, and the more I look back on my four years at Tech, the more I appreciate what a good school it was—and is. The student-professor relationship during my stay was outstanding. The atmosphere was great."

1930

After more than a year of semi-retirement, **Alfred Vibber** is back practicing patent law with Klein & Vibber in New York City. He believes that "retirement is for the birds."

1931

Now retired after thirty-five years with DuPont, **John Tuthill** is currently a commercial fisherman on a small scale. (His father and grandfather were also fishermen.) His one fish trap catches about 30,000 pounds of fish annually, which he sells to Fulton Fish Market in New York City. During the winter he works on his nets. He is located in Orient, N.Y., a ferryboat ride away from New London.

1933

Ralph Allen, who is retiring from his own business, Allen Insulation Co., has joined Anson Perley's Real Estate Agency in Damariscotta, Me. as a broker salesman. . . . **Frank** and Dee **Roberts** and **Don** and Eleanor **Haskins** spent Christmas with **Ed** and Mildred **Perkins** in Tavares, Florida. Don and Eleanor, who are from Brigham City, Utah, trailer-toured Florida during December and spent a week with Dee and Frank in Daytona. While in south Florida, they visited **Al Belcher, '32.** The Robertses write: "It didn't seem to matter that it rained all day during our WPI Xmas—as long as the snow melts in Worcester by June 9th and 10th." (Reunion time.)

1934

After forty-three years in the research and development department at Norton Co., Worcester, **Bertil Anderson** retired on Nov. 30th. He was involved with mechanical, electrical, physical and exploratory testing of abrasive and nonabrasive products and processes. His last assignment was that of senior research engineer in charge of the precision grinding unit. . . . **Clayton Hunt, Jr.** retired last year from Eastman Kodak Co. where he was a senior product development engineer. He is still living in Rochester and says that he enjoys not having to go to work in the snow.

1936

A resident of Reading, Mass., for thirty-three years, **H. Foster McRell, Jr.** has recently moved to Harwich. Before his retirement he was with Monsanto Co.

1938

Robert Evans, assistant vice president of Northeast Utilities, spoke on the topic of atomic energy at a Rotary Club meeting in Wallingford, Conn. in January. He serves as the assistant vice president of the generation engineering and construction division at NU. He belongs to ASME, the American Nuclear Society, and is past chairman of the Connecticut section of the American Nuclear Society. . . . **Allen Gridley, Jr.** retired on March 1st. He had been director of communications at Revere Copper & Brass, Inc., Rome, N.Y. He is currently located in Ft. Worth, Texas. . . . **Ravi Kirloskar** holds the post of chairman and managing director at Kirloskar Electric Co. in Bangalore, India. He is the father of **Vijay Kirloskar,** '74. . . . **Henry Ritz,** president of R & R Plumbing Supply Corp., Worcester, was recently honored at a party at the Sheraton Lincoln Inn for his forty years of continuous service with the company. His son, Jesse, who has a master's degree from Boston College, is a vice president of the company.

1939

John Harvey, Jr. has retired after thirty-six years with the Allen-Bradley Co. as a sales engineer, first in the motor control division, and later in the electronics division in the New England area. Presently he is doing electronics consulting for Allen-Bradley. The Harveys, who have three daughters and two grandchildren, are living on Cape Cod. . . . Dr. **William Kay,** a retired research chemist for DuPont, writes that he has married Marilyn Casey, and that he is currently a "non-gentleman" farmer. . . . **Frans Strandberg** has been named building engineer for Dartmouth National Bank in Hanover, N.H. He joined the bank in 1976. A member of the National Society of Professional Engineers and ASME, he is registered in Alabama and New Hampshire. Formerly he was construction manager of the Brook Hollow condominium in Hanover. He and his wife Elsie reside in Enfield.

1940

Russell Lovell, Jr. is town historian and curator of historical materials at the Sandwich (Mass.) Glass Museum. He writes: "Friends are cordially invited to stop by when visiting Cape Cod."

Cyril "Cy" **Tourtellotte** retired late last year with "distinction" from the staff of the Laboratory for Nuclear Science (LNS) at MIT. For nearly thirty-six years he had served MIT, first as a draftsman with the Radiation Lab. during World War II, and then as a supervising designer for what was to become LNS.

Cy worked directly with seven Nobel laureates in physics, the most recent being Samuel C. C. Ting, who in 1976 was honored for leading the MIT-Brookhaven collaboration which announced simultaneously with another group from Stanford-Berkeley the discovery of the J/Psi particle—a stunning development in the world of high-energy physics.

During the past seventeen years he often worked closely with **Bruce Bailey,** '51, principal mechanical engineer for LNS, especially in their efforts related to the Ting experiments at Brookhaven, and more recently at the great European accelerator storage-ring facilities at CERN in Geneva and at DESY in Hamburg.

Through the years Cy has been active with his musical interests—sax and clarinet for small, mostly weekend combos, bass for other groups,

and barbershop quartet work. He and his wife Mary are twice proud grandparents by way of their MIT-trained biologist daughter (MS, Yale; PhD, Princeton) and her biologist husband. Being among other things a skilled model maker and craftsman, Cy's colleagues and friends do not expect he will find time hanging heavy on his hands during retirement.

1941

J. Philip Berggren was recently promoted to director in the commercial insurance department at Aetna Life and Casualty, Hartford, Conn. He joined Aetna in 1946 as a safety engineer and served in that capacity in Washington, D.C., Philadelphia, and Hartford. Later he was manager in Buffalo and Syracuse, and superintendent of technical services at the home office. In 1970 he was appointed manager.

He belongs to the American National Standards Institute, AIA, the American Industrial Hygiene Association and the National Fire Protection Association. He is a registered professional engineer, chairman of the Glastonbury (Conn.) Sewer Commission, and a certified safety professional.

1942

Salvatore Bellassai was recently promoted to vice president of engineering at Transcontinental Gas PipeLine Corporation, a subsidiary of Transco Companies, Inc., Houston, Texas. Formerly manager of engineering, he was an engineer with contractors designing and building the company's original pipeline before joining Transco in 1951. He is a member of the American Society of Mechanical Engineers Gas Standards Committees, American Society of Oceanography, the National Association of Corrosion Engineers, and the Houston Engineering and Scientific Society.

1943

Edwin Campbell has been named head of the new national level department of human resources development for Industrial Risk Insurers, Hartford, Conn. He will be responsible for developing, maintaining, and coordinating training programs for engineering, underwriting, and clerical personnel and educational courses for insureds. He has had over thirty years of experience with IRI in engineering and underwriting.

IRI, an association of forty-five leading insurance companies, specializes in providing underwriting and loss prevention services related to industrial, oil, petrochemical, and service risks worldwide. It has international property liability in excess of $375 billion.

Jack Durkee currently resides in Camp Hill, Pa. and formerly (1976) held a visiting professorship at Cornell University. Information in the December *Journal* stating that he lives in Bethlehem, Pa. and is presently affiliated with Cornell was incorrect. Our apologies.

Colin Handforth, a partner with his son-in-law in Handforth & Larson, Manzanita, Oregon, is the only practicing consulting engineer (civil engineer and surveyor) on the north coast of the state. He writes: "I give fatherly advice to a number of small towns . . . and I enjoy it tremendously." Last year he built himself a house and this summer will build another for "Ron and Colleen." He also plans to finish his barn. Colin is an Alumni Fund agent.

Positive news about negative feedback

If you have a computer-controlled sewing machine in your home, you can thank Dr. Harold S. Black, '21. The computer-controlled sewing machine is one of the latest of many applications of the negative feedback amplifier, which Dr. Black invented over fifty years ago as a 29-year-old systems engineer at the Western Electric Company's old West Street laboratories in New York City.

In an article in the December 1977 issue of *IEEE Spectrum*, Dr. Black writes that at the time "I did not foresee the tremendous range of applications that would open up for it in almost every type of communication and control system, from radio to automatic pilots, from computers to artificial limbs."

The concept of the negative feedback amplifier came to him in a flash on August 2, 1927 while he was crossing the Hudson River on the Lackawanna Ferry on his way to work. Suddenly, after several years of hard work, he realized that if he fed part of the amplifier output back to the input, in reverse phase, and kept the device from oscillating, he would have exactly what he wanted: a means of canceling out the distortion in the output. He opened his morning paper and on a blank page of the *New York Times* he sketched a simple diagram of a negative feedback amplifier plus the equations for the amplification with feedback.

January 1928 marked the start of the development of a carrier system for transcontinental cables—the first application of the invention. The system was required to transmit nine voice channels on a single 1.3 mm-diameter nonloaded, paper-insulated pair in an underground cable. Each cable was to contain 68 such insulated pairs, and the spacing between the repeaters was to be 25 miles.

In 1930 Western Electric delivered 78 of the negative feedback amplifiers for a field trial of the system at Morristown, N.J. The test used a 25-mile section of cable containing 68 pairs, two terminal feedback amplifiers, and 68 repeaters. The speech quality proved to be excellent.

Although the invention was successful, the U.S. Patent Office didn't issue a patent for it until December 21, 1937. Initially, the Office did not believe that it would work. The British Patent Office was also skeptical and asked Dr. Black to submit a working model! Finally, in 1937, a U.S. patent was granted after evidence was submitted proving that 70 amplifiers were working successfully in the telephone building at Morristown.

With the 50th anniversary of the invention now behind him, Dr. Black says, "It is gratifying to me to observe that negative feedback amplifiers and the feedback principle have found many new applications to all types and forms of communications systems—underground, underwater, in the air, via satellites, in outer space."

Equally important is the application of negative feedback to a rapidly growing number of diverse fields, including biomechanics, cybernetics, bioengineering, artificial limbs for the disabled, computers, medical equipment and instruments, and new consumer products.

In 1957 Dr. Black was awarded the Lamme Medal for his various technical achievements, including his contributions to the theory and application of pulse-code modulation. Among his other honors are a U.S. War Department Certificate of Appreciation during World War II and an honorary doctor of engineering degree from WPI (1955). He holds 62 U.S. patents and 271 patents in 32 other countries. The author of numerous technical papers, his definitive book, *Modulation Theory*, was published in 1953. He holds 10 fellowships in professional societies.

Dr. Black, who in 1921 joined the Western Electric department which later became part of the Bell Telephone Laboratories, remained with Bell until 1963. Later he became Principal Research Scientist with the General Precision Corporation. He has been a communications consultant since 1966.

Summing up the impact of Dr. Black's career, an industry observer says, "It is no exaggeration to say that without Black's invention (negative feedback amplifier), the present long-distance telephone and television networks which cover our entire country, and the transoceanic telephone cables, would not exist."

WPI

1944

Arthur Stowe is now district manager for Teledyne-Vasco in Agawam, Mass.

1945

Anson Fyler, a WPI trustee, was recently named president and chief executive officer of Hersey Products, Inc., Dedham, Mass. Previously, he was president of the Superior Electric Co. in Bristol, Conn. . . . **Albert Talboys**, who had been in Port-of-Spain, Trinidad, with the Pan American Health Organization, is now located in Longwood, Florida.

1946

John Metzger, Jr., a DuPont employee since 1946, has been named vice president of the photo products department at DuPont Company in Wilmington, Delaware. He had been a general manager of the department. Earlier he was director of the poromeric products division of the fabrics and finishes department, director of the fluorocarbons division of the plastics department, assistant general manager of the polymer intermediates department, and assistant general manager of the photo products department. He serves as president of Junior Achievement of Delaware, Inc.

Edmund Oshetsky was recently appointed to the new position of vice president of manufacturing for Erving Paper Mills, Erving, Mass. In this capacity he is now a member of the executive committee. For the past year he has been general manager of manufacturing. Previously he had twenty-five years of administrative and operational responsibilities with Lincoln Pulp and Paper, Boise Cascade and Scott Paper. Erving is a leading manufacturer and converter of paper products including napkins, towels, printed specialties, health care products, and packaging industrial papers.

Charles Richardson serves as director and his wife Mildred serves as a co-director and administrator of Learning Foundations (The Tutoring Center) in Hauppauge, N.Y. The Center provides individualized instruction in basic academic skills at all levels and has shown positive results in clients aged 5 to 55 and from kindergarten through college age. Emphasis is placed on reading, English, math, speed-reading, exam preparation and testing, covering aptitude, achievement, and learning disabilities. Staff members are certified teachers.

1947

John Williams, Jr., vice president of the Torrington Company's heavy bearings division in South Bend, Ind., has been transferred to the firm's corporate headquarters in Torrington, Conn. Starting as a sales trainee in 1947, Jack spent nine years as a district sales engineer and manager at Dallas and Los Angeles. He went to South Bend in 1958 where he advanced to general manager of the midwest facility. Subsequently he became vice president of worldwide heavy bearings operations and a director of the company.

1948

Dr. **Robert Lerner** of MIT and Mrs. Mary Lou Lerner, leader of a Cadette troop in Harvard, Mass., have returned from a trip to mainland China. The Lerners were part of a ten-member delegation of IEEE which toured the country as guests of the Chinese Electronics Society. They were greeted by a National Day Celebration in Peking, went sightseeing in five cities, and were feted at banquets. The wives of delegates toured schools, factories, communes, and children's palaces. While in Hong Kong, they visited Girl Guide headquarters. The Lerners comment, "The Chinese were happy to tell us about their way of life; never, however, did they ask about ours."

Richard Noble works for Data General Corp. in Westbrook, Me., where he is an industrial engineer. . . . **Irwin Vanderhoff** has been elected senior vice president of Equitable Life Assurance Society of America, where he is in charge of business development and finance.

1950

Mark FitzMaurice, son of **William FitzMaurice**, is a freshman at WPI.

1953

Dr. **John Gregory,** director of the cardiopulmonary department at Overlook Hospital in Summit, N.J., also serves as director of the hospital's mobile intensive care units (MICU) program. During the February blizzard, the mobile units responded to an avalanche of emergency calls. Each MICU, a mini-hospital on wheels, includes a portable EKG machine, suction equipment, an oxygen system, and drugs and telemetry gear. Most MICU calls are for heart attacks, auto accidents, or other serious emergencies.

1954

John Greenaway, Jr., SIM, holds the post of president of Peterson Steels, Inc., Union, N.J. . . . **Roy Hayward, Jr.** was recently promoted to manager of marketing services at Astra Pharmaceutical Products, Inc., of Framingham and Worcester. . . . **King Killin** has been named vice president of engineering for U.S. Reduction Company, a wholly-owned subsidiary of American Can Co.

1955

Lt. Col. **Dean Carlson** (Ret.) is now director of training and chief of the property management division for Mann Associates, Inc. Last year he joined Mann as manager of the firm's Severna Park (Md.) office after sixteen months as vice president of Price Realty. Mann Associates is one of the top realty companies in Anne Arundel County.

1958

Walter Veith, president of Sterling Precision Export Corp., West Palm Beach, Fla., reports that being able to speak Spanish, German, French, and English is a definite asset to his business. He feels that his speaking his customers' language establishes a greater amount of confidence and goodwill. International trade, however, can be frustrating and requires a lot of patience. It often takes several days to get an appointment with a foreign businessman, plus a few more to start business rolling. Strikes and unfamiliar holidays can also hold things up, as well as the frequent unreliability of transportation. But Veith has patience, and points out that he likes to have the opportunity to sell products that the buyers have confidence in. His company operates four divisions: replacement automobile parts; industrial products; financial services; and real estate. He travels some 100,000 miles a year trying to stay ahead of both domestic and foreign competition.

Robert Weinberg holds the position of president at Economy Electric Supply, Inc., Manchester, Conn., the state's largest electrical distributor. He also serves as chairman of the board of Precision Dynamics, a New Britain manufacturer of solenoid valves and chairman of the board of Therma Ray Mfg., Inc., an Old Saybrook manufacturer of ceiling radiant electric heating systems. The Weinbergs have two daughters at home, Karen, 12, and Lisa, 10.

1959

Robert Kelley is now a senior manufacturing engineer at Maremont Corp., N.E. Division, in Saco, Me. For three years he was a consulting engineer, mainly in the firearms industry. . . . **Jack McGinnis** serves as production manager at Hardigg Industries in South Deerfield, Mass. Hardigg is known for engineering excellence in plastic rotational molding, molded polyurethane foam, reusable plastic containers, and package cushioning devices. Jack lives in Westhampton, Mass. with his wife Roberta and children, Michael, Maureen, and Kathleen.

1960

Dr. **Robert Condrate, Sr.** has been promoted from associate professor of spectroscopy to professor of spectroscopy at New York State College of Ceramics at Alfred University. . . . **John O'Connell** serves as principal of Construction Engineering Services in Newbury, Mass.

1961

Jim Kachadorian, owner of Green Mountain Homes, Royalton, Vt. (05068), reports that one of his two-story, solar-designed models was heated for just $249 during the severe Vermont winter of 1976-77. He has written an article concerning the feasibility of passive solar heat used in combination with wood heat, which is included with the company brochure kits. An article describing the firm's unique solar-slab method of home construction was featured in the December 1976 *WPI Journal*.

The Norton Spirit. Winner and bearer of the prestigious No. 1 on the 1978 racing circuit based on its phenomenal performance with Tom Sneva, the USAC National Champion.

Together, this Norton-sponsored racing team, headed by Roger Penske, has rolled up an impressive number of firsts:

Winner of the 1977 USAC National Championship and Citicorp Cup.

Winner of the Schaefer 500.

Winner of the Texas 200.

Winner of racing's Olsonite Triple Crown, based on driver-car performance in the three USAC 500-mile races.

Winner of the pole position in the 1977 Indianapolis 500 and the first car to officially break the 200 mph barrier at the Indianapolis Motor Speedway.

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World's largest manufacturer of abrasives.

World's leading producer of diamond drilling bits.

Fastest growing name in industrial safety protection products.

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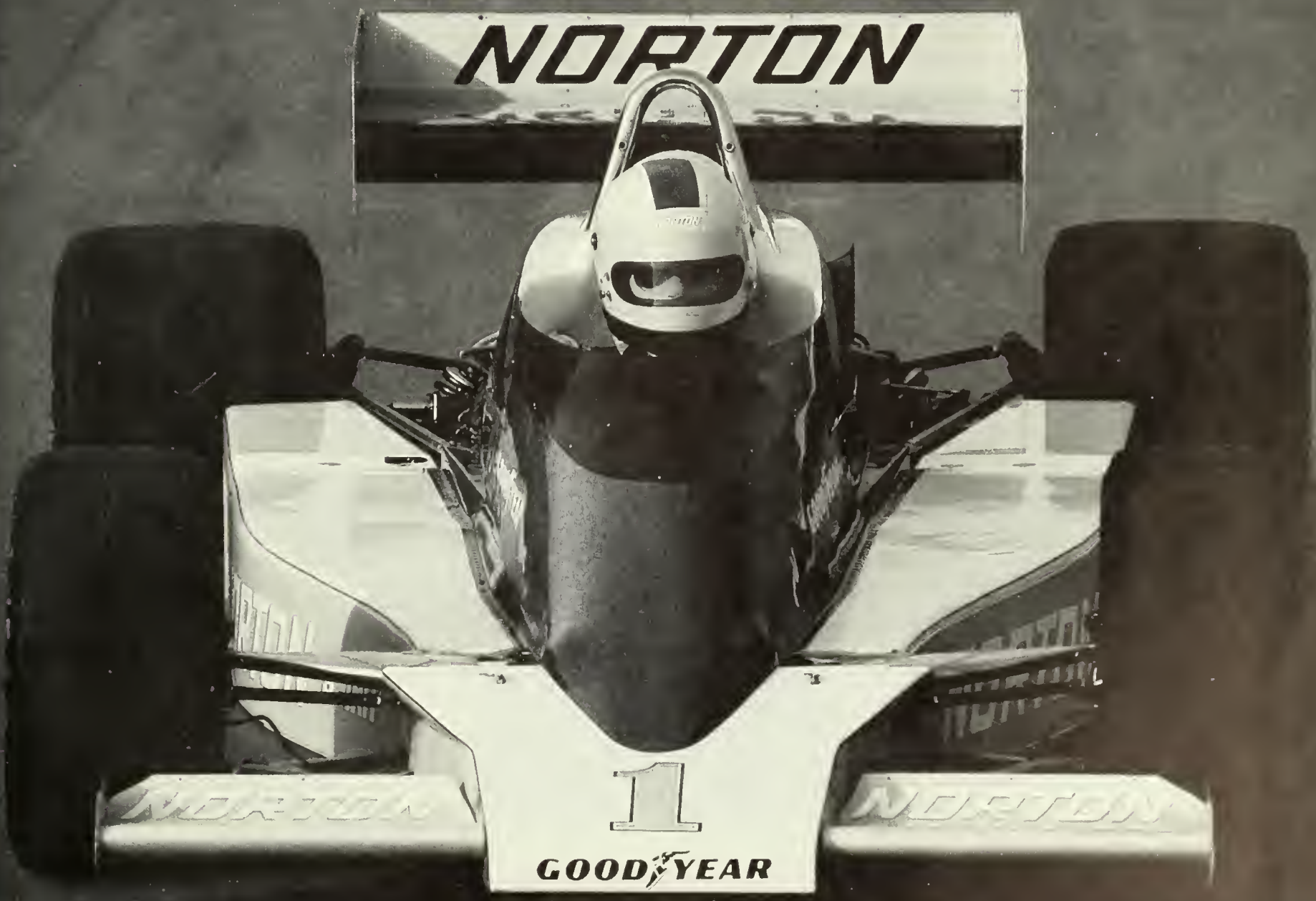

1962

Dr. **Kenneth Anusavice** is presently assistant professor of restorative dentistry at the Medical College of Georgia. He, his wife, and two children reside in Augusta. . . . Recently **Jon Sauter** was promoted to engineering manager for target detectors in the Orlando division of Martin-Marietta Corp. in Florida.

1963

Carl Freeman is director of marketing at Litton Industries in College Park, Md. . . . Dr. **Robert Murphy** has accepted a new position as chief of planetary atmospheres programs at NASA headquarters in Washington, D.C. He is also serving as the program scientist for the Pioneer-Venus probe scheduled to arrive at Venus in December.

1964

H. Louis Lion is a manager of quality control and product reliability at Fenwal Inc. in Ashland, Mass. . . . **Peter Marston** wrote "Capacitor Fusing to Overcome Tank Rupture" which appeared in the December issue of *Transmission and Distribution.* He is employed in the distribution systems department at Northeast Utilities Service Co. He joined Connecticut Light & Power in 1964. . . . **Paul Ramsden, Jr.** was recently named director of the Cortland (N.Y.) Laboratory at Smith-Corona Operations. He will be responsible for directing the engineering laboratory, including product development, engineering, testing, and analysis. Previously he was chief engineer for Centronics Data Computer Corp. in Hudson, N.H.

1965

H. Slayton Altenburg, still with Ametek-Westchester Plastics where he is manager of engineering, is now located in Nesquehoning, Pa. . . . **Clinton Kucera** serves as manager of industrial service at GE in Cleveland, Ohio. . . . Continuing with IBM, General Technology Division, **Peter McCormick** has transferred to Burlington, Vt. He is involved with LSI circuit development. . . . **Steve Sutker** holds the post of corporate OEM marketing manager at Interdata in Oceanport, N.J. He is responsible for all OEM marketing efforts, marketing research and competitive analysis for the corporation. Steve and his wife Carol and their beagle, Oliver, reside in Middletown, N.J.

1966

▶*Married:* Capt. **Eugene R. Dionne** and Capt. Margaret A. Harris, USAF, last September at the U.S. Air Force Academy in Colorado Springs, Colorado. Mrs. Dionne was formerly stationed at the Academy before being transferred in November. After being involved for five years with the Defense Meteorological Satellite Program as launch vehicle project officer, and later as spacecraft systems manager, the groom has transferred to the Secretary of the Air Force, special projects, where he is chief engineer. He is stationed in Los Angeles.

Roland Bouchard currently serves as a project engineer at Lear Siegler, Inc., in Grand Rapids, Mich. . . . Recovering from a disabling accident suffered several years ago while he was working for the Navy, **William Collentro** has taken a part-time job in the chemistry department at Woods Hole Oceanographic Institute. . . . Dr. **John Lauterbach** holds the post of manager of chemistry at the Pillsbury Co. in Minneapolis, Minn.

1967

▶*Born:* to Mr. and Mrs. **Steve Cotter** their first child, Stephanie Jean, on November 20, 1977. Steve works with Eastern out of Logan Airport and the Vermont Air National Guard flying the Cranberry. The Cotters are also in the interior decorating business (paint, wallpaper, carpeting, etc.) in Laconia, N.H.

Edward Ciarpella continues as a teacher of secondary school mathematics at Tiverton (R.I.) High School. Currently he is president of the local Teachers' Association, which he had formerly served as chief negotiator. . . . Dr. **M. H. Dwarakanath,** who received his PhD from Brooklyn Polytechnic last year, is now a senior specialist engineer at Boeing Computer Services in Seattle, Wash. . . . **Edward Gallo** was promoted to major in the U.S. Army in February. This is his second year in the math department at the U.S. Military Academy at West Point, N.Y., where he teaches upper level math electives.

Jim Lawson is now a business systems consultant at Hammermill Paper in Erie, Pa. . . . **Gary Willis** has been named manager of home office sales operations at Foxboro (Mass.) Co., worldwide producer of instruments and systems for the process industries. Previously he was manager of power sales operations. In his new post he will be responsible for the company's chemical, food and drug, metals, oil and gas, power, pulp and paper, and textile industry sales departments, as well as special accounts, systems sales development, and international sales coordination, and marketing services operations. He joined Foxboro in 1975 as a major project coordinator in power sales operations.

1968

Francis Barton holds the post of North American field service financial manager at Digital Equipment Corp., Maynard, Mass. . . . **Richard Brodeur** has left the Army and is now employed by the EMTECH division of American Electronic Laboratories as a field engineer. . . . **John DeMeo** was recently appointed systems manager and coordinator of computer services for Regional School District #13 in Durham, Conn. For the past six years he has been teaching math. Earlier he was a statistical analyst for Pratt & Whitney Aircraft. He has an MS in mathematics from RPI and a sixth year certificate in education from Central Connecticut State College. The DeMeos have two children, Dawn and Scott.

Vin Genereux has been promoted to operations planner for the Prince Matchabelli division of Chesebrough-Ponds in Clinton, Conn. . . . **Richard Hedge** is employed as a process engineer at American Hoechst in Leominster, Mass. . . . **Allen Palmer** is an electronics engineer in the tranducers and arrays division at the Naval Underwater Systems Center, New London, Conn. He and his wife Rosemary have a two-year-old daughter, Amy. . . . **Jim Raslavsky** currently holds the post of plant manager at Viking Yacht Co., New Gretna, N.J., where he also serves as production manager and personnel manager. He does the hiring, reviewing, and promoting. He has established a complete job grading and evaluation system which involved writing job descriptions for the entire 180-man Viking operation. He has also set up procedures for other manufacturing and personnel matters. . . . **Richard Rubino,** MNS was recently made a member of the Civitan Club, a service organization in Meriden, Conn. He is president of Century 21 Mark IV of Bristol, Plainville, and Southington, is a member of the Bristol Board of Realtors, and maintains interests in industrial education. The Rubinos have four children.

1969

▶*Married:* **John S. Starsiak** and Miss Joan K. Leonard in Newton, Massachusetts on October 1, 1977. The bride graduated from Boston College and teaches in Wellesley. Her husband is a chemist for the state of Massachusetts.

▶*Born:* to Mr. and Mrs. **Stephen O. Rogers** a son Brian on September 28, 1977. He joins brother Timothy, 3. Stephen is a senior supervisor with Du Pont in Gibbstown, N.J.
is a senior supervisor with Du Pont in Gibbstown, N.J.

Joel Cehn is an energy-environment consultant at Teknekron in Washington, D.C. . . . Continuing with Raytheon, **Michael Hart** currently serves as a radar system analyst in the Missile System Division in Bedford, Mass. He has his MSEE from Northeastern University. . . . **Philip Kazemersky** holds the post of program manager at the Tennessee Valley Authority in Chattanooga, Tenn. He has a PhD from Ohio State. . . . Presently **Gary Leventhal** is associated with New Tone Amusements, Inc. in Roslyn Heights, N.Y. He earned his MBA at Northeastern.

1970

▶*Born:* to Mr. and Mrs. **Stephen Bernacki** a son, Stephen, Jr. on May 15, 1977. Dr. Bernacki is a physicist at MIT's Lincoln Laboratory. . . . to Mr. and Mrs. **Alan F. Hassett** their first child, Brooke Audrey on September 30, 1977. "Chip" is manager of the Dover (Del.) office of O'Brien and Gere Engineers, Justin and Courtney Division. . . . to Mr. and Mrs. **Alan J. Nizamoff** a son David Alan on September 1, 1977. Alan is a project engineer for Exxon Research & Engineering Co. He is going to Ft. McMurry, Alberta, Canada to work on a startup project for Syncrude Canada, Ltd., which is partly owned by Exxon.

Dr. **Frederick Golec, Jr.** presently serves as a senior chemist I at U.S. Vitamin Pharmaceutical Corp. in the chemical research division, process research and development. The corporation is the pharmaceutical research center of the health care division of Revlon, and is located in Tuckahoe, N.Y. It is involved in the anti-hypertensive ethical pharmaceuticals market as represented by the products Hygroton and Regroton. Dr. Golec received his PhD in organic chemistry from the University of Washington in January. In 1974 he was elected to Phi Lambda Upsilon Honorary Chemical Society. He is married to Susan Robinson Golec, who has her master's degree in psychiatric social work from the University of Washington in Seattle, and her BS from Northeastern.

Roger Henze is a senior planner for transportation services for Chatham County, Savannah (Ga.) Metropolitan Planning Commission. . . . **Steve Johnson** is now employed at the Babcock and Wilcox Alliance Research Center, where he is the principal investigator in a program aimed at minimum emissions of nitrogen oxides from coal-fired utility boilers. This program, funded by the Electric Power Research Institute, is in response to the government's goal of limiting this pollutant to 100 p.p.m. or less by 1985. . . . Capt. **Alan Prucnal,** a company commander with the U.S. Army Corps of Engineers, is presently located in Germany.

1971

Joseph Ausanka is an insurance agent with the Ayres Agency (State Mutual) in Worcester. . . . **Daniel Demers** works for GE in Lynn, Mass. . . . Previously with Electronic Instrument and Specialty, **Allen Downs** now holds the post of staff engineer at Tele-Resources in Ballston Lake, N.Y. The Downses are building a log cabin in Greenfield, N.H. Recently they enjoyed a trip to Oregon. "Sauce," who is setting up a studio in their colonial farmhouse outside of Schenectady, has been chosen to be a part of the Smithsonian Institute Sites show, "New American Monotypes." . . . Dr. **Irving Engelson** is associate dean of the College of Engineering and Technology at the University of Nebraska in Omaha. . . . **John Pankosky** is associated with Nettco Corp., Everett, Mass. . . . Presently **Anthony Yankauskas** serves as director of capital management at Continental Can Co., a company of the Continental group, in Stamford, Conn. Previously he was assistant director of financial reporting at the Continental Group, Inc., New York City.

1972

▶*Married:* **James P. Colangelo** and Rosanna Mondazzi on December 17, 1977. The bride received her RN from the University of Rochester and is currently pursuing a master's degree in nursing at Boston College. The bridegroom is a medical resident at Hartford (Conn.) Hospital.

▶*Born:* to Mr. and Mrs. **Richard Panton** a son Richard Russell on August 8, 1977. Panton was recently promoted to senior engineer on special assignment to Nomex textile manufacturing at Du Pont's Spruance plant. The Pantons are located in Chesterfield, Va. . . . to Mr. and Mrs. **Donald A. Taft** twin sons, Benjamin Nichols and William Biggins on October 3, 1977. . . . to **Jack** and **Lee Small Zorabedian,** a son, John III, on June 12, 1977. Jack has been promoted to production engineer for the foam and bellaplast departments of Sweetheart Plastics in Wilmington, Mass., where he was formerly foam department supervisor. Also, he is a town meeting member and a member of the finance committee in Reading.

Steven Bauks continues as a senior experimental engineer for United Technologies Power Systems Division at the fuel cell facility in South Windsor, Conn. He has a son Jesse, 4, and a daughter Sarah, 2. . . . **Michael DiBenedetto** serves as an assistant engineer at E.U.A. Service Corp., Lincoln, R.I. Last year he received his MSEE from WPI. . . . **Adrien Gaudreau, Jr.** has been promoted to captain in the U.S. Air Force. Currently he is working for the Alaskan Air Command as a computer programmer for the Alaskan Norad Region Command and Control Center. . . . **Rae Johnson** works as an application engineer at Waterbury Farrel, Thompson Grinder Division in Cheshire, Conn.

1973

▶*Married:* **Kevin J. Crossen** and Kathleen Powers on October 9, 1977. The groom is a research chemist at Walter Reed Research Institute. Last year he received his master's degree in biochemistry from the University of Rhode Island. . . . **Robert W. Kibler** and Miss Barbara A. Buschner on January 21, 1978 in South Hadley, Massachusetts. Mrs. Kibler graduated from Fitchburg State College and formerly taught in Leominster. Her husband is a product engineer at Rodney Hunt in Orange, Mass.

▶*Born:* to Mr. and Mrs. **Donald Kray** a daughter Kara Lynn on January 19, 1978. Don is a development superintendent for Aetna Lite & Casualty in their group data processing department in Hartford, Conn. . . . to Mr. and Mrs. **Richard F. Silvestris** a daughter Julie Marie on December 28, 1977. Richard is presently a production supervisor for Polaroid Camera Division in Norwood, Mass.

Conrad Baranowski continues as an electronics design engineer for the Powercube Corp. in Waltham, Mass. Presently he is a project engineer, redesigning a first generation Off Line Switching Power Supply. He has four patent applications pending with the U.S. government having to do with high density electronics packaging. . . . **Bruce Beverly,** a staff engineer for Haley & Aldrich, Inc., Cambridge, Mass., is currently concerned with geotechnical engineering for the Massachusetts Bay Transportation Authority. His responsibilities include the Red Line Extension NW-Harvard to Davis subway extension. . . . Capt. **Richard Brontoli** has completed the Engineer Officer Advanced Course. He will be stationed for three and a half years at Baumholder, Germany with the U.S. Army 293rd Engineer Batallion, a rapid runway repair unit dealing with concrete and asphalt paving. . . . **Thomas Cawley** is an engineer in the electrical division at Stone & Webster in Boston. He earned his MS at Northeastern.

John Cirioni works as a store manager for Southland Corp. in Dallas, Texas. . . . **Paul Clark** serves as a senior field service engineer at Digital Equipment Corp. in Marlboro, Mass. . . . **Jon Franson** holds the post of weather editor for the U.S. Air Force. Presently he is with Croughton RAF of the United Kingdom. . . .**Robert Haywood,** who has received his MBA from Harvard, is a DBA student and research assistant at Harvard Business School in Newton, Mass. . . . **Roger Lavallee** has just completed his first year as a programmer-analyst with Life Insurance Marketing and Research Association in Hartford, Conn. . . . **Ruey Sen Lin** is employed as an instructor at Digital Equipment in Marlboro, Mass. . . . **Bruce Nunn** has been appointed to the Middlefield (Mass.) finance committee. He and his wife **Allison Huse Nunn** have been residing in Middlefield for over a year. . . . **Richard Olson** holds the post of resident chemical engineer for Industrial Risk Insurers in Brussels, Belgium. . . . **Gerald Otte** is finishing his fifth year of teaching in Malaysia at Tun Habab Secondary School in Johore. He is in charge of modern mathematics and additional mathematics for form 4 (like tenth grade in the U.S.). His wife Rosni is an RN at Kota Tinggi Hospital. . . . **Clifford Peterson** has been appointed assistant treasurer of the Bank of Tokyo Trust Company in New York. He is also a loan officer at the main office. . . . **Bill Rutherford** works as a plant engineer at Merrimack (N.H.) GRC. The Rutherfords have two children, Wendy and Michael.

1974

Jonathan Barnett now works for Firepro, Inc. where he holds the post of fire protection engineer. . . . **Daniel Brune II** has been promoted to director of manufacturing for Louis Lefkowitz & Bro., Inc., Milltown, N.J., a manufacturer of camera carrying equipment and leather tennis grips.

Magician **Steve Dacri** appeared on the Merv Griffin TV show on February 8th. Recently *Worcester Magazine* ran a cover article about Steve which stated that he plans to move soon to California. . . . **Vijay Kirloskar** is now a quality assurance engineer at Germanium Power Devices Corp. in Andover, Mass. He has been with the company for two years. He is completing his master's degree in management science at WPI.

Eugene Lukianov presently serves as resident engineer at Maremont Corp./Gabriel Shocks in Saco, Me. . . . **David McGuigan** is a member of the technical staff at Hughes Aircraft in Culver City, Calif. He and his wife, Kathleen, reside in Los Angeles. He received his MS in physics from the University of Rochester. . . . **Richard Mellor** works as an engineer in mechanical controls design with the aircraft engine group at GE in Lynn, Mass. . . . Brother **Jim Morabito,** MNS, will be ordained a priest of the Roman Catholic Church in Columbus, Ohio on May 19, 1978. He is a member of the Salesian Congregation, whose principal aim is youth work. He has spent three years teaching at Don Bosco Technical High School in Boston, Mass. . . . **Stanley Purington** serves as a structures engineer at Rohr Marine in Chula Vista, Calif. . . . **Al Simonti** is an estimating engineer for Stone & Webster in Boston.

Robert Slack holds the post of production engineer at Dow-Badische Co. in Anderson, S.C. . . . **Andrew Wemple** has been promoted to senior actuarial associate at State Mutual Life Assurance Company of America, Worcester. He began work at the firm in 1974 as an actuarial assistant, and was promoted to actuarial associate in 1976. . . . Continuing with Procter & Gamble, **John Young** is now electrical manager for the firm in Mehoopany, Pa.

1975

▶*Married:* **John Aubin** to Sheila Moulton of Norwich, Vermont in December. Mrs. Aubin is a registered nurse at the Newington VA Hospital. Her husband is an analyst for the town of West Hartford, Conn. He recently completed a master's degree program in public administration at the University of Pennsylvania. . . . **Gordon D. Henley** and Miss Carol A. Johnson in Cleveland, Ohio on November 26, 1977. The bride graduated from Miami University and has her MS in library science from the University of Illinois. She is currently acquisitions librarian at Texas Christian University in Fort Worth. The groom, who has his MSEE from the University of Illinois, is an aerosystems engineer for General Dynamics' Fort Worth Division. . . . **Terry W. Penner** to Donna Padget on Christmas Eve in Manchester, New Hampshire. Mrs. Penner graduated from Daniel Webster Junior College in Nashua and received her medical laboratory technician degree from Colby-Sawyer College, New London, N.H. Her husband is manager of C. S. Woods Co., Inc., in Manchester. . . . **Charles Riedel** and Miss Barbara Yankowski in Beacon, New York on October 8, 1977. Mrs. Riedel has a degree in veterinary science from Becker Junior College. The bridegroom is employed by Region I N.Y. State Department of Transportation in the Division of Traffic and Safety.

▶*Born:* to 2/Lt. **Robert Howard** and Mrs. Howard a daughter Deborah Lynne on November 27, 1977. Presently Robert is stationed in Warren, Mich. with the U.S. Army Tank Automotive Materiel Readiness Command. He is the engineering directorate's executive officer.

Alan Bergstrom continues his graduate work and duties as a research assistant in the department of biochemistry at the University of Massachusetts in Amherst. . . . 2/Lt. **Kent Berwick** is starting undergraduate pilot training at Vance AFB in Oklahoma. . . . **Robert Byron** was recently promoted to the post of group leader of catalyst development in the experimental development department at UOP in Riverside, Ill. . . . **James Costello** is a civil engineer at Tennessee Gas Pipeline in Houston, Texas. . . . A temporary assignment with Monsanto at the Avon plant in Martinez, Calif., has turned into a permanent position for **Mario DiGiovanni.** . . . **Allen Downs,** who received his MS in chemical engineering last spring from the University of Pennsylvania, is now a project engineer for Stauffer Chemical Co. in Visalia, Calif. at a cottage cheese whey processing plant. He is working for his MBA at California State University at Fresno. During his spare time he enjoys hiking and back-packing. . . . **F. Douglas DuGrenier** has completed his MBA at the University of Massachusetts, where he is working for his PhD in business administration.

Robert Fried received his MSEE last year and is now working for his PhD at SUNY at Stony Brook. He is also doing research on fuel cells for the U.S. Department of Energy at Brookhaven National Laboratory. . . . **Richard Harabedian** serves as assistant superintendent of construction at Associated Construction in Hartford, Conn. . . . The **Robert Horners** have bought a house in Glendale, N.Y. Mrs. Horner is a medical assistant working with a cardiologist. . . . **Gary Kiontke** has been promoted to actuarial assistant in the actuarial department at Monarch Life Insurance Co., Springfield, Mass. Last year he joined Monarch as an actuarial trainee.

Raymond Mott was recently promoted to group leader in charge of catalytic petrochemical development. The job entails supervision and planning of research in the petrochemical area at UOP, Inc., Riverside, Illinois. . . . Currently **Richard Murray** is a junior optical engineer at Itek Corp., Lexington, Mass. He has received his MS from the University of Rochester. . . . **Robert Murray** is a mechanical product support engineer in the equipment division at Raytheon Co. in Waltham, Mass. . . . **Jay Pulli** is a candidate for his PhD in geophysics in the department of earth and planetary sciences at MIT in Cambridge. . . . **William Stieritz** is a member of the technical staff at TRW, Inc., in Redondo Beach, Calif. Last year he received his MSEE from the University of Massachusetts. . . . **Donald Taddia** serves as a staff engineer for the Department of Aviation, Allegheny County, at Greater Pittsburgh International Airport. He and his wife reside in Sewickley, Pa. . . . **Mark Youngstrom** is presently a project engineer at Wright Engineering in Rutland, Vt.

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▶*Born:* to Mrs. **Andra Eslami Finkel** and her husband Charles, a son Dustin Philip on January 22, 1978. Andra currently works for Hughes Aircraft in Los Angeles, Calif., where she is a corporate patent agent. She will attend law school next fall. Her husband is a commercial pilot for Krueger Aviation in Santa Monica.

David Andel is now a development engineer for AVCO, Lycoming Division, in the lubrication systems group. Lycoming is located in Stratford, Conn. . . . **Mark Coulson** is a nuclear test engineer for General Dynamics, Electric Boat Division, Groton, Conn.

Thomas Descoteaux is employed as a project manager at ENCON, Inc. in Chicopee, Mass. . . . **Edward Fasulo, Jr.** has been promoted to project leader at American Cyanamid Co., Bound Brook, N.J. With the firm since 1976, he is employed in the chemical intermediates manufacturing department. He had been a day production supervisor. . . . **Edward Floyd** has joined Kennedy Engineers in San Francisco, Calif. . . . **James Hetherman** is a graduate research assistant doing research on deep-sea sediments. Recently he participated in research cruises to Bermuda and Hawaii. He expects to receive his MS in ocean engineering this summer. . . . **Paul Lessard** works as a planner for the Federal Highway Administration in Baltimore, Md. . . . **Joseph Lucchesi** is a Passionist Brother at Holy Family Monastery in West Hartford, Conn. . . . **Pamela Baradine Maynard** works as a programmer/mathematician for RCA in Waterford, Conn.

James Roberge is doing graduate work at the University of Rhode Island. . . . **Gerard Robidoux** serves as an electronic engineer with the Naval Underwater Systems Center in Newport, R.I. . . . **Jonathan Rourke** is a research assistant at MIT in Cambridge, Mass. . . . **Arthur St. Andre,** SIM is the new president of Thomson National Press Company of Franklin, Mass. He started with Thomson in 1975 as general manager of manufacturing and engineering. Earlier he had been associated with Heald Machine Division of Cincinnati Milacron. Thomson manufactures platen presses for the paper and plastic converting industry. . . . **Mark Smith** teaches mathematics at Woodstock (Vt.) Country School. Formerly he taught at Maine Central Institute. . . . **Neal Wright** has received his MS from North Carolina State University. He is a second lieutenant in the U.S. Army Corps of Engineers and has been slated to be stationed at Ft. Devens, Mass. in April. . . . **Joseph Yu** is a design engineer at Westinghouse in Hyde Park, Mass.

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Roman Adrianowycz is an insurance property loss adjuster for Alexander & Alexander, Inc. in New York City. . . . **Bruce Baran** serves as a teaching assistant in the Northeastern University department of physics. His wife, **Carol Sigel Baran,** is an assistant editor at Benwill Publishing, Boston. . . . **Adolfo Chandek** is assistant programmer at IBM in Boca Raton, Fla. . . . **Donald Edwards** holds the post of associate vice president of Yankee Atomic Electric in Westboro, Mass. . . . **Domenico Grasso** is at the School of Civil Engineering, Purdue University, West Lafayette, Indiana.

John Greaney has joined the batch facilities department of the manufacturing and engineering division of Corning (N.Y.) Glass Works. . . . **Paul Hajec** is working for his master's degree in transportation planning at Northeastern University in Boston. . . . **Keith Harrison** in studying for his master's degree in transportation planning and engineering at Polytechnic Institute of New York in Brooklyn, where he is a full-time research fellow. . . . **Robert Prettyman** is a junior programmer at IBM in Boca Raton, Fla. . . . **Scott Shurr** works as an associate software engineer at Digital Equipment Corp. in Maynard, Mass. . . . **Steven Sweeney** has joined the Soils Bureau at the New York Department of Transportation in Albany. . . . **Rick Wheeler** is currently located at Hanover Gardens, Apt. C-3, Pottstown, Pa. He is a product sales representative for Firestone Plastics Company.

L. Norman Reeve, '06, one of the nation's foremost authorities in hydraulic engineering, died on February 8, 1978 in Falmouth, Massachusetts. He was 93 years old.

Mr. Reeve, who was concerned with the construction of many large power and flood control dams, retired in 1948 from Stone and Webster Engineering Corp., Boston. At the time of his retirement he was an advisory member of the U.S. Committee on Large Dams, a part of the International Commission on Large Dams.

He designed the Conowingo Dam and hydroelectric power plant on the Susquehanna River in Maryland, completed in 1928 at a cost of $60 million. At the time, the plant had the largest power generating capacity of any such plant in the world, 378,000 horsepower. The water wheels and generators were the largest then in existence. He also designed dams and power plants for the $20 million Shogawa Project in Japan in 1923 and served as a consultant on the $40 million Jitsugetsutan Project in Formosa in 1928.

Mr. Reeve was born in Worcester on March 14, 1884. In 1906 he graduated from WPI with a degree in civil engineering.

The first ten years of his professional career were spent with the U.S. Bureau of Reclamation where he was involved in the design of power and flood control dams at Yellowstone, Grand Valley, Arrowrock, Jackson Lake, and the Shoshone River, all in the Rocky Mountain region. He then designed a copper plant in Chile. With America's entry into World War I, he left Chile to design the plant and shipways at the famous Hog Island Shipyard, the site of the world's first production line for merchant ships. Later he was appointed supervisor of shipbuilding there.

In 1920, he joined Stone and Webster as a hydraulic engineer, specializing in the design and construction of hydroelectric power projects in and out of the U.S. In World War II he was appointed a project engineer in charge of designing the James River Shipyard for the Navy's Bureau of Ships. Also, during the war, he was associated with the Manhattan Project at Oak Ridge, Tenn., where the first atomic bomb was produced.

Mr. Reeve was a life member of ASCE, a member of the Boston Society of Civil Engineers, the Northeastern Society of Civil Engineers, and the National Society of Professional Engineers. He was a registered professional engineer in several states, including Massachusetts.

Through **Leon W. Hitchcock, '08,** we have learned of the recent death of **Robert E. Dunklee,** an alumnus of the former Washburn Apprentice School at WPI.

Mr. Dunklee was born in West Brattleboro, Vt. on Sept. 18, 1881. In 1904 and 1905 he attended the two-year Apprentice School conducted by the Washburn Shops. He was the founder of Dunklee's Machine Shop, the first electric welding shop in Vermont. He was among the first people in Vermont to use an automobile in winter employing light motor oil, and one of the earliest to build a personal radio.

Before starting his own shop, Mr. Dunklee was with M.S. Perkins Machine Shop in Keene, N.H., where he installed mill water wheels and the former L. H. Stellman & Son Machine Shop, Brattleboro, where he was involved in the development of the Franklin automobile. He retired from Dunklee Machine Shop in 1962 at the age of 80.

Mr. Dunklee was a trustee of Meetinghouse Hill Cemetery for 60 years, serving 20 years of that time as business manager. He belonged to the Masons, the Commandery, Green Mountain Club, Vermont Historical Society, and Windham County Farm Bureau. He was the father of **Robert E. Dunklee,** '40.

Walter E. Brown, Sr., '08 passed away recently at Somerset Hospital in Somerville, New Jersey. He had been a resident of Bound Brook, N.J. for many years.

Ralph G. Gold, '10, of Middletown, Rhode Island passed away in Newport Hospital on January 22, 1978 at the age of 89.

He was born on January 3, 1889 in West Stafford, Conn. and graduated as an electrical engineer from WPI in 1910. During his lifetime he was with GE testing department in Schenectady, N.Y., taught electrical engineering from 1911 to 1914 at Fukien Technical School in Foochow, China (under the auspices of the YMCA), and spent a year as a student at Hartford (Conn.) Divinity School. For twelve years he was a secretary of the YMCA in Foochow. When the Chinese Revolution broke out in 1927, he returned to the U.S. where he became a junior secretary of the YMCA in Lynn, Mass. From 1930 until his retirement in 1954, he was general secretary of the "Y" in Newport, R.I.

During World War II Mr. Gold and his wife, Helen, entertained servicemen stationed in Newport nearly every weekend at their home. He had belonged to the Lions Club, the Newport Chamber of Commerce, the Governor's Advisory Committee for the Blind, and was active on various church boards and committees.

Chester W. Aldrich, '20, retired sales director of the National Biscuit Co., died in Stamford (Conn.) Hospital on January 22, 1978.

A native of Uxbridge, Mass., he was born on June 11, 1899. He was a chemistry major at WPI. For over forty years he was with Nabisco. He retired in 1964.

Mr. Aldrich, a member of SAE, belonged to the AARP, the Leisure Time Men's Club, Congregational Church, Meadowview Rod and Gun Club, and the Masons. He was a director of Pilgrim Towers in Stamford, a church-related housing project for the elderly.

Clifford C. Fifield, '26, of Orford, New Hampshire passed away recently after a short illness.

He was born on October 12, 1902 in Manchester, N.H., and later studied at WPI. During his career he was with Colorado Fuel and Iron Corp., Palmer, Mass., and Wickwire Spencer Steel in Clinton, Mass. For a time he was vice president of New England Equipment Sales Corp. of Contoocook, N.H.

Mr. Fifield belonged to Phi Gamma Delta. Active with the Boy Scouts, he was presented with the Silver Beaver award for his contributions to scouting. He had also served as master of Trinity Lodge (Masons) of Clinton, Mass. While a resident of Orford, N.H., he had served on the school board, and had been health commissioner and a member of the cemetery association.

Frank E. Buxton, '28, died suddenly at his home in Wellesley, Massachusetts on Christmas Day. He was 72.

A retired senior engineer for the New England Power Service Co. of Westboro, Mr. Buxton was also a member for many years of the Wellesley Congregational Church. He belonged to Sigma Xi and Tau Beta Pi and was a life member of the American Wood Preservers Association. He was a member of the Massachusetts Society of Professional Engineers.

Mr. Buxton was born on December 24, 1905 in Eastford, Conn. In 1928 he received his BSCE from WPI.

Harry M. Bagdigian, '33, died in the Memorial Hospital, Worcester on January 18, 1978 at the age of 66.

A Worcester native, for twenty-three years he had been a letter carrier for the Worcester Post Office. He belonged to the Men's Club of the Armenian Church of Our Saviour and Branch 12 of the National Letter Carriers' Association.

Earl C. Conant, Jr., '39, died recently in Boynton Beach, Florida.

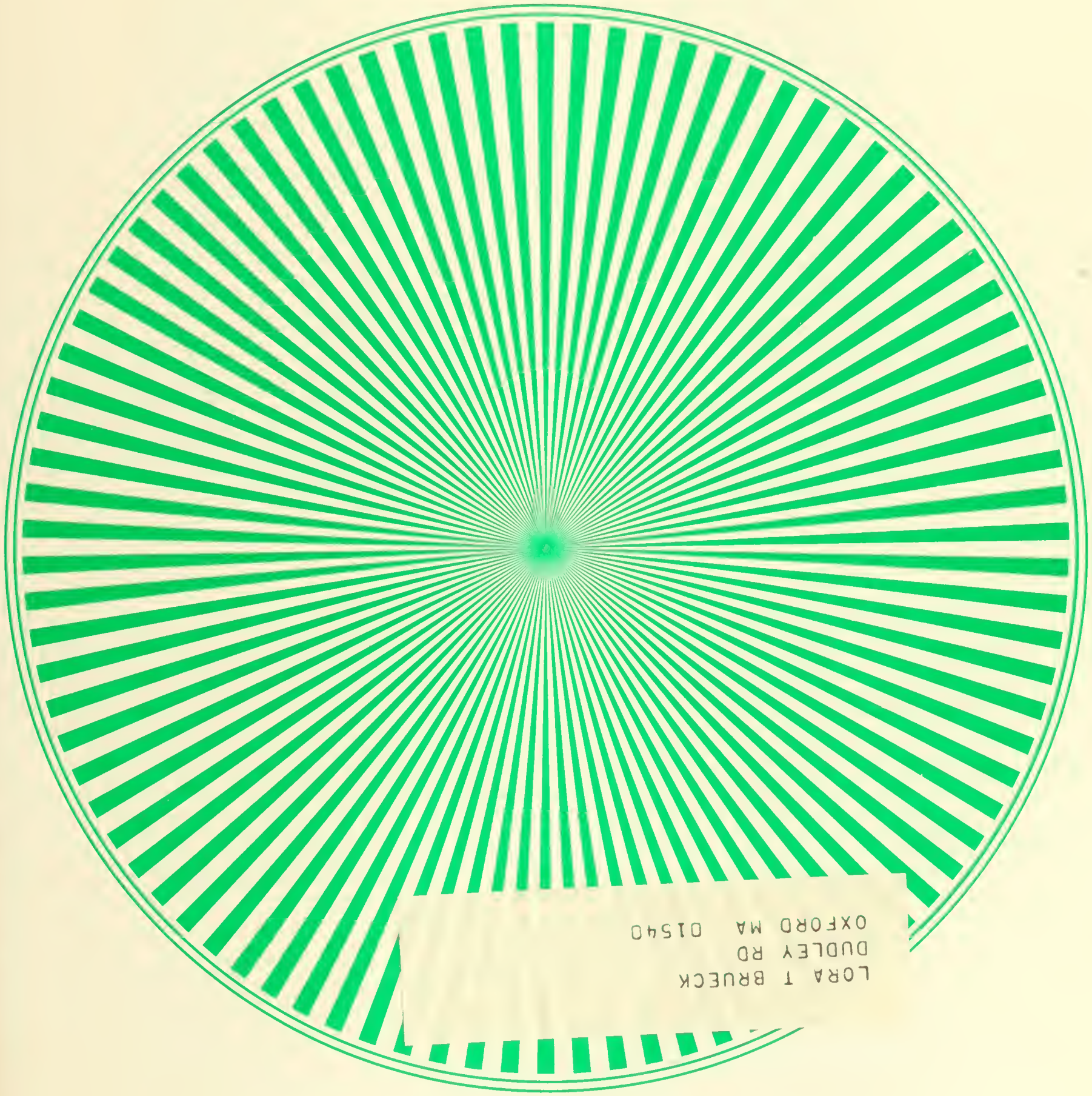
He was born in Pittsfield, Mass. on July 11, 1917, and studied at WPI. He had been employed by Warren-Bigelow Electric Co., Worcester. For a number of years he served as president of Electric Maintenance Corp., and treasurer of Eadon Realty Corp., Ramcon Corp., and Electric Service & Supply Co., Inc.

Edward T. Kelley, '42, died in Gardner, Massachusetts on July 5, 1977.

He was born on October 3, 1918 in Gardner. For many years he served in the U.S. Army. He belonged to Phi Kappa Theta.

August 1978

WP journal



What is smaller than . . .?

WPI

HOMECOMING '78

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OCTOBER 20 & 21

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The weekend begins with a concert on Friday night. Join in the Saturday fun at the Tailgate Picnic and Barbecue. Then cheer the WPI football team on to victory at the afternoon game against Bates.

The newest event featured is a 4-mile Alumni road race which will finish at half-time at the 50 yard line.

Laugh with comedian Robert Klein at the Saturday "Night Club" and then dance the night away at the Homecoming Party.

There's more! But why don't you come home and find out for yourself.

COME HOME TO WPI

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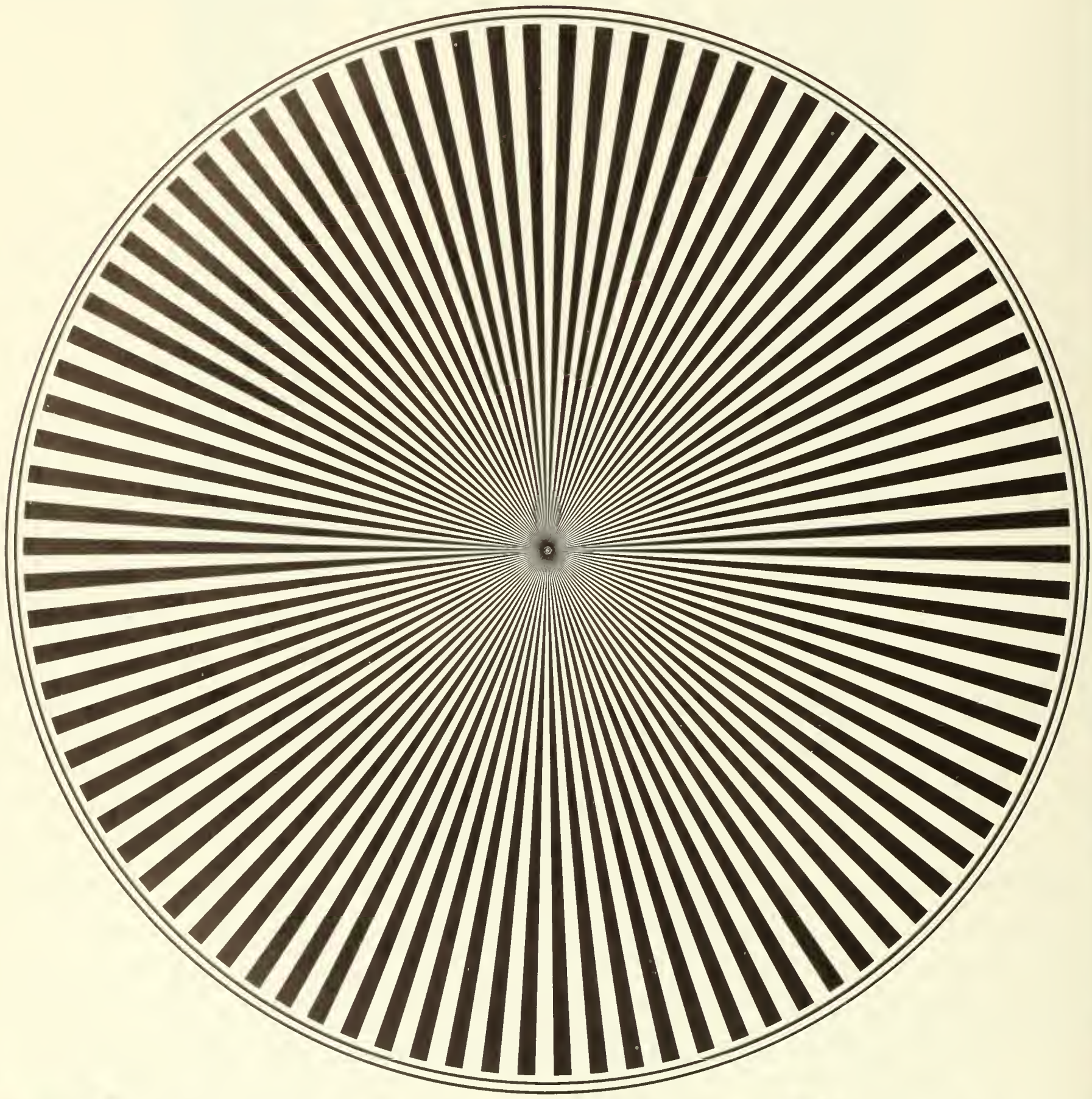
Within the drawers of my file cabinet are bulging manila folders bearing titles such as strangeness, charm, truth, beauty and illusion. The diagrams, notes and papers contained in these folders pertain not to a field such as philosophy but rather to the latest and most central theories in elementary particle physics. Strangeness, charm, and the others serve to characterize quarks — particles that may eventually provide the ultimate answer to the age-old question:



What is smaller than..?

by Jack O'Reilly, '75

Particles and Quarks

Prior to the 1950s, the situation in the world of particle physics, then still a branch of nuclear physics, was relatively simple. There were just about a handful of known sub-atomic particles: the proton, the neutron, the electron, the anti-electron (positron), the muon and the photon. Although these particles and their interactions were, for the most part, not well understood, there was the hope that the situation would soon be remedied. And why not? Wasn't it true that machines to study these particles, namely particle accelerators, were being built larger and larger every year? Since accelerator size is a most crucial determining factor in regard to the energy at which these particles can be produced, wasn't it logical to expect these machines to lead to a more thorough understanding of the high energy properties of these particles? Furthermore, it was hoped that this examination of the particles' high energy properties would lead to an overall elucidation of their structure and interactions and then finally to an all inclusive theory of matter.

Unfortunately (fortunately?), there was a flaw in this line of reasoning. True, the development of more powerful accelerators brought about the desired investigation of the known particles at higher and higher energies. However, the new machines also led to the production of totally new and unexpected particles. These new particles had not been previously observed for two main reasons: (1) due to their high mass the old accelerators were not energetic enough to produce them; and (2) due to their short lifetimes and low production rates they weren't easily detected in the only other kind of particle production experiment, namely the collision of cosmic rays with nuclei in the earth's atmosphere.

In any case, the discovery of each of the first four or five of these higher mass particles was accompanied by the hope that the mysteries of the field would NOW finally be solved. After all, it was thought, how much longer could the rate of discovery continue? There must be some limit to the number of possible particles (states) — mustn't there?

In the late 1950s and the early 1960s, with the rate of discovery showing no signs of abating, particle theorists began looking in earnest for evidence of subtle similarities between members of the quickly enlarging family of particles. They began to think that maybe — just maybe — many of the particles which had now been discovered weren't really as elementary as had originally been thought. Possibly, some of them weren't actually new particles but merely higher mass versions of old ones. The analogy with an atom is somewhat appropriate. The electrons revolving about a given nucleus can be excited and thereby forced to go into higher energy orbits. The resulting atom is essentially a new energy state but its main properties have changed little. It is still the same type of atom as it was before excitation. So it was thought that certain particles were just excited versions of other, more common particles.

In this vein, the early 1960s saw the publication of numerous papers purporting to classify most of the then-known particles into divisions or groups based on some of their common properties. Of these papers, the most significant ones were a pair of independently researched papers written by two theorists who were later to win the Nobel Prize for their work. These papers, written by Murray Gell-Mann and George Zweig, both contained the idea that the majority of the known particles could be considered as being bound states of even more elementary, and yet undiscovered, particles. These more basic structures are now almost universally called by the name Gell-Mann gave them: **quarks.**

The Gell-Mann–Zweig proposal had a majestic beauty to it. Rather than complicate the then quite messy situation, it served to greatly simplify it. It presented a simple 'deck' of 18 quarks out of which the majority of the 40 or so then known particles could be constructed. This construction process was simply the combining, on paper of course, of either a quark/anti-quark pair, a quark triplet or an anti-quark triplet. Moreover, the most enthralling aspect of the theory was that each of the new 18 quarks could be considered as different manifestations of but a single quark state. Quite a simplification indeed.

The initial deck contained three quark types or *flavors*: *up* (denoted by the letter **u**), *down* (**d**) and *strange* (s) (sometimes called sideways). Also, each of the flavors came in three 'colors': red, white and blue. This system, however, yields only nine quarks — the remaining nine were the anti-quarks of the first nine. (Recall the anti-electron?)

If the reader still believes the situation to be complicated perhaps he is correct. But, when compared to the pre-1964 situation of many seemingly unrelated particles, the new concept was almost a theorist's dream. This is not, however, to say that the new theory was perfect. What theories are? The major drawback to the new classification scheme was that, in order to properly combine to form the known particles, the quarks had to be given non-integral values of charge. The proton, for example, was said to be formed out of two 'up' quarks (each with 2/3 of the proton's charge) and a 'down' quark (with −1/3 the charge of a proton). Although this was not a new idea — Sakata had proposed a similar model in 1956 — it still sent shivers down the spines of the more conservative members of the physics establishment.

More complete acceptance of the theory was later achieved when Gell-Mann realized that there was one quark combination that should exist but could not be associated with any of the already discovered particles. It was a state composed of three strange quarks, denoted as 'sss'. By convention, an 's' has a 'strangeness' of −1, thus the new particle was thought to have a 'strangeness' of −3. Rather than modify his theory, Gell-Mann stated that the experimental physicists had failed to uncover a particle. Using the relatively simple mathematical relationships that his theory led to, he predicted that a new particle with specific characteristics should exist. Soon the predicted particle, called the omega-minus, was discovered very

close in mass to where it had been predicted to be. From this point on, acceptance of the Gell-Mann–Zweig theory became more widespread. Over the past decade it has managed to weather numerous experimental upheavals and, with a few additions, remains in the forefront of physics research today.

More Particles and more quarks

The additions referred to above pertain to new quarks added to the original theory. It is now coming to be accepted that there are at least six quark flavors rather than the original three. Since, as far as we are now concerned, no new colors have been introduced, there are therefore 18 quarks and 18 anti-quarks. If the quark situation seems to be getting somewhat unwieldly . . . it is. But so is the known particle situation. There are now over 150 so-called 'elementary' particles — the vast majority of which can be constructed from quarks. Moreover, the particles that can't be constructed out of quarks aren't supposed to be. That is, they really do seem to be elementary. These exceptions — the photon, the graviton, the electrons, the muons, the neutrinos, the gluons and the intermediate vector bosons — supposedly form, together with the quarks, the basic building blocks of absolutely all matter.

Just as the strange quark had a quality referred to as *strangeness*, the three additional flavors also pertain to specific particle qualities which have little to do with the names given them. The best known of these flavors is *charm*. It was first proposed by Glashow and Bjorken in 1964, and evidence of a particle actually containing a charmed quark was uncovered in 1974. This particle, which managed to achieve front page status in many of the nation's newpapers, was called the psi. It was just the combination of a charmed quark (**c**) and a charmed anti-quark ($\bar{\mathbf{c}}$). This state is simply represented as $\mathbf{c\bar{c}}$.

Theoretical introduction of the charmed quark along with the subsequent discovery of a particle thought to contain such a quark naturally led to the prediction of other charmed particles. That is, physicists expected the **c** to combine with the other quarks so as to form more 'charmed' states. Such states might be represented by the quark configurations: $\mathbf{c\bar{u}}$, $\mathbf{c\bar{d}}$ or $\mathbf{c\bar{s}}$. As it turned out, the past few years have seen all of the above mentioned quark combinations discovered. For the record, the states in question represent the D^o, D^+ and F^+ mesons. (Mesons are quark/anti-quark pairs while particles containing three quarks, the proton, for example, are baryons. States containing four or more quarks and/or anti-quarks may be possible but needn't be discussed here.)

The other quarks which are currently undergoing the process of being accepted are labeled *truth* (**t**) and *beauty* (**b**) by the majority of the physics community but *top* and *bottom* by the more conservative members. Current experimental evidence concerning the existence of particles with the attributes of *truth* and *beauty* is nonexistent and sketchy, respectively. This situation, however is not expected to remain this way for more than a few years. The hope in the verification of their existence lies in the next generation of more powerful particle accelerators. (Does this sound familiar?)

Beyond *truth* and *beauty* are two other not yet generally accepted quarks: *illusion* (**i**) and *optimism* (**o**) (also called *inside* and *outside*). The latter has been proposed on purely aesthetic grounds and refers to the optimistic statement: "Oh, God, I hope this is the last quark."

What does the quark model tell us?

Beyond simply providing a method of constructing known particles out of supposedly elementary particles, the quark model provides an explanation of other phenomena related to particle properties.

A particularly important example involves the decay modes of certain particles. As Nature has arranged it, the vast majority of the known particles are unstable. That is, after a time interval subsequent to their production, they decay into other particles. This time period is most definitely a function of the particle involved, and ideally, its measurement allows physicists to infer a significant amount of information concerning the basic structure of the particle undergoing decay.

Prior to the introduction of the quark theory, although the decay schemes of the known particles had been determined, physicists were most often unable to predict the decay modes of a given particle before discovering them. However, the Gell-Mann–Zweig theory coupled with additional mathematical work of Gell-Mann and others, served to provide insights into the decay processes of many of the newly discovered particles.

By considering the decay modes of the constituent quarks rather than those of the particles themselves, theorists were greatly able to increase their ability to predict the decay modes of the new particles. Moreover, this method allowed scientists who were in search of yet undiscovered particles to predict what the most mathematically favorable mode(s) to search for would be.

A prime example of this last technique involves the previously mentioned F^+ meson. (A similar particle of opposite charge, the F^- is also predicted by the model.) Recently discovered after having been postulated a few years ago, the F^+ has several possible decay modes. Since it is a $\mathbf{c\bar{s}}$ system the state prior to its decay contains only two quarks. Of these, consider the case where only the 'charmed' quark is unstable. In fact, it undergoes the decay process $\mathbf{c \rightarrow usd\bar{s}}$. Thus after the F^+ decay has occured, there are four quarks: $\mathbf{us\bar{d}s}$. Given that the quarks then form mesons (they do), and recalling that a meson is a quark/anti-quark pair we see that there are two possible final state quark combinations: (1) $\mathbf{s\bar{s}} + \mathbf{u\bar{d}}$; and (2) $\mathbf{u\bar{s}} + \mathbf{s\bar{d}}$. From Table 1 it can be seen that these combinations do indeed represent known particles. The predicted final states are in fact: (1) $\eta\pi^+$; and (2) $K^+\bar{K}^o$. Thus two possible decay schemes of the F^+ are:

TABLE 1

PROPERTIES AND QUARK COMPOSITIONS

OF SOME OF THE PARTICLES MENTIONED IN THE TEXT.

Greek Symbol	*Common Name*	*Mass (proton≡1)*	*Quark Composition*	*Charm*	*Strangeness*
π^+	pi-plus	.149	$u\bar{d}$	0	0
K^+	K-plus	.526	$u\bar{s}$	0	1
$\overline{K}^0$	K-zero-bar	.530	$s\bar{d}$	0	−1
η	eta	.585	$s\bar{s}$	0	
p	proton	1	uud	0	0
n	neutron	1.001	udd	0	0
Ω^-	omega-minus	1.783	sss	0	−3
D^0	D-zero	1.986	$c\bar{u}$	1	0
D^+	D-plus	1.991	$c\bar{d}$	1	0
F^+	F-plus	2.164	$c\bar{s}$	1	1
ψ	psi	3.299	$c\bar{c}$	0	0

$F^+ \rightarrow \eta + \pi^+$
$F^+ \rightarrow K^+ + \overline{K}^0$.

The quark diagrams pertaining to these modes are shown in Figure 1.

Using this information, a search last summer found the F^+ by detecting its $\eta\pi^+$ decay mode. The $K^+\overline{K}^0$ mode is not experimentally easy to locate but experiments to find it are currently underway in several parts of the world. In any case, the discovery of the F^+ via the quark theory prediction of its decay modes provided yet another bit of evidence confirming the validity of the quark model. Furthermore, as the reader has seen, the theory's method of predicting a few of the decay modes of the F^+ is very straightforward.

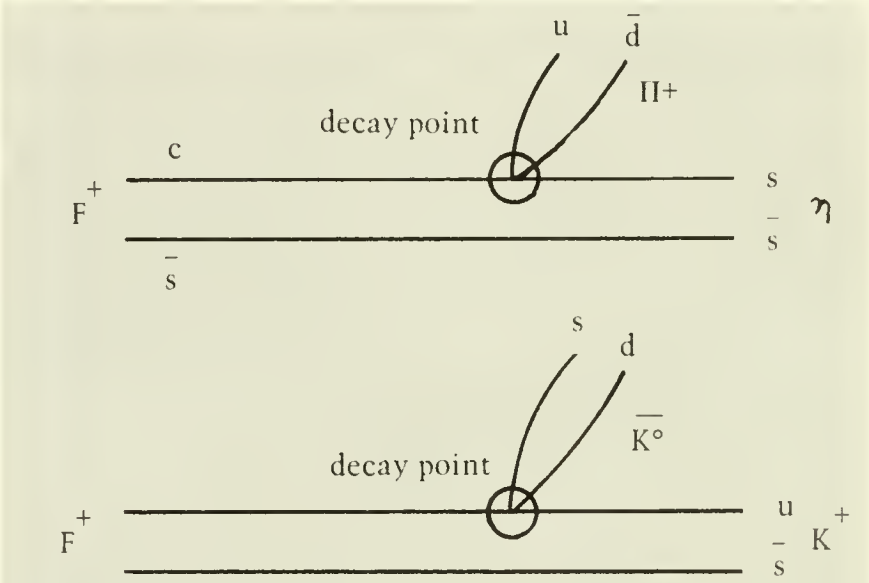


FIGURE 1

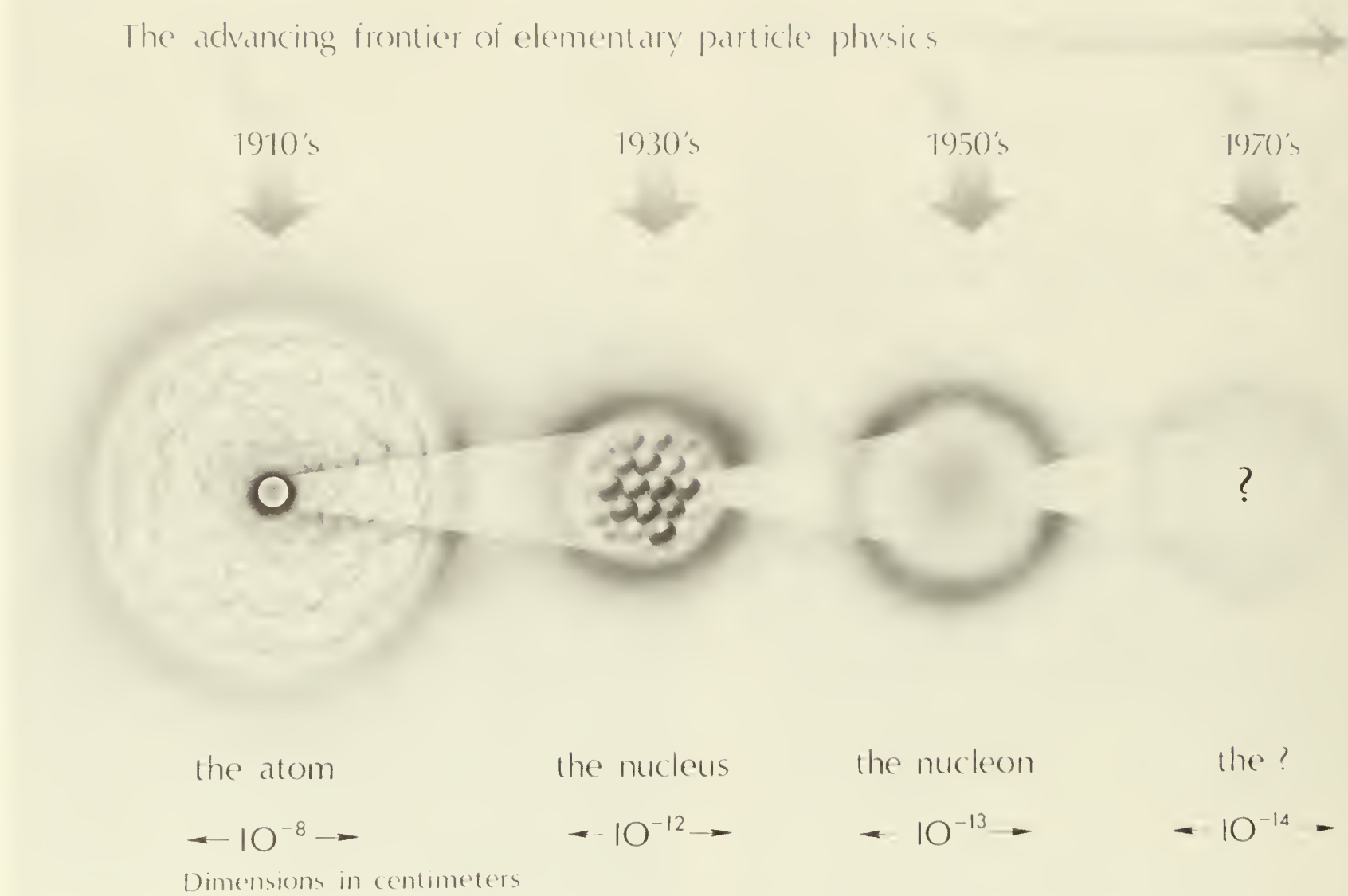
QUARK DIAGRAMS OF TWO POSSIBLE F^+ DECAY MODES.

Quark slavery via gluons

Before the reader comes to the conclusion that the quark theory provides all the answers to all the questions, let me mention that there is one semi-troublesome aspect of the model. It is this, in fact, that may be serving to block the theory's full acceptance by the physics community. This problem is the inability of physicists to find a free, i.e. non-bound, quark. To say the least, many person-years of work have been expended in the hope of finding a quark existing out of the pair or triplet states which characterize mesons and baryons, respectively. Examples of the searches which have been undertaken in regard to these fractionally charged particles include: an examination of ancient ocean-bed sediment; composition tests on meteorites; and a study of moon rocks. There have been, of course, the more standard physics experiments one of which will later be discussed.

Despite all of these angles of attack, the quark has so far proven to be totally elusive. A similar occurrence in almost any other theory of similar age might well bring about its downfall. The quark theory, however, has been so otherwise successful that the failure to find free quarks has only slightly slowed down the theory's multitude of proponents.

The solution to the problem of no free quarks may be contained in one aspect of the theory itself called *slavery*. It is thought that it may be essentially impossible for two quarks to be separated by a distance greater than about 10^{-15} meters. This confinement would be a logical result if the (attractive) force between two quarks increases as the two particles get further apart. Like the original quark



Graphic representation of the dimensions involved in elementary particle physics. Diagram by Walter Zawojski.

concept, this is a novel idea. Indeed, both the forces with which the reader is most familiar, the gravitational and the electromagnetic, get weaker with increasing distance.

If indeed, the force between quarks becomes larger as the quarks begin to separate, it is possible to conccive of the force actually reaching infinity. This value, of course, could only be approached asymptotically. Here, the result would be that quarks would only be allowed to exist in multiples. Thus, prevention of isolated quark states is indeed quark slavery.

In general, if two particles are known to exert forces on each other, they do so by exchanging another particle. Such is believed to be the situation with quarks. It is the exchanged particle that serves to very effectively keep the quarks together. In that moment of sheer brilliance which occurs once in a person's lifetime, an unnamed physicist suggested the name *gluon* (pronounced 'glue-on') for the exchange particle. Actually, there are thought to exist an octet of gluons whose properties differ slightly. As might be expected, it is not thought that the gluons may exist as free particles. But, just as with quarks, searches for free gluons are currently being undertaken.

Having reached this point, the reader is probably shaking his head. The direction of motion, however, is uncertain to me. If he has automatically accepted everything I've said as merely confirming the fact that he "never really understood what those people were doing anyway," then his head might be bobbing up and down. If, on the other hand, the reader's head is swinging horizontally he is more skeptical and has most likely come to the conclusion that there is quite a bit of "fudging" going on.

To those of you of both directions, I can honestly say that your feelings are shared by physicists throughout the world. There are many first-rate scientists who ardently believe that matters in the field of particle physics are getting out of hand. They believe that the answer does not lie in complicating the theory by postulating particles with strange properties and even stranger names. Rather, many of them believe that somewhere behind the red, white and blue facade of gluons, intermediate vector bosons, and virtuously named quarks, sits a beautifully simple model. Based on the universal symmetries of nature, this sought after theory would unify all the forces of the universe. It would range from the infinite(?) force of gluons to the nearly, but thankfully not totally, negligible force of gravity — with a few stops in between.

Given the general title of unified (force) field theory, this area of research has taken its toll in years of seemingly fruitless human toil. Albert Einstein, in fact, spent a considerable fraction of his life somewhat unsuccessfully pursuing this topic. He readily admitted that he found it more difficult than general relativity to which it is somewhat related.

Whether or not you tend to believe the quark theory, a final decision on its validity must await the outcome of further experiments. Experiments attempting to prove or disprove the quark model fall into two general categories: (1) searches for free quarks; and (2) searches for more mesons (pions, etas, etc.) and baryons (protons, neutrons, etc.) and a determination of their properties. In regard to the former area, the discovery of a quark would obviously serve to cement the quark theory into a permanent position in that lattice called physics. However, a failure by experimenters to discover such a particle would not necessarily lead to the theory's downfall. As we have seen, the concept of slavery would then be moved into a prominent position in the theory.

Quark production via accelerators

Since they were first invented in the 1930s, particle accelerators have experienced many changes and improvements. Originally they were designed to cause accelerated particles, mainly electrons, to collide with stationary targets such as liquid hydrogen. Recently however, developments in numerous fields of engineering and the basic sciences have allowed the construction of accelerators that cause two beams of moving particles to collide with each other. The advantage of this procedure over the original one is that more energy is available for subsequent particle production. The analogy usually drawn is that two cars colliding head on will have more energy available for deformation when they are both moving at for example, 50 miles per hour than if one were stationary and the other moving at 50. At more relativistic velocities the difference in the energies available is very much larger than it is in this simple case.

The colliding beam concept has been physically realized in several countries during the past ten years. Currently the most powerful such facility, The Stanford Linear Accelerator Center, or SLAC as it is called, is one of only two United States National Laboratories devoted almost entirely to the study of particle physics.

SLAC's colliding beam area, shown in the accompanying photographs, serves to cause electrons (e^-) and their antiparticles, positrons (e^+), to collide at velocities essentially equal to the speed of light. The result of such collisions is a state of pure energy called a 'virtual photon' which soon decays into various 'elementary' particles. If indeed, free quarks do exist there are few, if any, better ways of producing them.

Quark detection

It should not be news to any of the *Journal's* readers that particles passing through matter almost invariably transfer some of their energy to the surrounding material. Atomic excitation and ionization along with electron-positron pair production are among the major processes by which this occurs. Furthermore, in some cases, the electrons released by these processes often have sufficient energy to excite and/or ionize other atoms in the material. Thus a chain reaction called an electromagnetic shower is produced.

In 1947, Dr. Robert Hofstadter who later won the Nobel Prize in physics, found that, if the incident particles were made to pass through sodium iodide (NaI), the resulting electromagnetic shower produced a substantial amount of visible light. This light, when amplified and measured, was an indication of the total energy the particle had transferred to the NaI. Moreover, if the piece of NaI were sufficiently large, the electromagnetic shower could be fully contained and the total energy of the initial particle could be very accurately determined.

This method of energy measurement has since been applied to areas of science as divergent as cancer therapy and the satellite monitoring of underground nuclear explosions. Needless to say,it has also been applied to the energy measurement of particles emanating from collisions within particle accelerators.

As a charged particle passes through, for example, NaI, its energy transfer is proportional to the square of its charge. Since all particles but quarks have integral values for their charges the passage of a quark through NaI should result in a very distinctive signal. To optimize one's chances of detecting such a signal from a quark that is produced in an electron-positron collision it is logical to have as much of the space around the collision or interaction area filled with NaI as is possible. Previously prevented for technical as well as financial reasons, it has only recently become feasible to construct a device to almost completely surround the interaction region.

This apparatus, semi-whimsically named the Crystal Ball, will begin its study of high energy particle (quark?) production at SLAC this fall. It is the result of a four-year project by a team of scientists, currently 30 in number, aided by numerous engineers, technicians, and machinists. Consisting of a four foot diameter sphere of NaI, the ball is divided into some 700 separate modules. This modularization supplements the energy measurement abilities of the apparatus by allowing a precise determination of the angular distribution of the particles produced from the decay of the 'virtual photon.' Manufactured by Harsaw Chemical Company of Cleveland, the ball, along with the additional NaI used in the experiment, accounts for fully 15 percent of the world's supply of this material in detector form.

This fall the Crystal Ball, accompanied by approximately 100 tons of additional detection equipment, will be placed in one of the two interaction regions shown in the photographs. Soon afterwards, scientists from the institutions involved with the project: Harvard, Princeton, CalTech, SLAC, and Stanford, will begin work on what is one of the most eagerly awaited particle physics experiments of this decade.

There are several ways in which the Crystal Ball will aid in the explanation of 'elementary' particle physics. Most pertinent to the subject of this article is the way it will search for quarks. If quarks are produced their Crystal Ball signatures will be unmistakably apparent. Personally, I tend to favor the slavery concept and believe that quarks will not be produced. In any case, although not initially designed to look for the distinctive electromagnetic signatures of quarks, the Crystal Ball should certainly prove to far surpass its rivals in the ability to do so.

Also, the Ball should prove quite good in regard to achieving its originally intended goal, that is, of examining photons, electrons, and positrons produced from the decays of particles such as the ψ, the D^+ and the F^+. Not only should it shed light on the properties of these known particles but it should also prove extremely capable in locating new particles if they do exist. There is little doubt that the Crystal Ball will prove to be worth the many millions of dollars that has been spent on it.

So what?

Despite what deluded students of physics may believe, not everyone in America rushes through his evening meal so that he can curl up in front of the fireplace and read the latest text on quantum electrodynamics. Yes, it took me quite a while to realize that there are skeptics who ask that horrible question: "So What?"

A complete answer to that query could well fill this journal by itself. I will, however, spare the reader from incurring that hardship by condensing my response by a factor of several thousand. (The following is best read in a very emotional voice to a large pro-science crowd. Pounding your fist on the podium is optional.)

I am a firm believer in the concept that mankind must eventually overcome the all too encumbering shackles placed on him by Nature. This is something that will come about as a logical extension of man's innate mind processes. It will not be easy nor will it occur quickly. Rather, it will come about only after man has subdued nature as one army conquers another army: by investigating his operations to the fullest and using this knowledge to control and change those operations. This action must include, as an integral component, a study of the basic principles by which Nature controls her movements. That is, it must include a study of the most basic particles and forces in the universe. For it must be remembered that everything else in the universe, from microscopic diatoms to the macroscopic supernovae, is merely a manifestation of these basic units and can be understood if, and only if, these basic units are understood in their entirety.

WPI

Corporate Contacts

Perhaps you've been to a WPI class reunion. Maybe you've attended a chapter or club meeting of the Alumni Association in your area. Aside from publications such as this Journal, these are two of the most traditional ways the Association has used to help alumni keep in touch with one another and with WPI.

Now there's an important new program you should know about. It's called the "Corporate Contacts Program," and it brings together alumni who work at the same company. Activities were started at ten different companies last year, and another twenty are scheduled to be added in '78-'79. Among the various activities (already held or planned) are luncheons, cocktail hours, slide shows, tours, professional recruitment, welcoming of new alumni, faculty consulting, and presentations of student projects.

The idea for the program came from an Alumni Association study commission in 1977, which felt that WPI's strong professional and technical orientation was a natural tie-in to alumni in their working lives, and that WPI could increase the level of alumni involvement and pride by reaching alumni at their common places of employment. More than 100 companies currently employ ten or more WPI graduates, so there is significant room for the program to expand.

If you're interested in the program and want to participate, contact Bob Anderson, assistant alumni director.

The companies involved last year are:

Company	*Chairman*
Bell Labs, Holmdel, NJ	John L. Kilguss '67
Combustion Eng., Inc.	David A. Bareiss '59, Supervisor Corp. Mat'ls.
Electric Boat Div. of Gen. Dynamics	John R. Hunter '49, Engineering Director
Foxboro Company	Gerald Gleason '49, VP & Director of Sales
Norton Company	William P. Densmore '45, Vice President
Pfizer, New London, CT	William J. Hakkinen '70, Production Supervisor
Polaroid Corp., Boston	Robert M. Delahunt '56, Vice President
Stone & Webster, Boston	Gary Dyckman '66, Structural Engineer
Torrington Co.	J. Peter Torrant '59, Research Engineer
United Technologies Pratt & Whitney Aircraft	Walter D. Allen, Jr. '49, Reg. Dir. Int'l. Mktg.

Reunion 1978

Class of 1928 — 50th Reunion

Our 50th Reunion was glorious! The attendance at our Thursday evening dinner was something of a record with our crowd overflowing the Great Hall of Higgins House into the adjoining room.

Unfortunately President Hazzard had suffered a heart attack about a month before. The reception which is normally held at his home on Drury Lane was held at the Higgins House. We were sorry Mrs. Hazzard and he could not attend. We are happy to hear that he is recovering nicely and will soon be able to undertake the responsibilities which he has chosen for his retirement. He will move to Petersham where he plans to enjoy gardening and country living. We wish him well!

The reception was held in the beautiful garden of Higgins House where a tent had been erected for our protection in case of rain. It did not take long to recognize classmates and renew acquaintances. One after another arrived. The Fred Cooks, Art Olcotts, and Big Halls came from Florida and the Giff Cooks from Austria. Some we hadn't seen for 50 years, others a little more recently. Everyone was full of pep and the tempo of the party continued to increase. The *Worcester Telegram* termed our class "from the Roaring Twenties" and we certainly lived up to that connotation from Thursday evening through Saturday afternoon.

It was well after the scheduled 6:00 p.m. time for dinner that we adjourned to the banquet hall for a delicious roast beef dinner served by the food concession at the college. If the meal is typical of the food served to the students at the college they are very fortunate — even though the menu may not include roast beef too often.

At the informal program which took place after the dinner we were welcomed by Julius Palley, '46, representing the Alumni Association. Ray Bolz, dean of the faculty, represented President Hazzard and said he expected George Hazzard would be playing tennis in September!

It is interesting to note that there are 2400 students at WPI (compared to 500 to 600 in 1928) and there are 280 women now. Ray stated that WPI is to remain small and that the total may shrink slightly in the future.

Steve Hebert complimented us on the excellent participation of 85 percent of our living members in the 50 year gift to the college. We were all presented with 50 year diplomas by Acting President Ray Bolz. Our class president, Andy Wilkinson, responded commenting that '28 was responsible for starting the Goat's Head tradition as well as the custom of wearing blazers.

The evening continued at the "Hospitality Room" at the Sheraton-Lincoln and the festivities did not break up until the early hours of the morning.

Friday was a showery day but we managed to move about between the raindrops. We all kept busy with renewing friendships, attending lectures on "WPI Today" and "Estate Planning" and tours of the campus. Those who hadn't been back for a number of years were amazed at the transformation and beauty of the grounds. We joined with other reunion classes for an excellent buffet luncheon again put on by the college food service.

Friday evening was the highlight of our reunion when we assembled at the Sheraton-Lincoln for our Class Banquet. A social hour preceded the dinner and we again continued our reminiscing. We were 44 classmates present and 39 brought their lovely wives. We were sobered a bit by paying tribute to those 47 who had gone to their reward. We each had an opportunity to relate what we had done since graduation, what our hobbies are, and brag about our grandchildren.

At a short business meeting the following class officers were elected:
President, Andy Wilkinson
Vice President, Gabe Bedard
Foreign Secretary, Gus Cook
Domestic Secretary, Ted Englund
Treasurer, Karl Penney

It was announced that our representative on the Alumni Council is Gabe Bedard.

It was voted that our class gift be used to finance two offices in Boynton Hall, namely: Office of Continuing Education and Office of Graduate Studies. Suitable plaques will be placed. It was voted that Roger Stoughton be commended for his fine job of organizing this reunion. Several letters from classmates unable to attend were read.

Mrs. Gifford Cook, a very accomplished musician, entertained by singing and playing the piano. Dancing followed and the Hospitality Room was again an active place.

Saturday was another busy day with tours, lectures, visiting, and a meeting of the 50 Year Associates in the morning. The reunion luncheon was served on the lawn of Higgins House. We all enjoyed the chicken barbecue served under a cloudless sky. The annual meeting of the WPI Alumni Association took place and awards were given. Gabe Bedard presented our gift of $20,903 and announced that Bill Lester had established a trust of $25,000. As the *Worcester Telegram* stated, our group from the Roaring Twenties waltzed off with the Class of 1917's reunion attendance trophy, with 44 registered for attendance at this reunion.

Thus ended a wonderful reunion with everyone pledging to attend the 55th. Those attending were:
Mr. & Mrs. Lyman C. Adams, Mr. Milton H. Aldrich, Mr. & and Mrs. Carl F. Alsing, Mr. & Mrs. Gabriel O. Bedard, Mr. & Mrs. Bernard N. Carlson, Mr. & Mrs. Arthur M. Cheney, Jr., Mr. & Mrs. Frederick R. Cook, Mr. & Mrs. Gifford T. Cook, Mr. & Mrs. Charles H. Decater, Mr. & Mrs. Chester C. Doe, Mr. & Mrs. John E. Driscoll, Mr. & Mrs. Charles G. Durbin, Mr. & Mrs. Theodore J. Englund, Mr. & Mrs. Frank J. Fleming, Mr. & Mrs. Everett W. Fowler, Mr. & Mrs. W. Bigelow Hall, Mr. & Mrs. Jacob J. Jaffee, Mr. Francis H. King, Mr. & Mrs. Frederick H. Knight, Mr. & Mrs. Allen E. Lawrence, Mr. & Mrs. Louis F. Leidholdt, Mr. & Mrs. William M. Lester, Mr. & Mrs. Walton P. Lewis, Mr. & Mrs. William A. Manty, Mr. & Mrs. Andrew F. Maston, Mr. & Mrs. Leo J. Melican, Mr. Forrest S. Nelson, Mr. & Mrs. Arthur W. Olcott, Mr. & Mrs. Harland L. Page, Mr. & Mrs. Karl W. Penney, Mr. Donald P. Reed, Mr. Gordon E. Rice, Mr. & Mrs. Lester H. Sarty, Mr. & Mrs. Paul C. Schmidt, Mr. Roger K. Stoughton, Mr. & Mrs. Roger B. Tarbox, Mr. & Mrs. Frank C. Taylor, Mr. & Mrs. James W. Torrant, Mr. & Mrs. Robert M. Tucker, Mr. & Mrs. Harold R. Voigt, Mr. & Mrs. Charles A. Warren, Mr. Winslow C. Wentworth, Mr. & Mrs. Andrew L. Wilkinson, and Mr. & Mrs. Julian Witkege.

WPI Class of '38 — 40th Reunion

Wednesday morning, June 7, 1978, finally dawned, bright and beautiful, and we were on our way to Wentworth-by-the-Sea for an all-too-short pre-campus reunion holiday, ably arranged for us by Henry and Ros Ritz.

Arrival time was about eleven a.m. so that we could be on deck as our classmates pulled in, many of whom we had not been in contact with since that happy but sad day, 40 years ago, when we all said farewell to WPI. Almost everybody was easily recognized — really hadn't changed a bit — as they came through the door with fairly quizzical expressions. Within a short time after arrival, some were on the golf course, some on the tennis courts, a few brave souls were in the pool, while others, like ourselves, were just lazily sitting around comparing notes. By cocktail time all of our expected group had arrived with Bob and Louise Taft bringing up the rear, carrying word that Bea and Bob Day would not be along until Thursday morning. After a most noisy Happy Hour, forty-six jolly souls marched to a private dining room where a great roast beef dinner was served, (accompanied by Lancers — compliments of our Classmate, Dick Court, Manager of Convention Sales at Wentworth, and his lovely wife, Jen, who had joined us). After dinner, barely able to move and about three pounds heavier in spite of the fact that every last person was dieting in one way or another, we slowly made our way to the lounge, where some of our more agile members had an opportunity to display the results of numerous hours of private lessons or just some steps picked up on their latest cruise. Most of our number made the fabulous buffet breakfast Thursday morning, sampled everything in sight from fresh blueberries to Eggs Benedict, and ambled off to face a hazy day.

Before too long, Neil Fitzgerald, Dick Stuart, Henry Ritz, Dot and Andy Constant, Louise and Bob Taft and a few others were following each other behind that little white ball, some were back on the courts, and a three-car caravan was about to take off for Strawberry Banke in nearby Portsmouth, when Len Kuniholm, assisted by Ellen, in an effort to avoid creasing the rear bumper on the car in front of him — all of 10 feet away — backed up, and down, into the top stair of a flight of cement steps. Needless to say, Ruth Tolman, who was sitting over the rear right wheel, will remember the sudden descent long after the reunion has become ancient history. Ignoring suggestions of the hotel management to Call AAA and get the car quickly off the badly-bent guard rail and beautiful salmon-colored geraniums, which were at their early June best, Len quickly surveyed the situation and accepted the offer of the badly-maimed Ruth to use her car. We were soon on our way, leaving the obstruction on the stairway to be attended to upon our return, not by AAA, but by LMK, some rope, a spare tire, Bob Abbe and Dana Stratton.

After a delightful two hours of roaming through the various buildings at the Banke, we returned to late lunch at the hotel. The hardy folk bravely faced a huge repast in the main dining room. Those who were watching their figures joined the golfing crowd at the "Fairway," Wentworth's attractive club house, for a taste of New England clam chowder, a delicate, three-decker club sandwich, and a sundae (leaving off the nuts), then back to tennis, golf, jogging, bridge, writing cards or perusing the very lovely gift shops within the hotel — and before we knew it, the hands of the clock had reached six — a signal for all to climb into slacks and sweaters for a real old fashioned shore dinner, wisely moved from the shore to a corner of the main dining room, decked out in red and white checked tablecloths, where we picked up our much-needed large plastic bibs. The menu: steamers, corn on the cob, cold slaw, broiled live lobsters (or chicken), baked potatoes, hot rolls, watermelon or ice cream. Later, in the lounge, while after-dinner drinks were being sipped, we were royally entertained by Dick and Jen Court, who are widely recognized as a talented radio and television singing team.

The velvet lawns and colorful gardens at Wentworth were well-watered from above both nights, but the good Lord forgot to turn the sprinklers off on Friday morning, so it was inside for most of us after another visit to the tremendous array, called "breakfast" and packing. Fortunately (?!) at the suggestion of Rae Stratton, husband Dana and Dick Burke had both brought slides taken during the WPI Alumni trip to Greece last fall. The Strattons and Burkes were close companions during the trip, and while many duplicate scenes were shot and shown, almost everybody was polite and generous in their praise of the semi-professional production!

Nobody was going to eat lunch, but practically everybody did, and it was all too soon time to say good-bye to the Courts, Wentworth, and a most memorable time.

The temperature and weather were just about perfect as we gathered together once again — the time, six p.m., the place, an attractive tent adjoining the Higgins House, the event, a delightful cocktail hour hosted by WPI with Vice President Ray Bolz and his gracious wife, Jean, substituting for President and Mrs. Hazzard, due to an untimely heart attack which had hospitalized President Hazzard during the busiest time of his final year at WPI. All of the guests who had supped together in New Hampshire were assembled, and joined now by a number of new faces. We were all happy to have the opportunity to visit with Julia Graham, who had thoughtfully rearranged a New England tour so that she might briefly renew acquaint-

ances with the many friends with whom she and her late husband, Tom, had shared the joys of former reunions.

Seven-thirty found us all seated at attractive round tables, set up in that most unusual and completely captivating Higgins House — now proudly displayed and used as part of the Tech campus. The dinner was superb, and the brief speeches and sociability after, under the congenial leadership of our talented Alumni Director, Steve Hebert, led everyone into the proper mood to push on to the Sheraton Lincoln Inn, (some by way of the WPI Pub) where a hospitality room, capably supervised by Lefty and Grace Gamache proved to be a great way to end a great day — and into the next.

Saturday, bright, breezy and glorious, made all of the activities on campus a joy to participate in. Tours of the campus, "WPI Today" with Dean William R. Grogan, a trip to the Worcester Art Museum and just visiting, took care of the a.m. The alumni luncheon at noon was most colorful, spread out on round tables under the trees on the grounds of Higgins House. Happy and proud moments for the class of '38 came about when Bob Taft, Chairman of the untiring reunion gift committee, made up of Dick Burke, Dick Elliott, Ray Perreault, Henry Ritz and Fran Swenson, presented with a huge blow-up of a check for $60,418, the largest class gift ever presented to the Institute, and when two classmates, Bob Taft and Dick Burke, received Herbert F. Taylor Awards recognizing outstanding involvement with the College through the years. Mrs. Taylor, charming widow of Herb Taylor, gave an excellent speech after the presentations and was warmly received by all.

Saturday evening a group of ninety gathered at the Sheraton for an elegant surf and turf dinner. Paul and Hazel Bergstrom presented each of us with a jaunty, genuine plastic sailor "skimmer" sporting a bright red '38' and an attractive WPI double old fashion glass; and Walter and Toni Knapp distributed a superb 40th Reunion Yearbook — the fruit of many hours of preparation by Walter. Walter Knapp's election as Permanent Class Historian was followed by the presentation of silver trays to the ones who traveled the farthest — Ravi and Indumati Kirloskar, from Bangalore, India — with Doris and Dick Cloues, from Saudi Arabia a close second; the ones with the greatest number of grandchildren, again, the Kirloskars; the ones with the youngest child, Walter Howard; and the one with the least amount of hair, Bob Somerville.

The popular "Ragtime Rowdies" provided music for the last chance to display our terpsichorean ability, then on to the hospitality room until early morning when the time had come to say the fond "good-byes" — and a promise to "do it again" in five years.

One wife's parting remark summed up, quite well, the atmosphere which had pervaded the entire four days when she said "I feel as though I have eighty-nine new cousins" — and the rest of us wholeheartedly went along with her sentiments.

Page at left, clockwise from upper left: Winners of the Herbert F. Taylor award for outstanding alumni participation and involvement, Richard F. Burke, Jr., '38 and Robert M. Taft, '38, shown with Mrs. Taylor.

David G. Holmes, '53, presents a check for $26,814 to Acting President of the Institute Ray Bolz. The gift has been applied to the Boynton Hall renovation. Also that day Gabriel O. Bedard presented $47,704 as the 50th reunion gift of the Class of 1928.

Charlie Loveridge, '48, chats with the Karl Penneys ('28) during the Reunion Luncheon.

Bob Day (left) and Dick Burke, Jr. (rt.), both '38, talk with Leon Hitchcock, '08, attending his 70th reunion!

George T. Abdow, '53, president of Abdow's Big Boy restaurants, receives the Robert C. Goddard award for outstanding professional achievement from WPI Board Chairman Milton P. Higgins.

This page, clockwise from top: Acting President Bolz receives a symbolic check from Class of '38 President Dick Burke, Jr.

Alan R. Pearlman, '48, recipient of the Goddard Award, shown here with Alumni Director Stephen J. Hebert, '66. Pearlman is chairman of the board of ARP Instruments.

John H. McCabe, '68, pictured with William A. Julian, '49, president of the Alumni Association. McCabe was the first recipient of the John Boynton Award for outstanding involvement with WPI by a

Class of '53 — 25th Reunion

Friday afternoon and early evening found the Fuller Apartments beginning to fill with some early bird arrivals. The Hospitality Room was in full operation offering refreshment and relaxation to weary travelers with Fred and Irene DeBoer, John and Nan Leach, Dave and Bettie Van Covern, and John and Joan Morrill among the first to partake. The Goat's Head Pub that evening hosted all classes at a "Good Old Days Get-Together" complete with banjo band (Sanford Riley Commons was never like this)! New arrivals joined the early birds including Dick and Janey Davis, Paul and Anna May Snyder, Dave and Ruth Holmes, Dave and Nancy Beach, Jack and Mary Lou Gearin, Ted and Carol Fritz, Bill and Lorraine Ernst. The renewing of old friendships was in full swing. So began, for the Class of '53, a super weekend of congeniality, sharing of memories, inspiration, and just plain fun.

Saturday morning dawned brilliant, clear and fresh, providing a perfect backdrop for the events of the day. Tours and talks occupied the morning for many. Others continued the conversations and story telling of the previous evening. More new faces appeared with Ken and Norma Shiatte, Don and Lenore Campbell, and Ray and Patricia Giguere.

The Alumni Luncheon at the Higgins House Saturday now was a memorable event. All classes gathered at tables spread on the magnificent grounds of the Higgins House. Grounds where we once were forbidden to tread now welcomed us in grand style. Still more 53'ers arrived with Chuck Dechand, Harry and Virginia Brown, George and Janet Abdow, Bob Lunger, Ken and Diane Healy, Chuck and Ann Horne, Don and Betty Oliver, John and Carol Morin, Bill and Jane Nagel. After a delightful luncheon, the program began with a welcome by Acting President Ray Bolz on behalf of President Hazzard who was still recuperating from his recent heart attack. A highlight of the affair was the presentation of one of the Robert H. Goddard Awards to classmate George Abdow, an honor which he rightly deserves for his successes in the business world and his service to the community. A second highlight was the presentation by Dave Holmes of the Class Gift. And it was a fine gift in the form of a $37,162 check to the College. With the closing of the luncheon ceremonies, the tours resumed, the Hospitality Room reopened and the re-living of good times continued.

The crowning event of the weekend was the Reception and Dinner at the Higgins House Saturday evening. The captivating Old English atmosphere of this marvelous house provided a perfect setting.

One-by-one more classmates arrived for cocktails on the terrace — John and Alice Gregory, Ken and Norma Haaland, Vyto and Patricia Andreliunas, Henry Camosse, Herb and Janet Peterson, Mike and Barbara Cariglia, John and Mary Flynn, John and Sabra Flood, Dan and Ann Hock, Phil and Harriet Kaminsky, Whit and Carol Mowry, Gene and Faye Rubin, Henry and Louise Vasil. Our faculty guests for the evening included Ray and Jean Bolz, Bob and Jean Pritchard, and Carl and Arline Koontz. Ken and Betty Scott joined us for the reception.

After extreme difficulty, our very patient photographer succeeded in getting everyone organized for the Class picture . . . and a handsome group it was.

Dinner was served and the reminiscing continued. About this point, it was becoming apparent that this was a reunion for many of the wives as well as for the '53'ers. Many of us had married college sweethearts (about 50% according to the survey) and many wives were from the Worcester area.

After dinner, all assembled in the Great Hall. Acting President Ray Bolz, Bob Pritchard, and Carl Koontz provided words of wisdom seasoned with some salty stories and other remembrances of the Class of '53. All were having such a good time, a straw vote indicated we should re-assemble for our 30th Reunion. After the words, the music and dancing came and so ended our visit to the Higgins House. At this point, many "retired" to the Hospitality Room in the Fuller Apartments and continued the festivities into the wee hours of the morning.

Sunday morning was a time for good-byes at the Brunch in Morgan Hall.

To the members of the Class of '53 who couldn't be with us — we missed you. The members who were there send our enthusiastic greetings. WPI is a great college deserving of our involvement and support. Here's hoping the 30th Reunion brings more of us together.

Above: Gene Rubin, Mike Cariglia, and John Gregory celebrate their 25th Reunion. Here they are chatting with WPI Dean of Undergraduate Studies William R. Grogan, '46.
At left: Walter Dennen, '18, models the freshman beanie he first wore in the fall of 1914.

WPI's philosopher-artist-writer

How did a writer for the "slick" magazines, a blueberry farmer, an artist, a photographer, and a furniture builder, with a degree in philosophy from Yale, first become a member of the WPI English faculty?

"It was like this," says Prof. James Hensel, currently a professor of philosophy and associate head of the Department of Humanities at WPI. "It was the late 1950s, and the 'slick' market was beginning to dry up. *Colliers* had already folded, and *The Saturday Evening Post* was on the skids. Fiction, at which I had made a living for twelve years, was definitely less in demand. I decided that I should look into another profession, perhaps teaching."

Since the Hensels already had a home in Friendship, Maine, Jim took a creative writing post at the University of Maine for a year. "Then one day my wife, Anita, took out a map and pointed to Friendship, where we were then living, and then to New York City," he says. "She reminded me that we still had strong family ties in New York (my mother lived there), and that we both occasionally enjoyed the cultural advantages of the city where my writing career had begun. She then pointed to Worcester, which is practically dead center between Friendship and New York. 'There's the perfect place to look for a teaching job,' she said. 'We could summer in Maine and easily visit your mother during the theater and ballet season.' "

Jim Hensel agreed, and in 1960 he began teaching English at WPI. For two years he taught only English, but once a philosopher, always a philosopher, so he sneaked such writers as Plato, Kierkegaard, and Camus into his English courses.

The students really cottoned to these literary philosophers, as well as to such scientific philosophers as A. N. Whitehead, F. S. C. Northrop, and Hans Reichenbach. They learned that scientists, including Einstein, Planck, and Eddington, had written on such "philosophical" issues as idealism vs. realism, determinism vs. freedom of choice, and the foundations of moral, religious, and artistic values. They liked Hensel's concept of philosophy so much that in the mid-1960s they petitioned the dean to institute the first philosophy course into the curriculum. It naturally followed that Jim Hensel became the first professor of philosophy at WPI.

In the May-June 1964 issue of the *WPI Journal,* Prof. Hensel said in his article, "A New Dimension in Liberal Studies at Tech — Philosophy," that the overall objectives of the philosophy course would be to familiarize students with the principal philosophical issues and the important philosophers, and to help them clarify, develop, and deepen their understanding of themselves and their relationships to their work and their culture.

Today there are two full-time professors of philosophy at WPI teaching six philosophy courses, plus two others teaching courses that crisscross over into religion.

Student enthusiasm is still much in evidence on campus. "There is a current student of whom I am especially proud," Hensel reports. "Tom Murray, '79, was an IQP student of mine. He taught philosophy to fifth graders at Vreeland Street School in Worcester in order to meet his project requirements. His course was called 'Thinking About Thinking,' and the children were really fascinated with it. When the course was finished, they didn't want Tom to leave. They kept asking when he was going to come back."

Prof. Hensel has made his mark at WPI. In 1968, while he was still teaching English as well as philosophy, he began serving as adviser for the student-instigated Creative Writing Workshop and literary magazine, *The Tech Review,* a purely voluntary post which he held for several years.

"The Workshop was voluntary for all of us from the very beginning," Hensel says. "The students received no credits, and I donated my time."

Encouraging her husband in his new venture, Anita Hensel said, "Well, if you can't sell it [creative writing advice] give it away!"

"Reading one's piece aloud and then having it critically analyzed by the other members of the group was the main business of the Workshop," Hensel explains. "Our Wednesday afternoon meetings, however, had a faintly 'subversive' quality about them. After all, shouldn't the students *really* have been doing their physics or strength of materials?"

Prof. Hensel outlined the objectives of the Workshop in his article "An Experiment in Creativity" which was published in the *WPI Journal.* Student poems and stories also began appearing in the *Journal,* as well as *The Tech Review.*

"Everyone connected with the Workshop agreed that pieces presented before the Workshop for evaluation, or for eventual publication, showed a definite commitment by the writer, a much more positive attitude than the mere dashing off of a sketch or a poem that would end up in a desk drawer," Hensel recalls.

Meanwhile, Hensel was involved in some off-campus writing of his own. His article, "Are Engineering Students Square?", was published in *College English.* "Just for the record," he says with a grin, "I answered 'no'."

Prof. Hensel's unique teaching methods were recognized in 1973 when he was named "Teacher of the Year" at WPI. He was also a member of the committee that put together the first faculty constitution, and was the first elected secretary of the WPI faculty.

Presently, Hensel serves as associate head of the Department of Humanities under department head Prof. Donald E. Johnson. "We are concerned with such things as hiring, scheduling, and the entertaining of faculty members in our department," he explains.

The latter duty turned into an unexpected pleasure for the Hensel family. "A few years ago," he says, "our daughter Melissa and her roommate from B.U. were on hand when we were welcoming two new faculty members. One was Dr. Lance Schacterle, a young English professor. Lance and Melissa are now married and expecting their first child."

Jim Hensel is not always teaching, however, and he and his wife are not always welcoming new faculty or a prospective son-in-law. Many of their happiest days are spent at their 65-acre salt water farm in Friendship, Maine.

"We bought the place in 1948," Hensel says. "It was an ideal spot for a writer to get away from it all. We loved New York, but it was too hectic living there day in and day out. And those three-martini lunches with editors —!"

So, the Hensels ended up in Friendship in an 1820 brick house located on a point with two inlets, plus their own private island. For a while they augmented their income by growing blueberries. "There was a time," Hensel reports, "when we grew two tons of blueberries annually and sold them to the canning companies. It's too expensive to raise the berries on such a large scale these days," he goes on. "Now we just raise enough to keep us in blueberry pies."

The family spends every summer in Friendship and makes periodic trips there during the winter, although they have a young couple "house sit" for them during the off-season. "Come June, there's always plenty of work to be done on the house," Hensel says. "Maine winters are hard."

He does much of the repair work himself, and especially loves working with wood. He has built chairs, tables, and couches from scratch. One of his pet projects was his transformation of a twelve-foot-long oak table into two loudspeaker cabinets, a new table, and a commode. He also cut up some 12' by 16" cellar boards and made, among other things, a 32" by 48" table, which always arouses the curiosity of guests. "Is that an antique?" they ask, seeing the marks from hobnail boots through the protective wax layer.

As Maine has nourished Hensel, the writer, it has also nourished Hensel, the artist. "Mainly I do nudes and landscapes over vacation," he says. "I paint for myself, but wouldn't object to a sale."

He likes to gather Maine-weathered boards, not only for use in building furniture, but also for use as unusual "canvases" for his paintings. "I use a thin layer of acrylic paint," he says, "which lets the texture of the original wood show through."

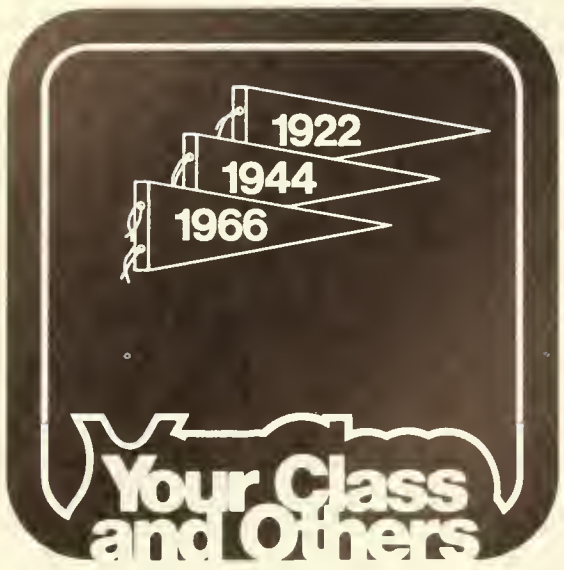
While he does the major share of his actual painting during the summer in Friendship, his penchant for the arts is still evident back at WPI. Not only do his pictures hang in his office, but he teaches "Philosophy of Art," and a course in painting, "Concepts in the Arts," in the Art, Music, Drama, and Cinema series. He is also into photography, has his own darkroom, and develops "lots of Maine pictures."

Should he retire tomorrow from teaching, Jim Hensel could probably easily make a living building custom furniture, painting, or taking photographs. But one cannot help but get the feeling that even now he is getting writer's itch. Is there an *Esquire* article in the works? A book, perhaps?

He enjoys reminiscing about his writing days, the days when writing fiction was not only fun, but profitable: "When Melissa was a little girl, she pulled an envelope I had inadvertently discarded, out of the waste basket. It had a $500 check from Hollywood inside! — One of my stories, 'On a Dark Night,' was translated all over the world and had been made into a television play. Funny thing about that story. It was about a college teacher, and I wrote it long before I ever dreamed of becoming a professor myself."

(Funny thing about *that* story. Although Jim Hensel is now, indeed, a college professor, the feeling persists that, somewhere at his new home on Grove Street, or at his salt water farm in Maine, there's a sheet of paper in the typewriter, and what's written on it has nothing whatsoever to do with philosophy!)

WPI



1912

Eric Benedict, who retired twenty-three years ago to Cape Cod writes: "There's no place to compare with it." Currently he resides in Orleans, Mass.

1916

Wellen Colburn continues as moderator of the historic First Parish Church in Shirley Center, Mass. He is town chairman of the Red Cross Blood Donor Program and a member of the United Church of Shirley choir. He still enjoys working with his eleven apple trees.

1918

Ivan Coggeshall received the IEEE Service Award this year in recognition of his "dedicated contribution over a span of fifty years to the engineering profession through his service to IRE and IEEE, and his leadership in integration of wire and radio media through his wise counsel and action as officer and staff member of technical and professional organizations." He has served as a director and president of IRE, secretary and manager of technical operations of AIEE, and editor of IEEE's administrative newsletter. In 1942 he helped to organize IRE's New York section. He began his career with Western Union working on land-line telegraphy and submarine cables. In 1953 he received an honorary doctorate in engineering from WPI. He is a retired commander in the U.S. Naval Reserve.

1919

During graduation ceremonies at St. Joseph's College in Standish, Maine on May 14th, **Ray Heffernan** was awarded an honorary degree. Mr. Heffernan, chairman of the board of directors of H. H. Brown Shoe Company, was recognized for his commitment to his faith, his business success, and his civic endeavors. In recognition of his apostolic efforts, he was made a Knight of Malta by Pope Pius XII in 1946 and a Knight of the Holy Sepulchre. Mr. Heffernan, who received the Goddard Award from the Alumni Association in 1972, is also a member of the President's Advisory Council at WPI.

1922

Edward Colesworthy retired this year from mechanical engineering. He continues to reside in Zellwood, Fla.

1923

Warren Bell, former vice president and treasurer of Sweeney and Bell, Inc., New York City, is retired.

1924

Formerly a self-employed consultant in Olean, N.Y., **Edward Beardsley** is now retired and living in Clearwater, Fla. He serves as president of the association of the condominium in which he resides. He says that **Winfield Gove** was "here for a while last winter." . . . **Willard Gallotte** is on a temporary assignment (8 to 12 months) as a consultant for Metro Transit in Seattle, Washington. "This is a D.C. trolley system rehabilitation and expansion project," he writes. "I average about twenty-four hours of work a week."

1926

Ken Archibald, executive vice president of the Springfield (Vt.) Chamber of Commerce, has recovered from cancer and heart surgery, and continues to ski downhill and cross country. Ken commutes to Springfield each day, a fifty-mile round trip from Ludlow, and estimates that he's driven the same "lousy" road about 2,000 times or 100,000 miles. Presently he is lobbying to have the road improved so he can continue his "chosen vocation as a senior citizen." . . . **"Red" Burns** is an associate in Betty M. Brothers Real Estate in Summerland Key, Florida.

1929

Fred McGowan writes that last October, while driving alone on Interstate 95 near his home in Guilford, Conn., he suffered a heart attack, went off the road wrecking his car, and landed in the intensive care unit at Yale-New Haven Hospital for several weeks. Now recovering, he reports excellent results from treatment and expects shortly to be in good shape.

A former licensed professional engineer, he had been with Pratt & Whitney Aircraft in East Hartford, where he was engaged in designing exotic rigs for the testing of advanced jet aircraft engines. He took early retirement in 1970, and now collects antique prints and restores damaged prints.

He has worked on some rare Currier & Ives prints, which currently command substantial prices. In 1973 he was cofounder of the American Historical Print Collectors Society, which is devoted to the collection and preservation of early prints.

Fred cautions about the indiscriminate destroying of old posters and manufacturers' catalogs of the nineteenth century, as they often contain valuable information. He would be glad to hear from companies or individuals with old material they wish to discard. His address is: 38 Peddlers Rd., Guilford, Conn. 06437.

1930

Myrton Finney says that he is a proud grandfather. His grandson, a senior at Stroudsburg (Pa.) High School, was selected as the 1977 scholar-athlete of the Lehigh Valley chapter of the National Football Foundation and Hall of Fame. The chapter covers fifty-five high schools in central eastern Pennsylvania.

1931

Giving truth to the story that you can't keep a good man down or retired, **Al Demont** has just completed his second "recall to active duty" as acting director of cooperative and career placement at the Schenectady (N.Y.) County Community College. He served from Nov. 1977 until April of this year. He writes: "My new retirement occurs as the golf season opens here. Good timing, don't you think?" Al is a WPI trustee emeritus. . . . The **Hurant Tashjians** are planning to visit their daughter, Gloria, who is spending the current academic year at the Mathematics Institute, Czechoslovak Academy of Sciencies, in Prague, where she is an exchange scientist. . . . **Milton Gleason,** who retired from L. S. Starrett Co. after more than thirty-seven years, is currently museum curator and a director of the Athol Historical Society, which is housed in a beautiful 150-year-old church. He is also director, clerk, and part-time machine repair technician for his brother's company, the L. H. Sawin Co. in Gardner. He has served for fifteen years on the Athol Board of Public Works and is up for reelection for another three-year term.

1933

Frank Eaton, Jr., writes: "On April 1st we moved into our new home in Port St. Lucie, Fla. After last winter, it's not hard to take Florida living! Hope to see all you '33 grads, if you're down this way." . . . **Donald Haskins** has retired as supervisor of reliability engineering at Thiokol Corp. Prior to retirement, he worked on the Space Shuttle solid propellant rocket booster motors, the largest production solid rocket motors in the world, which are now being flight tested. Although they have only recently returned from an 8,300-mile cross country trip, the Haskinses are looking forward to another trip east for their 45th reunion. Don says, "For all those who haven't already retired, get with it. It's great!"

1934

Charles Dayton is retired as district manager for GE electric utility sales, Philadelphia, Pa.

1935

B. Austin Coates retired June 1st from Heald Machine, Worcester, following forty years of service. . . . **Samuel Ehrlich,** who has retired after thirty-three years in engineering and manufacturing of ordnance, is now "happily engaged in a second career as president of Metro Mfg. Co., Inc., of Herndon, Va." (The firm manufactures contemporary furniture.) His son, Richard, is corporation secretary and general manager. . . . **Russell Fargo** has retired from Pratt & Whitney Aircraft. . . . **C. Gordon Lincoln,** who retired some time ago after serving eighteen years with Morse Twist Drill and twelve years with Union Twist Drill, now lives 240 miles north of San Francisco, about six miles from Lake Shasta. . . . **George Makela's** third grandchild, Melinda Sue, arrived March 24th. He notes: "Everyone is doing well."

1936

Jack Brand, director of Engineering Development Laboratory, recently chose voluntary retirement ending over forty-one years' service with Du Pont. He originally joined the firm in the former Industrial Engineering Division at Remington Arms Co., Bridgeport, Conn. Later he was transferred to Ilion, N.Y. In 1943 he was assigned to the Manhattan Project. After studying nuclear physics at the University of Chicago, he became senior supervisor and superintendent of instruments at Oak Ridge, Tenn. In 1948 he moved to the former Mechanical Development Lab as section supervisor, and in 1955 became assistant director. He was promoted to his present post in 1969.

He was responsible for engineering development programs on improved processes and equipment for photo products, plastic products and resins, central R&D, biochemicals, fabrics and finishes, and textile fibers departments. He is a fellow of ASME and a registered professional engineer in Delaware.

Jack and his wife, Dorothy, will remain in the Wilmington area. In May they cruised to Spain, France, and Britain. Now back home they plan to spend more time with their five grandchildren. Jack also hopes to be able to concentrate more on his greenhouse and photography.

A. Hamilton Gurnham writes that "My customers, a 200-unit condo and a small construction company, keep me from full retirement." He and his wife, Martha, live in Pompano Beach, Fla., where he does part-time bookkeeping and accounting.

1937

John Chapman retired last October as manager of information services at American Optical Co. in Putnam, Conn.

1938

J. Randolph Buck retired March 1st as assistant director of the production and reservoir engineering department at Michigan Consolidated Gas Co., where he specialized in oil and gas production and gas storage. Presently he is an independent petroleum consultant in Pass Christian, Mississippi. . . . **Raymond Dunn,** a GAIU representative since 1948 and a member of the union for forty years, has retired. He was president of the former Local 21 of the Amalgamated Lithographers of America (ALA), now Springfield-Hartford Local 264. In 1958 he ran for the office of international president of ALA. He spent forty-four years in the lithography trade, starting out at Worcester Engraving & Litho, and then worked at Polygraphics, Graphic Arts, Western Printing, and Hano Co., which he helped organize. Upon his retirement, he was presented with a gift of a trip to Las Vegas by members of Local 264. . . . **Peter Koliss** is a department head at Bell Labs in Whippany, N.J.

1939

Roland Anderson, who resigned from the U.S. Army in May, is now president of TKI, Limited in Warren, Mich., a family holding company. He and his brother, **Lennart, '46,** have edited their mother's book, *The King Makers,* a history of the August N. Anderson family. Anderson's son Linwood has a farm in Roscoe, Ill. Daughter Linnea will be an RN, and Annika will be a commercial photographer. Myron received his BSCE from the University of Michigan this year, and Roland II is in Sweden working as an engineer for the federal government.

Keith McKeeman recently finished his first year of retirement from J. C. Penney Co., Inc., where he was chief industrial engineer. He and his wife Evelyn have moved to Silver Bay on Lake George in the Adirondacks, and have found it is easy to become involved in a smaller town. He writes that their younger son, Bruce, was married last year and that their older son, Alan, will be married this summer. . . . **Harold White** has been promoted to the post of corporate vice president at Norton Co., Worcester. For the past two years he has been serving as managing director for the Northern Europe Division. Formerly, he was managing director of Norton's English subsidiary. White, a graduate of WPI's School of Industrial Management, joined Norton in 1946, and has held a variety of manufacturing management positions in the U.S., Canada, and Great Britain.

1940

Arthur Koerber, a camp ranger at Girl Scout camps since 1972, retired on May 15th.

1941

Capt. **Norman Klaucke,** currently a commercial fisherman in Massachusetts, writes: "Since the 200-mile limit went into effect, fishing is improving rapidly. The present controls limiting catches were badly needed." . . . **James McGinnis** is now division engineering manager of depreciation and separation at New England Telephone & Telegraph Co., in Boston, Mass. He has accepted the 40th reunion gift committee chairmanship at the request of Donald Smith, class president.

1942

E. Curtis Ambler has been appointed to the new position of vice president-research and product engineering for the Stanley Industrial Hardware division of the Stanley Works. The new position results from the division's increasing involvement in the original design as well as the manufacture of parts for other manufacturers.

Ambler, who holds seven product patents, joined Stanley in 1967 as manager of research and product engineering for the power tools division. Subsequently he became project manager in the corporate product development department, and chief engineer for technical services for the corporate laboratory. In April of last year, he was named senior product engineer for the Industrial Hardware division. In August he was appointed manager of engineering for Stanley Industrial Hardware.

Prior to joining Stanley, Ambler had been senior product engineering manager for Veeder-Root, Inc., had been associated with Ingraham Co., and had served as director of engineering for Landers, Frary, and Clark.

He was a three-term member of the Newington, Conn. Town Council; is a director of the Newington Children's Hospital; safety officer of the local volunteer fire department; and treasurer of the Central Connecticut Regional Authority for Solid Waste Management. He is a lieutenant commander in the U.S. Naval Reserve, and has five children. He has served as a WPI class agent.

Still with Electric Boat in Groton, Conn., **Philip Camp** is now ship manager. . . . **Harold Crane** says that after five years of jogging, he can almost keep up with the girls when the NASA Running Club holds two-mile races. With his 15-year-old son Allen, he has resumed his high school hobby of building and flying rubber-powered model airplanes. . . . **Eric Essen** writes that he has a new career — teaching and business counseling. His youngest son just graduated from UMass. "Now we have a banker, a salesman, a soil scientist, and a teacher wife," he says.

Jim Fernane, retired from the Federal Communications Commission after thirty-four years of service, is becoming increasingly involved with flying and amateur radio operation, both of which have been his major hobbies for several years. He attends local and cross country practice flights, and refresher clinics on updated instrument procedures, mountain flying, aviation weather, and survival training. He plans to utilize his commercial pilot's license to carry passengers for hire on sightseeing or charter flights.

"As for ham radio," he says, "design of an acceptable amateur band antenna entails unique problems that I never encountered in Prof. Newell's radio engineering courses back in the 40's." The prime requirement is that the antenna maintain a low profile in the 800-unit apartment complex where he resides, "otherwise my neighbors will be blaming my activities as the source of every malfunction that may occur in their TV sets."

1943

Currently **Richard Bonnet** holds the post of technical assistant to the vice president of operations at Avtex Fibers, Inc. in Front Royal, Va. . . . **William Currie,** a Cleveland State University law student, has been named chief staff engineer for Parker's Hose Products Division in Wickliffe, Ohio. . . . **Arnold Jones,** divisional vice president and general manager of the materials division at Norton Co. since 1974, has been promoted to corporate vice president of the Worcester firm. Formerly, he was divisional vice president and general manager of engineering and construction services. He joined Norton in 1946. He is a graduate of the Advanced Management Program at Harvard Business School and the WPI School of Industrial Management. . . . **Friend Kierstead, Jr.** recently became problems editor for the *Journal of Recreational Mathematics.*

1944

Irving James Donahue, Jr., has been elected a vice president of Memorial Hospital, Worcester. Jim, who is president of Donahue Industries, Inc., Shrewsbury, is a WPI trustee, and a past president of the Alumni Association. . . . **Richard Holden** now serves as senior engineer at Singer Co.-Kearfott Division in Little Falls, N.J. . . . **Kimball Woodbury** has been elected to the board of managers of the accumulation fund of the Paul Revere Variable Annuity Insurance Co. The five-person board directs investment policy of the fund. Woodbury is president of Woodbury and Co., stationery engravers, Worcester.

1945

Dr. **Carl Clark** has gone back into safety research. Currently he is concerned with occupant packaging for the Office of Vehicle Structures Research at the National Highway Traffic Safety Administration in Washington, D.C. . . . **Bob Duffy** says that he is semi-retired, but staying active selling real estate through the Century 21 Gitomer & Co. in Cherry Hill, N.J.

Lee Seccombe was recently named chief engineer for Gripnail Corporation of Bristol, R.I. Previously he was manager of machine development at Bostitch Corporation, East Greenwich. He had also been with the Stanley Works and Arthur G. Russel Co. At Gripnail he will be responsible for all engineering functions, including product design and development, manufacturing engineering, material specification, application engineering, quality control, drafting, and the metallurgical laboratory. The firm makes industrial fasteners for securing insulation and other materials to metal surfaces. . . . Dr. **Albert Talboys** has just completed a three-year assignment on a United Nations water project in Trinidad. He is retired and lives in Longwood, Florida.

1946

Theodore Balaska, director of engineering services for Bishop Electric division of Sola Basic Industries, has been named chairman of the tests and measurements subcommittee of the Insulated Conductors Committee, Power Engineering Society, IEEE. He served as publications chairman for IEEE's UT & D Conference in 1976; will serve as executive vice chairman of the Atlanta T & D conference next year; and as executive chairman of the Minneapolis conference in 1981.

Prior to joining Bishop Electric eight years ago, Balaska had been with Hartford Electric Lt. Co.; Long Island Lighting Co.; Phelps Dodge Copper Products Corp; and Bishop Manufacturing Corp. His utility experience has encompassed field engineering and supervision of the installation, maintenance, and operation of cable systems from secondary networks to 138 KV transmission systems.

He has written several technical papers, and is a member of the Power Engineering, Industry Applications and Electrical Insulation Societies. A member of CIGRE, he also belongs to the Pacific Coast Electrical Association, the National Association of Corrosion Engineers, Northwest Electric Light & Power Association, and National Society of Professional Engineers. His name is listed in *Who's Who in the East* and in the *Dictionary of International Biography.* Last year, business trips took him to, among other places, West Germany, England, Yugoslavia, Sweden, Australia, Singapore, Hong Kong, and Japan.

In April Dr. **John Lott Brown** was inaugurated as the third permanent president of the University of South Florida in Tampa. In his inaugural speech, Dr. Brown stressed the need for universities to close the gap between town and gown by devising educational programs to meet community requirements. "I have come to the University of South Florida because I see it as an institution which can achieve a leadership role in higher education," he said. "If we are to achieve this, we must cast our lot with our community. We must serve students in a wide range of ages, and we must provide special programs for business and industry in our area. At the same time, we must accept our responsibility as a university for the preservation of our intellectual and cultural heritage."

The ceremony, characterized as modest, but enthusiastic, was highlighted by a proud procession of 200 educators in colorful regalia. U.S. Representative Sam Gibbons of Tampa and Dr. Robert Q. Marston, president of the University of Florida, were speakers.

Dr. Brown won the U.S.F. presidency over 200 national candidates. Formerly, he was director of the Center for Visual Science at the University of Rochester (N.Y.). He is also a WPI trustee.

Robert Hamilton was recently named general sales manager of the abrasives marketing group at Norton Company, Worcester. He has been with the company for thirty years, and has held general management positions in the U.S., Mexico, and Great Britain. Earlier he was director of market development for the abrasives marketing group. He graduated from the Advanced Management Program at Harvard Business School.

1947

Carrol Burtner is presently area director of the San Francisco office for the Occupational Safety and Health Administration. He is a professional engineer in Massachusetts and California; a CPCU (chartered property and casualty underwriter); and has a diploma in risk management.

Dr. **Edward George** addressed the Wallingford (Conn.) Rotary Club in April. In his talk, "Computers and their Uses," Dr. George gave a brief outline of the computer industry growth, defined terms, and discussed typical business and technical applications. He was elected to *Who's Who in Computers* in 1964; *American Men of Science* in 1968; *New York Academy of Sciences* in 1967; *Leading Men in the U.S.A.* in 1967; and *Who's Who in America* in 1974. He developed the first on-line admissions and registration system at the University of New Haven, and the first computerized simulation of product assembly.

Dr. **William Rice** is spending his sabbatical year from the chemical engineering department of Villanova (Pa.) University at the University of Delaware. He is working on sodium sulfate as a phase change material for thermal energy storage at the Institute of Energy Conversion.

1948

Paul Anderson, the regional environmental engineer for the Massachusetts Department of Environmental Quality Engineering, Lakeville, was unchallenged as a candidate for a one-year term on the board of selectmen in Middleboro. Previously he was a selectman from 1952 to 1959 and from 1963 to 1975.

Robert Donnan, a senior engineer with IBM, recently moved to the IBM Centre d'Études et Recherches near Nice, France, where he is continuing his work in communications systems architecture and standards. He has held a variety of engineering and managerial assignments with the firm, starting in Poughkeepsie, N.Y. in 1951 and later in Reno, Nevada; Tacoma, Washington; and Kingston, N.Y. In 1967 he became manager of communications products architecture with the responsibility for the development of IBM's Synchronous Data Link Control in Raleigh, N.C. SDL has since been adopted by the American National Standards Institute and the International Organization for Standardization as a data communications standard. Bob and his wife Doris enjoy visits from state-side friends and plan to have their two grandchildren with them this summer. . . . Continuing with Electric Boat, Groton, Conn., **Sameer Hassan** is now a chief of engineering.

Sal Intagliata has been named general manager of the Perkin-Elmer Corporation's Wangco Division and a vice president of the corporation's Data Systems Group. He will direct the division's day-to-day operations, including engineering, manufacturing, marketing, quality assurance, finance and administration. Formerly, he was general manager of General Instrument Corporation's memory products division. Wangco is a leading producer of computer peripheral mass storage devices. The Data Systems Group manufactures, sells and services a fully-integrated line of mini-computers, magnetic storage peripherals, and CRT and printer-based terminals. . . . Dr. **Robert Lerner** is a member of the Harvard (Mass.) Planning Board and Energy Policy Committee. . . . **Charles Mouradian** is presently supervisor of construction engineering at Electric Boat.

1949

Robert Bareiss has assumed the chairmanship of the Management Sciences Division of TAPPI. A leader in the division since its formation in 1972, he had served as chairman of the statistical applications committee, and division vice chairman. He is also a member of the process control committee of the engineering division, the 1978 nominating committee of the board of directors, and of the editorial board of *TAPPI* magazine. He is director of process control technology at the Technical Center of St. Regis Paper Co. in West Nyack, N.Y. His responsibilities include process analysis and control, mathematical and statistical services, instrument development, and lumber processes. Prior to joining Regis in 1966, Bareiss was with Curtiss-Wright; the Torrington Co.; Lessells and Associates; and was a member of the faculty of the College of Engineering at the University of Nevada. He has worked with United Way and is on the board of directors of the Mental Health Association of Rockland County, N.Y. He belongs to the Minisceongo Yacht Club on the Hudson River. The Bareisses have a daughter, Lisa, and two sons, Seth and Alex.

Samuel Franc, Jr., recently joined Raiser Construction Co. in San Mateo, California, where he is the senior estimator and project manager. He reports that it was a great surprise to find fellow alumnus **Fred Kolack, '73,** also working at Raiser. Currently the company has a Sheraton Hotel, a high rise HUD housing project, and a four-story office building on the boards. . . . Continuing with Burns & Roe, Inc., Woodbury, N.Y., **Maurice Nirenstein** is now writing specifications and administering contracts for nuclear power plant projects. . . . Dr. **Charles Selwitz** has received a gold service award pin marking his 25th year of employment with Gulf Science and Technology Co., Harmarville, Pa. He was awarded his PhD in organic chemistry from the University of Cincinnati. In 1953 he joined Gulf as a chemist. Today he is director of synthetic chemistry.

1951

Charles Bouchard has been appointed national sales manager for metals industry sales at Westinghouse in Pittsburgh, Pa., following a major restructuring of the firm's industry products marketing organization. Bouchard, with the company since 1951, has held sales and managerial positions in Boston, Worcester, Buffalo, and Pittsburgh. . . . **Charles Mulrenan** is still with the Chicago South Shore and South Bend Railroad, the last electric interurban railroad in the U.S. (1500 volts, direct current catenary). Last year he became a licensed real estate broker after having taken the required course of study and passing the state examination. . . . **Ramsey Sheikh** is president of Leighton Industries, Inc., Phoenixville, Pa.

1952

Richard Bennett is back in his old office due to the merger with Dean Witter and Reynolds Securities. The firm is now called Dean Witter Reynolds. . . . **Robert Favreau** has been elected president of the Greater Pottsville (Pa.) Area Chamber of Commerce. He is manager of the Exxon Chemical plant at Marlin. Earlier he was with Du Pont in Richmond, Va. He has been a plant executive at Exxon since 1965, and manager since 1970. He has been a director and first vice president of the Chamber of Commerce; a director and past president of the Manufacturers Association of Schuylkill County; a past president of Schuylkill Country Club; and a member of the board of directors of the Children's Home in Mechanicsville. The Favreaus have two daughters. . . . **Lee Tuomenoksa** is currently director of the Digital Terminal Laboratory at Bell Laboratories in Holmdel, N.J.

1953

David Beach was recently appointed program manager for medical products instrumentation, business and professional products, at Kodak Apparatus Division (KAD) in Rochester, N.Y. He joined Kodak in 1953, and until his most recent promotion, was project design manager for consumer products engineering in the KAD. He belongs to the Society of Photographic Scientists and Engineers, and the Rochester Chamber of Commerce. KAD is the company's center for the manufacture of still and movie cameras and projectors, optical goods, and other photographic equipment.

Brady Buckley now holds the post of general manager of marketing at Keene Corp. in New York City. . . . **James Merrill,** SIM is director of industrial engineering at Interlake, Inc., Chicago, Ill. . . . **Thomas O'Connor** has been named chairman of the Central New England College Engineering Department in Worcester. He had been a faculty member about twenty years and had been associate academic dean and director of registration. A past president of the Worcester County chapter of the WPI Alumni Association, he had also served as an officer of the Poly Booster Club. He belongs to the Worcester Board of Health Advisory Committee on Lead Paint and Rodent Control, and the Worcester Personnel Managers' Association. . . . **Petros Petrides** works as an engineering specialist at General Dynamics-Electric Boat.

1954

Joachim (John) Herz holds the post of executive vice president of New Hermes, Inc., in New York City. . . . **Donald McEwan,** newly-elected president of ITT Avionics Division, was guest speaker at the January meeting of the Management Employees Association of ITT Avionics and ITT Defense Communications. In December ITT Avionics was honored as "Company of the Month" at a meeting of the International Management Council (Metropolitan New Jersey Chapter).

A new planning and engineering organization, Meckler Energy Group, was launched in April by **Milton Meckler,** P.E., former president of the Energy Group, a subsidiary of Welton Becket Associates, and long identified nationally with major energy-related projects.

The new firm will offer complete planning, consulting, and design services for building automation and utility systems, as well as energy management programs and related feasibility studies for new or existing structures. Headquarters are in Encino, Calif.

Meckler has personally designed many significant solar energy and heating developments, alternate energy concepts, and related testing and measurement disciplines for private industry and government.

In April he addressed the solar evaluation conference in Washington, D.C. and presented a paper at the Second International Helioscience Institute at Palm Springs, Calif. In February he presented a paper for a solar workshop in San Francisco.

Active in a dozen professional societies, Meckler has written over ninety articles in power engineering, building, and architectural journals. McGraw Hill is publishing his book on energy conservation for buildings and industry later this year. He is a registered professional engineer in ten states, holds U.S. and overseas energy-related patents, and has been granted an NEC Council certificate.

1955

Hugh Bell, president, chief executive officer, and founder of Dataline Corporation, has announced the move of corporate headquarters from 49 Locust Ave. to larger facilities at 4 Danbury Road in South Wilton, Conn. Bell, generally regarded as one of the top twenty computer technologists in the country, invented and developed the Dataline system, which is acknowledged as the first software and computer applications package available to the lumber and building material industry. His fast-growing nationwide company has offices in Charleston, S.C., Houston, Texas, and San Francisco. Previously Bell was a principal of Scientific Data Systems before it was sold to Xerox. . . . **Kirby Ducayet III** serves as controller of Kimberly Clark Corp./California Forest Products Business Division in Anderson, Calif.

Brian Kelly, president of the class of 1955, has been promoted to general marketing manager for Bell of Pennsylvania. Earlier he had been division operations manager for Bell in a five-county area extending from Pittsburgh north. He joined Bell after graduating from WPI, and later attended LaSalle College and Cornell University. He earned a master of science degree in management from MIT, where he was a Sloan fellow. In his new post he will be responsible for sales and service to business, industry and government accounts, as well as for the introduction of major new services and equipment developed by Bell.

1956

Continuing with General Dynamics-Electric Boat in Groton, Conn., **Robert Betchley** currently holds the post of senior engineer. . . . **Paul Cnossen** has joined ATF-Davidson Co., Inc. of Whitinsville, Mass., where he is a senior project engineer responsible for new projects with automated graphic arts equipment. Previously he had worked as a senior manufacturing engineer at BIF, a unit of General Signal, and in various capacities at Norton Co., Worcester. . . . **Richard Roberts** holds the post of supervisor of engineering at Electric Boat. . . . The Rev. **Paul Schoonmaker** has just published a new book, *The Prison Connection —A Lay Ministry Behind Prison Walls.* Recently he and his wife, Joan, were given a trip to Puerto Rico in celebration of his tenth year with the Royersford (Pa.) Baptist Church. . . . Dr. **Roger Tancrell** is presently principal research scientist for Raytheon Research division in Waltham, Mass.

1957

Warner Clifford remains with Stone & Webster, Boston, where he is resident manager. . . . **Donald Craig** is flying as a DC10 and 707 co-pilot and enjoying San Francisco and the Barbados. He also owns and operates Wescon Tax Service, which specializes in income taxes for airline personnel. Occasionally he builds a house to sell. . . . **Leon Morgan,** an executive vice president of United Illuminating Co., New Haven, Conn., has been elected a director of the utility. He has been with the company since 1957. . . . **Art Nedvin** and his family are returning home to Stamford, Conn. following a four-year stint in Japan. Art has a new job as director of business systems planning for IBM America/Far East Corporation. The Nedvins' oldest son, Mark, a National Merit Scholar, will attend Cornell University this fall. Looking forward to their return to the U.S. are Laurie, 15, and Brian, 13.

1958

Jasper Freese, owner of Freese Engineering, Greeley, Colo., acts as Weld County surveyor and serves on the City of Greeley zoning board of appeals. . . . **Joseph Gill** recently announced the purchase of Vee-Arc Corporation of Westboro, Mass. Vee-Arc designs and manufactures direct current motor drives and portable electric grinders. Previously Gill had been elected executive vice president of the C.E.M. Company of Danielson, Conn., and had held earlier management positions with Kaydon Bearing of Muskegon, Mich. and Fafnir Bearing Division of Textron in New Britain, Conn. Dr. **Joseph Mancuso, '63,** serves on the company's board of directors. Vee-Arc supplies standard and high performance DC drives to manufacturers of machine tools and other machinery builders throughout the country.

Richard Hammond, president of Hammond Engineering Corporation, has announced that his firm has purchased J. A. Jubb Company. The new company specializes in all types of insulation, and deals in vinyl and aluminum siding, as well as combination windows and doors. Hammond, who has extensive experience in building construction and design, was plant manager for the firm of RobertShaw for five years during which time he supervised the construction of the firm's new facility. His wife, Ruth, a graduate of UMass, is treasurer and accountant for the corporation. . . . **William Juhnevicz** holds the post of engineering supervisor at Electric Boat.

1959

John Bonk is now district manager of facilities engineering at Bell Telephone of Pennsylvania in Philadelphia. . . . **V. James Cinquina, Jr.,** has formed his own executive search firm, Merlin International, Inc., in Ramsey, N.J. The firm specializes in health care and life sciences. It places physicians, scientists, and technical people with the pharmaceutical and health care industry. . . . **Tim Hurley** has left Sangamo Weston, Inc. after eighteen years. Currently he is involved with commercial real estate with W. H. Daum & Staff in Los Angeles, Calif. His responsibilities include sale and leasing of office buildings, restaurants, and shopping centers, in the South Bay, L.A. Airport area, and downtown Los Angeles.

Richard Keats is now a program manager for Raytheon Company in Wayland, Mass. . . . **Robert Massad** presently serves as a senior product engineer for diamond products, at Bay State Abrasives, Westboro, Mass. . . . **Edward McKeon** holds the post of manager of product development at Farm Bureau Insurance Co., Lansing, Mich. . . . In February, **Robert Price** joined the L. Hardy Company in Worcester as plant engineer. . . . In March **William Pursell, Jr.,** became vice president of manufacturing for Hinderleter Energy Equipment Corporation in Tulsa, Okla. He, his wife, Judy, and sons John, 15, and David, 14, live in Broken Arrow, Okla. . . . **Richard Ronskavitz** serves as an engineer II in the traffic engineering division for the Department of Transportation in Broward County, Fla. He, his wife Louise and sons, David and Michael, reside in Ft. Lauderdale.

1960

Martin Beck, who is assistant director of research and development for Cabot Corp. in Billerica, Mass., was a candidate for the four-year term on the Pepperell planning board. Professionally he is involved primarily in the areas of long-range planning and administration of a multi-million-dollar budget. He belongs to AICE, ACS, and served in the 26th Yankee Infantry Division for eight years. Presently he serves as vice chairman of the town's Charter Study Committee. . . . **Kevin Burke** is a strategic planning analyst for the U.S. Navy in Armish-Maag Arspo, Iran. . . .**Richard Loring** holds the post of technical manufacturing manager in the film division at Polaroid Corp., Waltham, Mass. He is involved with the SX-70 film system. . . . **Norman Barry Mack,** a field representative for the New York-Arden general agency of National Life Insurance Company of Vermont, has won membership in the 1978 Presidents Club and is among the firm's outstanding agents nationwide. He is located in Plainview. Membership in the Presidents Club recognizes outstanding client service and sales and includes the opportunity to attend a five-day educational conference in Bermuda. . . . Continuing with Electric Boat, **John Pickering III** is presently a senior engineer. . . . **Harry Ray** has been named field sales manager in the rubber chemicals division at Monsanto Industrial Chemicals Co., Cleveland, Ohio. Previously he was sales manager for industrial rubber products. He joined Monsanto in 1960 in the organic division, and advanced through a number of positions in the organic, rubber and process chemical, and rubber chemicals divisions. Monsanto's rubber chemicals division, with manufacturing plants in ten countries, is a leading worldwide supplier of chemicals, testing instruments, and equipment used by the rubber industry. . . . **Myron Smith** works as general manager at Solvents Recovery Service in Southington, Conn.

1961

▶*Born:* to Mr. and Mrs. **Lawrence Staats** a daughter Monica Jane on April 21, 1978. Presently Staats works as first assistant engineer on tankers from International Ocean Transportation Corp. of Philadelphia hauling Alaska crude oil to refineries in the Gulf and Puerto Rico. Last year he and Torill Kamsvaag were married in Norway.

Henry Allessio, vice president of William E. Hill & Company, the management consulting division of Dun & Bradstreet, was recently quoted extensively in the *New York Times* as well as in "Forbes 30th Annual Report on American Industry." According to Allessio, an industry expert, fundamental changes are occurring in the automobile replacement parts industry. He believes that uninterrupted growth is a thing of the past. "Technical obsolescence is the key problem today," he says. For example, mass merchandising of batteries guaranteed for the life of a car has severely cut into the replacement battery market, causing an industry slowdown. The market for engine oils may be shrinking as well, as the small-car trend has meant smaller crankcases. Summing up, he says that only the most alert, technologically advanced companies supplying the replacement market are likely to grow in the future. Allessio, a former president of the New York chapter of the Alumni Association, is currently head agent and admissions chairman.

Thomas Chace, SIM, is president of Rollmet, a division of Wyman Gordon in Irvine, Calif. . . . **Bradley Hosmer** has joined AMF Incorporated, White Plains, as director of marketing for industrial products. His responsibilities include looking for business opportunities, investigating marketing trends, and serving as a consultant to the business units to assist their growth and development. For the past two years Brad has been vice president of special products for the Branson Sonic Power Company, makers of industrial and biomedical equipment in Danbury, Conn. With Branson since 1972, he was responsible for developing and marketing special assembly equipment. In 1974 he was promoted to vice president of manufacturing. Earlier he had been with Booz Allen Hamilton. . . . **Allen Johnson** is now a field sales engineer with Intel Corp. in Dayton, Ohio.

Herbert Moores, who was appointed to first full-time town engineer in Newburgh, N.Y. four years ago, has been appointed interim supervisor to fill a vacancy caused by death. Previously he was a special management consultant to the New York State Division of the Budget and the State Narcotic Control Commission. He had also been principal engineer with the Orange County Department of Public Works. He did graduate work at RPI and the Graduate School of Public Affairs at SUNY. . . . Still with IBM, **John Ryerson** is now manager of IBM Corporate I/S Decision Support Systems in Armonk, N.Y. John and Toni live in Ramapo with children David, 7, and Mechele, 4. . . . **John Tompkins, Jr.,** is president of Argus Sanitation Service in Troy, N.Y. His firm provides site investigation, design, plan approval, construction and operation maintenance in the fields of water supply, sewage disposal, drainage and other site improvements. The company deals with existing home and commercial site owners, as well as community developers. Tompkins, a civil engineer and licensed real estate broker, served for over eleven years as assistant public health engineer in the Rensselaer County Health Department, Division of Environmental Hygiene.

1962

▶*Born:* to Mr. and Mrs. **Joel Freedman** their first child, a son David Jeffrey last July.

Richard Allen holds the post of supervisor of customer software support at Gerber Scientific in South Windsor, Conn. . . . Dr. **Michael Davis** is participating in a new executive MBA program at Northeastern University in Boston. The program, designed for top level managers, meets one day a week for a year and a half. . . . **Robert Hall** has been named manager of technical services at Johnson Steel & Wire Co. in Worcester. He previously was with New England High Carbon Wire Corp. and has had fifteen years of experience in the production and testing of high carbon wire. In his new post he will have charge of the quality control departments at the Johnson steel plants in Worcester, Akron, and Los Angeles. He belongs to the Wire Association, American Society for Metals. . . . **Thomas Holland,** who received his MS in systems management from U.S.C. last year, is presently manager of the commercial department at Person & Person, Inc., Sumner, Washington. He is a general contractor for residential and business structures.

Peter Martin is with J. F. White Contracting Co. in Newton, Mass. . . . **John Matson** presently holds the post of district sales manager for Carrier Air Conditioning Co., New York City. He and his wife Sarah have three children and live in New Canaan, Conn. . . . Still with 3M Company as a sales representative, **James Mayer** is now located in Cleveland. . . . Navy Commander **Brian J. O'Connell** was recently promoted to his present rank while serving at the U.S. Naval War College in Newport, R.I. He joined the Navy in 1963, and is now with the U.S. Navy Public Works Center, San Francisco. . . . **John O'Malley,** SIM, controller at Holden District Hospital, has been accorded advanced member status in the nationally-recognized Hospital Financial Management Association. He has served as controller and director of fiscal services at Holden for twelve years. Earlier he was assistant treasurer and controller at Wain-Roy Corp., Fitchburg. He has been working for his MBA at Anna Maria College. . . . **Peter Parrino** presently works as a research associate in radiation therapy at Washington University School of Medicine, St. Louis, Mo. He and his wife Rita have a son Chris, 11, and daughter, Nici, 7. . . . **Charles Roessler** continues with General Dynamics-Electric Boat, where he is an engineering specialist.

1963

▶*Married:* Dr. **Peter F. Lilienthal II** and Miss Tana Ann Fairfield in Wilton, New Hampshire on January 21, 1978. Mrs. Lilienthal attended Framingham State College and is with the word processing department at Exxon's corporate headquarters in New York City. Her husband, who received his PhD from the University of Illinois, is a research leader at Western Electric's Engineering Research Center in Princeton, N.J.
▶*Born:* to Mr. and Mrs. **Robert Gowdy** a son William Henry on February 25, 1978. The Gowdys have two other children, Jay, 10, and Cellissa, 9.

Still with Farrel Co. in Ansonia, Conn., **Alfred Bartkiewicz** is now industry manager for polyolifens at the firm. . . . **Paul Cahalen** is a partner in Process Engineers, Inc., Hayward, Calif. . . . **Roger Flood** serves as director of operations for Badger's London office. . . . **Earl Fratus** holds the post of president of Fratus Construction Co., Inc., in Houston, Texas.

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MARTIN MARIETTA

Jim Kelly has started his own manufacturing representative firm, Kelly Equipment Co. . . . **Robert Magnant's** book, *Domestic Satellite: An FCC Giant Step,* is currently recommended reading for members of the telecommunications industry. A reviewer writes: "Rarely can a book about telecommunications and its regulation rate high praise for its readability. . . but this book is beautifully written. . . .It covers much more than satellites. . . . It reviews the history of communications regulation and especially its recent development of competition in telecommunications." The 296-page book is available from Westview Press in Boulder, Colo. Magnant is chief engineer and technical director for the U.S. Army Communications Electronics Engineering Installation Agency in Ft. Ritchie, Md.

Ed Polewarczyk holds the position of resident materials manager in the Space Shuttle Program for Rockwell International Space Division, Downey, Calif. He is currently stationed at Sunstrand Corp. in Rockford, Ill. Active with BSA, Ed also gives speeches and slide shows on the Space Shuttle Program to various interested organizations. . . . **Ronald Pueschel** was recently promoted from manufacturing manager to operations manager at Philips Medical Systems, Inc., Shelton, Conn. . . . **Dennis Snay** has been named assistant to the regional executive of Massachusetts Electric at company headquarters in Worcester. Previously he was central division manager of consumer services in Worcester. In 1963 he joined the company as a commercial sales representative in Malden. Later he became local commercial sales manager for the firm in Marlboro. A registered professional engineer, he has done graduate work in engineering management at Northeastern University. . . . **Warren Standley** is a member of the technical staff at TRW-Energy Systems Division in McLean, Va. . . . **Nishan Teshoian** serves as manager of materials at Gardner Denver Co., Quincy, Ill. . . . **Bill Zinno,** project manager for inventory management systems at Dresser Clark, spoke about manufacturing control in business before the Penn-York chapter of the American Production and Inventory Society last April in Olean, N.Y. He has been with Dresser Clark for two years. Previously he was with Industrial Nucleonics Corp. in Columbus, Ohio. He and his wife Janice and three children reside in Allegany, N.Y.

1964

Continuing with Boeing, **Robert Bridgman** is now assigned to the Boeing Co., Del City, Okla., at Tinker AFB. . . . **William Clark III** has been named "Engineer of the Year" by the main office section of the New York State Association of Transportation Engineers. A thirteen-year employee of the N.Y.S. Department of Transportation and Thruway Authority, Clark is currently the technical services engineer in the Bureau of Thruway Maintenance. In that post he coordinates all engineering research at the Thruway and also serves as the materials engineer for maintenance. Major research accomplishments at the Thruway include development and implementation of: 1. a quality assurance system for asphalt concrete pavement mixes; 2. paving techniques especially designed for overlaying old pavement; and 3. asphalt concrete membrane mastic mixtures for waterproofing rehabilitated bridge decks. Before joining Thruway's engineering staff, Clark spent six years with N.Y.S. Department of Transportation's Research Bureau. He wrote nine research reports then, two of which were presented at meetings of the National Academy of Science's Transportation Board in Washington, D.C. In 1971 his report, "Computer Simulation for Quality Assurance in Asphaltic Concrete Production" was selected as the best research paper by a young engineer. A licensed professional engineer, he belongs to the N.Y.S. Association of Transportation Engineers, the Transportation Research Board, ASCE, and the Association of Asphalt Paving Technologists. For six years he has served as the Civil Service Employees Association's shop steward for the professional, scientific, and technical employees in the Thruway's headquarters in Albany. Clark and his wife Mary Ellen have two children.

Dr. **Gary Goshgarian,** associate professor of English at Northeastern University, gave a lecture, "Science Fiction — The World Ain't What it Used to Be" before the Connecticut branch of the Armenian Students' Association in Hartford last April. Dr. Goshgarian received his PhD from the University of Wisconsin. Last year his book, *Exploring Language,* was published by Little, Brown & Co. . . . **Dave Healy**, a lieutenant colonel in the Marine Corps, retired from the Corps on July 1st "to commence a new career." . . . Continuing with Electric Boat, Groton, Conn., **Alfred Malchiodi, Jr.**, is currently chief of engineering. . . . **Bob Morse,** president of Traffic Systems Co., Inc., a traffic signal construction company in Clinton, Mass. reports that a new company, Fiber-Optics Sales Co., Inc., has been formed to market Valtec's line of traffic signals and related products. (Valtec Corporation, the leading manufacturer of fiber-optic equipment for traffic control and highway safety, is located in West Boylston, Mass. Morse has been representing Valtec in New England through Traffic Systems Co. for two years.) Fiber-Optics Sales Co. will market fiber-optic pedestrian signals, lane control signals, two-color vehicle turn arrows, and other fiber-optic related equipment in the New England area. Increased demand for fiber-optic traffic equipment is attributed to the efforts of New England cities and towns to save money through energy conservation. Generally, fiber-optic traffic signals use one-third the energy of conventional signals, and offer improved visibility, resistance to vandalism, and reduced maintenance.

1965

Dr. **Brad Barber** serves as a research associate in the division of nuclear medicine at the University of Arizona Health Science Center in Tucson. . . . **Donald Carlson** is assistant to the managing director of NSK-Torrington Co., Ltd. in Tokyo, Japan. The firm is affiliated with the Torrington (Conn.) Co. . . . **Stephen Cloues** received a master's degree in religious education from Southwestern Baptist Theological Seminary in May. . . . **James Hammett, Jr.,** recently moved to Florida where he is the marketing manager of Tesdata-Inmet, a growing systems and instrumentation company. He writes: "The challenge is enjoyable." . . . **Russell Koelsch** works as a senior mechanical engineer at EBASCO Services in Newport Beach, Calif.

The Canton (Ohio) Regional Society of Professional Engineers has awarded the 1978 "Young Engineer of the Year" award to **Larry Phillips.** Larry, a registered professional engineer in both Ohio and Pennsylvania, and a professional surveyor in Ohio, is presently employed as an associate member at Hammontree & Associates, Ltd., Consulting Engineers and Surveyors. He is primarily responsible for the sanitary, environmental, and industrial sections of the firm.

He belongs to NSPE, Canton Regional Society of Professional Engineers, Engineering Foundation of Ohio, and Akron Area Consulting Engineers. He is a membership chairman for both the state and Regional Society of Professional Engineers, and vice president of the Akron-Canton chapter of ASCE. Previously Larry was secretary-treasurer of the Akron section of ASCE and vice president and president of the Canton Joint Engineering Council. One of his published articles was "Plastic Bubble Houses Construction."

He has been active with the Kiwanis, the Methodist Church, Doylestown Joint Planning Commission, Rogues' Hollow Historical Society, and Akron Art Institute. Also, he has served as a volunteer for the Grand Masters Tennis Tournament. He and his wife, Sue, reside in Doylestown with their two sons.

Howard Sachs was recently promoted to associate professor of anatomy at the University of Illinois in Chicago. He was also appointed as assistant dean of the Graduate College, Medical Center campus. . . . **Chester Slyk,** SIM is a production manager for American Optical in Brattleboro, Vt. . . . Dr. **John Wright** is now an associate professor at UNH in Durham.

1966

▶*Born:* to Mr. and Mrs. **Robert A. Sinuc** a second son, Adam, on March 15, 1978. (Adam has a brother, John, 8.) Sinuc is currently employed by GE/Noryl Plastics in Selkirk, N.Y., where he is manager of the resin plant.

Continuing with Eastman Kodak, Rochester, N.Y., **John Carosella** presently serves as a senior optical engineer. . . . **Irvin Havens, Jr.,** SIM, of Bay State Abrasives Division, Westboro, Mass., has been awarded $200 in conjunction with a patent application filed for him as part of a corporate patent recognition program sponsored by Dresser Industries, Inc. Havens, manager of inorganic product development, has developed a high strength vitrified bonded wheel. He holds a BS in ceramic engineering from Alfred University and an MS from Clemson. He has been with Bay State since 1957. . . .

Michael Mauro is now a senior engineer at General Dynamics-Electric Boat in Groton, Conn. . . . **John Morawski** graduated last year with an MS in industrial administration from Union College, Schenectady, N.Y. . . . Dr. **Frank K. Pfeiffer** was recently promoted from assistant professor of management to associate professor of management at Nichols College, Dudley, Mass. . . . **Stuart Roselle,** still with Central Illinois Public Service, is presently a special projects engineer with the firm in Springfield. . . . **Donald Ruef** serves as a supervisor T & D of the North Slope for Sohio-BP Alaska of Anchorage. . . . **Peter Sommer,** a patent attorney with Sommer & Sommer in Buffalo, N.Y., writes that he and his wife have purchased a "Big, old house, and are busy restoring it."

1967

▶*Married:* **Steven J. Frymer** and Anne E. Prescott on September 24, 1977. The bridegroom is an assistant civil engineer for the Massachusetts Department of Public Works in Boston.

Fawn Realty (Century 21) of Nashua, N.H., with **Gregory Goulet** as president, recently received four plaques from the Southern New Hampshire Multiple Listing Service for sales leadership. Goulet is also president of Carey Development Corp., a Fawn affiliate, which has purchased land in Amherst for a 49-lot subdivision featuring fifty acres of open space and conservation land. Fawn purchased Jelley Associated Realty in Hudson and established its first branch office there last summer. An additional corporation is called Fawn Homes, which allows Fawn to build homes on Carey Development Corp. land as well as on land owned by others. Goulet expects to build twenty-four homes during the next year. He and his wife, Barbara, have an adopted son, Timothy Michael, one.

Presently **John Kuenzler** holds the post of senior application engineer at Honeywell, Inc. in Fort Washington, Pa. He and his wife Marilyn have two children and reside in Chalfont. . . . **"Pete" Picard** is with the construction and maintenance division in the management procedures branch at the Federal Highway Administration in Washington, D.C., where he is a highway engineer.

1968

▶*Born:* to Mr. and Mrs. **Robert Pleines** a son Thomas Joseph, on April 15, 1978.

Donald Aldrich presently serves as engineering supervisor for Du Pont at the F & F department's Philadelphia plant. He and his wife Lois have two children, Lori, 4½, and Bradley, 2¼. . . . **Michael Babin** is now with Tudor Engineering Company (consulting engineers and planners) in San Francisco. . . . **David Baxter** works as a project engineer at Torin Corp., Torrington, Conn. . . . **John Colognesi,** vice president of the Southbridge (Mass.) Sheet Metal Co., also serves on the board of directors of the Chamber of Commerce; is co-chairman of the industrial division of the United Way Fund; and a corporator of the Southbridge Savings Bank. He and his wife are active with the Gateway Players Theater, with John working behind the scenes as technical chairman and Pat as the properties chairman.

William Gross, Sr., SIM, is treasurer and manager of international sales at Dymo Business Systems, Inc., Randolph, Mass. . . . **Dave Gumbley** has been promoted to engineer 3 and transferred to Cherry Hill, N.J. with Getty Refining & Marketing Co. . . . **Steven Halstedt** was recently named to the board of directors of Telesis Corporation, a major cable television company. He is chairman of the audit committee of the board. . . . **Donald Holden** is now a project engineer at Abbott Laboratories in North Chicago, Ill. . . . **Stephen Holub** serves as a sales engineer with the Davison Chemical Division of W. R. Grace & Co., Media, Pa. . . . **Vincent Kubert,** SIM, is a project engineer for Harris Corp.-Commercial Press Division in Pawcatuck, Conn.

Andrew Lesick is a computer systems analyst at the Naval Underwater Systems Center in New London, Conn. His current project involves a real-time data acquisition system which will be used to analyze acoustic data aboard a deep sea vessel in the Atlantic Ocean this summer.

Ray Racine is employed as a rotating equipment specialist at Aramaco Services Co. in Houston, Texas. He and his wife Rebecca have two children. . . . **Scott Ramsay** is now controller and assistant treasurer at George C. Shaw Company, South Portland, Me. . . . **David Rice** has been promoted to manager of manufacturing systems applications at Inmont Corp., a subsidiary of Carrier Corporation. He and his wife Linda and two children, Jeffrey, 4½, and Melissa, 1½, reside in New Milford, N.J. . . . Still with Mobil Oil Corp., **Kenneth Roberts** now serves as manager of crude logistics planning for the firm in New York City. . . . **Peter Saltz** holds the position of director of finance and administration in the data services division at Informatics, Inc., Fairfield, N.J. . . . **David Speirs** has been named Republican alternate to the Board of Finance in Old Lyme, Conn. He is with Speirs Plumbing.

David Swercewski is presently a senior engineer at General Dynamics-Electric Boat. . . . **Marshall Taylor** has been elected treasurer of Ryder System, Inc., Miami, Fla. Before joining Ryder in 1974 as manager of capital planning, he had held managerial posts with Allis-Chalmers Corp. and Mobil Corp. In 1975, he was promoted to assistant treasurer at Ryder. Taylor, who has an MBA degree from Babson, is a vice commodore of the Biscayne Bay Sailing Fleet, and a member of Miami's Coconut Grove Sailing Club. He and his wife Nancy and two sons live in Miami. . . . Lt. **David Williamson** is an electronics material officer with Naval Security Group Activity in Northwest, Va. . . . Presently **Bob Woog** serves as manager of service and technical support for American Bell International Inc., South Plainfield, N.J. The Woogs are now living in Tehran, Iran.

1969

▶*Married:* **Stephen W. Press** and Miss Mary A. Furtek on May 20, 1978 in Chicopee, Massachusetts. The bride, a graduate of the College of Our Lady of the Elms and of the Yale-New Haven Hospital School of Medical Technology, is a medical technologist at Yale-New Haven Hospital. Her husband, who has a master's degree from Yale, is a research chemist for Hoffman-LaRoche Pharmaceuticals of Nutley, N.J.
▶*Born:* to Mr. and Mrs. **Peter S. Heins** a daughter, Sarah Elizabeth, on March 21, 1978. Jamie, 7, is in the second grade. Peter continues to fly as a Coast Guard HC-130 Hercules aircraft commander. He was married to Jan M. Keigh on top of Mt. Washington (N.H.) on July 2, 1977.

Thomas Fournier is an associate engineer at Puget Sound Power & Light in Bellevue, Washington. . . . **David Johnson** was elected a town meeting member for Belmont, Mass. in April. . . . **Stephen Legomsky,** who has received his Juris Doctor degree from San Diego School of Law, is a postgraduate student at St. Johns College, the University of Oxford in England. . . . Capt. **Douglas Nelson** is an instructor-pilot for the Air Force at Homestead AFB, Florida. . . . **Donald Rapp** recently transferred to Du Pont's Seneca Works plant as division engineer. He is married and has one son. . . . **James Rodier,** staff engineer in the research department of Public Service Co. of New Hampshire, spoke at a Public Service Co. forum in Nashua in March. His present job responsibilities include rate design and administration, special contracts, and fuel adjustment clause administration. Formerly, he had worked as a utility rate specialist in Boston and New York. . . . **Barry Shiffrin** was recently promoted to staff engineer at IBM in Endicott, N.Y. He has a master's degree in computer systems from SUNY at Binghamton. . . . **Marty Surabian** is still employed with Bechtel Power Corporation as mechanical engineering group supervisor. He has been married about a year. His wife's name is Sylva. . . . After nearly nine years with the D.C. Department of Transportation, during which time he rose from junior engineer to the chief traffic signal engineer for the city of Washington, . . . **Paul Wolf** has now accepted a post as senior transportation engineer with the Northeast Ohio Areawide Coordinating Agency, the largest in Ohio. His duties will include providing traffic engineering assistance and guidance to some of the 170 villages, townships, municipalities and county governments in a five-county area, serving 2.3 million people in and around Cleveland. The Wolfs have two children.

1970

▶*Born:* to Mr. and Mrs. **Clark Knickerbocker,** their second son, Paul, on February 27, 1978. Clark is presently serving as sales manager for Swift Agrichemicals in Chicago. . . . to Mr. and Mrs. **John Pelli** their second daughter, Megan Elizabeth on April 13, 1978. Megan joins her older sister, Jennifer Ann. John was named vice president of Ley Construction Co., Inc., in February. . . . to Mr. and Mrs. **Leonard Polizzotto** their first child, a son Matthew on March 25, 1978. Lenny is a principal engineer at Polaroid Corp., Waltham, Mass.

Michael Arslan is employed by UTC at Hamilton Standard Division as a test engineer for the manufacturing engineering department. He is also working for his MBA at Western New England College. . . . Currently **James Bagaglio** works for Water's Associates in Milford, Mass.

Peter Blackford has joined Astro Wire and Cable Co., Worcester, as chief engineer. He still maintains a part-time affiliation with High Fidelity House, also in Worcester. Active for many years in the Worcester Area Sports Car Club, in both rallying and auto-slalom, last year Peter was manager for a road-racing team sponsored by Daniels Brothers Renault. The black and gold Renault "Le Car," driven by **Mark Saviet,** '71, finished third in the national "Le Car" challenge.

John Cattel, who has been with Riley Stoker for five years, is presently district service engineer for the company in the Baton Rouge district. He is responsible for the proper administration of all service department personnel and service work done in the district. John belongs to ASME and to Mensa, an organization for those having an IQ higher than 98% of the country's population.

Congressman **David Emery,** from Maine's first district, was slated to be the guest speaker at the University of Maine at commencement exercises on May 13th. The selection of the graduation speaker is done by the Student Senate. . . . **Dom Forcella** is included in the current edition of *Who's Who in American Politics*. . . . Capt. **Edward Howe** serves as a communications and electronics staff officer with the U.S. Army in Korea. . . . Sister **Louise Lataille,** NSF, teaches math in St. Louis Parish, Lowell, Mass. . . . Continuing with Dewey & Almy Division of W. R. Grace, **Richard Steeves, Jr.** is now manager of process development for the firm in Lexington, Mass. . . . **John Sztuka** received his MBA from Western Michigan University in April. . . . **Anthony Toscano** is employed as a project manager in the Envirotech Corp./Buell Division in Lebanon, Pa. . . . **Ross Willoughby** holds the post of programmer-analyst at International Graphics in San Diego, California.

1971

▶*Married:* **Charles F. Ebbinghaus** and Miss Alice J. Donohue on March 17, 1978 in Groton, Connecticut. The bride, who teaches reading at Sacred Heart School, graduated from Nazareth College, Rochester, N.Y. and attended graduate school at the State University of New York in Genesco. The groom is an assistant scientist researcher at Pfizer, Inc. . . . **Nicola LoStracco** and Miss Janet F. DeChiaro on April 8, 1978 in Worcester. Mrs. LoStracco attended the Art Students League, New York City, and graduated from the School of the Worcester Art Museum and Clark University. She is a self-employed artist and photographer, and part-time ski instructor. Her husband teaches mathematics at Shrewsbury High School.

▶*Born:* to Mr. and Mrs. **Richard B. Hopewell** their first child, Jonathan Richard, on February 23, 1978. Rick is with the Badger Company, Inc. in Cambridge, Mass. . . . to Dr. and Mrs. **Joseph J. Spezeski** a son Joel David on September 8, 1977. Dr. Spezeski, who received his PhD in physics from Yale in December, is now an instructor and research associate in the physics department at the University of Arizona in Tucson.

Jim Abraham has just been promoted to second vice president of investments at Shearson Hayden Stone, Inc. in Chicago. Previously, he was with Dames & Moore. He has an MBA from Northwestern University. The Abrahams have a two-year-old daughter. . . . **Steven Chan** holds the post of vice president at Adams-Smith, Inc. in Boxboro, Mass. . . . **Lee Cristy** is a senior industrial engineer at Singer-Kearfott Division in Little Falls, N.J. . . . Still with Koretsky King Associates, **Daniel Donahue** is presently a project engineer for the firm in Richmond, Calif. . . . On May 1st, **Gordon Govalet** left Bechtel Power in Maryland to assume the post of project engineer-manager at ALNASCO in Pittsfield, Mass. . . . **Wayne Holmes** serves as district supervising engineer for Industrial Risk Insurers in Wellesley, Mass. . . . Capt. **Michael Hughes** has been named to head the Army Reserve Training Corps extension unit at Fitchburg (Mass.) State College. The unit was created in conjunction with the ROTC program at WPI last fall, and Hughes is the first permanent Army officer assigned to the Fitchburg unit. He was commissioned a second lieutenant in 1971, promoted to first lieutenant in 1972, and to captain in 1975. He has served in Germany and at Ft. Carson, Colo. Twice he was awarded the Army Commendation Medal for meritorious service. He and his wife and two children reside at Fort Devens.

Philip Johnson, who received his MS in management science and engineering from WPI last year, is now manager of engineering at Omnitech, Inc., in Dudley, Mass. . . . **Ernest Joyal** works as a mechanical engineer at Naval Underwater Systems in Newport, R.I.

. . . **Robert Mills, Jr.,** was recently promoted to associate actuary at State Mutual Life Assurance Company of America in Worcester. He serves in the individual life actuarial area. . . . **John Petrillo,** who has a Juris Doctor from Brooklyn Law School, holds the post of district market manager at AT &T Long Lines in Bedminster, N.J. . . . **Ray Skowyra** serves as a marketing consultant for corporate consulting services at GE in Bridgeport, Conn. . . . **Robert Trachimowicz,** who was recently promoted to construction engineer for EBASCO Services Inc. of New York in Houston, Texas, is in charge of instrumentation and will coordinate the mechanical engineering activities for a 565-megawatt coal-fired power plant in Thompsons, Texas. . . . **Steve Watson**, with DEC-Europe, is located in Geneva, Switzerland. Steve writes: "This job has me traveling throughout Europe 50 percent of the time, and I'm paid in Swiss francs."

1972

▶*Born:* to Mr. and Mrs. **Kenneth W. Kolkebeck** a son Scott on March 3, 1978. Scott joins brother, Keith, almost 2. In January Ken was transferred to Pittsburgh to set up a sales office for Rosemount, Inc. He is senior sales engineer in charge at the company. . . . to Mr. and Mrs. **Steven Lutz** a daughter Amanda Marie on February 6, 1978. Steve is a product engineer at Fram Corp., East Providence, R.I.

James Andruchow is vice president of Stephen Andruchow, Inc. in West Warwick, R.I. He and his wife Catherine have two children. . . . **Robert Blackmar,** SIM, holds the post of director of the manufacturing standards department at Norton Co., Worcester. . . . **Charles Brine** will receive his PhD in chemical oceanography from the University of Delaware, College of Marine Studies this year. . . . **Raymond Coleman** serves as technical director for United Products Corp. in Providence, R.I. The company manufactures braided industrial products. . . . **David Cummings** has been elected a director of Lowell Corp., Worcester. His great, great grandfather founded the company, which manufactures ratchet arms and specialty wrenches, in 1869. Cummings is a financial analyst at Norton Co. He earned his MBA at Babson. . . . **Carl Goldknopf** is with Electric Boat in Groton, Conn. . . . **James Hardy** is employed as an optical engineer at NCR Corporation in Cambridge, Ohio.

Still with Digital Equipment Corporation, **Robert Lyons** is now a product planning specialist for the firm in Merrimack, N.H. . . . **Glenn Mortoro** works as a senior engineer at General Dynamics-Electric Boat. . . . Dr. **James O'Neil** is a senior resident chemist with Du Pont in Parlin, N.J. He, his wife, Jean, and two children, reside in Howell. . . . **John Powers** recently began working for Westinghouse as an associate reliability engineer. He is located in Pittsburgh, Pa. . . . **Bob Rogers,** formerly a mechanical design engineer for Pratt & Whitney, commercial products division, United Technologies, has transferred into the scientific programming group, where he is now a senior scientific programmer-analyst. His responsibilities include several programs used by mechanical design, coordination of CAD/CAM systems with Pratt & Whitney's manufacturing division, and the engineering design and development of several new programming applications. In May of last year he completed his MBA degree at UConn with concentration in the areas of operations research and marketing.

Dr. **Brian Savilonis** is an assistant professor at Widener College, Center of Engineering, Chester, Pa. . . . Currently **Walter Smith** is a graduate student in the doctoral program in the department of chemistry at Brown University, Providence, R.I. . . . **Larry Stepenuck,** a self-employed lobsterman in Rockport, Mass., recently ran for a seat on the town planning board. He feels that planning board members can object to uncontrolled building plans and suggest by-laws which can slow harmful development. Through the board, he would also work to protect public access to the ocean. . . .Continuing with Monsanto, **Donald Taft** is presently a salesman for the firm in Southfield, Mich. The Tafts have two children. . . . **William Way**, still with Kemper Insurance Co., North Quincy, Mass., is a fire protection consultant. . . . **Richard Wolke** now works as a methods specialist under the manufacturing management program at GE's small A.C. motor department in Hendersonville, Tenn. He has held the post since December.

1973

▶*Married:* **Michael C. Greenbaum** to Miss Wendy N. Schwartz in Merion, Pennsylvania on August 21, 1977. Mrs. Greenbaum graduated from Clark University and received her MD degree from the University of Rochester School of Medicine and Dentistry. Her husband received his Juris Doctor degree from Rutgers School of Law. An associate with the law firm of Bacon & Thomas, Arlington, Va., he specializes in the law of patents, copyrights, and trademarks. He also attends the National Law Center of George Washington University where he will receive the LLM degree. He is registered to practice before the U.S. Patent & Trademark Office and has been admitted to practice law in Pennsylvania. . . . **John H. Ward** to Donna L. Childress of Fort Wayne, Indiana recently. Mrs.

Ward is employed at Purdue University. John receives his PhD in atmospheric science this August and will begin a one-year National Research Council postdoctoral fellowship at the National Weather Service in Marlow Heights, Maryland.

▶*Born:* to Captain and Mrs. **Tom Beckman** a daughter Jamie Lynn on February 27, 1978. The Beckmans are presently located in Fort Devens, Mass. . . . to Mr. and Mrs. **William Henries** their first child, Alison Ann, on St. Patrick's Day, March 17, 1978. Henries passed his PE registration exam last November.

David Bedard has been promoted to captain while serving as a test officer with the U.S. Army Air Defense Board at Ft. Bliss, Texas. He entered the Army in 1973. . . . After three years as data processing director at United Restaurant Equipment Co. of North Smithfield, R.I., **Steven Buba** was recently promoted to the road position of institutional sales specialist. . . . **Paul Christian** has received his PhD from Stanford University and is now with Bell Labs. His wife, the former **Laima Pauliukonis,** '77, is working for her PhD at Princeton. . . . **Lee Cooper** holds the post of plant engineer at CY/RO Industries in Sanford, Me.

Herbert Hedberg was promoted from product engineer to project manager at Waters Associates, Milford, Mass. in January. He is pursuing his MBA in the evenings. . . . **John Homko,** who received his master of science degree in electrical engineering last year at Carnegie-Mellon University, is presently with the Union Switch and Signal Division of Westinghouse Airbrake Company. John, who is located in Pittsburgh, works for the computer systems development group. He is engaged in research involving computer applications in the railroad industry. . . . **Robert Kowal** serves as a diagnostic programmer at Data General in Westboro, Mass. . . . **Robert Levi,** a district sales manager for Carrier Transicold Co., is located in Danville, Calif. . . . **Joseph Magri** works as a project engineer at Bird Machine Co. in South Walpole, Mass. . . . Lt. **Thomas Masker** is a weapons officer with the Navy assigned to the U.S.S. Snook out of San Diego. In October he will be in the San Francisco area. . . . **William Mawdsley** has been promoted to associate actuary at State Mutual Life Assurance Company of America in Worcester. He is responsible for individual actuarial service within the individual life actuarial organization.

Aram Nahabedian works as a plant supervisor at Westinghouse Electric Corp. in Augusta, Me. . . . **Richard Norlin** is employed as a chemist at New England Nuclear Corp. in Boston, Mass. . . . **William Nutter** is being transferred to the GE ordnance office at Electric Boat Division of General Dynamics. He will be involved with the Trident submarine fire control system installation. . . . **Wayne Pitts** serves as a senior scientist at Energy Resources Co. in Cambridge, Mass. . . . **Mark Richards** reports that he is commissary manager for the Pizza Transit Authority. His wife, Christina, a student at the University of North Carolina, is employed at North Carolina Memorial Hospital. . . . **Charles Scopelitis** has fulfilled a four-year engineering internship and completed sixteen hours of examination by the National Engineering Council, qualifying him for licensing as a registered professional engineer by the State of Connecticut. He is a staff engineer responsible for process computer systems at Millstone II Nuclear Power Station. . . . **Joe Staszowski** received his MSEE from Northeastern University last year. . . . **Paul Tassinari** holds the post of president at Mica-Tron in Braintree, Mass. . . . **Karl Williams** is plant supervisor at Sterling Institute, Craftsbury Common, Vt.

1974

▶*Married:* **Garry Balboni** to Miss Adele Tiberi of Dover, Massachusetts on June 4, 1977. Garry, who is a project manager for Perini Corp., is currently constructing a wastewater treatment facility for Lukens Steel Co. in Coatesville, Pa. . . . **Thomas I. Burns** and Nancy Kelly of Rockville, Connecticut on August 27, 1977. Mrs. Burns graduated from Anna Maria College and teaches math, social studies, and art at the Immaculate Conception School in Schenectady, N.Y. Her husband is a control systems engineer in the gas turbine department at GE. He is also pursuing a master's degree at RPI through a GE program. . . . **Alan C. Judd** to Miss Penelope R. Bost on February 4, 1978 in Pennsylvania. The bride graduated from Lenoir-Rhyne College, Hickory, N.C., and is a travel counselor. Her husband is a process control engineer for GE in Hickory.

▶*Married:* Dr. **Mark Mahoney** to Kathryn Jakubczyk in New Britain, Connecticut recently. The groom began his residency in family medicine in June at Abington (Pa.) Memorial Hospital. . . . **Lawrence D. Patty** to Miss Nancy R. Capozza on May 13, 1978 in New London, Connecticut. Mrs. Patty graduated from Southern Connecticut State College and is a children's librarian at Waterford Public Library. The groom is with General Dynamics-Electric Boat. . . . **Thomas J. Socha** and Miss Barbara H. Hall in Paxton, Massachusetts on May 20, 1978. Mrs. Socha graduated from Utica College of Syracuse University and is an occupational therapist at St. Vincent Hospital, Worcester. The bridegroom is production manager at Mercury Wire Products, Inc., Spencer, Mass.

▶*Born:* to Mr. and Mrs. **Michael E. Lewandowski** their first baby, Scott Michael, on December 19, 1977. Michael teaches at Joseph Case High School in Swansea, Mass., where he is active in rocketry and science fair programs. . . . to **John** and **Michelle (Riel) Lord** their first child, a son, Benjamin Warren, on December 13, 1977. The Lords are now in their new house "settling in for a long stay in Connecticut."

Lt./Jg **James Asaro** is with U.S. Navy Patrol Squadron Five. He and his wife Belinda reside in Jacksonville, Fla. . . . **Erik Brodin** is an industrial engineer for GM in Framingham, Mass. He has an MCP from URI and an MBA from Western New England College. . . . **Wayne Bryant** serves as a project leader of the systems programming group at Composition Systems, Inc. He lives in Mahopac, N.Y. . . . **Christopher Cigal** has served as commander of Headquarters Company 544 Maintenance Battalion for a year and now plans on going to UMass Graduate School for an MBA this fall. . . . **Keith Coakley** holds the post of manager of quality assurance at Scan-Optics,

Inc. in East Hartford, Conn. . . . **Gene DeJackome,** a research engineer with Monsanto in Springfield, Mass., was recently a candidate for selectman in Orange, Mass. He is a member of the Orange Planning Board. He and his wife Pamela have one daughter.

Still with Grumman Aerospace, **Stephen Engel** is now an associate engineer for the firm in Bethpage, N.Y. . . . Presently **Ronald Fargnoli** serves as the project engineer for Gilbane Building in Providence, R.I. . . . **Robert Foley** is a personnel officer with the U.S. Marine Corps. . . . **Thomas Frink** works as a junior engineer for Malden Mills in Lawrence, Mass. . . . **Edward Gordon** holds the post of engineering programmer for RACAL-Milco, Inc. in Miami, Fla. . . . **James Gow** has been promoted to systems consultant within the systems development organization at State Mutual Life Assurance Company of America. He joined the company after graduation as a systems analyst. He was named senior systems analyst in 1976. Last year he achieved the designation of the fellow, Life Management Institute (FLMI). . . . **Donald Gross** has graduated from F-4 RTU at MacDill AFB, Fla. He is now assigned to Kunsan AFB, Korea. . . . **Gary Hills**, a senior field cost engineer for Stone & Webster in Boston, is presently assigned to Long Island Lighting Company's Shoreham Nuclear Power Station. . . . **Chester Kokoszka** serves as an associate engineer at Connecticut Yankee Atomic Power plant in East Hampton, Conn. . . . **Robert Partridge** works as an office engineer for Stone & Webster in Wading River, N.Y. . . . **Peter Thacher** continues with ARAMCO of Dhahran, Saudi Arabia, where he is with project engineering services. . . . **Jim Wong, Jr.** holds the post of process engineer at Allied Chemical Corp., Philadelphia, Pa.

1975

▶*Married:* **Robert J. Ankstitus** and Miss Patti A. Milley on April 22, 1978 in Ashland, Massachusetts. The bride graduated from Ashland Senior High School and is employed by Lehrer & Madden, Inc., Wellesley Hills. The bridegroom is employed by the U.S. Environmental Protection Agency in Lexington. . . . **John F. Gabranski** and Miss Carol A. Finney in Westfield, Massachusetts on March 18, 1978. Mrs. Gabranski graduated from Springfield College and received her MS in education of the deaf at Smith College. Her husband is a student at Columbia University Graduate School of Business.

▶*Born:* to Mr. and Mrs. **David H. Kingsbury** their second child, a daughter, Lesley Anne, on April, 12, 1978. Dave is with Monsanto in Springfield, Mass., where he is a systems engineer.

Jim Aceto has accepted the post of superintendent at Perini Corp. in Coatesville, Pa. He and his wife Melinda will be moving to the Coatesville area soon. . . . **Jon Anderson**, who has just graduated from Yale Law School, is currently a law clerk for Caleb Wright, employed by the U.S. government. He is located in Wilmington, Delaware. . . . **Thomas Bower** has completed requirements for his master of science and safety degree from the University of California. He is assistant chief of the Safety Corps of Engineers in Baltimore, Md. . . . **Barry Braunstein** now works for Intel Corporation as a field sales engineer. He is located in Chestnut Hill, Mass. . . . **Mark Candello** has joined Frederick A. Farrar, Inc. in Keene, N.H. . . . **Jane Lataille Carnevale** currently serves as a supervising engineer at Industrial Risk Insurers, Philadelphia, Pa. . . . **Douglas DeWitte** works as a mechanical engineer at the Naval Air Engineering Center in Lakehurst, N.J. . . . **Donald Drew**, who received his MBA from Cornell last year, is now a management consultant for Arthur Young & Company in Washington, D.C. . . . Continuing with Westinghouse, **Charles Embree** currently serves as a marketing representative in engineering services in Hartford, Conn.

John Fitzgibbons is a graduate student at Northeastern University in Boston. . . . **Stephen Fitzhugh** works for I & CE Systems Engineering at Combustion Engineering in Windsor, Conn. . . . **Stanley Goldfarb** continues at Digital Equipment Co., Maynard, Mass., where he is a software engineer. He and his wife Janice reside in Shrewsbury. . . . **D. Berrien Halstead III** holds the post of damage control assistant with the U.S. Navy. . . . Still with Wildish Companies, Eugene, Oregon, **Timothy Hendrix** is currently a construction engineer. . . . **John Holmes** serves as an engineer technician at Combustion Engineering in Windsor, Conn. . . . **Michael Malanca** is chief of computer services for Dynatrend, Inc. in Burlington, Mass. He has his MS from WPI. . . . **Charles May** is employed as a sales engineer for Dana Corp. in Alanta, Ga.

Stephen Mealy has been in Puerto Rico working with the Navy's East Coast Seal Team. . . . **Paul Menard,** who is working for his PhD at Ohio State University, is currently a research associate. . . . **Martin Meyers** received the degree of doctor of philosophy in electrical and computer engineering from UMass, Amherst in May. He is now a member of the technical staff at Bell Telephone Laboratories in North Andover. . . . **Frank Moitoza** serves as a contract administrator for the Naval Underwater Systems Center/Naval Sea Systems Command in Washington, D.C. He lives in Alexandria. . . . **Richard Newhouse** has accepted a position as a structural engineer with Roussel Engineering, Inc. of Metairie, Louisiana. . . . In June **Barrett Pett** was reassigned to the U.S. Army cold region center in Ft. Greely, Alaska. He is the project manager testing air defense missile systems in the Arctic. . . . **Francis Schlegel** was transferred to Baton Rouge in November to the Uniroyal chemical plants in Scotts Bluff and Geismar, Louisiana, where he is a development engineer.

Catherine Seymour has completed her first year of graduate work at MIT. Last year she was a teaching assistant. Currently she holds the position of research assistant, specializing in organic chemistry. . . . **David Shopis** is with Gilbane Building Co. of Providence, R.I. He has a degree in building sciences from RPI. . . . **Margaret St. John** continues at St. Vincent Hospital, Worcester, where she is now a senior electron microscopy technician. . . . Lt/jg **Michael Sundberg**, U.S. Navy, is presently stationed near the Indian Ocean, where he is with the Civil Engineer Corps. . . . **John Watkins** is an experimental engineer at Warner & Swasey Co., Worcester. . . . **Stephen Werner** holds the post of senior design engineer at Boeing Wichita (Kansas) Company. . . . **Jeff Wnek** finished the 1978 Boston Marathon with a time of 2:39:45. It was his first Boston race, and only his second marathon. He continues at Lilly Chemical Products, Inc., Templeton, Mass., where he is a paint chemist and plant safety director.

1976

▶*Married:* **Thomas H. Descoteaux** and Priscilla A. McNamara on May 6, 1978 in Worcester. The bride graduated from the Memorial Hospital School of Nursing and is a registered nurse on the staff of St. Vincent's Hospital. The bridegroom is a civil engineer with ENCON, Inc. in Chicopee. . . . **Robert Roy IV** and Nancy Krusell in Marshfield, Massachusetts on May 20, 1978. Mrs. Roy graduated from St. Lawrence University and is an environmental planner employed by the GCA Corp. in Bedford. Her husband is an electrical systems engineer with GTE Sylvania, Waltham.

Joseph Betro, who received his MSEE from the University of Wisconsin in May, has received a full fellowship to the University of Illinois, where he will study for his doctorate. . . . **Raymond Calabro, Jr.** works as a pipe hanger engineer at ITT Grinnell in Providence, R.I. . . . Still with Clairol in Stamford, Conn., **John Casey** is currently a production supervisor. . . . **Therese Cirone** holds the post of production supervisor at Clairol in Stamford. . . . **Albert Cooley, Jr.,** who has received his MBA from the University of Michigan, works as a marketing associate at RCA in Cherry Hill, N.J. . . . **Robert Cormier** serves as an engineer in training at Allan H. Swanson, Inc., in Nashua, N.H. . . . **Nancy Duncanson** is a pilot plan engineer for Union Carbide-Linde Division in Tonawanda, N.Y. . . . **Kevin Egan** works as a structural engineer for Allen & Demurjian Inc., Boston, Mass. . . . **Randall Emerson** is employed as a fire protection engineer at Kemper Insurance in Quincy, Mass. . . . Lt. **Christopher Ford,** U.S. Army, serves as battalion motor officer for the Ist Battalion, 28th Infantry at Ft. Riley, Kansas. . . . **James Galvin,** who received his MSCE from Stanford last year, is now a project cost-schedule engineer at Bechtel Power Corp., Ann Arbor, Mich. . . . Presently **Larry Gaspar** serves as a design engineer at GTE Sylvania in Ipswich, Mass. . . . **Perry Griffin** has joined the Trane Company's commercial air conditioning division in the Boston sales office. Recently he completed the firm's six-month graduate engineer training program, which concentrates on specialized heat transfer theory and practice, as well as in-depth coverage of Trane products. Trane is a leading manufacturer of air conditioning, refrigeration and heat transfer equipment for commercial, residential, industrial, transport and special process applications and has offices and facilities worldwide.

Paul Gudaitis holds the post of analytical engineer at Pratt & Whitney in East Hartford, Conn. . . . **Robert Harris,** SIM, is manufacturing manager at Henry L. Hanson, Inc., Worcester. . . . **Barry Heitner,** who has received his MS degree in chemical engineering from Cornell, is now employed by Du Pont at the firm's experimental station in Wilmington, Delaware. He and his wife Prorit Szafran Heitner reside in Claymont. . . . **Ray Houle** is employed as general manager of Precision Products Co., Woonsocket, R.I. . . . **Paul Jaques** serves as a plant design engineer at Eastman Kodak in Rochester, N.Y. . . . **Mark Johnson,** who received his MSCE from the University of Maine in December, has joined the Bridgeport (Conn.) Hydraulic Co. . . . **Jeremy Jones** works as a development engineer in the R&D department at Polaroid in Waltham, Mass. . . . **Doug Knowles** is a programmer at Applicon, Inc. in Burlington, Mass. . . . **Andrew Kopach** is now an installation and service engineer working on hydroelectric power plants for GE. . . . **Charles Lauzon,** who has received his MS from the University of Michigan, is presently a process engineer at Union Carbide in Bound Brook, N.J.

Rodney Lewis is a scientific programmer at MIT Lincoln Laboratory in Lexington, Mass. . . . Having completed a two-year training program, **Thomas May** was slated to be assigned to the post of district engineer at a Torrington Co. district sales office on July 1st. . . . **Francis McConville,** still with the Worcester Foundation of Experimental Biology, serves as a research assistant. . . . **Thomas McNeice** has completed requirements for an MS in civil engineering at the University of Maine in Orono. He has joined Camp Dresser and McKee, Boston. . . . **Ronald Medrzychowski** continues at Electric Boat in Groton, Conn.

Leon Meyer is a qualitative assurance engineer at Sikorsky Aircraft in Stratford, Conn. . . . **Roland Moreau** was recently promoted to structural engineering project leader at United Nuclear Corp. in Montville, Conn. . . . **Ed Robillard** works as a design draftsman at GTE Sylvania in Ipswich, Mass. . . . **Eugene Savoie** serves as a sales planner in the semi-conductor products department at GE in Auburn, NY. . . . **Steven Schoen** has been appointed actuarial assistant in the product department of Sun Life Assurance Company of Canada at U.S. headquarters in Wellesley, Mass. He is an associate of the Society of actuaries and a member of the Actuaries' Club of Boston. . . . **Paula Stratouly** holds the post of industrial sales representative for Exxon Corp. in Springfield, Mass. . . . **Peter Tordo** is a counselor at New Dominion School, Dillwyn, Va., a wilderness school for emotionally distrubed boys. He was slated to spend May hiking with ten boys 145 miles on the Appalachian Trail in New Hampshire. He expects to move near Salisbury, Md. soon to start another such school. . . . **Jeffrey Triwedi** serves as a trainee in the T.M.P. program at GE in Cincinnati, Ohio. . . . **Roy Willits** is a graduate student at Rutgers University. . . . **Thomas Wimbrow** is now operations manager at Beswick Engineering Co., Inc., Ipswich, Mass. . . . **Brian Young** works as a process engineer at Allied Chemical in Marcus Hook, Pa.

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▶*Married:* **Asta J. Dabrila** to Romas A. Pliodzinskas in Worcester on June 17, 1978. The bride, formerly a loss prevention consultant at Factory Mutual Engineering & Research in Norwood, Mass., is now working in the company's Cleveland District office. Her husband, a student at Cleveland State University, is employed in the department of engineering and construction for the City of Cleveland. . . . **Brian A. Soucy** and Miss Sherry Ann Basch on March 11, 1978 in St. Johnsbury, Vermont. Mrs. Soucy graduated from Rivier College and received an associate in science degree in medical technology. She is employed at Lawrence and Memorial Hospitals in New London, Conn. The bridegroom is with Pfizer, Inc., in Groton, Conn., where he is a process supervisor.

Robert Bowser is a mechanical engineer for the Naval Ship Engineering Center in Washington, D.C. Recently he has had temporary duty in Bremerton, Washington. He resides in Alexandria, Va. . . . **Edward Bromage** works as a project assistant for the Portland (Me.) Area Comprehensive Transportation Study. . . . **Jeffrey Brown** has joined the Trane Company's Commercial Air Conditioning Division at the sales office in Boston. Recently he completed the six-month Trane Graduate Engineer Training Program. . . . **Gerard Chase** is an assistant mechanical engineer at the United Illuminating Co. in New Haven, Conn. . . . **Paul Craffey** is working for his MS in chemical engineering at UMass in Amherst. . . . **Robert Dolan** is a production control specialist for Ford Motor Co. at the Cleveland stamping plant. . . . **Michael Doyle** holds the post of quality assurance engineer for Singer-Kearfott Co. of Little Falls, N.J. . . . **Kurt Eisenman** is the New York State territory manager of industrial hydraulics for Parker-Hannifin Corp. of Saddlebrook, N.J. He and his wife, Tina, live in Rochester. . . . **Steven Fine** is doing research on inorganic ion exchangers at Texas A & M University, where he is a graduate student.

Eric Hertz writes: "Having fun watching technology change at AT & T Long Lines in Newark, N.J." . . . 2/Lt. **Joseph Hillery** has completed a medical service corps officer basic course at the Academy of Health Sciences of the U.S. Army in Ft. Sam Houston, Texas. . . . **Richard Hopkinson** is a property consultant for Employers Insurers of Wausau in Atlanta, Ga. . . . **Chuck Johnson,** who is class agent, is with Western Electric Co. in North Andover, Mass. . . . **David Lounsbury** is with programming and engineering at Prime Computer Inc., Framingham, Mass. . . . **Jerry Melcher** now works as a system analyst on automatic generation control systems for Leeds and Northrup Co. in North Wales, Pa. . . . Presently **Marc Meunier** serves as an assistant engineer at Industrial Risk Insurers in Atlanta, Ga. . . . **Bruce Minsky,** who has been doing cancer research at Boston University Medical School and Harvard Medical School, has been accepted at the University of Massachusetts Medical School. He will start studying for his MD degree in September.

Stephen Potz has been hired as a structural engineer by Pratt & Whitney Aircraft in East Hartford, Conn. His work involves computerized structural analysis of commercial jet engines. . . . **Ralph Sacco III** is currently an assistant sales engineer for Westinghouse in Washington, D.C. . . . **Gregory Scott** serves as chief systems programmer at Applied Logic Corporation, Boston. . . . **Allan Shear** works for the engineering department in City Hall at Woonsocket, R.I. . . . **William Shoop** is a manufacturing engineer for GE in San Jose, Calif. . . . 2/Lt. **David White, Jr.** has completed an ammunition officer course at the U.S. Army Missile and Munition Center and School, Redstone Arsenal, Alabama. . . . **J. Gilbert Wilson III** holds the post of structural design engineer at Varco-Pruden in Evansville, Wisconsin.

Forrest G. Kirsch, '08, died on February 23, 1978 in Endwell, New York.

A native of Northampton, Mass., he was born on December 18, 1883. During his lifetime he was with Springfield Automobile Co. and the city of Springfield (Mass.), where he was a deputy tax collector. He studied mechanical engineering at WPI and belonged to the Western Massachusetts Engineering Society.

Oliver B. Jacobs, '10, of Morristown, New Jersey, who held patents that made the transoceanic submarine cable telephone possible, died in May at the age of 89.

He was born on January 23, 1889 in Danielson, Conn. In 1910 he graduated from WPI as an electrical engineer. From 1910 until 1917 he was with the American Telephone & Telegraph Co. During World War I he rose to the rank of captain in the U.S. Army Signal Corps. After the war he again joined AT & T. From 1929 to 1954 he was a member of the technical staff at Bell Telephone Laboratories. After he retired in 1954, he remained at the labs until 1962 as a consultant, although his employer at the time was Lockheed Electronics Co.

Mr. Jacobs was co-inventor of the fundamental features of repeatered transoceanic telephone cable systems, and contributed much in devising suitable installation, system design, and operating procedures. He belonged to IRE, AIEE, and Morris County Engineers Club. He had served as chairman of the local Red Cross, and as a member of several municipal boards.

David G. Howard, '13, died in Annapolis, Maryland on March 20, 1978. He was 87.

A native of Townsend, Mass., he was born on May 10, 1890. Following his graduation from WPI as an electrical engineer, he was with Westinghouse in Pittsburgh as a research engineer for three years. While with Westinghouse, he obtained a patent on a thermal relay and variable speed induction motor, which he had invented.

In 1916 and 1917 he taught at Carnegie Institute of Technology. During World War I he was a lieutenant in the U.S. Navy assigned as an instructor in electrical engineering at the U.S. Naval Academy in Annapolis. After the war, he became a civilian instructor at the Academy. When he retired in 1955, he was a professor of electrical engineering, and was named professor emeritus. He belonged to Sigma Xi, and was a fellow of IEEE. Also, he was a member of the American Association for the Advancement of Science.

Frank Aiken, '15, of Havertown, Pennsylvania, died on January 16, 1978.

He was born on December 16, 1892 in Bridgewater, N.H. In 1915 he graduated from WPI with a BS in electrical engineering. During his career, he was with Atwater Kent Manufacturing Co., Emlen & Co., and Wiler & Co., Inc., of Philadelphia. He belonged to Skull and Theta Chi.

Sarkis M. Nahikian, '15, of Allegan, Michigan, the retired president of Heatube Corporation, passed away on January 8, 1978.

Born in Harpoot, Turkey on October 26, 1891, he later studied mechanical engineering at WPI. He had been employed by Blood Bros. Machine Co., the Federal Resettlement Administration, Overton Machine Co., and Heatube Corp., from which he retired in 1955.

Mr. Nahikian belonged to the Masons, the Society of Automotive Engineers, and the Rotary. He served on the local board of education. He was an Army veteran of World War I, and a graduate mechanical engineer from the University of Michigan.

Heyward F. Lawton, '18, a retired assistant sales manager for Rohm & Haas Co., died on March 28, 1978. He was 80 years old.

A native of Newport, R.I., he was born on July 2, 1897. After graduating as a chemist from WPI, he was employed for a short time at Acheson Graphite Co., Buffalo, N.Y. Later he was with U.S. Finishing Co. of Pawtucket, R.I., Borden & Remington Co., Fall River, Mass., and Rohm & Haas of Philadelphia. He retired in 1963 from the Philadelphia firm, where he had been assistant sales manager of the textile chemicals department and district sales manager for the mid-Atlantic territory and mid-western territory.

Mr. Lawton belonged to Lambda Chi Alpha, The Chemists Club of New York City, and the American Association of Textile Chemists and Colorists.

Roland H. Taylor, '18, of Santa Rosa, California died on February 10, 1978.

He was born on March 28, 1894 in Worcester, and later studied civil engineering at WPI. He had been associated with the Salt River Valley Water Users Association, and Taylor Machinery Co. (owner), both in Phoenix, Ariz. Later he was with Byron-Jackson, Los Angeles; Six Companies, Inc. (builders of Boulder Dam); and Industrial Equipment Co., Oakland, Calif. For a number of years, he was a life underwriter for John Hancock Life Insurance Co., Santa Rosa.

Mr. Taylor belonged to Phi Gamma Delta, Skull, ASCE, and was active in scouting, the YMCA, PTA, and church affairs.

Malcolm B. Arthur, '20, class president, passed away on March 29, 1978.

He was born on February 24, 1899 in Worcester and graduated as a civil engineer from WPI in 1920. During his lifetime he had been employed by F.T. Leg Co., Lima, Peru; New England Power Construction Co.; the U.S. Geological Survey; and So. California Edison Co. From 1935 until he retired in 1965, he was with the Forest Service of the U.S. Department of Agriculture. A specialist in dam design and construction and flood control, in 1962 he received an award for superior service from the Secretary of Agriculture. He was honored for "notable results in the engineering field in the north central region of the Forest Service."

Mr. Arthur was a fellow and life member of ASCE, and an associate in the Society of American Foresters. He was a member of Lambda Chi Alpha and Skull.

Lionel O. Lundgren, '24, retired chief engineer for the Okonite Co., died on February 20, 1978 in Attleboro, Massachusetts at the age of 74.

A Worcester native, he was born on Sept. 22, 1903. In 1924 he received his BSEE from WPI. He joined the former American Electrical Works after graduation and stayed with the firm for forty-four years, while the company name was changed to Kennecott Wire & Cable Co., and then to the Okonite Co. He retired from the Phillipsdale, R.I. operation in 1968.

Mr. Lundgren belonged to Lambda Chi Alpha, Tau Beta Pi, and Sigma Xi. He had previously belonged to the Seekonk Fire Association, which he served as treasurer for twenty-three years, and as chief of the Volunteer Fire Department for four years. He had been an officer on the Seekonk Finance Committee and a member of the board of Water Commissioners. A 32nd degree Mason, he belonged to the Palestine Shrine of Providence. He was a member of the permanent diaconate of Central Congregational Church.

Robert H. Dunbar, '25, of Springfield, Massachusetts, a retired administrative assistant for New England Telephone & Telegraph Co., died suddenly on March 2, 1978.

Born in Syracuse, N.Y. on April 18, 1903, he later studied at WPI. He was with NET & T Co. for over fifty years, and retired in 1967. He was a member of the Masons, Phi Gamma Delta, and the Shrine.

David M. Shapleigh, '25, died unexpectedly on April 12, 1978 in Dover-Foxcroft, Maine. He was 78.

He was born on Sept. 10, 1899 in Boston and was educated at WPI and the University of Maine. Before retirement, he had been a chemical engineer in the pulp and paper industry. He was a member of TAPPI.

Donald L. King, '27, of West Nyack, New York passed away on March 30, 1978.

A native of Athol, Mass., he was born there on February 4, 1905. In 1927 he received his BSEE from WPI. From 1927 until his retirement in 1968, he served as a project engineer for the New York Telephone Co. At one time he was plant supervisor for the company in New York City. He was a member of Tau Beta Pi.

Lincoln B. Hathaway, '30, passed away in New Bedford, Massachusetts on February 15, 1978. He was 70 years old.

A native of New Bedford, he was born on August 30, 1907. He received his degree in mechanical engineering from WPI. From 1933 to 1938 he was with Continental Screw Co. Later he joined Revere Copper & Brass, Inc., from which he retired five years ago.

Mr. Hathaway belonged to ATO, the Masons, and the Service Corps of Retired Executives. He was also a member of the New Bedford Council of Royal and Select Masters, the Sutton Commandry, and Knights Templar.

Albert N. Narter, '30, of Dobbs Ferry, New York, a retired engineer from the American Bureau of Shipping, died in April.

He was born on Sept. 15, 1907 in Worcester. After graduating as an electrical engineer in 1930, he joined New York Edison Co. in New York City. For a time he was with Standard Shipping Co. He was employed by the American Bureau of Shipping for many years serving as a marine surveyor and principal surveyor in charge of the machinery technical section. At the time of his retirement in 1971, he was assistant to the vice president.

During World War II, he was a "free agent" and traveled to Italy, France, Greece, Tunisia, Sicily, and Algeria to assist the U.S. War Shipping Administration with repairs of battle damaged merchant vessels. His job was to outline the extent of repairs required, to supervise and to inspect such repairs before letting the vessel leave port. After the war, he became involved with nuclear powered ships.

Mr. Narter, who received his MSEE from WPI in 1933, belonged to AIEE, the Society of Naval Architects and Marine Engineers, and was an associate member of the American Welding Society.

Ferdinand A. Trautner, '30, chief engineer and executive vice president of New England Concrete Pipe, Inc., died in Newton, Massachusetts on January 27, 1978. He was 69.

He was born in Massachusetts on Feb. 24, 1909. In 1930 he graduated as an electrical engineer from WPI. With New England Concrete Pipe for many years, previously he was associated with Rhode Island Concrete Pipe in Providence. He belonged to Lambda Chi Alpha, the Congregational Church, the Engineers Society of Boston, and the Nobscot Power Squadron.

Lester Smith, '31, died in Worcester on January 12, 1978.

In 1931 he received his BSCE from WPI. He had worked for Critchley Machine Screw Co., later R.B. Phillips Mfg. Co., and Wright Machine. He was born on May 10, 1900 in Worcester, and belonged to ASCE.

John S. Hancock, '33, of Andover, Massachusetts passed away recently.

A native of Lawrence, Mass., he was born on Nov. 13, 1910. During World War II he was a staff sergeant in the U.S. Army. For many years he served as a public accountant in the town of Methuen, Mass. He belonged to Phi Sigma Kappa.

Robert S. Grand, '34, of North Plainfield, New Jersey died on November 5, 1977.

He was born in Brockton, Mass. on Jan. 3, 1912, and graduated with his BSCE from WPI in 1934. For many years he was district superintendent of Austin Co., Roselle, N.J. He belonged to AE Pi, ASCE, National Society of Professional Engineers, the Masons, and the U.S. Coast Guard Auxiliary. He was a professional engineer in New Jersey.

Norman H. Osgood, '41, a sales engineer for Coppus Engineering Corp., Worcester, passed away on December 13, 1977.

A native of Worcester, he was born on May 13, 1919. He graduated as a chemical engineer in 1941. During his career he was associated with RCA in Harrison, N.J.; Reed & Prince, and Coppus, both of Worcester.

Mr. Osgood belonged to ATO and had served as water commissioner for the town of Paxton.

Richard O. Slein, Sr., '43, a retired New England Telephone Co. engineer, died January 24, 1978 in City Hospital, Worcester. He was 58 years old.

In 1974 he retired as an outside plant engineer for the telephone company's Worcester district, where he had been employed for thirty-three years. He was a major in the Army Air Corps during World War II, and held the Distinguished Flying Cross, the Air Medal, and ten Oak Leaf Clusters. He completed 62 missions as navigator of a B-26 bomber in Europe, and saw action over Belgium, Holland, and France. On D-Day, June 6, 1944, he participated in the second air wave.

Mr. Slein had once been interviewed in a radio news program by the late Edward R. Murrow, a former CBS correspondent in London. Prior to his service in World War II, he attended WPI and worked for Heald Machine. He was a Worcester native.

Lee G. Cordier, Jr., '44, of Sacramento, California, manager of plant facilities for Campbell Soup since 1963, died of a heart attack on March 25, 1978.

He was born on May 15, 1922 in Philadelphia, Pa. In 1944 he graduated as a mechanical engineer from WPI. During his career he was associated with J.T. Baker Chemical Co.; Philadelphia Gas Works; and Aerojet-General Corp. solid rocket plant, Sacramento, where he was manager of facilities planning new plants and manufacturing processes. He became manager of plant facilities for Campbell Soup fifteen years ago.

Mr. Cordier belonged to Phi Gamma Delta, ASME, SAM, the Chamber of Commerce, and California Manufacturers Association. He was a professional engineer in Pennsylvania and California, and a WPI class agent.

Herbert I. Boo, SIM, '63, superintendent of manufacturing at Wyman-Gordon, Worcester, died in Worcester on January 7, 1978. He was 59.

Born in Worcester, he later graduated from the School of Industrial Management at WPI. He was employed by Wyman-Gordon for thirty-nine years. In 1964 and 1965 he was superintendent of Wyman-Gordon India, LTD. in Bombay.

He was vice chairman of Immanuel Lutheran Church, a member of the expansion committee for the Lutheran Nursing Home in Worcester, a 32nd degree Mason, and a member of the All Scottish Rite Bodies. A World War II Air Force veteran, he had also belonged to the American Forestry Association and the Mendelssohn Singers.

Francis R. Chiarillo, '67, of West Hartford, Connecticut died on December 30, 1977.

He was born in Hartford on August 26, 1945, and received his BSMA from WPI in 1967. He was an associate statistical analyst for Travelers Insurance Co. A member of the Travelers Men's Club and chess club, he also belonged to the U.S. Chess Foundation.

Dinesh C. Shah, '67, a product design engineer for Ford Motor Co., died recently.

He was born in Darol Gujarat, India on August 1, 1943. In 1967 he received his MSME from WPI.

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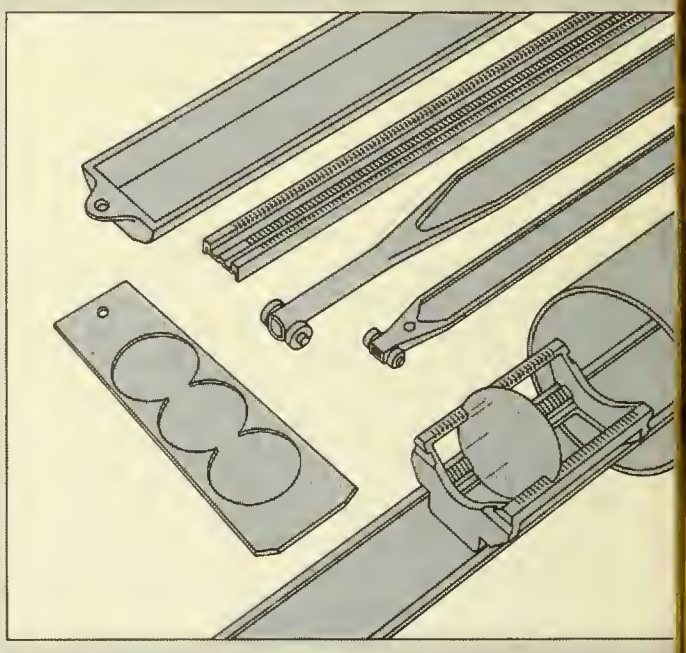

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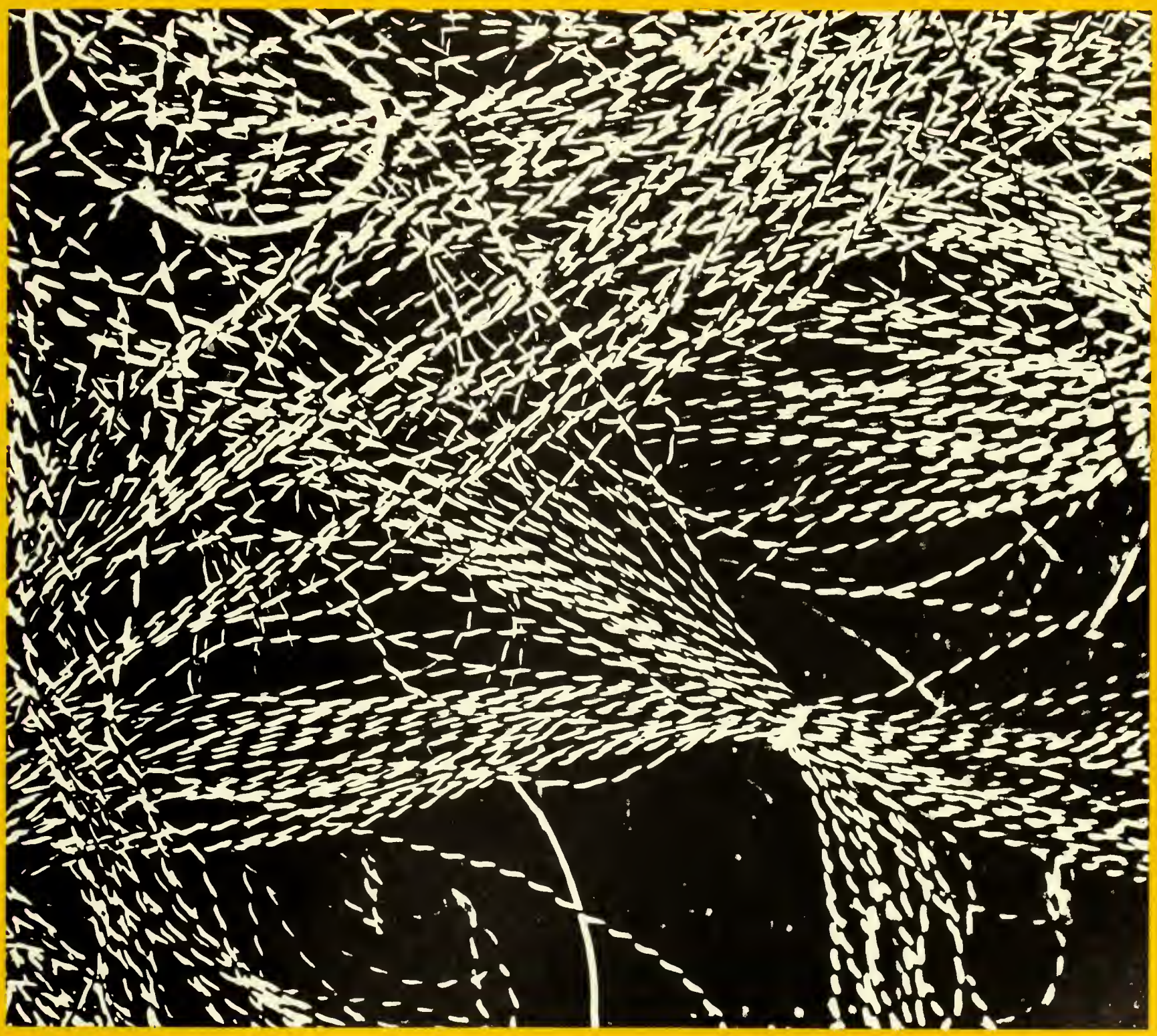
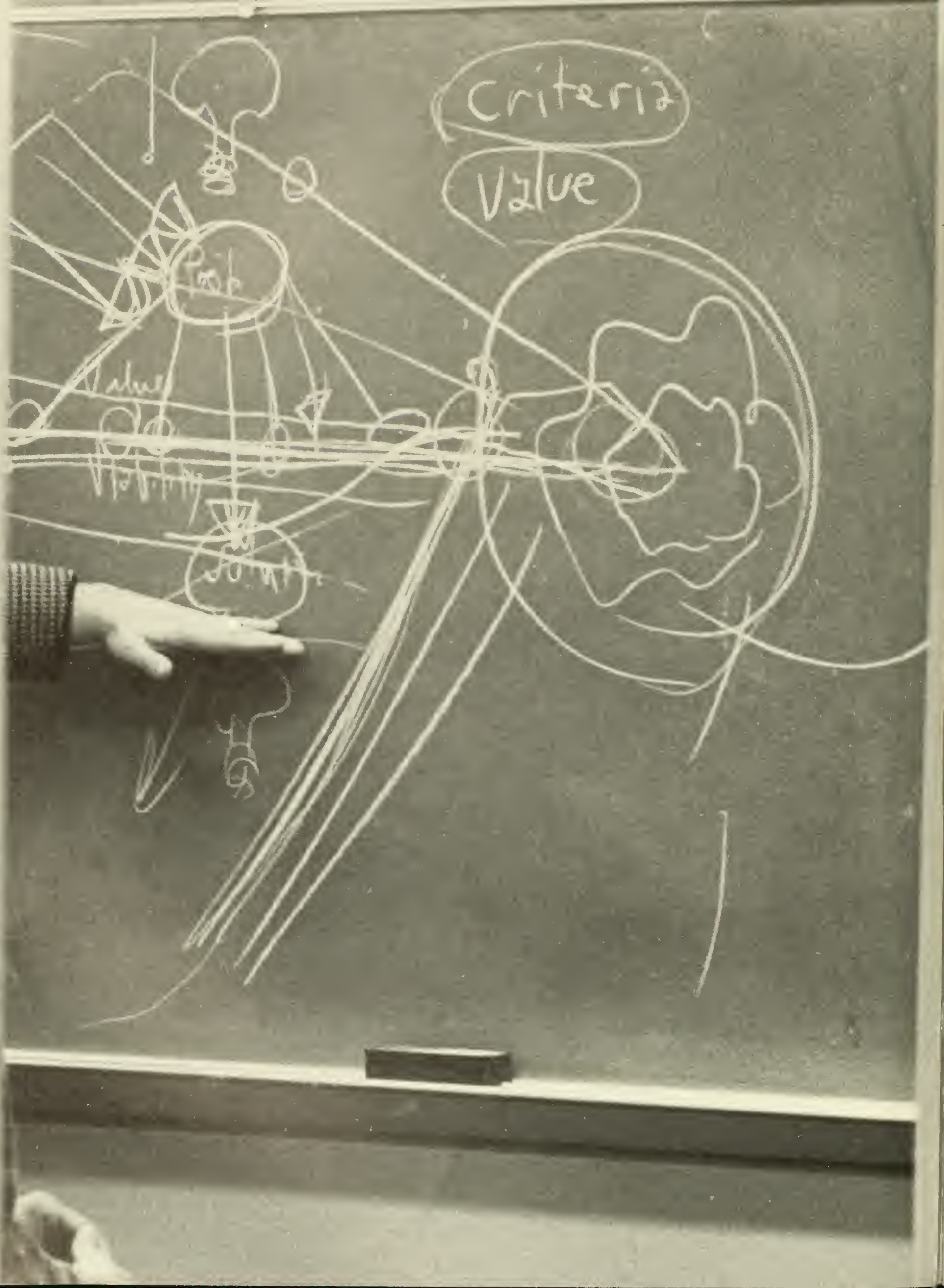


Computers and society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Computers and society:

Who's in charge?

We live in a world increasingly dependent — or at least depending — on the use of computers. For science, for business, for industry, for government, the use of computers has become a fact of life in record-keeping, calculating, simulation, designing, decision-making . . . you name it. What bank or insurance company today could even continue to exist without computers?

But we know too about the dark side of computers. As our private space is increasingly crowded by the vast amount of data on file about our lives; as such everyday things as supermarket checkouts and payments begin to depend on computers (the store's, the bank's, and your personal ID card that validates the transaction); as we wrestle with the computers that keep track of our finances and obligations: then we begin to appreciate the influence the computer now exerts on our lives.

As a college that educates young men and women for careers in science and technology, WPI inevitably adds to the power of computers in our world. As a school concerned about the interface between science, technology, and the human values and needs of our society, WPI must also help make sure that the computers respond to us, and not we to them. At WPI we must ask the hard questions. We must ask who is in charge.

In March 1978, WPI held a special symposium on the social impact of the computer, organized by social science professor John Wilkes. The Lawrence Hull Memorial Lecture was delivered by Joseph Weizenbaum, and a panel discussion immediately following was made possible by a grant from the Lilly Endowment, Inc. The articles that follow are based on that symposium.

The questions computers raise

by Joseph Weizenbaum

I FIND MYSELF occasionally at a gathering where it comes out who I am, and then I get inundated with questions in much the same way that physicians do. Doctors get told, "Oh, you know, my aunt had a very interesting operation." and then they hear about the operation; or, "I have a pain somewhere. What do you think it might be?" Lawyers get told sad stories, usually ending with "Can they do that to me?" and the answer is always "Yes." And so it is with those of us who are identified as computerniks — we get asked certain questions which reveal that the computer has generated a stirring among the people, and I think this stirring can be identified or characterized by the questions we get asked.

These questions fall into several categories. One is, **Can computers think?** Now, I don't want to answer this question. I want to just point out that it consists of three words, each one of which is among the most difficult words in the English language. Reflect on the word *can*, what it means in all its refinements. And of course the word *think* is enormously problematical. Just try to read Husserl or Heidegger on thinking, and you'll see what I mean. And then there's *computer*, which people generally think of as a fairly simple word. That is, people think of computers as being boxes, roughly like Coca Cola dispensers or something like that, with perhaps tape recorders attached to one side and a typewriter sitting in front and maybe a television set too. And it's that gadget about which the question is asked. Well, in any case, it's a very, very difficult question in its many ramifications and it comes up constantly. There are other questions in this category: questions like, "Is the human mind a computer?" Sometimes it's "Is the human mind merely a computer?" Or sometimes it's "Is the computer a mind?" There's a lot of confusion, I think, between mind and brain.

JOSEPH WEIZENBAUM is professor in the Computer Science Laboratory of Massachusetts Institute of Technology. Author of the book, *Computer Power and Human Reason*, he warns about the power that the use of computers can exert over human minds.

A second category, which already assumes some answers to the first, is **What will intelligent computers be able to do soon?** or **What are they doing now?** Take, for example, speech recognition. This is a term that's not well understood. What it means can be characterized in the following way: imagine the output of my microphone is fed into a computer. We would say that the computer has mastered speech recognition if, while I'm talking or maybe a little while later, the computer can type out an English transcript of what I said here. This turns out to be an incredibly difficult problem, in my view essentially unsolvable in its whole generality although solvable in very, very narrow domains. But in any case, we get asked that question. Sometimes the naiveté of the questioner is revealed when he or she sees speech recognition by computer as merely the other side of the coin of speech production by the computer. So we get asked, "Well, we know the computer can produce speech, as for example when we get a wrong number on the telephone and there's a computer behind the scenes which says, 'I am sorry; 373-5921 is not in service.' If the computer can do that, why can't it do speech recognition?" There is terrible confusion about how easy it is to do the one and how almost impossibly difficult it is to do the other.

Another similar question has to do with language translation. **How soon are we going to get automatic language translation?** That is, you feed a source text in English, say a novel by Hemingway, into a computer and out comes the same text in the target language, say German, all done by computer. "And how soon will that happen" or "Is it happening now?" Very often people say "I understand that this is being done routinely, English to Russian or vice versa." I'm terribly tempted to answer these questions although I really don't want to, but I can't resist remarking that automatic language translation, that is language translation by computer, is impossible. Having made this remark, I want to sharpen it up a little and leave out the words "by computer." Language translation is impossible. I can give you lots of evidence, but that's not what I'm here to talk about.

Another category is "**How soon will intelligent computers give us home robots that will serve us, clean the rug, and open the window when it begins to rain outside?**" I emphasize that because one of the great enthusiasts for this sort of thing, Professor John McCarthy of Stanford University, in defending the idea that this will happen very soon, used exactly this example. I hope you noticed the slip. Well, I suspect we'll have robots that open the windows sooner than we'll have robots that will reliably close the windows when it rains outside.

These first two categories, computers thinking and what intelligent computers will do for us, are in the dimension of technological optimism, or at least so it appears on the surface. The next question assumes that all of these wonderful things have happened and now begins to worry about them. **Will computers take over?** Will they develop a will of their own, slip from our control, and make decisions for us which have consequences to which we are then irreversibly bound? Will that happen? One good answer is, "Why state that in the future tense?" Still, all these three categories are at least vaguely technologically optimistic in that they all see computers doing very remarkable things, particularly things they don't do now.

Then comes another category, which goes in the other direction. The general question is, **Why is my X screwed up?** where **X** is what in computer science we call a free variable. That is, it can be replaced by lots of other things: for example, "Why is my bank account screwed up?" "Why is my credit card statement screwed up?" "Why is my airline reservation screwed up?" and so on. It has to be understood that this gets asked of computer people in a rather accusatory way. It's clear that it must be the computer's fault. This is a question of fault and responsibility, which is another whole issue that comes in here.

In this connection, I want to clear up a misconception that exists in the world today. Someone in the audience talked about computers that screw up credit cards, and she said she knew that it wasn't the computer who screwed up, it was the person who put the wrong information in. Well, it *wasn't* the person who put the wrong information in. And no, it wasn't the computer either. It turns out that most of those errors result from a conglomeration of circumstances having to do with people who wrote programs, people who glued together programs that other people wrote, and so on, until the final result is a system that handles all the data and transactions, but is utterly incomprehensible to anyone. Most large systems that exist today, that run our businesses and our military installations, are in this sense incomprehensible to anyone.

Let me give an example. Some time ago, the President of the United States held a telephone call-in, and television was there so we could listen in. A lady called up the President and told him she was on social security, and she wanted a cost of living increase every half year, just like her neighbors who were military retirees, instead of only once a year. The President said he'd have his staff look into it and he'd call her back. Some months later he called her back, and magically television was there again and we could overhear. The President said, in effect, "I've had my boys look into it and what they tell me is that the system that runs Social Security is so big and complex that the change you are asking for, even if we wanted to make it, is essentially impossible to make." Of course, it's not logically impossible to change the system. But there's another consideration. What the President didn't say is that there's an enormous danger in going into a program of this kind, making a little fix, because you can't guarantee that everything else in the program will work as it did before. That's why it would be foolhardy to go in and perform this surgery. And that's why I call it an incomprehensible system.

I think that if, five or seven years ago, I asked my colleagues what sort of canonical questions they got asked, I would have heard the same questions I've referred to here. It may be that the questions are asked with a little more fervor, a little more certainty today, than they might have been seven years ago, but it's fundamentally the same list.

However, another whole set of questions has appeared quite recently. The new area has to do with **home computers.** All of a sudden, the home computer has entered the public imagination. Indeed, to a certain extent, it is here. One can go to Radio Shack, for example, and actually buy these things for on the order of $500-1500. Well, what are the questions that get asked about home computers? Certainly one of the principal ones is, **How soon will it be before 'everyone' has a home computer?** Another question is, **What will we be able to do with them?** The "we" is important here; that is, people assume that soon they're going to have one, and then wonder what they will do with it.

I have given you this list of questions and I'm now at the end of it, although I imagine that if I thought a little harder I could come up with some more. I don't intend to answer these terribly interesting questions. I think these questions, from a slightly different point of view, are really statements. Not only are they statements about computers and the state of the art in computers; they're statements about people and about people's attitudes quite generally, not just with respect to computers. And more particularly, these questions seen as statements reveal a number of illusions that are worth discussing.

The first illusion has to do with the word **everyone.** "Pretty soon everyone in the United States is going to have a home computer" is more or less the assertion. Just read *Time* magazine and you'll see. And who is the everyone? One of my colleagues has a nice little theorem which goes: It can't be everybody if it doesn't include me. And I think that's a pretty good theorem. Who is this everyone? Well, the analogy is often made to television. Isn't it true that virtually everyone has a television set? (I just want to comment on the word **virtually.** It's one of those curious English words which means exactly the opposite of what it says. When you say, for example, that John is virtually six feet tall, then one thing you know with certainty is that, whatever else he is, he's not six feet tall.) It is in fact true that almost all American places of residence have a television set, even among the poor and the very poor. What isn't so clear is *at what cost* that television set was obtained. That is, what was given up by the people in order to get the television set. But that's another matter. What I think differentiates the home computer from the television set, in this sense of everyone, is that there are, in the United States, millions of people for whom even the $10 pocket calculator is simply, totally, and absolutely irrelevant. It just doesn't have anything to do with their lives. And so the everyone who will have a computer is a very different everyone from the everyone who has a television set or who has access to a television set.

I could put a period there and turn to the next item, but I want to attach a little more nourishment to that idea. There are, of course, causes, which I don't want to talk about, and also consequences. The consequences may well be (my crystal ball is no clearer than yours) that when in fact "everyone" has access to the kind of powerful home computers that are currently envisioned, what emerges is a brand new fracture in the society, a brand new division between those who are comfortable with and can do the kind of simple manipulation that one does with these things (and have access to the other systems to which these things are tied, for example, an electronic funds transfer system, and so on) and those who are not. The gap between these two will widen in a great many ways, and I think it will become increasingly difficult for these two segments of American society to communicate with one another at all. This may be a little hard to swallow but I suggest that any one who is not a computer hacker come to the building I work in at MIT and see if he or she can understand the conversations that go on among the hackers in that building. The communication difficulties can

be severe. I've been at MIT for 15 years now, and I've seen generations of students come and go. The exposure to computers, to that way of thinking in our building, has profoundly changed the way many of those people think. And I certainly want to include some of our faculty, who explicitly say that all problems are fundamentally technical problems, that social problems are analogous to bugs in a computer program that need to be repaired and fixed.

Consider, if you will, the popular example of the character Mr. Spock on *Star Trek.* He teaches generations of youngsters, sometimes not so young youngsters, that life, even in those far distant days, is basically paradoxical . . . but that paradoxes can be unraveled by a suitable application of logic. In other words, Spock is a kind of computer. He does the kind of thinking that we say computers do, if we can talk about computers thinking. In fact, of course, real life is not simply laced with paradoxes; it's laced with *dilemmas* which no existing suitable logic will unravel. Illusions are being foisted upon us and propagated about life being essentially computable, that there are no real value conflicts, no dilemmas. For example, we now have a wonderful verb in our language, *problem solving,* which didn't exist, certainly not in the sense that we use it today, thirty or forty years ago. I'm quite convinced that in life, real human problems are never solved. Take a bad marriage — maybe a divorce is indicated, but that doesn't solve the problem. What happens to real human problems is that they're replaced by other problems which may be easier to endure or not. They're postponed, set aside; they're transformed. But what Mr. Spock teaches us, what the whole computer metaphor and the computer culture teaches us, is that all of life is computable. Indeed, some of my colleagues, in my field and in my institution, actually teach precisely that, in just so many words. I think it's very, very bad.

The next question I get asked is, **What will people do with home computers?** The marketing geniuses who have gone to work on this are pretty sure about what people will do, what these computers are likely to be for. There's talk about robotics, closing the window when it rains and turning down the heat in the evening and turning it up again in the morning, etc. (A good question, by the way, is Why is this such a great problem that it requires all this marvelous technology? But that's another matter.) But one can hardly call this sort of application of this high technology a *vision* in the profound sense that that is occasionally spoken of, especially by politicians. And yet there's a need for a vision. (Just by the way, we insiders in the computer business have known for about ten years that the home computer revolution is on its way, and we've been studying this problem and asking what are we going to do with these things when they get here. Imagine all that talent for ten years applied to this particular problem . . . and *we* still don't know. It's a big mystery.)

The vision, and you all know what it is, has to do with universal education. According to this vision, in every home there's going to be a box attached to some sort of typewriter console, some sort of television screen (possibly the very television on which you or your children watch *Star Trek*), and of course to some sort of telecommunication link, perhaps cable television or even the telephone system. You'll be linked to the supermarket so you can do your ordering electronically and transfer your funds electronically and all that. And of course there are going to be games. There's going to be Space War and Tank Battle, a lot of kill 'em and smash 'em, and Battleship, etc. All that's called killing. We have a euphemism for that. It's called entertainment. But there's a more serious purpose. There will be an equivalent of National Educational Television, in addition to the commercial channels and all the killer channels. The home computer will give access to the world's great teachers, the world's great literature, and the libraries of the world.

But the analogy to television may be useful here. I'm reminded of the vision of then Secretary of Commerce Herbert Hoover at the dawn of commercial radio broadcasting. That same euphoric vision was again pronounced by other people when television became a feasible commercial prospect. In those days it was foreseen that these media would exert an enormously beneficial influence on the shaping of American culture. As far as radio was concerned, children would be exposed to the spoken word in its finest form, the great spoken drama, the great teachers, the great literature, and so on. And then television came and again the same dream was resurrected, this time with the additional dimension.

Well, what actually happened? The technical part of that dream was fully realized. The scratchy radio was replaced by high fidelity FM stereophonic broadcasting. The snowy little black and white television tube was replaced by gigantic screens in living color. Satellite communication systems made it possible to display almost any event taking place on this earth, even in outer space or on the battlefield in Viet Nam, right in your home. But the cultural dream, the dream of education, of the exposure to great teachers, was cruelly mocked. It simply failed. We have the most intricate electronics and technology, and what does it deliver to us? An occasional gem buried in immense and boundless floods of everything that's most banal and insipid and even pathological in our civilization.

We're beginning to see this same scenario played out with respect to the home computer. Again we have the euphoric dream. But when we look at the very beginnings of it, the little bits of home computer that we see now, what do we see? We see Space War, Battleship, kill 'em, smash 'em, and so on. I'd like to report something I heard very recently in the laboratory where I work. A number of graduate students were standing around a console playing Space War. Perhaps you know the kind of game Space War is. It has to do with space ships shooting each other down and that sort of thing. And one of the students said to the others, "You know, we ought to get more points for killing than for merely surviving." It was a perfectly reasonable statement in that context, and I'm afraid it may turn out, unhappily, to become a slogan for the era of home computers.

People often say to me, especially if they have read my book, since I feel as I do about computers, Why am I a professor of computer science, at MIT of all places? Or to put it another way, What are the obligations, in my view, of being a professor of computer science. I teach it; that's part of the obligation. And there are a lot of good things that computers have made possible. For example, take the picture of the earth in space — impossible without computers. There are whole lists of good things. But there's another crucial consideration. Suppose I'm driving a car on a slippery road and I'm beginning to head over into an

embankment. That's when I have to watch out, and I have to try to steer the other way. The danger at this moment, in the whole computer business, in the whole technology business in our society, is that we're heading for a collision and therefore somebody has to take corrective action. All the good things will get done anyway. Plenty of people tell us about the good things. But only people who thoroughly understand all the intricacies of the pathology can sound the warning that needs to be sounded. And the warning is absolutely necessary, not just about computers but with respect to X-rays, other sorts of radiation, DNA, whatever. It's terribly important to understand the limitations of the technology. Somebody has to say that. There are very, very few of us who ever speak about it at all. At forums like this, I'm usually the only one who says anything about limitations, while the other speakers are technological optimists. I was stunned when I came here to WPI and I heard these other people speaking about limitations. It's at least as important to talk about the limitations of science and technology as it is to understand the powers. Plenty of people speak to the powers. Somebody has to state the caution.

We are often asked to suspend judgment until science gives us the data. But that's precisely the kind of entrapment into the cult of the expert, into the cult of science, that I want to escape from. And it's precisely the kind of trap that my institution, the Massachusetts Insitute of Technology (which prides itself, to quote from the president's speech, on being polarized around science and technology) insists on putting students into.

The truth, I think (and this also comes up in the nuclear and DNA controversies, for example), is that the really important policy questions with respect to science and technology are simply not very hard for anyone to understand. It's an enormous copout for scientists and technologists to say, "Oh, this is all very complicated and you'll never understand this until you get a degree." The details about atomic energy, the details about computer systems, those are complicated, difficult, and take years to get straight in your head. But the basic policy questions are relatively simple.

WPI

Microprocessing everything

by Robert Solomon

I'd like to bring more into perspective some of the things that Professor Weizenbaum mentioned and how they'll impact you. And I'd like to discuss some things that worry me, and that may start worrying you.

First of all, the so-called microprocessor revolution we're seeing means that we now have computers which have the power of computers in the 1950s (and then they filled rooms) on little pieces of processed beach sand, which we have called silicon wafers, selling for under $2. We're talking about computers that cost millions of dollars back in the '50s, hundreds of thousands of dollars in the early '60s, now available for under $2 on a single chip. And these chips are being applied in a whole bunch of new ways. All of a sudden, the name of the game has changed. People are thinking of smart stoves and intelligent vacuum cleaners. In the computer microprocessor industry, we're now trying to sell Detroit two to three microprocessors in each car. In fact, to save wiring, it has been suggested that we put a computer in each headlamp to control the dimmer. And we're really getting into this era of the microprocessor revolution where it's predicted that, in the average home, in the next three years, there will be three or four computers — hidden in TVs, hidden in such complex kitchen devices as blenders. Now, what this means, and it's been much more detailed in a lot of the work done by Professor Weizenbaum, is that we're going to have more controls put on us, and more things can go wrong. You get on an elevator and you're wearing a badge in a particular office building, and you try to go to the fifth floor. The elevator says, No, that's not your floor. And similarly with motor vehicles and various other aspects of our endeavors. The computer is going to be much more commonplace.

The analogy I love to make, to show you the ludicrousness of it all, is that if television sets were cheaper than light bulbs, what you'd do is you'd rip out the guts of a television set, throw away the tuner, turn up the brightness, and use them in your house as light bulbs. This is the sort of thing that's now happening in microprocessors and these small, cheap, very inexpensive computers. Inexpensive intelligence. A lot of people say that this intelligence is wonderful and in some respects it is. You can take the intelligence of a human, as long as you keep remembering that it's human, and embody it in something. So in other words, you have somebody who really knows how to operate a blender program in the operations. And you buy the machine, even if your fingers are sort of klutzy, and now you have the ability of this genius, this so-called French chef extraordinaire electronique, come into your kitchen. You can make any mistake you want, but you can't burn out the blender. So the people who advocate the use of microprocessors are saying it's fantastic. A little bit of people's genius are now included on these little $2 chips.

To my way of thinking, this means that we can all become klutzes. We can have our brains atrophied and become a lot sloppier in what we do. Other people say it kills the drudgery. Just think of all those horrible things you have to do, like to remember what floor you live on and push the elevator button. Or remember exactly where you parked your car. Well, for those people, again I begin wondering about whether or not we are liberating ourselves just to watch the Gong Show.

Another thing I should mention is that these very inexpensive computers have located and isolated an incredible sociological entity — the hacker. If this is a disease, then it's spreading. If it's something undesirable, it's spreading, and many more people are starting at earlier ages. We never used to let a kid twelve years old get on a computer. Now he owns one. People now have them to play games with. I suppose that's positive compared to what goes on in the afternoon on television.

There is an interesting possibility in terms of the home computer market: I have heard that newspapers may one day be popular again, especially the comic pages, because now they're proposing putting games on the comic pages, coded in bar codes, variation of black and white stripes. The cheapest way to mass reproduce anything, short of biological, is by just putting it down on newspapers. This

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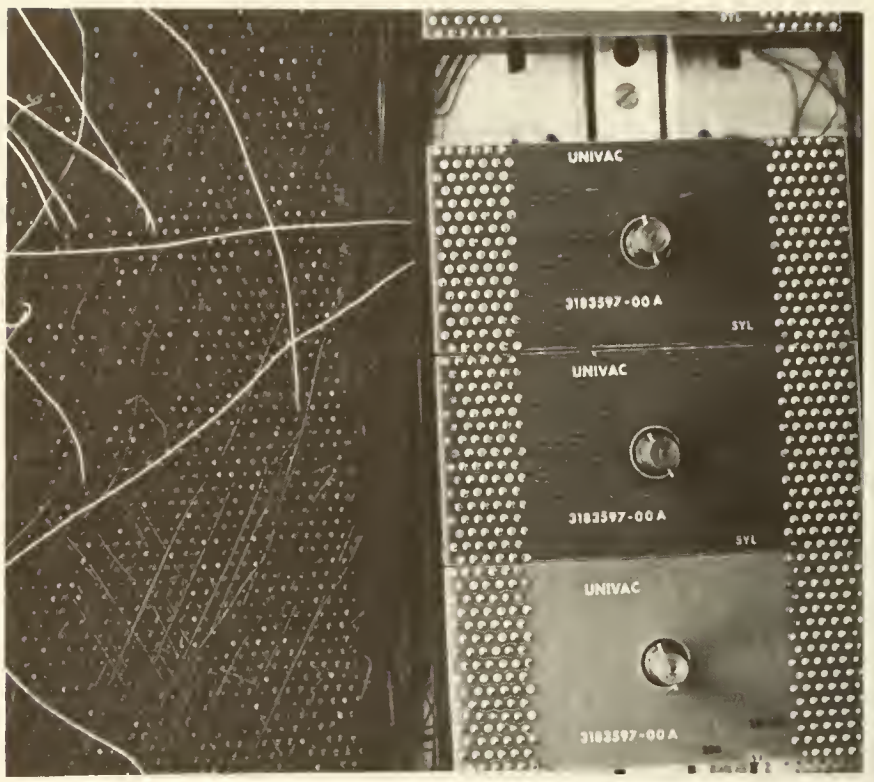
means that every night you won't get bored with your computer. You'll take a little photo light pen and run it across the funnies page and you'll have your new war game to play for that evening, to keep up your interest. The television people are very scared because they see it as competitive with all of the things they can dream up, which are highly redundant and repetitious.

Setting that background to computers, there will be about 10 million microprocessors, one way or another, installed in products throughout the world. And this is all going to limit things. People with intelligence are now saying, No, this is the only way you can operate the blender. You can't burn it out. But that might have been a very positive experience. (Of course, you might just stick you finger in the blender and lose a little bit of your digital abilities there.)

I am concerned about the negative things that can be coming about. We all know about electronic funds transfer. That scares me. I mean, I miss coins. I think the intrinsic value, the innate value of things that had money were nice. Now you're trusting a computer. You're trusting a system which some skyjacker could aim a plane into and destroy the entire wealth you had accumulated over your life. But much more importantly, I am worried about computers taking over functions, evolving us artificially. Let's take the case of the calculator which most of us own and some of us use. I bought this very fancy calculator a couple of years ago for $200. It now sells for $4. But at any rate, with this calculator I wound up just using the four basic functions. I rarely multiply anymore. People who started much younger than me, at the age of four or five, who are getting into calculators now, they don't multiply. There's a certain mechanism missing. The thing that worries me, and some research is now going on in this area, is that a society which was created by people who did multiply regularly and did exercise certain skills, is now suddenly being evolved, all too fast, into a society that no longer uses these skills. Consider the sudden, almost epidemic detection of dyslexia. It may be like one of the other bad products of society — the epidemic of cancers highly correlated to the industrial revolution, chemical pollutants in the water and the atmosphere. Now we may find an almost epidemic rise in things like dyslexia, learning disabilities, inability to work, a propensity to industrial accidents and auto accidents, due to the fact that, because we're using calculators, we can no longer multiply in our head. And maybe those little neurons that fired to make us multiply also were used by the brain in another way for us to perceive distance or other sorts of geometric space properties. I don't know, but I'm rather concerned about those things. Buckminster Fuller, in a recent talk at Harvard, said that the age of the red schoolhouse is gone. Well, I don't see us being that different today from our forefathers who went to those red schoolhouses. And what does he propose? Electronic education on the TV screen; education at home. Well, maybe it would be nice to be near Mommy and Daddy, but I think sociologists will give some value to children learning in peer groups. And so I'm very concerned in terms of the movement to teaching machines and, once again, removing the human contact.



Given all the advances in medicine we've had in recent years, we're not living to a much later age than the people who founded this country. Check how long the presidents have been living, for example — these are the people whom other people take care of. There's a general increase in how long we live, but the Industrial Revolution did impact us quite negatively, too. There's been a tremendous increase in cardiovascular disease, lack of exercise, high correlation of an almost epidemic increase in cancer. An incredible increase in industrial accidents which account for various other areas of pollution that affect us in many adverse ways.

With the computer, however, it's an entirely different thing. We're now supplementing your brain. A student comes to my office with a proposal, and I say, Well, it's already been done, or, Why don't you start here because so much has been done before. That's actually not such a good thing to say. When you get into computer-aided design, for example, or areas where the computer has helped us out, a lot of very smart people have worked on very nice problems and solved them already. Now, we who would like to work in those areas find ourselves merely using this tool and pumping in numbers. We become more technicians than engineers or highly creative people. I'm not saying that computers as tools are bad. It's just that when we rely so heavily on them that our entire job function during the day is working with computers almost in a technician capacity . . . that really hurts creativity.

The computer industry has already taken over a tremendous amount of our society. Almost 45 percent of our total GNP is spent on information, on people who aren't producing — they're not farmers , they're not making industrial products, they're pushing papers. That should give you some idea of how far we've gone from a society of producers, from a physical, farming, materials-producing point of view to a society of people who handle information.

WPI

How to keep your computer busy

by Greg Scragg

SEVERAL PEOPLE FOUND OUT that I ran a computer simulation of making omelettes and sandwiches when I was in California. While I was still doing it, the university public relations office sent a crew over to photograph my computer making these things. I had to explain calmly that No, no it just types out a description of what it would be doing if it were actually doing it, and it all takes place right here in the computer terminal — no pictures, just some English or English-like sentences. And they said, Oh, it's been very nice talking to you, thank you very much for your time, and they went away. The whole world is, in some sense, absolutely crazy about what the computer is going to do next. They've heard so many good things, they're champing at the bit to hear the next thing. People were so willing to believe that I had a robot running around the psychology laboratory making omelettes and ham and cheese sandwiches that they were ready to send a camera crew over to take pictures of it. I was astonished.

On the other hand, maybe I'm old fashioned. I know I'm one of the few computer scientists who still uses a slide rule. When pocket calculators first came out they cost about $400. I was a graduate student and I thought, Well, I can't afford that. The next year they were $300. I said, Well, maybe pretty soon. By the time I graduated and could afford one, they were down to about $20 and at this rate I figure I might as well wait until they're free. I still don't own a pocket calculator. I just can't get into computing for computing's sake.

I don't think there's any problem thinking up great tasks to put our home computers to. I want to distinguish between the type of computer Professor Weizenbaum discussed and the type Professor Solomon described. The first is a computer which we're going to program oursleves to do whatever we want; the other is a pre-programmed computer that comes with a specific device, and it's just intended to control that device. Let's talk about the one that we can sit and program at home. One thing you hear about is an automatic recipe keeper. You can type in and request the recipe for ham and cheese omelette, or chocolate mousse, and out it comes. That's really great. Right now, we have to go to the kitchen, take out our little box of recipes, and flip through it. If we're lucky, chocolate mousse is filed under chocolate mousse — mousse, chocolate, dessert — so we have to flip through it a while before we find it. It shouldn't take too long. But some of us have a big recipe box, and it takes a while. Now, let's go to the computer. We turn it on. If it's our own home computer, we don't have to go through the process of logging in and that kind of stuff. But still, I don't think we're really going to save much time before we get the recipe out. But you know how recipe cards get after you've made the dish about 13 times — it's covered with chocolate and bent and you can barely read it. That's great; we don't have that problem with paper anymore. (Of course the chocolate that gets down inside the terminal keys is another kind of problem. That makes it rather expensive.)

I used to work at a place, Information Science Institute in Los Angeles, that has computer power rolling out of its ears. They have four PDP-10s and eighty employees. We each had a terminal in our office and we all ran programs. The first thing we did every day was turn on our program called CALENDAR. CALENDAR kept us informed if we had to go do anything. At 2:30 in the afternoon it'd go *beep, beep,* you have an appointment with your boss. Then at 4:00 it'd go *beep, beep,* don't forget volleyball this afternoon. It's really kind of an exciting thing. And then we usually turned on SPY. SPY told us whenever anybody we were interested in signed onto their terminal. Since the first thing people did when they came in was sign onto their terminal, you knew when they came in and you could always tell what they were running. If you wanted to see someone, you set this thing up. Much better than going over and putting a sign on their door. I don't know how much time we saved with these programs, but we sure created a lot of good jobs making these systems up, getting them to run.

So we're looking at the home computer idea with the idea that, as useful as it may be, we aren't going to save much time by it. Some people say we have much more complex things to do. We'll have a system that controls

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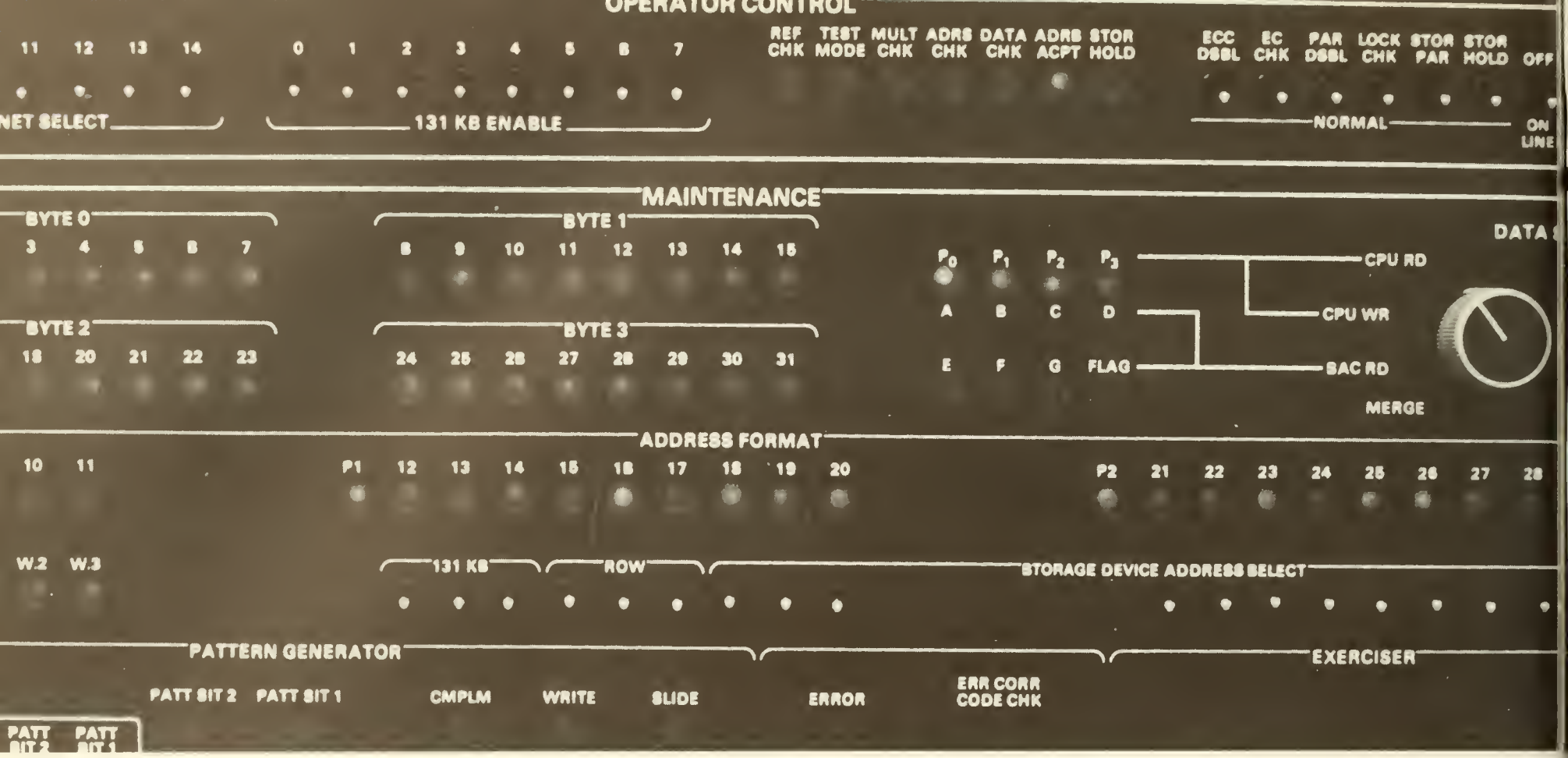


everything in the house and we'll tell it what to do. We'll say, go vacuum the living room. Now, this presupposes one of two things. The first is that the person who gets this device knows a nice computer language, and we know right now that only a very small percentage of the people in this country know a computer language well enough to remember all the fine controls for the language itself. It may work fine for vacuuming because we do vacuuming every week, but what happens when we tell it to change the washer in the faucet? We haven't done that in a year, and we have to go look up the proper control command. So we get out our dusty operating manual, and of course we still have to go to the store to get a washer for it to use. Again, I don't think we're going to save that much time. But we're certainly going to have trouble giving it commands.

The second possibility, and I keep hearing it from lots of people, is that they're going to be able to use English instructions. For the non-specialist, we say it's five years off, or ten years. But it just isn't real. When did they first say we'd have a natural language understanding system? Ten years ago, fifteen, twenty? My own present prediction is it will take us another *fifty* years.

There was kind of a thread that wandered through some of the previous discussion, to the effect that the computer is somehow exerting more control over our lives. Now, I like computers, I really do. They're fun. They're interesting to study. And I don't want to see them get blamed for too many things. Yes, computers are going to make a lot of things more possible, both good and bad. There are ways the government is going to be able to use them to control. There are ways that we're going to be able to use them to control other people. There are ways they're going to help us — medical diagnosis, perhaps. But I think we have to stop blaming the computer for all these things.

Some of the examples I hear remind me of an incident that happened to me recently, and I don't believe a computer had anything to do with it. I recently moved. I live in the only house on a street which is right on the border between two zip codes. I figured I had my choice. I could put my mailbox at the corner at one end of the street or the corner at the other end of the street. I have to travel a quarter mile in either case. But one corner is on my way to work, and the other is a direction I never go in. So I phoned the Post Office and said I would like to put my mailbox at the corner of Swan and Paris avenues. They said, "No, you can't; that's in the 01602 zip code and you're in the 01603 zip code." I said, "Well, can you change it?" And they said, "Once we've established service for a customer, we can't change it." So I replied, "But I've never been your customer here before." And they said, "Well, there's a regulation." We went around and around on this until I gave up on that person and moved to the next level. After three days they finally gave me permission to move my mailbox to another location.

What I'm saying is that we're a society that is getting more and more complex, with more rules, and it has nothing to do with computers. The computer is simply the instrument of those rules that are being given to us. As computer scientists, perhaps, we have to watch where our tools are being used, but I don't think that responsibility belongs to us alone. WPI

A giant Rorschach test for society

by Sherry Turkle

I'm a sociologist interested in exploring some questions about computers and people, what you might call the subjective side of computer science. It has often seemed to me that certain social images of "computer impacts" have become so powerful among sociologists and writers for the popular press, that they've become established as the "official" social problems related to computer technology. Typical of these are problems relating to data banks and privacy, to computers and the transfer of money, and to computers and the transfer of mail.

These "official," much-discussed problems tend to be those of large systems. Of course, they are of critical importance, and their impact may well change the face of American life. But it seems to me that they leave out an important part of the story. Specifically, they don't touch on the issues raised by a much smaller system, of which computers are a part, that is, the direct relationship between man and machine. And this is the focus of my own concern and research. I am interested in the subjective sociology of the computer impact, the kinds of relationships that people form with computers, and which they form with each other in the social worlds that grow up around computation. I'm interested in how computers and computational metaphors influence a person's life away from the terminal — how he thinks about himself; about other people; about questions like, "What is man?" "What is machine?"

My experience in interviewing people who belong to a variety of computer subcultures has been that many people have stronger feelings about computers than they know. I think that we have seen this even here today. Today I have heard direct and indirect expressions of our insecurities about what's going to become of us in an increasingly computer-rich world. There have been a lot of images of computers, of encroachment on individuality, and of computers closing things down. Repeatedly this afternoon, both the speakers and audience have used humor and laughter to help keep anxiety down, because a lot of things we have been laughing about today, if they should come to pass, would not be funny. But we don't have these kinds of charged feelings, anxieties, and the need to reduce our anxieties through laughter unless we have a very good reason. Why are our feelings so charged? This is the kind of question to which my own research addresses itself.

I think I can suggest some of the elements of a first answer: the computer presence seems to make many of the problems and conflicts that trouble us about our society more transparent to us. It magnifies them; directly confronts us with them. Consider that very memorable conversation Professor Weizenbaum overheard in a computer lab where a computer game was being played: "You ought to get more points for killing than surviving." Professor Weizenbaum's suggestion seemed to be that the computer had something to do with evoking this verbal violence. But it seems to me that the really disturbing thing about the sentiment he overheard doesn't have to do with computers. Its language is completely resonant with the language our nation used in fighting and in justifying the Viet Nam war. The fact that we now hear it reflected back in our fascination with war games and in the language we use to talk about them is a comment not on the computer presence but on the internalized violence of our society. The problem isn't in the computer; it's in us. Similarly, when we look closely at the fears about living in a bureaucratic society that Robert Solomon spoke about, (the problem of restrictions, of social opacity, of not knowing how or why things operate a certain way because someone doesn't want us to know) — these things don't have specifically to do with computers, but with the kind of society we have fashioned for ourselves. What is clear is that the computer can take these already existing problems and magnify them — one might even say, raise them to a new power. What I am saying now is very much in the spirit of Gregg Scragg's last point about fears of alienation from technology. If war games become popular in the Sunday supplements, that doesn't have to do with computers; it has to do with us.

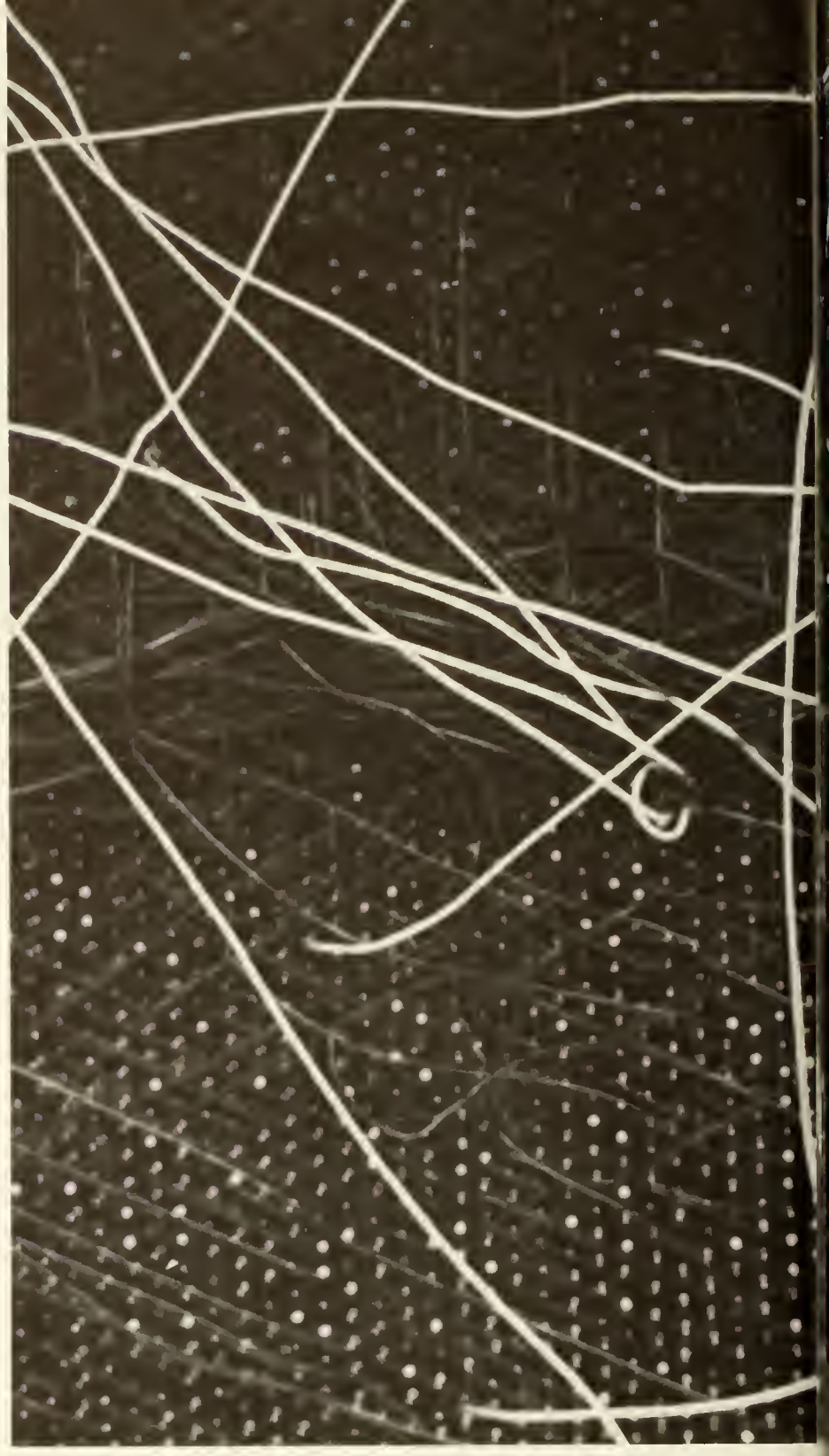
SHERRY TURKLE is assistant professor of sociology in the Program in Science, Technology, and Society, School of Humanities and Social Sciences, Massachusetts Institute of Technology. She is author of the book *Psychoanalytic Politics: Freud's French Revolution*, which is being published in November. She is currently engaged in a study for the National Science Foundation, investigating the impact of the computer on the individual.

There is an expression that captures how society "forgets" those things that threaten it. Russell Jacoby coined it to talk about how society forgot what was most subversive in the psychoanalytic vision. The phrase is "social amnesia." We don't like to talk about our fears of bureaucratic society, our fears about the difference between classes, our fears about our alienation from technology. Serious talk about such matters threatens our normal ways of doing things. We spend a lot of time and energy finding ways to put such fears to sleep, often by developing a language to talk about these problems that allows us to forget the real issues. But our tendencies to social amnesia are challenged when we're confronted with a very powerful new technology that raises these issues again for us in a very dramatic and compelling way.

Sociology has several things to contribute to the kind of coversation that we have been a part of today. First, some issues require empirical investigation.

Professor Weizenbaum raised the issue of computers making it more rather than less difficult to communicate with one another, of widening the gap between people of different social and economic classes. But whether or not this is the case is open to investigation, to study. In my own work I sometimes run across situations which suggest that just the opposite can happen as well. Computers use a kind of communication, a kind of symbol processing that doesn't rely on the kinds of fine points that make me speak "correctly" and that make some other people speak "correctly" but in a dialect that is not widely accepted. Using the new computational dialect can lessen the gulf between such people.

There is another, more important contribution that a sociological perspective can make to the discussion, one that I have already touched on. It can help us avoid the pitfall of having conversations about fundamental social and political problems focus exclusively on the computer. This can have the effect of diverting us from the underlying things that really matter. I think that we may have seen this happening in the discussion today. I have already said that I believe discussion about social and political violence can be subverted if it is reduced to complaints about the violence of computer games. I also believe that a discussion about our alienation from politics can be subverted if it is reduced to concerns about "computers" not "letting us out of the elevator" on certain "secret" floors. And I believe that fears about computers taking over the functions of certain of our neurons, like multiplication neurons, can divert our attention from the profound crisis in education today, where functional illiteracy after a high school education is becoming increasingly common. Again, as in all these cases, the computer is a metaphor for talking about these other problems. And it seems to me that a role for sociology is to bring us back to them.



There is clearly a social discourse about computers. We're participating in it today. They're good, they're bad, they'll change us, they won't change us, they're coming into our homes, what will they do there, will they change everything once they're there. There are stirrings, there is nervousness, tension, anticipation, excitement. A sociological perspective on this computer "knowledge," much of it the knowledge of popular culture, would suggest that when people are talking about computers, in their fears and fantasies about computers, they're really talking about other things as well. The stirrings about computers express important social and psychological preoccupations. In a way, the computer serves as a kind of giant Rorschach blot for society, a screen onto which other preoccupations are projected. With a Rorschach, as with other projective devices used in clinical diagnosis, we analyze projections for what lies beneath. Then we try to use our understanding to help the individual to deal with his preoccupations in the most constructive way possible.

Why is the computer able to play this evocative role? I believe that, as in the case of the Rorschach, its form is inclusive, ambiguous. People can make many things of it. Professor Weizenbaum pointed out this property of computer very well when he remarked that the question "Can computers think?" deals with three of the most ambiguous words in the English language. I think the computer's evocative power does relate to the quality of ambiguity, the difficulty of pinning down what is "thinking," what is "not thinking." It also relates to the plasticity of the machine. Unlike other technologies that essentially *do* some *thing*, the computer is extraordinarily plastic, malleable. And in the case of computer technology, perhaps more than in the case of others, the social construction of the machine (that is to say, its meaning, its use as symbol, what kind of signifier we make it in our lives) can be a large part of its impact; and, as I have already pointed out, a lot of the time when we're talking about the computer, we're really talking about our social construction of the computer.

Of course, this is not all that we are doing. The computer's direct impact, how it's going to enter and change our lives, is highly consequential. I'm not trying to reduce discussion of the computer impact to a sociological artifact. I'm just saying that it is equally reductionist to take social problems and mask their systematicity and deep-rootedness by transforming them into "computer impact problems." Claude Levi-Strauss, the anthropologist, has a metaphor for this use of cultural symbols to talk about underlying truths; he calls it *bricolage.* It means a kind of "tinkering" with powerful social symbols and I think that the computer has become a dominant image for such tinkering.

What can we say about what's going on in the sphere between computers and people that makes the computer metaphor so powerful?

In my own work, I find people preoccupied by two unknowns, both of which have been echoed here today. First, the possibility that the computer presence will change the way in which we think and second, that computers may develop a mind of their own. When people I interview are confronted with the possibility, for example, of computers which might serve as a physician-consultant — that is, whose very functions border on ones which we now consider to be quintessentially human — people react with a force of feeling by which they themselves are surprised. When this issue came up in today's session, we laughed to cover our unease. In interviews, people often try to neutralize their feelings of discomfort by making jokes or by denying that such things are possible. But then they try to buttress these defenses by adding in unabashed self-contradiction that while such things are possible, they *shouldn't* be allowed to happen. In these reactions we see the complexity of our response to the idea of machine intelligence. The issue is charged because of our own stake in maintaining the line between the human and the artificial. This is a highly charged line, long central to mythology and literature, and indeed to the research literature of psychoanalysis, psychiatry, and psychopathology as well. In my own clinical work in a student health service, I've seen people use programming as an activity that helped them come out of serious depressions. Programming has many qualities that make it a natural therapeutic facilitator. It offers a fairly structured set of tasks with still some room for creative inputs, and where debugging the program means you don't have to go back to the beginning to recreate the whole thing if you make a mistake. When I've spoken about this, about programming as a route out of depression, there is often sincere concern expressed that depression may only have given way to a compulsive activity with a machine. But if I had told the story about somebody coming out of a depression by playing a lot of chess, there wouldn't be that

kind of concern. So it seems to me that people's concern expresses their tension about interaction between machine and man. People get very disturbed when they see their children going to bed with a Little Professor, an educational toy for kids that teaches math by presenting number problems for the child to solve. But it's all right if the child goes to bed with a Raggedy Ann doll or a blanket. Again, I'm suggesting that tension arises because the issue touches the charged line between the human and the artificial.

Another problem the computer touches on and which makes it highly evocative is that of our alienation from technology in general. Many people watch men going to the moon in machines they don't understand on a television whose inner workings they don't comprehend. The idea of the malleability of the computer, the idea that it can do for you what you want it to and in the way you want it to, makes a very evocative image for many of us: it presents itself as a complex technology that can be infinitely personalized. But of course it may act in the other direction and increase our alienation from the technologies on which we depend.

Finally, the computer raises the issue of social authoritarianism. I think that here, perhaps more clearly than anyplace else, the computer has the power both to increase authoritarianism and to serve as a mirror for what's there anyway. People are nervous that the computer is acting to take out the space, the "loopholes" in a basically unsatisfying system. I recently had an interesting conversation with a colleague who was distressed to find that, when he was at the airport and wanted to pay for a flight with a check, the airline attendant said, "One moment please, I'll just have to check your balance." My friend had not been aware that a shop owner or an airline ticket agent had the right to check the balance in his bank account at any time. Now that's always been true, but, because in the past you didn't have a computer to do it, it was a kind of messy procedure with telephone calls. It couldn't easily be done while you were waiting in line at the ticket booth and so, most often, it wasn't done.

To conclude, I think that these fears we have predate the computer. I think it's a good thing that my colleague now knows that about the limits of his privacy in the banking system. I tell the story to make the point that the computer may be serving an important function in making us aware of things that were there all the time, that are offensive to us but that we swept under the rug — issues regarding privacy and authoritarianism, for example. The question before us is what we make of the mirror that the computer now offers us to deal with these underlying problems.

WPI

Computer games

It's NEARLY IMPOSSIBLE to talk about computers, especially home computers, for any length of time without touching on computer games. This symposium was no exception, and the audience and the panelists created an interesting dialogue on the subject.

(Question from the audience) Many people touched on the very aggressive aspects of most computer games. And certainly this can imply that the computer exerts negative influence on our psyches, or on the entire culture in the long term. How much of this depends on the types of games and the types of people developing the games? To give an example, the best computer game I've ever seen, the lunar lander game available for a machine with a graphics terminal, the most violent thing in it is a little guy getting out of a spaceship and ordering two cheeseburgers and a Big Mac.

Prof. Weizenbaum: Well, you must be a great lunar lander manipulator if you've never seen the consequences of crashing, where the thing blows up very vividly, and some very violent messages are given out. And it's also true that if you shoot a missile at a tank, it blows up. That's what happens, but that doesn't mean that one must *necessarily* have tank battles and so forth on computers. That's just what happens when you do.

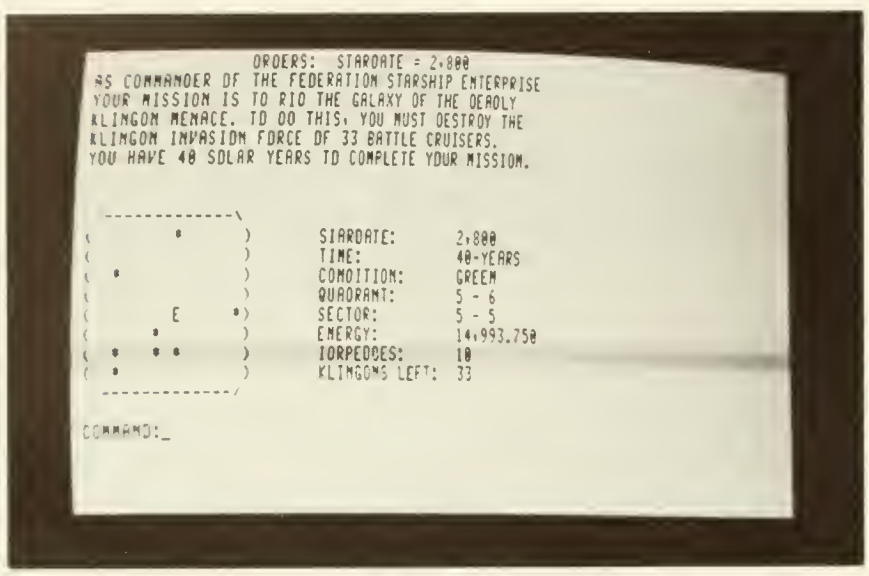
Prof. Solomon: I think one thing should be noted, but I don't know whom it's more characteristic of. You don't see computer games on sex or on social relationships. (Maybe there are some, but I haven't heard about them.) The closest I ever came to a computer game like that was a game called LIFE, where things reproduced in totally non-human ways and also died in non-human ways. Nevertheless, I think it is indicative.

I wouldn't worry so much about the violence of the computerized television games, because I see them as childlike, an extension of boys' toys. They're just more sophisticated. If I was alarmed by that, I'd be alarmed by a child with a cap pistol. Perhaps I ought to be. But what I'm saying is that this violence is not unique to the computer; it seems to go along with the age group.

I wonder why we aren't confronting the more everyday situations, such as getting a job, and putting them on the computer. I've seen a few computer programs like this, but mostly what we have are tanks, war games, or some form of Monopoly.

(Question from the audience) I'm not that familiar with computer games, but I wonder why they don't have anything but violence. From what I hear, it's just war games.

Prof. Turkle: I know I said that, because that's all that's on the computer system I have access to. But there's an interesting game I'm trying to set up a research project around. The game is called ADVENTURE, and it takes you through what may be the most fascinating, perhaps the richest kind of oral literature being generated in America today. This is a very broad statement, but I think it's true.



Prof. Weizenbaum: Sherrie, I have some data to supply to you. *(To the audience):* What was the name of that game that was mentioned? (response) Right, that's the word I wanted to hear — ADVENT. Did you hear that ? Almost everybody said ADVENT. The name of this game is ADVENTURE, but it got to be ADVENT. I think this illustrates the co-influence of all sorts of things, even the corruption introduced by one thing to another. Six letters happens to be a magic, historical number having to do with an early implementation of the computer language known as FORTRAN. So ADVENTURE gets truncated to ADVENT.

Yes, it's certainly a fascinating game, but in fact it also has its violent aspects. It's interesting that the people who put together this game couldn't do it without sticking in some violence. They were apparently incapable of doing it.

There are a whole catalog of games that don't show violence, and some are very nice. For example, CHESS is on computers today. But isn't this interesting — people will sit down with the computer to play chess who haven't asked a real person to play chess for years. There's another nice game called PQ. It's a version of Scrabble. People sit at various consoles and the computer throws up a world, a sort of menu of letters out of which you can build words, and people play against one another, building as many words as possible. Students play that a lot, and the faculty too. Many of us at MIT have computers at home, and in the evening you can see what other people are doing using a program something like SPY. And what do you know, half the faculty is plaing PQ. But they never play Scrabble with one another. That's curious.

Prof. Scragg: It seems a little unfair to point out that ADVENTURE is a violent game and they couldn't make it without violence. Let's take a look at what it is. It was certainly inspired by Tolkien's *Lord of the Rings.* And Tolkien's inspirations came from very old folk tales. So this violence is nothing new. Some people talk about it as a current trend in our society, even if it isn't the computer's fault. But the type of violence that's in this game is centuries old.

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Roy Seaberg

"WPI is the best place to study in the country today," says Roy A. Seaberg, Jr., '56. Nothing equivocal about that statement. Flat out Seaberg says WPI is the "best."

When you come right down to it, it's what you might expect to hear from a faithful alumnus and long-time WPI administrator, who helped to mold the Plan, and who currently sits in the chair of the associate director of admissions. Roy has been involved in one way or another with WPI since 1952, when he entered as a freshman. The changes that have come about on campus since that time have been nothing short of revolutionary. He is understandably proud to have played a part in furthering those changes, and in helping to shape WPI into a unique seat of higher learning.

"When I arrived at WPI twenty-six years ago, Admiral Cluverius was president," Roy says. "The curriculum hadn't been modified, except in minor ways, since the mid-1930s. There was a small change in 1957, but basically the early 1950s were the close of the Victorian Age at WPI."

Students of the 1950s were characterized as the "silent generation," he continues. "That may have been true generally, but at WPI during that period, many students and faculty were as alert and as concerned with both campus and off-campus issues as their successors a decade later. Although somewhat more inhibited than today's generation, they, nevertheless, advocated and worked for reform. Most of the Plan initiators on the faculty were not Young Turks, but as David Reisman has said, the 'Old Guard' of the college. Perhaps they were the real secret behind the success of the WPI Plan. They helped keep the changes on campus, dramatic as they were, orderly and calm."

People may not have always agreed with the Plan, admits Seaberg, but they managed to be both civil and tolerant when it was discussed. He was in a position to observe this first hand. In 1969 he became a member of the WPI Plan Committee, and served as executive secretary of the committee from February to September.

"Under the Plan we opted for a new admissions policy," Seaberg explains. Initiated by Ken Nourse, then the Dean of Admissions, the purpose was to add the candidate's appraisal of his or her own motivation and self-initiative qualities to the admissions equation. Instead of an anonymous admissions committee making the decisions solely based upon an applicant's grades, SAT scores and recommendations, the student would be brought directly into the picture right

from the beginning, usually during a campus interview. If an application followed the interview, then within three weeks by letter, the student would receive a no-holds barred appraisal of his academic talent. More importantly, however, he would receive a full understanding of the college's performance-based education and the need for his own continued growth.

Are applicants ever rejected? "Most definitely, yes," Seaberg replies. He admits, however, that the whole procedure is under continued review.

"Our admissions process is so different, as is our educational approach, that it is often misunderstood," he continues. The phrase 'open admissions' keeps cropping up. Whether we keep it or not is still being discussed. But there's no denying the fact that SATs and the high school record tell only part of the story. Motivation and creativity are not measured by three-hour exams, yet they are the biggest factor in eventual success."

Seaberg, a member of Skull, PDE, and Phi Gamma Delta Fraternity, graduated from WPI in 1956 as a mechanical engineer. He was commissioned a lieutenant in the ROTC, and served as a field representative for Phi Gamma Delta from 1956 to 1958, and took his six-month tour of duty with the Army in 1957.

"I was the first Fiji from the WPI chapter ever selected as a field representative for the fraternity," he says. Later there were four others: John Pelli, '70; Tom Burns, '72; Bill McDonald, '62; and Bill Johnson, '76.

In 1958 he left his Phi Gamma Delta post and became a manufacturer's representative for Stewart Miller Associates, which represented manufacturers of hydraulic equipment. He was responsible for the areas of Massachusetts and Vermont from 1958 to 1962.

"During the late 1950s I continued to be involved with Phi Gam, too," he reveals. "Hans Koehl, '56, Otto Wahlrab, '54, and I worked hard to raise money to renovate the chapter house. Also, I served as area adviser from 1958 to 1966."

From 1962 to 1969, Seaberg was assistant secretary of the Alumni Association and worked with Warren Zepp, '42, who was then alumni secretary. His responsibilities included compiling and writing material for the *WPI Journal*, helping to arrange reunions, and speaking at alumni chapter meetings throughout the country.

"One alumni trip was especially memorable," he recalls. "President Storke and I were in Los Angeles for a meeting, and, of course, we had to visit Disneyland. We had only a few hours to spend there, but we made the most of them. President Storke was very enthusiastic about the jungle boat ride. It was hard to get him off of it!"

On the way home from Los Angeles (it was Easter time), Roy had an opportunity to stop off at Aspen for some skiing. "That Easter trip was one of the most enjoyable ever," he comments.

Roy did lots of skiing during the middle '60s. Not only did he challenge Aspen, he also hit the high spots in New England, as well as at Mt. Tremblant. "Just for pleasure though," he says.

Golfing, he has always enjoyed since he was a youngster in New York City. He won the New York City Junior Championship in 1952. He coached the WPI golf team from 1963 to 1970. "We had two undefeated seasons during that period," he reports with a smile. "But the credit has to go to the great golfers, not their coach."

Today, Roy concentrates on his golf at Holden Country Club, where he has won several tournaments. "I really consider myself more of a pleasure golfer now, though."

Although he spends much of his time in admissions work, and has always been involved with the actual day-to-day business at WPI, he has also served in other capacities. He has been president of the Worcester County Alumni Council, a representative to the Alumni Council, a member of a special committee to nominate alumni trustees, a founding officer of the Cluverius Society, and an original member of the Pub committee. Currently, he belongs to the nominating committee and the awards committee of the Alumni Association.

In the future, he is considering taking a possible 'round-the-world trip. But, recently, he made a move of another kind — from his sunny, comfortable office in Higgins House into the newly renovated admissions office in Boynton.

"It's good to be back," he says. For a moment he reminisces about the pleasant view he had previously had of the lush, east lawn of Higgins House. "I think," he adds.

WPI

1914

Ray Crouch is recovering from an attack of angina. Currently, he and his wife reside in Dallas, Texas near their son, Walter, and family.

1915

Charles Hurd writes from Anna Maria, Fla. that he works a couple of hours a day and still keeps going "in all this heat." . . . **Maurice Steele,** at the age of 86, was honored by being asked to deliver the annual Memorial Day address in Bellamy Park, Rome, N.Y., on May 29, 1978.

1921

Over fifty years ago **Robert Chapman,** now semi-retired, founded the R. E. Chapman Co., a drilling company in Oakdale, Mass. Today, it is the largest New England-based drilling operation, according to his son, **Richard Chapman, '58,** vice president. "Six years ago we dropped domestic drilling in favor of municipal and industrial work," says the younger Chapman. "The company has grown from two men to fifty and from one rig to twenty." The firm operates in New England and New York. It has developed wells for nearly all of Worcester's suburban towns and has completed a well for Provincetown. Nearly 50 percent of its work is now in Boston drilling for hydraulic elevators.

Foster Sturtevant has moved to the McLean Home in Simsbury, Conn. He writes: "Except for minor symptoms of Parkinson's disease, I am in good health."

1923

The **Weston Morrills** celebrated their 50th wedding anniversary in June at a party attended by eighty people in Pittsfield, Mass. Mr. Morrill, who retired in 1968 after 38 years with GE, established an international reputation in magnetism and magnetic materials. He had been laboratory manager of metallurgical engineering at GE in Pittsfield, and was invited to lecture abroad. An author, he is also a fellow of IEEE, and belongs to the American Institute for Chemists, the American Institute of Mining and Metallurgical Engineers, Sigma Xi, and Tau Beta Pi. He holds several patents in his field. Both of the Morrills are interested in genealogy and mineralogy. Mr. Morrill has also received photography prizes.

1926

Howard Thomson, who had a severe stroke last July and spent eight months in the hospital, is now home continuing to improve. . . . **A. Harold Wendin** says that he still winters in a travel trailer park in Mesa, Ariz. He expected to spend most of the summer in San Diego, Calif. and to make a trip east in August. Although his wife Barbara died last winter, he is trying to continue an active life with a large variety of interests.

1927

Charles Moore has swum three-hundred miles in Cleveland's Cudell Recreation Center pool from October 1971 to June 1978, and has earned six Red Cross 50-mile certificates.

1930

Ed "Foxy Grandpa" **Delano,** for the second year in a row, has captured the national title in his age group in the Master's 25-mile time trial, which was held this summer in Milwaukee, Wis. At the Senior Olympics in July he brought home the gold in both the 10-mile time trial and the 25-mile road race. What pleased him most was that his time beat any of those in the two 60-year age group classes in the time trial, and all but one in the road race.

Delano pedals some 6,000 miles a year, has ridden twice coast to coast since 1970, and has biked through seven countries of Europe. Two years ago he placed ninth among 23 masters starting in the 1976 International Championhips in Austria. Recent tests performed at the University of Washington in St. Louis, showed that he performed like a man aged under forty. He notched an unsurpassed recorded oxygen intake level for someone aged 73.

He advises older people not to be afraid to exercise (even those with heart conditions) under medical supervision. Taking his own advice, he arises at 7:30 each day and performs thirty limbering and stretching exercises. He then bikes to town for his mail, which often includes notices of various races in which he might wish to compete.

In 1970 he biked from Red Bluff, Calif. to WPI for his 40th reunion. Who's to say that he's not planning a repeat for his 50th in 1980?

1931

Warren Doubleday, who during the depression worked on the Swift River Valley project in which his family home in North Dana (Mass.) was flooded, recently lectured on the project at a standing-room-only presentation at New Salem Town Hall. Forty years ago he was one of 2,500 persons who lost their homes when the Swift River Valley was flooded to make way for the Quabbin Reservoir.

1933

Dr. **Herman Dorn,** former owner of Dorn & Co., Glen Ellyn, Ill., has just retired. He is now a food and drug consultant.

1934

Recently **John Birch** had dinner with **Ted Perry, '32,** his wife and sister-in-law. This year he has been program chairman of the IEEE section that extends from Pensacola and Tallahassee to Dothan, Alabama and Panama City. . . . **Carl Hammarstrom** says, "I didn't retire after all, just retread." He is enjoying his part-time work in connection with mineral exploration, and part-time teaching and lecturing on surveying topics. His main outside interests are with the American Congress on Surveying & Mapping and the Surveying and Mapping Society of Georgia. "I'm having a ball!"

1935

Walter A. Blau, Jr., former safety director and plant manager for Wallace Silversmiths, Wallingford, Conn., retired August 1st. . . . **Allan Hardy, Jr.,** president of Hardy Contractors, Inc., Princeton, Mass., also owns and serves as executive vice president of Creative Tech, Micro Electronics, Inc. in Rumford, R.I.

This summer **William Grogan, '46,** dean of undergraduate studies at WPI, was browsing through an art gallery in Jericho, Vermont, when a winter scene of Camel's Hump took his eye. "I thought it was just right for my new office in Boynton," he says, "so, I bought it." Soon after, he received a surprise note from the artist, **Douglas Watkins,** who was pleased to learn that his painting had found a home at his alma mater. "I had no idea that an alumnus had done my painting," Dean Grogan says.

Watkins, who retired in 1972 as chief cable engineer for the electrical cable division of U.S. Steel in Worcester, is essentially a self-taught watercolorist. He began painting in 1962, and studied briefly with Stan Marc Wright in 1974. He had several paintings selected for the Worcester Art Museum biennial Worcester area exhibitions, and received first prize in watercolor awards at a number of exhibitions in the area. He has had two one-man exhibitions

at the Wood Art Gallery in Montpelier (Vt.), and has exhibited at the Norwich University Art Show and in numerous Northern Vermont Artist Association shows, receiving honorable mentions.

Other awards include an honorable mention in 1976 and best-of-show in the 1977 Vergennes Garden Club Exhibition, a show which he judged this year in July. He won the best watercolor award this year at the Norwich University Art Show. He is a director of the Northern Vermont Artist Association, and is represented in Vermont by the Monks House, Ltd. Gallery in Jericho and the Art Cache Gallery in East Burke.

Harvey White has become a member of the Society of Fire Protection Engineers (chapters in New York City and in New Jersey); a registered fire protection engineer; and an elected member to the council in the Borough of New Providence. He has also been awarded a diploma as an associate in risk management. He is the grandfather of Harvey W. White III and Alexander Lamonte White.

Plummer Wiley, a retired telephone company executive, is keeping busy these days with his 3,000 automobile license plates. An avid collector for over forty years, he has three rooms and a hallway paneled in plates at his home in Baltimore, Md. The year he graduated from WPI, he and three cousins drove across the country in a wooden-body Model A Ford station wagon festooned with plates from nearly every state. "New Englanders are notorious savers," he explains.

Today, as one of the 2,000 members of the American License Plate Collectors Association, he trades tags by mail, in person, and at national conventions. Wiley, whose collection has some Maryland tags going back to 1912, has a complete set of passenger plates from 1916 to the present. He also has a number of Mexican and Canadian tags. "Currently," he says, "license plates from Delaware are among the hardest to find."

1936

Perry Clark has retired from his real estate business in the Virgin Islands. Presently, he is residing in Columbia, South Carolina. . . . **C. James Ethier,** chairman of Bush Brothers & Co. of Dandridge, Tenn., has been named a director of Park National Bank. He joined Bush in 1946, was named president in 1964, and chairman last year. He is a director of Blytheville (Ark.) Canning Co; Valley Canning Co., Ville Platte, La.; and Shiocton (Wis.) Kraut Co. A former trustee of Tusculum College, he is now on the board of visitors.

1937

Morton Fine, executive director of the National Council of Engineering Examiners (NCEE), participated in a program entitled "Statutory Registration and Licensing," which was held in April at the London headquarters of the sponsor, the Institution of Electrical Engineers (IEE) of the United Kingdom. The meeting was designed to provide an insight into the registration and licensing systems which are already in operation in other countries, and to indicate how such systems might operate in the United Kingdom.

Fine pointed out that the purpose of engineering registration in the U.S. is to protect the public health, safety, and welfare. He also discussed NCEE's role as a coordinating and service body to all State Registration Boards.

Later, reporting on his visit, Fine noted that there is no engineering registration or engineering curricula accreditation as such in the United Kingdom comparable to the U.S. system. However, the structure of the engineering profession in the U.K. is similar to that in the U.S., in that there are a number of technical professional societies. Each of the U.K. institutions has created standards for its type of registration, which include the creation of a roster of "Chartered Engineers."

A report of the IEE discussion meeting on "Registration and Licensing" was to have been presented to Sir Monty Finniston's Committee on Inquiry into the Engineering Profession this summer following a visit to the U.S. by a subcommittee of the Finniston Committee.

Fine served as chairman of the Class of 1937 Gift Committee during the 40th reunion. For many years he was an active alumnus in the Hartford (Conn.) area before taking his current post as executive director of the National Council of Engineering Examiners.

William Stanton has retired after thirty years with the Installation Engineering Division at General Electric Co. He resides in Chatham, New Jersey.

1940

Everett Smith retired April 30th following thirty-seven years and nine months with U.S. Steel in Worcester.

1941

F. Harold Holland, Jr., has retired from Eastman Kodak Co., Rochester, N.Y., where he had been employed for thirty-two years. He had been senior engineer for film testing.

1942

George Andreopoulos holds the post of sales manager-engineer at United Baking Equipment Co. In Kansas City, Kansas. The firm makes packaging and automatic handling equipment for bakeries.

1943

Henry Durick, Jr., is slated to return to the U. S. in November from Suriname. He has been serving as manager of the Suriname canning industry. . . . Dr. **Chet Holmlund** spent part of the summer in Sweden visiting relatives. While there, he presented seminars at several universities. Currently he teaches biochemistry at the University of Maryland. He writes: "I enjoy the combination of teaching and research, and most especially the continuing contact with young people."

Dr. **Richard Whitcomb,** who, in his 35 years with NASA and its predecessor agencies, has become one of the nation's most distinguished aeronautical engineers, has been named by the NBAA to become the twenty-sixth recipient of the Association's Meritorious Service to Aviation Award. This prestigious award is given to those individuals who, by virtue of a lifetime of personal dedication, have made significant identifiable contributions that have materially advanced aviation interests. The NBAA board considered forty persons for the award before recommending Dr. Whitcomb unanimously. His selection was based on his research, design, and development work with NASA, which resulted in two significant breakthroughs in aeronautical design that materially advanced the state of the art: the area rule (Coke bottle) design concept in 1952, which reduced drag and increased speed without additional power; and the invention of the NASA supercritical wing. All new aircraft built since have been influenced by these concepts. Among his other aviation awards are the Collier Trophy, the National Medal of Science, AIAA Aircraft Design Award, and the NAA Wright Brothers Memorial Trophy. Presently, he supervises development of ways to improve aerodynamic performance of aircraft at transonic speeds and the practical application of these improvements to specific aircraft.

1944

John Underhill works as distribution coordinator for the western marketing region of Exxon Co. USA, Dallas, Texas.

1945

Robert Fay holds the post of vice president of sales at Springfield Moulders, Inc. in Monson, Mass.

1946

▶*Married:* **Richard C. Lawton** and Eleanor Clark Dwyer on June 25, 1978 in Rochester, New York. Mrs. Lawton, a graduate of Endicott Junior College, is a medical assistant at the Rochester Gynecological and Obstetrics Association. Her husband is president of Buell Automatics, Inc.

1947

Robert Mark continues as a member of GE's corporate employee relations staff in Fairfield, Conn. His youngest son, Fred, recently received his master's in industrial relations with high honors from the University of Cincinnati.

1948

Lawrence Minnick has been named president of Yankee Atomic Electric Company. He joined the Yankee engineering staff in 1957, and in 1963 was named assistant vice president. In 1966 he became vice president of Yankee, and two years later assumed additional duties as vice president of engineering for Maine Yankee and vice president of Vermont Yankee. For the past four years he has been the head of nuclear engineering and operations and the liquid metal fast breeder reactor project at the Electric Power Research Institute in Palo Alto, Calif. Following graduation, he worked for four years as a training student in New England Electric retail company offices in Worcester and Providence. In 1952 he became a technical assistant for NEP at Salem Harbor station. Just before joining Yankee, Minnick took a leave of absence to work as an assistant engineer at the Atomic Power Development Association in Detroit.

Robert Robson holds the post of senior business analyst at Nalco Chemical Co. in Oak Brook, Ill.

1949

Albert Hardaker has been promoted to shift foreman in the #31 paper machine manufacturing department at Champion International Corporation's Courtland (Ala.) Champion Papers mill. Prior to his promotion, he was assistant to the manager of #31 paper manufacturing. . . . **Edward Randall** is now vice president of rolling mill project administration and purchasing at Morgan Construction Co., Worcester. In 1954 he started at Morgan as a research engineer. Recently he has held posts in project administration and purchasing. . . . **Robert Rowse** was recently named division vice president of research, development and marketing in the materials division at Norton Co., Worcester. He had been divisional vice president of research and operations for the division, and has been working in research and development since joining Norton in 1949. He attended the School of Industrial Management at WPI, and the Advanced Management Program at Harvard Business School. . . . **John Snyder** serves as manager of packaging research at Pepsi Cola Co. in Purchase, N.Y.

1950

Richard Carlson has assumed the post of staff engineer at du Pont in Fairfield, Conn. . . . Col. **Frank Harding** retired from the U.S. Air Force in June. He has joined TRW Systems in Redondo Beach, Calif. . . . Presently **Bartlett Hastings** is district scout executive for Pioneer Valley Council, B.S.A., in West Springfield, Mass. . . . **Arthur Joyce, Jr.,** has been promoted to marketing programs manager in the plastic products and resins department at du Pont.

After twenty-six years with Creole Petroleum Corp. in Venezuela, **John Margo** has returned to the U.S. and is presently with Exxon Production Research in Houston. Margo was an Exxon representative in 1976 and 1977 when Creole, Exxon's Venezuelan affiliate, was nationalized. During nationalization, Exxon had to deposit $210 million to guarantee the condition of the assets turned over to the government. After nationalization, all assets were reviewed and deductions from the fund made for those assets not received in good operating condition. Margo was in charge of this task, which was completed in November. He writes: "My family and I are now undergoing a reverse culture shock, but we're very happy to be back in the U.S.A."

Formerly senior vice president for strategic planning at United Technologies Corp., **Robert Stewart** recently accepted the post of president and chief operating officer at Arlen Realty & Development Corp., the nation's largest real estate concern. Arlen is comprised of an $800 million real estate portfolio and Korvettes, Inc. Previously Stewart held top level posts at Litton Industries, Inc. and Rockwell International Corp. In June he received an honorary doctor of engineering from WPI. . . . Having been transferred from Providence, R.I. in January, **Robert Van Amburgh** presently serves as quality control manager for Davol's new plant in Moncks Corner, S.C. Davol, Inc., manufactures a variety of medical goods from latex.

1951

Dexter Cate is now a senior project engineer at International Packings Corp. in Bristol, N.H. . . . **Charles Lorenz** works for Hunlor & Associates, Inc. in Cincinnati, Ohio. . . . **Thomas McComiskey** holds the post of plant manager for the Buffalo Tank Division of Bethlehem Steel Corp. in Buffalo, N.Y.

1953

G. Brady Buckley is now the vice president of marketing at Keene Corporation, a New York-based manufacturer of industrial, pollution control, lighting, and other building products. Previously he was general manager of the cutting tool products department of Babcock & Wilcox's automated machine division. (He has not been Keene's general manager of marketing as stated in the the August *Journal.*) He had been with GE. He resides in Darien, Conn. with his wife and four children. . . . **Jack Schmid, Sr.,** is a plant engineer at Velsicol Chemical Corp. in El Dorado, Arkansas.

1956

Dr. **Howard H. Brown,** associate professor of management at Southeastern Massachusetts University College of Business and Industry, has been appointed dean of the School of Business Administration at Ithaca (N.Y.) College. During his five years at SMU, he had served as chairman of the department of management, chairman of the Graduate Policy Committee that developed the university's MBA degree program, and as chairman of the Business Community Liaison Group. At Ithaca he will administer the second largest of the college's six schools.

Brown's earlier experience included teaching part time at Northeastern and at Worcester Junior College. He spent eleven years with Vee-Arc Corporation in Westboro, Mass., as vice president and member of the board of directors, and five years with U.S. Steel in research and development.

Presently he is working as co-author of the book, *Help for the "Trying" Manager.* He has provided manuscript evaluation for *Professional Selling,* and *Industrial Organization and Management.* He belongs to the Academy of Management and is a registered professional engineer in Massachusetts.

1957

Anthony Matulaitis, Jr., serves as plant metallurgist at National Standard-Worcester Wire Division. . . . **James Richards** holds the post of vice president of manufacturing at Bowers-Siemon Chemicals in Coral City, Ill. He and his wife Rita, who have two children, live in Park Forest South. . . . **Richard Silven** was recently appointed as group vice president, international, at Harvey Hubbell, Incorporated in Orange, Conn. He joined Hubbell last year as vice president of corporate planning and development. Earlier he was vice president of corporate development and general manager of the metallurgical products division at Bundy Corporation. From 1957 to 1966 he held posts with Texas Instruments, Inc. Hubbell manufactures electrical products for a wide range of commercial, industrial, and utility markets. It has facilities in nine states and overseas.

John Stinson, who resigned as town manager of Hanover (N.H.) on July 1st, was honored by 100 people at a reception. He had served in the post for the past three years. Previously he had been administrator of the Berkshire Medical Center in Pittsfield and manager of several other towns. He expects to stay in the Hanover area in a business capacity. . . . **"Spike" Vrusho** has won his twenty-second suggestion award at IBM. He operates the GSD Information Center, where he is involved with technical marketing support, and is responsible for answering any questions concerning the company. He also serves as a vice president of the board of trustees at a Unitarian Universalist church in Manhattan, his goal being the doubling of church membership in three years. He plans to publish a church cookbook as a fund-raising project; is in charge of a monthly Underground Gourmet Society which dines at unique restaurants; and is taking gourmet cooking lessons.

Spike writes: "I recently had a major role in a medieval play, my first acting stint since my days with WPI's Masque, and only flubbed three times. . . . The audience didn't know the difference."

1958

Everett Angell has returned from a three-year assignment as chief engineer for the Foster Wheeler Rio de Janeiro affiliate office in Brazil. Currently he is project manager at corporate headquarters in Livingston, N.J. . . . **Neil Carignan** works as a senior mechanical engineer for CDI Marine Co. in Jacksonville, Fla. . . . In June, **Paul Dalton** was appointed director of technology for the Fabricated Products Division of Monsanto Plastics and Resins Company. He, wife, Jan, and children, Julie, Jonathan, and James, have moved from Connecticut to St. Louis, Missouri. He says, "Ran into **Hank Nowick, '56** in Boston recently and see **Bill Rogler** in St. Louis frequently."

William McLeod serves as a project engineer doing consulting work in the chemical industry for Herzog-Hart Corp., Barrington, R.I. . . .This year **Bill Rabinovitch** is exhibiting his art at Haverstraw (N.Y.) Enrichment Movement Gallery during a group show, as well as at a one-man show at the Rabinovitch Studio in New York City. Last year he exhibited at Whitney Counterweight, also in New York City. Bill, who is in *Who's Who in American Art,* is one of several cover artists commissioned by the Paulist Press for its 1978-82 series, *The Classics of Western Spirituality.*

1959

In May, Cdr. **Robert Allen,** U.S. Navy, completed his tour as commanding officer of VAW-123, a carrier-based airborne early warning squadron flying Grumman's E-2C "Hawkeyes." During his tour, VAW-123 was awarded the AEW Excellence Award for being the most outstanding VAW squadron in the U.S. Navy for 1977. Cdr. Allen is now assigned to the office of Chief of Naval Operations in Washington, D.C. . . . Currently **William Bailey** holds the post of sales engineer for Moog, Inc., a manufacturer of electrohydraulic servo-valves. He, his wife, and three boys remain in the Cleveland area. . . . **P. David Edwards** works as unit superintendent at Chemplex Co. in Cunton, Iowa.

W. Michael Gasek has joined Jamesbury Corp. as ball valves product manager in Worcester. Previously, he had owned Morris Co. for eight years. . . . The Rev. **Roger Miller,** who holds a Master of Divinity degree from Seabury Western Theological Seminary, presently serves as vicar of St. Margaret's Episcopal Church in Inverness, Fla. He and his wife Rita have three children. . . .The Rev. **Richard Thompson** has been appointed minister of the Rockville (Conn.) United Methodist Church. Earlier he had served as minister of the United Methodist Church in Hingham for six years and as an associate minister at the Wesley United Methodist Church in Worcester for three years. In his new post, he will be responsible for coordinating the work of the Tolland Group United Methodist Churches. He graduated from the School of Theology at Drew University, Madison, N.J. The Thompsons and their two sons reside in Ellington, Conn.

Last fall, **Ernest Woodtli** transferred from GE's Space Division in Valley Forge, Pa. to the General Purpose Control Department in Bloomington, Ill., where he is a sales engineer covering the West Coast, Southeast, and upper Midwest.

1960

George Comeau, SIM, who recently retired from ATF-Davidson after thirty-two years, was honored at a retirement party in June. During the festivities he was presented with a weather data instrument, and a gift of money. He was also inducted into the Erectors Hall of Fame and given a scale model Erectors Cricket to be used as a jewelry box. He graduated from Notre Dame University and attended Harvard Law School. . . . **Russell Fransen** holds the post of project manager at Cahn Engineers in Wallingford, Conn. . . . **Ivan Kirsch** continues as engineering services manager at Analogic Corp. His oldest son, Robert, has completed his freshman year at MIT.

. . . **Alexander Kowalewski** is the facility manager at Hooker Chemical Company's PVC plant in Burlington, N.J. . . . **Kenneth Matson** has been promoted from assistant division manager of southern gas T & D of the Public Service Co. of New Jersey to manager of advanced systems research and development. He has his MBA from Rider College and has completed the program for management development at Harvard Graduate School of Business. He joined the firm in 1960 and was named assistant division manager last year.

1961

David Chesmel has been appointed manager of national sales for Chemplast, Inc. He will be responsible for Chemplast's national sales policy, line sales organization, and distribution networks. He has his MBA from Wayne State University. . . . **James Dunn,** registered professional engineer and land surveyor, recently opened an office on Cocasset St. in Foxboro, Mass. The office will offer all types of land surveying services and consulting engineering services in the land development, environmental, and land planning areas. The firm can handle an entire project from site and soil examination to inspection. It can service the home owner, the commercial developer, and those in the public sector. Dunn belongs to the Boston Society of Civil Engineers, American Congress on Surveying & Mapping, NSPE, and the Massachusetts Association of Land Surveyors and Civil Engineers. For the past fourteen years, he was the vice president and chief engineer of Schofield Brothers.

George Durnin, Jr., SIM, has been named director of personnel at Franklin County Public Hospital. For the past two years, he was personnel director at Fairlawn Hospital, a 105-bed hospital in Worcester. He has taught evening personnel management courses at Anna Maria College, Worcester Junior College, and Becker Junior College. In 1976 he received national recognition as an accredited executive in personnel, an award given by the American Society of Personnel Administration. He served seven years as personnel manager at Rexnord, Inc., and ten years as personnel director at Riley Stoker in Worcester.

A graduate of the Army Command and General Staff College, and the Industrial College of the Armed Forces, Durnin, a lieutenant colonel, is presently assigned to the faculty of the 1049th USAR School in Chicopee as instructor in the Command and General Staff College.

He is past president of the Personnel Management Association and a member of the Massachusetts Hospital Personnel Directors Association, the American Legion, and the Reserve Officers' Association.

Ralph Dykstra, a licensed real estate agent, has joined Community Real Estate in Madison, Conn. He is also a pilot with TWA. He lives in Madison with his wife and two children. . . . **Gerald Kuklewicz** has changed from sales to application engineering within the central air conditioning and heating division of General Electric Co. He writes: "Entire division is transferring out of Louisville, Ky. to Tyler, Texas. Eighty families!" . . . **Thomas Lopresti** is an insurance industry administrator at IBM in Princeton, N.J. . . . **Paul Sledzik** holds the position of manager of manufacturing for sheet products at GE in Mt. Vernon, Indiana.

1962

Richard Frost was recently appointed district superintendent of transmission and distribution at Narragansett Electric Co. in Providence, R.I. . . . **Frederick Hastings** is program manager at the Armament Development Lab., Elgin AFB, Florida.

1963

▶*Born:* to Mr. and Mrs. **Roger H. Maddocks** their fifth child, first daughter, on May 21, 1978. Maddocks is assistant superintendent of the paper sensitizing division at Eastman Kodak in Rochester, N.Y.

Paul Buma is again serving as a member of the Northbridge (Mass.) School Committee. He was a member of the school board from 1969 to 1977 and was chairman from 1972 to 1977. He served as chairman of the Regional School Study Committee in 1969. He is self employed as a manufacturer's representative, is married, and the father of three children. . . . **Russell Hokanson** works at the du Pont Savannah River plant in South Carolina as a senior supervisor in the reactor department.

1964

▶*Married:* **Thomas A. Zagryn** and Nancy L. Chatfield on June 2, 1978 in Plainville, Connecticut. The bride graduated from Central High School. Her husband has an MS degree from the University of Hartford. He is a supervisor of personnel development at Pratt & Whitney Aircraft.

Francis Caradonna received his PhD in aeronautics and astronautics from Stanford in April. Presently he is employed at the U.S. Army Aero Research Lab., Moffett Field, Calif. . . . **Thomas Modzelewski** holds the post of manager of application engineering at Leeds & Northrup Co. in North Wales, Pa.

Martin Cosgrove, a section manager at Loctite Corp., Newington, Conn., along with a colleague, have been issued a patent entitled "Coating Applicator" for a new machine called a Dri-Loc handcoater. The machine was developed for either low or medium volume runs, to turn regular bolts into locking bolts.

Dri-Loc, itself, is a microencapsulated adhesive which remains dry and inert on bolt threads or other threaded parts until they are assembled. After assembly, the Dri-Loc capsules are crushed, releasing a locking adhesive. After injecting a bolt into the coating chamber of the handcoater, threads are automatically coated and the bolt is then ejected. Bolts from 3/16" to 5/8" in diameter can be coated. Users include railroad and bridge builders and automobile manufacturers. Cosgrove has been with Loctite for five years.

Dr. **Alan Sinclair,** MNS, has been appointed a member of the Massachusetts Board of Regional Community Colleges. The board sets policy for the state's fifteen community colleges and specifies tuition rates for the schools which provide educational programs equivalent to the first two years of college. Dr. Sinclair, director of the Alternate Learning Center for staff development for the Rhode Island Department of Education, will serve in his new part-time position until December 30, 1983. He is with the University of Rhode Island.

1965

David Clayton holds the post of director of finance at Trans Ocean Leasing Corp. in San Francisco. . . . **Stephen Cloues** is employed as a church extension consultant with the Baptist Association's Council for the Metropolitan Birmingham (Ala.) area. . . . Dr. **William Gasko** has been elected president of Millis (Mass.) Research, Inc. The company provides materials technology and custom thin films using sputtering, ion plating, and photo-patterning. Bonding and coating techniques developed by Millis are used in space, medicine, electronics, machine tools, and consumer applications. Gasko is a cofounder of Millis Research. He received his doctorate in theoretical physics from WPI.

Paul Giusti now owns and manages Louie's on the Wharf, Inc., a restaurant and lounge on the New Bedford waterfront. The Giustis have a daughter, Kimberley Mary, 1½. . . . **James Keith** is a principal engineer working for Instrumentation Laboratory, Inc., Lexington, Mass. . . . Did you happen to catch the two-page ad in the April issue of *Computer Design?* It featured **Steve Sutker.** Steve, whose picure heads the ad, is quoted as saying, "My job is to make you successful with computers. And I do my job." Steve is OEM marketing manager for Perkin-Elmer Data Systems. . . . **William Zetterlund** holds the position of president of Norflor Construction Corp. in Orlando, Florida.

1966

▶*Married:* **Stephen D. Fogarty** and Miss Ruth B. Alexander on April 29, 1978 in Newton, Massachusetts. Mrs. Fogarty graduated from Northeastern University and is with C& I Cryogenics in Waltham. The groom serves as manager of shipping and receiving at Polyform Corp. in Westboro.

Recently changing jobs, **Paul Castle** presently holds the post of plant manager for Beecham Products, Inc. in Rockwood, Mich. Beecham took over the Calgon Consumer Products Co. The plant produces the Calgon line of consumer products. The Castles have moved to Grosse Ile, Mich. . . . **Kendall Cowes** now works as a senior development engineer at Datatrol Inc., Hudson, Mass. . . . **James Cocci** is unit manager of staff engineering at the government systems division of RCA in Camden, N.J. . . . **Robert Holt** serves as a computer programmer in the U.S. Bureau of the Census in Washington, D.C. . . . **Edward Kazanjian, Jr.,** former director of school plants in Brookline, Mass., has been appointed assistant superintendent of schools for business affairs in Billerica. He won out over seventy-five applicants for the post. He graduated from BU, and has a master's degree. He previously worked in industry, and was assistant director of buildings and grounds for the Framingham Public School Department.

Earl Sparks was recently promoted to plant superintendent at IMC Chemical Groups Ashtabula plant with total responsibility for all maintenance and capital projects. The plant produces chlorine and caustic potash, utilizing mercury cells. . . . **David Wilson** has been named a project manager for Sperry Univac's Federal Systems Division in Washington, D.C. The project is an automated communications system for the U.S. Navy with major installations around the world. In June, Wilson was promoted to major in the U.S. Army Reserve. His mobilization assignment is with the Automatic Systems Branch of the U.S. Army Communications Command at Ft. Huachuca, Arizona.

1967

Gary Bossak is now employed by Bristol Instruments & Systems. . . .**Wayne Chiapperini** works as a self-employed consulting engineer and land surveyor specializing in plant and facilities engineering. . . . **Hugo Croft** has been a product design engineer at Ford Motor Co., Dearborn, Mich., since July 1st. He and his wife Carolynn have two children and reside in Plymouth, Michigan. . . . **Kirit Desai** was the co-author of "Laser Light Scattering Probe," which appeared in the June issue of *Industrial Research-Development.* His work has been in the areas of thermodynamics, fluid mechanics, and turbine aerodynamics. He is with the Westinghouse Electric Corp. in Philadelphia.

James Dunn is now employed as product manager for Hendrix Electronics, Inc., Manchester, N.H. He has moved into a 160-year-old house and farm in Dunbarton, and is presently learning the sheep business. . . . Dr. **George P. Kasper,** as co-author, presented his paper, "Development of the Electrostatic Image" as part of a symposium of the 23rd International Congress of Photographic Science on August 24th at Rochester Institute of Technology. About 700 international scientists attended this first western hemisphere meeting of the congress. The Society of Photographic Scientists and Engineers was the host. Kasper is a research associate at Eastman Kodak's Research Laboratories.

Tom Keenan was recently elected treasurer of Torin Corporation, Torrington, Conn., where he continues as secretary of the corporation. Since joining Torin in 1969, he has served in a number of assignments, both domestic and abroad. In 1976 he was elected assistant treasurer and secretary. In his new assignment, he will function as the chief financial officer of the company. Keenan is a graduate of the Graduate Center of RPI. Presently he is a director of the Torrington United Way, and has served in a number of education-related community activities in Torrington. He is the son of **John Keenan, '34**. . . . Dr. **Neil Shea** has been promoted to assistant professor of mathematics and physics at North Shore Community College in Beverly, Mass. He has taught at the college since 1974 and has an advanced degree from RPI. . . . **Joseph Slocik,** a transformer design engineer at GE's transformer department in Pittsfield, Mass., has been installed as the new chairman of the Berkshire Section of IEEE. During his eleven years at GE, he has served as program and publicity chairman for the local section as well as IEEE Berkshire section scholarship committee chairman. He is a licensed professional engineer in New York and has completed requirements for his master's in industrial administration at Union College. He is married and has two children.

1968

▶*Married:* **Nicholas L. Mauro** to Miss Joanne M. Olszyk in New Haven, Connecticut on June 3, 1978. Mrs. Mauro is currently a student at Quinnipiac College in Hamden, Conn. Her husband served four years in the U.S. Air Force, and was stationed in Vietnam with a special engineering unit.

Alan Berg is an assistant director of the Department of Public Works and town engineer in Holden, Mass. . . . **Robert Gillies,** MNS, professor of electronics at Quinsigamond Community College, Worcester, has been awarded a $9,000 National Science Foundation grant to develop a computer technician program with Digital Equipment Corp. of Marlboro, Mass. Students in the program will be trained to work as computer technicians in area industries, and will earn associate degrees. Gillies was named an Outstanding Educator in America in 1975 and spent 1973 in England as a Fulbright scholar. He is a member of the Oxford (Mass.) Planning Board, and a member of the board of directors of Home Care Corp.

Paul Larini has been named manager of individual reinsurance services within the individual life actuarial organization at State Mutual Life Assurance Company of America in Worcester. He joined State Mutual as an assistant actuary in 1971, after having experience as an actuarial assistant with another large life insurance company. In 1973 he received his master's degree in actuarial science from Northeastern University. . . . Dr. **Roger Ludin** was recently promoted to full professor at Burlington County College in Pemberton, N.J. He is still expanding his computer assisted instruction programs for physics for which he was honored in 1977 by the N.S.P.I. . . . **James Sinnaman** received his PhD in mechanical engineering from the University of Michigan last April. He is with General Motors in Detroit.

1969

Raymond Baker, who received his MS in management science from WPI last year, is director of manufacturing at Martin-Copeland Co., East Providence, R.I. . . . Dr. **Robert Barnard** holds the post of materials engineering specialist at Reliance Electric in Cleveland, Ohio. . . . **Harold Hemond** is now an assistant professor at MIT. He received his PhD from MIT last year. . . . **Ronald Lewis,** a lieutenant in the Civil Engineer Corps of the U.S. Navy, is a full-time student working for his MSCE in an NROTC unit at the University of Florida in Gainesville. . . . **Mahendra Patel** has been working as a mechanical engineer in the engineering and construction department of the Boston Edison Company in Boston for nine years. Active in the Boston section of ASME for several years, he presently serves as chairman of the section. He lives in Hanover, Mass. with his wife Lekha and daughters, Mona, 5, and Reena, 1. . . . **John Taylor,** currently a senior development engineer with St. Regis Paper Corporation, and a recognized expert in his field, received the "Outstanding Alumnus of the Year Award" during graduation exercises at North Salem (N.Y.) High School in June. With Eastman Kodak until June of 1975, he helped to develop a U.S. patent on microwave drying of film surface coatings. In July 1975, he became senior development engineer at St. Regis in West Nyack, N.Y. He subsequently served as group leader of coating process and pigmented coatings, and director of the pilot plant in that area. Recently he invented a machine which improved the coating on paper process, a process which had remained unchanged for over thirty years. The machine is in use at the St. Regis Bucksport (Me.) plant.

1970

Presently **Philip Bartlett, Jr.,** serves as assistant manager of marketing for American Cyanamid Co. in Wayne, N.J. . . . **John Boyd,** recently recognized as a certified clinical engineer, is now a senior biomedical engineer at St. Vincent Hospital in Worcester. . . . **David Brown** holds the post of chief product engineer at Rodney Hunt Co. in Orange, Mass. . . . **Lawrence Cohen** is director of research and development at Cavedon Chemical Co., Inc., Woonsocket, R.I.

After working as an experimental engineer at Pratt & Whitney in East Hartford, Conn. for over six years, **Kenneth Cram** has accepted a post as an evaluation engineer at GE in Lynn, Mass. He, his wife and daughters, aged 3 and 5, now reside in Topsfield. . . . **Dom Forcella, Jr.,** of Plainville, Conn., won the Democratic nomination for state representative from the 22nd District delegates in July, when a tie vote was broken by the chairman of the nominating convention. A former Democratic Town Committee Chairman, Forcella

is presently employed by the Department of Environmental Protection. He is a past chairman of the Inland Wetlands Commission, was vice president of the Connecticut Young Democrats, and served on the Democratic Platform Committee. He is also on the board of directors of the Central Connecticut Mental Health Association.

Peter Cronin is the new senior research chemist in the Dade division of American Hospital Supply, Miami, Fla. He writes: "I'd be glad to hear from any alumni in the Miami area." . . . **Robert Mulcahy** works as supplies manager for New England Telephone in New Hampshire and Vermont. . . . **Robert Rosenberg** operates Childs Meadows Nordic Site Area in Lassen Volcanic National Park, Mill Creek, Calif. He is also an associate realtor with Vehr & Taylor in Chester, California.

1971

▶*Married:* **Stephen N. Dykes** and Miss Dorothy J. Fitzell on May 20, 1978 in South Hadley, Massachusetts. The bride attended Holyoke Community College and is with Allen S. White Insurance Co. of South Hadley. The groom is a production manager at Servus Rubber in Chicopee. . . . **Donald D. Tanana** and Miss Donna Reed in Solanu Beach, California on April 29, 1978. Mrs. Tanana graduated from San Diego State University and teaches in Escondido. She is also a professional violinist. Her husband holds the post of office manager of the Bristol Meyers Corp. La Mirada distribution center in California.

▶*Born:* to Mr. and Mrs. **Donald Usher** their second son, Colin Trevor, on April 18, 1978. Don is with Babcock & Wilcox Construction, Power Generation Division, in Copley, Ohio.

Martin Anderson owns Independent Software Co. in Highland Park, N.J. . . . 1/Lt. **Richard Brunet** has arrived for duty at Hill AFB, Utah. A weapons systems officer with a unit of the Tactical Air Command, he previously served at Torrejon AB in Spain. . . . **Bryan Foster,** SIM, was recently named product engineering manager in Norton Company's armor and spectramic products group. He began work at the Worcester firm in 1963. He is a graduate of Alfred (N.Y.) University. . . . **David Greenhalgh** writes: "Upon graduation from WPI, I went on active duty with the U.S. Army. I spent nine months at Ft. Knox in training, followed by three years in Germany. My company positions included platoon leader, motor officer and executive officer. While overseas I met and married my wife, Angel. We returned stateside in 1975. I then joined Airco Industrial Gases as a plant engineer in Acton, Mass. In 1976 I moved near Albany, N.Y. to start up a new 635-ton per day air separation plant. Last fall I was promoted to assistant production superintendent at Airco. My wife and I have a son, Brian Fowler, born last year. In May of 1977, we purchased a house in Glenmont, N.Y."

Michael Latka holds the post of contract management coordinator in the Worcester city manager's office. . . . **W. Robert Melville** is employed as the senior facilities engineer at Rochester Products Division of General Motors. . . . **John C. Moore III** has left Westinghouse in Minneapolis, and is now with the Cooperative Power Association, where he is involved in project engineering, design, and management. He and his wife Joan have a two-year-old son, Bradley Clark, and reside in Mendota Heights near St. Paul. . . . **John Sieczkos** is the supervisor of quality assurance at GE in Binghamton, N.Y. . . . **Lawrence Sniegoski** has been traveling quite a bit, and has visited nearly every capital in Western Europe. He is manager of international marketing for the Contherm Division of De Laval Separator Co., Newburyport, Mass. . . . **Glenn Tuomi** has rejoined Chromalloy Standard Foundry Division, Worcester, as supervisor of engineering. He had served at Chromalloy from 1973 to 1976 as an industrial engineer. For two years he was with Foster Grant Corp., Leominster. He has a BS in industrial engineering from Central New England College of Technology.

1972

Ralph Blackmer has received his master's degree in business science and engineering from WPI. Presently, he is manager of the preparation and sterile filling departments at Astra Pharmaceuticals in Worcester. . . . Dr. **Gordon Chess,** who has been acting dean of the faculty of engineering science since last fall, has been appointed dean for a seven-year period at the University of Western Ontario (UWO) in London, Ontario, Canada. He is a professional engineer and has degrees from the University of Toronto and McGill. He has served as a technical officer in the Canadian Army, and has made extensive contributions to UWO administration, serving in a senior capacity on many committees.

Kerop "Kenny" **Gebeshian,** a product development engineer, selects fabrics and checks production feasibility of designs and patterns in the soft goods division at Fisher-Price Toys. For the past two years he's researched American fashion from early colonial days to the present at various museums like the Smithsonian and the Metropolitan Museum of Art. He was slated to present forty of his American-inspired creations at Mechanics Hall in Worcester on Sept. 23rd.

Kenny has invented a loom on which he makes women's shawls reflecting American design. He also has originated the use of the shell of silk cocoon in appliquéd designs to women's clothes.

After studying at WPI, he went to Rhode Island School of Design and the New York Institute of Fashion Technology. He says, "Why should France dictate fashion to us? We've got it all here."

Kenny was born in Lebanon of Armenian descent. "I felt at home the minute I arrived here," he says. He will become an American citizen within six months.

Joseph Gotta, who received his MBA from Western New England College last year, is assistant manager of product and inventory control at Ludlow Papers & Packaging, Holyoke, Mass. . . **Patrick Lafayette** has been appointed city engineer in Norwich, Conn. Previously he was with C. E. Maguire. He has a master's in civil engineering from the University of Maine. He and his wife, Ann Marie, have an 18-month-old son, James Patrick. . . . **Howard Levine** says, "Am working on my PhD in low temperature magnetic phenomena." In regard to WPI today, he continues, "I've always felt that it's a first-rate institution. The best part is its closeness of faculty and students." . . . **Steven Rudman** works as a sales engineer for Combustion Engineering.

1973

►*Married:* **Bernard O. Bachenheimer** to Miss Melinda P. Hopkins on May 28, 1978 in Fairfield, Connecticut. Mrs. Bachenheimer graduated from Stephens College. The groom, a project engineer with Angel Engineering Corporation in Stratford, is also a student at the University of Bridgeport. . . . **Joseph J. Vallera** and Miss Kathy E. Krause on April 22, 1978 in Manchester, Connecticut. The bride attended Wagner College and Computer Processing Institute. She is a computer programmer at Finast, Inc. in Somerville, Mass.

Dr. **James Mon-Her Chen** is a chemical engineer assistant at Brookhaven National Laboratory. . . . **John Cirioni** now serves as auditor for Southland Corp. in West Palm Beach, Florida. . . . **Edward Jamro** was recently promoted to senior engineer and has transferred to Monsanto's Delaware River plant in Bridgeport, N.J. He is the site environmental specialist, and monitors and aids the site in recognizing and complying with all environmental regulations. He, his wife Joyce, and son Terry have moved from St. Louis to New Jersey. . . . **Dale Ladysh** holds the post of mechanical supervisor at du Pont in Cleveland, Ohio. . . . **T. Daniel Latina** is with Hewlett-Packard in Andover, Mass., where he is a project engineer.

John Luikey, Jr., who has his MBA from Boston University, is a staff engineer in the oil well division of U.S. Steel Corp. in Oil City, Pa. . . . Dr. **Thomas Mikolinnas** has received his PhD from WPI, and has joined Power Technologies Inc. system operation and reliability section as an analytical engineer. He is located in Schenectady, N.Y. . . . Currently on assignment at the Shoreham nuclear power station at Wading River, L.I., N.Y., **Albert Popoli** continues with Stone & Webster as a senior structural designer. . . . **C. Paul Russell** has been appointed technical sales representative for Hughson Chemicals, Wakefield, Mass. Previously, he had served in various development design and process engineering functions at Goodyear Tire & Rubber, Malden Mills, and Herzog Hart Co., Inc. Hughson manufactures a complete line of adhesives and coatings for industrial applications.

Martin Sklar recently received his master of engineering degree from the Thayer School of Engineering at Dartmouth College in Hanover, N.H. . . . Lt. **Greg Stamper** is a patrol plane commander with the U.S. Navy. . . . Currently a sales engineer for Morse Chain, **Anthony Urjil** is now located in Boyertown, Pa. . . . **Ralph Veenema, Jr.,** is employed as an analytical engineer at Pratt & Whitney Aircraft in East Hartford, Conn. . . . **Stuart Wallack** serves as district engineer at Torrington Co., Dayton, Ohio. . . . **Andrew White** holds the post of senior software specialist at Tymshare, Inc. in Cupertino, Calif.

1974

►*Married:* **Robert H. Becker** and **Katherine R. Fowler, '75,** on May 21, 1978 in Lexington, Massachusetts. Mrs. Becker, who is with Data Terminal Systems in Maynard, is doing graduate work evenings at Northeastern University in Boston. The bridegroom is a programmer for Bedford Computer Systems. . . . **Stephen E. Braley** and Susan E. MacCreery in Lansing, Michigan on June 17, 1978. Among the attendants were **Gene Lukianov** and **Steve McGrath.** The bride, a registered nurse, is employed as an RN instructor in a Milwaukee (Wis.) hospital. Her husband was recently promoted to area supervisor and transferred to Milwaukee by Hercules, Inc. . . . **Paul A. Sears** and Deborah R. Kitchen on June 24, 1978 in Westfield, Massachusetts. Mrs. Sears graduated from UMass and is a special needs teacher in Southwick. The groom works for GE in Schenectady, N.Y.

Brian Anderson serves as account manager at Taylor Instrument Co. in Newton, Mass. . . . Presently, **John Fanotto, Jr.,** holds the post of lead construction field engineer for Bechtel Power Corp., San Clemente, Calif. . . . Dr. **Michael Hartnett** has been named supervisor of analytical engineering in the Bearing Engineering Department at the Torrington (Conn.) Co. With the firm since 1972, he holds a BSME from the University of New Haven, an MSME from WPI, and a PhD in applied mechanics from the University of Connecticut. After a short time in manufacturing engineering, he transferred to bearing engineering, advancing from project engineer to product design engineer, to theoretician and product engineer. . . . **Dennis Hattem** is in his third year of Peace Corps volunteer service with Malaysia's drainage and irrigation department in the city of Kota Bharu. Working as the department's engineer in charge of development, he is currently supervising construction of a large earthen dam that will help rice farmers increase their yields through irrigation.

Robert Houston spoke on the topic: "New Bond Development for CBN Dry Tool Room Grinding of High Speed Steels" at a meeting of the Abrasive Engineering Society in May. He is a product engineer in the Grinding Wheel Division of Norton's Abrasives Marketing Group. He is concerned with the development and application of super abrasives and diamond. He has also helped develop metallic bonds for diamond products at Norton R & D Laboratory, and holds a patent in this field. He is a registered professional engineer in Massachusetts. . . . **Gerald McCullough** is an industrial systems engineer at GE in Fitchburg, Mass. . . . **Robert Parnass** works as an occupational engineer at Teletype Corp. (R & D) in Skokie, Ill. In May he received his MS in computer science from Purdue University.

Peter Petroski writes: "I am now settled in Idaho and have recently purchased a new home. My job is coming along well, and I'll be doing some important circuit design for one of our upcoming products." Petroski is a development engineer in the disc memory division at Hewlett-Packard in Boise. . . . In June, **Gary Pontbriand** joined the engineering staff of Quabaug Rubber Company in North Brookfield, Mass. He had been a production engineer for the New Jersey Zinc Co. in Palmerton, Pa. . . . **Stephen Skutel** was recently promoted within the computer research and education organization at State Mutual Life Assurance Company of America in Worcester. He is now advisory computer research and education consultant. He started at State Mutual in 1974 as systems analyst in the systems development organization. Last year he transferred to the computer research, technical support organization, as computer research and consultant. . . . Still with Combustion Engineering in Windsor, Conn., **Mark Whitney** has also completed 60 percent of his MBA degree studying part-time at the University of Connecticut. Since 1975 he has served as a member of the volunteer fire department. He has restored, with some assistance, a 1930 Model A Ford rumble seat coupe.

1975

▶*Married:* **Richard G. Aseltine, Jr.,** and Miss Joan Gibson in Longmeadow, Massachusetts on June 24, 1978. Mrs. Aseltine graduated from Westbrook College and Springfield College. She was director of the YWCA Women's Center in Louisville, Ky. The groom is employed by the Medical Systems Division of GE in Milwaukee. . . . **Barry D. Braunstein** to Deborah N. Rubin on July 9, 1978 in Newton, Massachusetts. The bride, who graduated from Simmons College and attended the Institute of European Studies in Madrid, is a field sales representative for the Drackett Products Company. Her husband is a field sales engineer for the Intel Corporation. . . . **Bruce A. Chamberlin** and Susan G. Rothman on July 15, 1978 in Herkimer, New York. Mrs. Chamberlin graduated from Brockport (N.Y.) State University and received her master's degree from the University of Stony Brook, N.Y. She was with the King Park School District, Long Island, N.Y. The bridegroom is with du Pont Co., Wilmington, Delaware.

▶*Married:* **Kevin J. Fielding** and Miss Jo-Ann M. White in Warwick, Rhode Island on June 25, 1978. Mrs. Fielding graduated from Mount St. Joseph College and teaches in Warwick. The groom works for Engineered Plastics, Inc., Providence. . . . **Daniel C. Lapen** and Jennifer Smith in West Brookfield, Massachusetts on June 17, 1978. The bride graduated from Northeastern University School of Radiologic Technology and Quinsigamond Community College School of Radiologic Technology. She is a radiologic technologist and student coordinator at Hahnemann Hospital in Worcester. The groom has his MS degree from UMass. . . . **Robert N. Wivagg** to Miss Janice M. Krombel on June 17, 1978 in New Haven, Connecticut. Mrs. Wivagg, a data-systems specialist for Southern New England Telephone Co., graduated from Pace University, White Plains, N.Y. Her husband is also a data-systems specialist at the same company.

Bruce Altobelli was recently promoted to plant engineer at Tampax Incorporated in Rutland, Vt. . . . **Robert Andresen** is manager of software services at Computervision Corp. in Bedford, Mass. . . . **Armand Balasco,** who has his MS in chemical engineering from Tufts University, is presently an engineering consultant at Arthur D. Little, Inc. in Cambridge, Mass. . . . **Mark Chevrier** serves as project engineer at Ensign-Bickford Co. in Simsbury, Conn. . . . **Steven Coes** is an administrative assistant for the town of Seabrook, N.H. . . . **Judy Nitsch Donnellan** became office manager of Freeman Engineering Co., a branch office of Schofield Brothers, Inc. in June. She is located in Attleboro, Mass. She is serving as chairman of the exhibits committee for the ASCE National Convention and Exposition to be held in Boston next April. Over 100 exhibitors are expected, including firms offering construction products, services and goods used by the engineering facility and exhibits related to the Technical sessions. Attendance at the convention, which starts April 1st at the Sheraton-Boston, is expected to be about 3,500. The Boston Society of Civil Engineers is a co-sponsor of the event.

Ronald Ford and his partner, William Knox, have opened a new real estate office on Washington St. in Norwell, Mass. Last year he opened his first real estate office in Brockton. Formerly, Ford was employed by a Boston engineering firm. . . . **Tom McGowan** is a programmer at Hendrix Electronics in Manchester, N.H. . . . **David Medeiros** holds the post of senior development engineer for the outdoor living products line in the Thermos Division of the King-Seeley Thermos Company of Norwich, Conn. . . . **Elizabeth Pennington** is an operations research analyst at Equitable Life Assurance Society in New York City.

Mel Noll '74 and **Norman Rehn,** co-chairmen of the Appalachian Mountain Club (AMC) Boston Chapter's Canoe Safety Committee, are concerned about amateurs who attempt whitewater canoeing. Quoted in a recent article in the *Boston Globe,* Noll says, "People in mass numbers have just discovered the sport . . . , but are not educated as to the hazards involved in this stuff." Inexpensive canoes and cheap daily rentals add to the problem. Noll, Rehn, and others have spent hours pulling people and equipment from hazardous spots. They feel that canoeists should receive proper instruction, know their own capabilities, and be thoroughly familiar with the river before attempting whitewater canoeing. Rehn serves as a senior engineer at GTE Sylvania in Waltham, Mass.

Siddharth Shah works as a design engineer for GE in South Portland, Me. . . . **James Weber** is an industrial engineer at Boeing-Wichita in Wichita, Kansas. . . . **Jeffrey Yu** holds the post of Far East regional manager for the Morse Division of Borg-Warner Corp., Ithaca, N.Y. His marketing responsibility covers seven countries in the Far East. . . . **Johnny Yuk,** who received his MS from Ohio State University last year, is a lighting design engineer for Philips Hong Kong Ltd. in Hong Kong.

1976

▶*Married:* **Edward J. Holmes** and Miss Jody E. Lippard on April 29, 1978 in Duxbury, Massachusetts. Mrs. Holmes graduated from Becker and is with the Worcester Area Chamber of Commerce. The bridegroom works for Wyman-Gordon as a quality engineer. . . . **Steven Lowe** and **Madeleine Gauthier** on April 22, 1978. The bride is with Sperry Rand Univac, Blue Bell, Pa. Her husband works for Scott Paper Co. in Chester, Pa.

▶*Married:* **James L. O'Connor** and Miss Lauretta L. Hadley on June 10, 1978 in New Haven, Connecticut. Mrs. O'Connor is a Becker graduate. The bridegroom is a design development engineer at Millipore Corp. in Bedford, Mass. He had been a graduate student at Colorado State University. . . . **Richard Rudis** and Susan M. Greene in Greenville, Rhode Island on July 22, 1978. Mrs. Rudis graduated from Katharine Gibbs School. Her husband is with Stone & Webster, Oswego, N.Y. . . . **Gunther Trentini** and Miss Sheila M. Lilley in Natick, Massachusetts on June 17, 1978. The bride attended Massachusetts Bay Community College and is now at Greenfield Community College as an executive secretarial science major. The groom is a political science major at UMass.

Richard Allen, a design engineer for Kramer, Chin & Mayo, Inc., was co-author of "Plant to Disinfect Wastewater With Ozone," which appeared in the July issue of *Water & Sewage Works.* He designed the ozone generation and diffusion system for the LOTT facility, a wastewater treatment facility in Olympia, Washington. Also, he has conducted research in chlorine disinfection at McGill University. . . . **William Baker** is an engineer-adviser for the U.S. Army at Denver Federal Center in Denver, Colo. . . . **Andre Bissonnette** works for Mobil Oil Corp. in East Boston, Mass. . . . Presently, **Jonathan Bradley** is an electrical engineer at Texas Instruments in Houston. . . . **Richard Brandoli** holds the post of manufacturing supervisor at Texas Instruments in Attleboro, Mass. . . . **Bill Johnson,** class president, has been named assistant executive secretary for programs for Phi Gamma Delta fraternity at international headquarters in Lexington, Ky. Previously, he had served two years as field secretary, visiting over 100 campuses and traveling more than 70,000 miles.

K. Alan Kelley is a senior manufacturing and development engineer in the Electro Division of Ferro Corp., Buffalo, N.Y. . . . **Rajendra V. Kibe** is working as a junior research fellow in the university teaching department for graduate and doctoral students at the University of Indore, Indore, India. . . . **Carey Lazerow** serves as a software specialist for Digital Equipment Corp. in Meriden, Conn. . . . 2/Lt. **Peter Magnuson** has graduated with honors from U.S. Air Force pilot training at Columbus AFB, Miss., and has been awarded silver wings. He is now a pilot at Holoman AFB, New Mexico. . . . **Ronald Medrzychowski** is now a nuclear test supervisor at General Dynamics-Electric Boat in Groton, Conn. . . . **Thomas Vaughn** works for Albany Engineered Systems, a division of Albany International Corp.

Edward Whittaker, who received his MA from Columbia University last year, is now a graduate research assistant at Columbia Radiation Lab in New York City. . . . **Jeffrey Wilcox** is a marketing representative for Mobil Oil. He has his MBA from the University of Pittsburgh, and is located in Green Bay, Wis. . . . Currently, **Thomas Wimbrow** works as a service center engineer for Worthington Service Corp. in Newport News, Va. . . . **Robert Winter** serves as a sales engineer for Raymond International, Inc. in Westville, N.J.

1977

▶*Married:* **Brian P. Belliveau** and Brenda J. Desmarais on June 17, 1978 in Jaffrey, New Hampshire. The bride, a graduate nurse, attended St. Vincent Hospital School of Nursing, Worcester. Her husband is with Westinghouse. . . . **Timothy M. Casey** and Miss Elizabeth A. Kendall in West Boylston, Massachusetts on May 27, 1978. Mrs. Casey graduated from MIT. She is a mechanical engineer at Boeing Marine Systems Division in Seattle. Her husband, also with Boeing, is a safety and reliability engineer. . . . **William A. Cloutier, Jr.,** and Miss Maureen Cronin in Salem, Massachusetts recently. Mrs. Cloutier graduated from Framingham (Mass.) State College. The groom is employed by Ebasco Services, Inc. in New York City. . . . **Robert W. Decker** and Miss Jo-Ellen Wilkinson on June 24, 1978 in Lynnfield, Massachusetts. The bride graduated from Katharine Gibbs School, and is employed as assistant to the registrar at Bradford College. The bridegroom is a construction engineer and manager with Hollett Building Corporation, Wakefield, Mass.

▶*Married:* **Robert J. Dolan** and Patricia M. Fogarty in Madison, Connecticut on July 8, 1978. Mrs. Dolan graduated from Becker with an associate degree, and from Eastern Connecticut State College with a BA in applied social relations. Her husband is with the Ford Motor Company in Northfield, Ohio. . . . **John J. Foley, Jr.,** and Miss Deborah L. Blondin in Worcester on June 18, 1978. The bride graduated from St. Vincent Hospital School of Nursing. The bridegroom is with Pratt & Whitney Aircraft, Hartford, Conn. . . . **David J. Laferriere** to Sharon A. Bartsch on July 28, 1978 in Holyoke, Massachusetts. Mrs. Laferriere has a BS degree in nursing from the University of Massachusetts. The groom works for Goodyear Tire and Rubber Company in Point Pleasant, W. Va.

▶*Married:* **Anthony M. Marrese** and Robyn L. Brown on July 15, 1978 in Granby, Massachusetts. The bride graduated from Becker and is assistant manager for the Casual Male in West Boylston, Mass. Her husband is with Raytheon Company, Sudbury. . . . **Jack Rosenfield** and Miss Margo J. Van Alstine on June 8, 1978 in Newport News, Virginia. Mrs. Rosenfield graduated from Framingham State College. . . . **Gregory P. Ruthven** to Miss Mary J. Tomasello on June 9, 1978 in East Haven, Connecticut. The bride graduated from Southern Connecticut State College. The groom is a design engineer with General Dynamics-Convair division in San Diego, Calif. . . . **Peter G. Stanton** and Cynthia L. Hoyt on July 3, 1978 in St. Johnsbury, Vermont. Mrs. Stanton has a BA in speech pathology and a BS in elementary special education from the University of Vermont. She has been employed by St. Johnsbury Academy. Her husband is with North Country Farms in Monroe, N.H. . . . 2/Lt. **David L. White, Jr.,** to Miss Donna L. Baranowski on December 18, 1977 at Aberdeen Proving Ground in Maryland. Mrs. White graduated from Rutgers with a bachelor's degree in botany. The bridegroom is in the U.S. Army.

Allyn Amabile is an instrument engineer at Monsanto in Springfield, Mass. . . . Currently, **Anthony Antuono** serves as a development engineer at Western Electric in North Andover, Mass. . . . **Russell Bauer** is a design engineer for Instron Corp., Canton, Mass. . . . **Chris Cocaine** serves as a test engineer at Sikorsky Aircraft in Stratford, Conn. . . . **Bill Cunningham** is now management employment supervisor for A.T.&T. Long Lines, White Plains, N.Y. He lives in Stamford, Conn. . . . **Paul Curdo** has been employed in the General Dynamics Convair Division on the Tomahawk Cruise Missile Program. . . . **Don Drinkwater** works for Digital Equipment Corp. in Tewksbury, Mass. . . . **John Dyer** is a welding supervisor at Farrel Co. in Ansonia, Conn. . . . **David Edgerton** holds the post of systems engineer at Singer/Kearfott in Little Falls, N.J.

Ron Gusowski works as a design engineer at Data General Corp. in Westboro, Mass. . . . Presently at sea with the Merchant Marine, **Barry Hamilton** is a radio operator for Sealand Shipping Co. of New York City. . . . **Jeffrey Harrington** is with Industrial Risk Insurers, Atlanta, Ga. . . . **Keith Harrison** is employed as a highway engineer trainee with the Federal Highway Administration in Albany, N.Y. In June, he received his MS in transportation planning and engineering from the Polytechnic Institute of New York. . . . **Richard Knapik** is with the Stanley Works in New Britain, Conn. . . . **Henry LeBlanc** holds the post of project engineer at Mobil Chemical Co. in Macedon, N.Y. . . . **Tina Perry** has accepted the position of civil engineer in the engineering division of the Department of Public Works in Holden, Mass.

Scott Sminkey is a systems programmer at Prime Computer, Inc. in Newton, Mass. . . . **Bruce Smith** serves as a loss prevention representative for Liberty Mutual Insurance Co., Lexington, Mass. He and his wife Carol live in Nashua, N.H. . . . **Kurt Sonstroem** is an associate engineer at Riley Stoker Corp., Worcester. . . . **Stephen Suba** works as an assembly engineer at Intel Corp. in Santa Clara, Calif. . . . Currently, **Joe Williams** holds the post of product engineer at Ford Motor Co. . . . **J. Gilbert Wilson III** has received certification as a professional civil engineer. He is a structural engineer for Varco-Pruden in Evansville, Wis.

1978

▶*Married:* **Wayne J. Beisecker** and Miss Kim V. Eklof on June 17, 1978 in Warwick, Rhode Island. The bride attends Clark University. The bridegroom works for Ciba-Geigy, Cranston, R.I. . . . **Eric T. Boucher** and Debra M. Lapointe on June 9, 1978 in Chicopee, Massachusetts. The bride graduated from Chicopee High School and is employed by Insurance Company of North America. The groom works as a mechanical engineer at Hamilton Standard, Windsor Locks, Conn.

▶*Married:* **Richard Corsi** and Miss Pamela A. Bickford on June 24, 1978 in Jamestown, Rhode Island. **Jeffrey Gravdahl, '76,** was best man. Mrs. Corsi is attending the Boston Museum School of Fine Arts. . . . **John P. Crossin** and Miss Laurie J. Pichnarcik in Purchase, New York on May 26, 1978. Mrs. Crossin graduated from Manhattanville College and has received her MBA from the University of New Haven. She is a programmer-analyst with the Polaroid Corporation in Waltham, Mass. Her husband is a senior engineer with Digital Equipment Corporation in Maynard. . . . **Joseph A. Sage, Jr.,** and Miss Susan M. Tully on April 30, 1978 in London, England. The bride attended Fitchburg State College and plans to continue her studies at the University of Wisconsin in Milwaukee. . . . **Raimond L. Winslow, Jr.,** and Susan Kent in Falmouth, Massachusetts on July 1, 1978. The bride, a graduate of BU, is attending Simmons College Graduate School of Social Work, Boston. The groom works for GTE Sylvania in Needham, Mass.

Richard Carpenter has accepted a post in design engineering at Hamilton Standard, Windsor Locks, Conn. . . . **Paul Cody** is employed at Westinghouse in Pittsburgh, Pa. . . . **Louis Collette,** who has designed a typewriter keyboard which will help handicapped people communicate, is currently seeking a patent on the device. The prototype keyboard, which he developed after visiting a school for handicapped children during a WPI project last year, now is in regular use at the school. It is made of wood and the keys are recessed about a quarter of an inch below the board's surface. The space around each key is carved in a sloping V-shaped notch, guiding the finger to the key. When a key is depressed, a switch is closed completing a circuit between the keyboard and typewriter, activating the corresponding key on the typewriter through a mechanical linkage set-up. Presently the device is helping a non-verbal cerebral palsy victim to communicate better.

Mark Duchesne, an employee of Harris Corp., is located in Charlestown, R.I. . . . **Anne Dyer** has taken a new position as a naval architect with the Taylor Research and Development Center in Bethesda, Md. . . . **William B. Gist** is an associate engineer at Digital Equipment Corp. in Maynard, Mass. . . . **Jeffrey Hovhanesian** serves as a naval architect at Portsmouth (N.H.) Naval Shipyard. . . . **Peter Hunt** is a Titan III Systems engineer for the U.S. Air Force at Vandenberg AFB, Calif. . . . **Jeremy Jones** is employed as an R & D engineer in the Film Division at Polaroid Corp. in Waltham, Mass. . . . **John Kuchachik** is with the Kemper Insurance engineering department in North Quincy, Mass. . . . **Jerome Marcotte** has accepted a position with the U.S. Environmental Protection Agency in Washington, D.C.

Joseph Maslar works for RCA in Burlington, Mass. . . . **Dennis Metrick** is a field service engineer at Ionics Corp. in Watertown, Mass. . . . **Peter Mulvihill** has joined Industrial Risk Insurers of Hartford as a field representative in the Syracuse (N.Y.) area. . . . **Theresa Murphy** is a project engineer at the Torrington (Conn.) Co. . . . **Thomas Panek** has joined Eastman Kodak as a development engineer in the recovery department, chemical manufacturing division, at Kodak Park, Rochester, N.Y. He belongs to the American Institute of Chemical Engineers. Kodak Park is the company's largest plant and center of its photographic film, chemical and paper manufacture. . . . **Robert Rossier** is studying ocean engineering at the University of Rhode Island. . . . **Margaret Ann Moriarty Staruk** holds the post of systems analyst at State Mutual in Worcester.

LORA T BRUECK
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December 1978
wpi journal

THE INAUGURATION OF

EDMUND TITUS CRANCH

AS TWELFTH PRESIDENT OF

WORCESTER POLYTECHNIC INSTITUTE

OCTOBER 20, 1978

What's happening!

* = home games.

BASKETBALL

*January 11	Stevens Tech
January 13	Amherst
*January 17	Upsala
January 19	Bowdoin
January 20	Bates
*January 25	AIC
*January 27	Babson
February 1	Brandeis
*February 3	Suffolk (Alumni Night!)
*February 6	Trinity
February 9	Coast Guard
*February 10	Middlebury
February 14	Williams
*February 17	Tufts
*February 22	MIT
*February 24	Clark

WOMEN'S BASKETBALL

*January 25	Gordon
January 27	MIT
January 31	Amherst
*February 2	AIC
*February 5	Suffolk
*February 8	Clark
*February 10	Anna Maria
*February 12	Rhode Island College
*February 14	Brandeis
February 17	Stonehill
*February 20	Assumption
February 22-24	MAIAW Division III Tournament
February 27	Babson

INDOOR TRACK

February 14	at Holy Cross, with Assumption & Worcester State
February 17	Easterns, at Tufts
February 24-25	New Englands, at UConn

SWIMMING

*January 23	Southeastern Massachusetts
January 27	MIT, Lowell (at Clark)
*January 31	Rhode Island
*February 3	Coast Guard
February 8	Trinity
February 12	Keene State
*February 15	Brandeis
February 17	Tufts
February 20	Nichols
February 15-17	Women's New Englands, at Springfield
March 1-3	Women's Easterns Men's New Englands
March 8-10	AIAW Small College Nationals
March 15-17	NCAA Division III Swimming and Diving Nationals

WRESTLING

January 9	Coast Guard
*January 13	Williams
January 20	RPI
*January 24	Amherst
*January 27	Rhode Island College
February 3	Lowell
February 6	at UConn, with MIT
February 10	at Wesleyan, with Hartford
*February 14	Western New England
February 22-24	NEIWA championships at Mass Maritime Academy
March 1-3	NCAA Division III Nationals

FILMS ON CAMPUS

(* = admission charge)

January 16	*The G.I. Blues*	Kinnicutt, 7:30
January 18	*A Hard Day's Night* and *The Sixties*	Kinnicutt, 7:30
*January 21	*Uptown Saturday Night*	Alden, 8:00
January 23	*The Yellow Submarine*	Kinnicutt, 7:30
January 25	*Gimme Shelter*	Kinnicutt, 7:30
*February 4	*Heroes*	Alden, 8:00
February 6	*Jonah who will be twenty-five in the year 2000*	Kinnicutt, 7:30
February 13	*The Marquise of O*	Kinnicutt, 7:30
*February 18	*Coma*	Alden, 8:00
*March 2	*Blazing Saddles* and *Young Frankenstein*	Alden, 7:30
*March 3	*Young Frankenstein* and *Blazing Saddles*	Alden, 7:30
*March 4	*High Anxiety*	Alden, 8:00
March 6	*The Best Way*	Kinnicutt, 7:30
March 13	*Effie Briest*	Kinnicutt, 7:30
April 10	*Three Women*	Kinnicutt, 7:30
April 17	*That obscure object of desire*	Kinnicutt, 7:30
*April 22	*Saturday Night Fever*	Alden, 8:00
April 24	*The Wonderful Crook*	Kinnicutt, 7:30
*May 6	*The Gauntlet*	Alden, 8:00

CONCERTS

January 22	Jerry Hartnett and his Marionette Musicale	Alden, 8:00
February 5	The International String Quartet	Alden, 8:00
March 5	Phoenix Dance Theatre	Alden, 8:00

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Wasn't it a lovely day for an inauguration!

by Russell Kay

All inauguration photographs were taken by Carol Lee, unless otherwise credited.

On the Hill

THERE ARE FEW OCCASIONS in the life of a university more colorful, more meaningful, or more forward-looking than the installation of a new president. It is then that all the eyes of the community are focused on one person and the significance he holds for the institution. It is a time of changing leadership, replete with a large measure of optimism and only a small dose of anxiety for the future. It is a time for posing questions, and for celebrating the search for answers. It is a new beginning at the highest level.

At every commencement of every college, tradition dictates there be an "academic procession," with every member of the community dressed in the centuries-old manner of academic cap and gown and hood. It is an impressive sight, those hundreds of people dressed in their costumes. But no mere commencement can begin to compare with the academic procession which precedes the inauguration of a new president.

Some would say it is merely a matter of numbers; an inauguration brings out more people. Perhaps it has to do with more people wearing hoods, those colorful modern vestiges of the medieval cowl. But whatever the reasons,

and they really don't matter, the academic procession before President Cranch's inauguration was a beautiful sight. More than 150 delegates representing other colleges and universities and professional and learned societies attended, each garbed in the colors of his or her discipline and institution. Most faculty and many of WPI's professional staff and delegates from 28 student organizations also took part in the ceremonial ritual.

Friday, October 20 was a date picked months before, in the middle of summer. Then one could only hope for good weather. When the day came, it was glorious. Rain had ended the day before, the fall colors on the trees were still vivid, and the temperature rose into the high 60s. It was a good sign.

Harrington Auditorium was filled with an overflow audience of more than 2,500. Music before and during the procession was provided by the Intercollegiate Symphonic Band and Brass Choir and Chorale. The sides of the lower level were draped with the flags of WPI's fraternities and sorority and other student organizations. The procession entered, led by Grand Marshal (and physics professor) Thomas Keil. He was followed by delegates from student organizations, the faculty and administration, delegates from other colleges (arranged in the order of the founding of those institutions, ranging from Harvard [1636] to Laboure Junior College [1972].

Last to come in were President Cranch and Board Chairman Paul S. Morgan.

An invocation was delivered by Father Peter Scanlon, a familiar figure around campus who was now wearing his full title, Bishop's Vicar for Colleges. Greetings to the new president from the city of Worcester and a letter from Governor Dukakis were presented by Mayor Thomas Early. Congressional representative Joseph Early greeted Dr. Cranch and then read a letter which was simply signed "Jimmy Carter." Faculty secretary Gordon Branche welcomed Cranch to the WPI community of scholars, and Alumni Association president William A. Julian, '49, extended the good wishes of all WPI alumni.

Up to this point, things had been rather serious in tone. The final greeter, student body president Jeff Boike, observed that Dr. Cranch was WPI's newest freshman, but noted that he wasn't wearing his beanie. To correct this oversight, Boike presented Cranch with a genuine maroon-and-gray WPI freshman beanie, which the president promptly put on and kept on while the student leader spoke. Boike commented that education takes place in many spots outside the classroom, and so he also presented a pewter beer mug along with a perpetual invitation to the Goat's Head Pub.

At this point, President Cranch was now formally presented and introduced by his long-time colleague, Dr. Dale Corson, chancellor of Cornell University, where Cranch had studied and taught for so long. In his introduction, Chancellor Corson also commented on the need for institutions of higher education to play a greater part in our society, and on the serious problems confronting our world by a growing population.

Roger N. Perry, Jr.

Left-hand page, and top: *The academic procession. At left, Grand Marshall Thomas Keil holds the walking stick of John Boynton, founder of WPI.*

Above: *President Cranch puts on the once traditional WPI freshman headgear.*

Below: *President Cranch accepts the charter of Worcester Polytechnic Institute from Board Chairman Paul Morgan, as Professor Keil prepares to present the official seal.*

From left: *Rev. James Miller, Faculty Secretary Gordon Branche, Trustee Anson Fyler '45, Mayor Thomas Early, Dr. George W. Hazzard, President Edmund Cranch, Board Chairman Paul Morgan, Cornell University Chancellor Dale Corson, Congressman Joseph Early, Alumni Association President William A. Julian '49, and Student Body President Jeff Boike. Father Peter Scanlon is giving the invocation.*

Chairman Morgan took the podium and formally charged Dr. Cranch with the care and nurture of Worcester Polytechnic Institute.

After Dr. Cranch delivered his address, the WPI alma mater was sung by the Chorale, using slightly different words than Willard Hedlund wrote back in 1910. The Rev. James Miller of WPI's neighbor, the First Baptist Church, gave the benediction, including Reinhold Neibuhr's classic prayer: "God grant me the courage to change what I can, the serenity to accept what I cannot change, and the wisdom to know the difference." Potent and yet highly appropriate thoughts on which to end this event.

Pictures on right-hand page: *top, the long and the short of things. Middle, the ringing of the Spencer Bell.* Bottom, *Ed and Virginia Cranch at the reception following the inauguration. The flowers were presented to Mrs. Cranch by the WPI student body.*

At left: *The eleventh and twelfth presidents of WPI: George Hazzard and Edmund Cranch.*

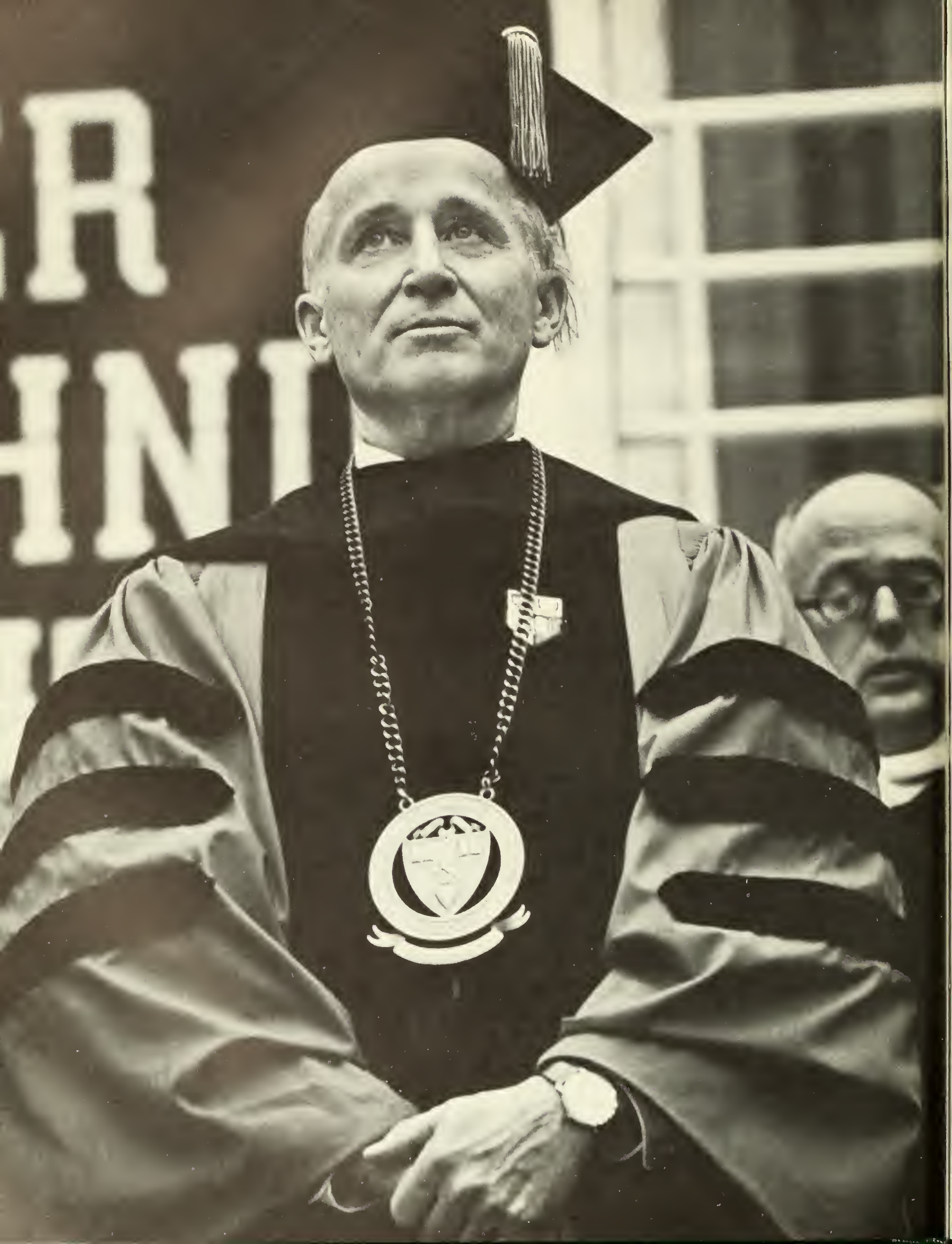
FOR ALL THE POMP AND CIRCUMSTANCE, the color and pageantry, the smooth pace of the day, the planning that went into making it a success was extensive, and required a lot of work by many people. A 22-member Inaugural Committee was chaired by Professor Donald N. Zwiep. They were charged with planning the event itself, arranging for invitations, announcements, addressing, correspondence with delegates from other institutions and from student groups, music, programs, ushers, flowers, stage decorations . . . literally thousands of details, all essential to the success of the day. Careful planning, followed by crisis and emergency, and in the end everything worked.

Before the Inauguration proper was scheduled to start, a brief ceremony was held on the quadrangle in front of Harrington. It had been billed as "the first sounding of the new college treasure" in the invitation which the Glee Club had sent out earlier, leading to speculation as to just what was going on anyway! The new college treasure turned out to be a bell, which had its own interesting history. Known as "the Spencer Bell," it was given to WPI through the generosity of the Worcester County National Bank on April 20, 1970. It was on that day that major portions of the former Park Avenue Baptist Church were being demolished to make way for a new addition to the bank's branch there. During the early afternoon, music professor Louis J. Curran, Jr., was going past the church, and he saw that the tower was still standing, with a tower bell inside.

Professor Curran immediately called Mr. Harry I. Spencer, Jr., executive vice president of the bank. Spencer agreed that the bell would be given to the college if it could be removed early in the morning so as not to cut into the scheduled demolition. So at 8:00 a.m. on April 21, the bell was lowered by crane onto a WPI truck, brought to Boynton Hall, and finally stored out at Alden Research Laboratory until it could be properly used. It sat there for eight years.

The WPI Glee Club decided that the inauguration of President Cranch would be the perfect time for the bell to make its reappearance. It was sandblasted and refinished, and came back to campus on Inauguration Day. At the brief ceremonies, Glee Club president Stephen C. Salamin told a large gathering of students and visiters, "this bell is dedicated that we — who are this college — may be 'summoned by bells.' "

The best view of the proceedings outside was undoubtedly that of senior Winsor Naugler, who watched it all from the seat of his six-foot tall unicycle. (Yes, that's right, unicycle.) Wearing a cap and gown, Windsor carried two sandwich boards signs that proclaimed "Good Luck Ed Cranch."



INAUGURAL ADDRESS

I THANK YOU, Mr. Morgan, and I accept the trust and charge which you and the Board of Trustees have given me with a sense of deep dedication and humility. It is a responsibility which no one man can discharge without the ongoing commitment and support of the entire WPI community — its faculty, staff, students, alumni, and friends. The kind greetings from those on the platform give evidence to both the depth of your willingness to share this partnership, and to the high value you place on this endeavor.

In accepting this responsibility, I am also cognizant of the contribution made by those who had the founding vision, the determination to sustain it, and the foresight to nurture its need for adaptation.

The college motto, Lehr und Kunst, together with the seal of Worcester Polytechnic Institute, summarize its purpose and goal:

teaching and skill
head and hand
theory and practice

It is this intimate union of knowledge and its application which keeps education vital. Especially in the case of a child, we have all witnessed the rapid translation of concept to practice. That is why we, as adults, have such a weighty responsibility for our behavior, why we stand exposed to the admonition to "practice what we preach." This dual nature of education implies another important aspect of learning — the willingness and challenge to experiment. Experiment is absolutely essential in helping us avoid the latent self-deception of knowledge untested by application and in arousing our curiosity to understand the reason behind observed practice. I believe that the willingness to test concept with practice, and practice with concept, extends far beyond the domain of science and technology. If we are to preserve our democratic institutions, we must test sociopolitical orthodoxies and procedures with our experience as free men. *Lehr und Kunst is an expression of the binary nature of education* — a property which is essential if it is to remain authentic and vigorous.

The Two Towers tradition of WPI reflects in structural form this binary concept of education. I hope that you have had a chance to view these two towers. If not, take a small excursion after this ceremony to do so. Boynton Hall was erected by the citizens of Worcester in response to a challenge by John Boynton for them to match his gift of his personal fortune to found a free institute of industrial science. It symbolizes the foresight of a peddlar of tinware joined by a community of artisans who perceived the need for knowledge to give understanding to their labor. Not only was their concept based on a sound foundation, but it was given substance by the quality of the building they erected. We had the pleasure and honor of rededicating Boynton Hall just a month ago for a second hundred years of service.

The second tower, on Washburn Hall, symbolizes the importance of the practical arts and the determination of Ichabod Washburn to have the institution include "instruction in use of tools and machinery" so that the school would not be confined to "the theories of science, but as far as possible extend to the practical application of its principles which will give the greatest possible advantages in the affairs of life." This concern for the practical arts is reflected in the arm and forging hammer atop Washburn Hall and its appearance in the seal. When a young man, Ichabod Washburn was a blacksmith, so he had great respect for things applied. Later in life, as a result of devising methods to make wire production practical and economical, he became the proprietor of the largest wire mill in the world, situated in Worcester. Mr. Washburn suffered a paralyzing stroke when his machine shop was only half erected, but Charles Morgan, a trustee of the school and the great-grandfather of our present Chairman of the Board, was given the responsibility for completing and equipping the machine shop. And it was the grandfather of Milton Higgins, our recently retired Chairman of the Board, who was named the first superintendant of the Washburn Shops.

So it was that the binary conept of education took root and Worcester Polytechnic Institute proceeded to turn out

its yearly class of students who spread across the country to become leaders in the Industrial Revolution upon which the prosperity of the nation depended.

"The antithesis between a technical and a liberal education is fallacious. There can be no adequate technical education which is not liberal, and no liberal education which is not technical: that is, no education which does not impart both technique and intellectual vision." This quotation from Alfred North Whitehead implies that there exists an inherent tension between these two dimensions of binary education.

In the early days of WPI, the applied was successful to the point that it was perceived to thwart the development of new fields of engineering. In an era of rapidly developing mechanical and electrical technologies, a stable balance was not achieved. In more recent times in engineering education, the situation has been reversed and theory has been dominant. I call this the *principle of maximum academic purity,* which can be stated as follows: Any academic organization with the freedom to pursue both theory and practice will, in the absence of external constraints, so conduct its affairs that sooner or later theory will dominate. In short, the pure drives out the applied.

This tension is not restricted to institutes of technology but exists equally well in the liberal arts. It is at the root of the current national debate over "general education," a debate whose outcome will be misdirected if it fails to achieve the required balance. The flaw in the platonic concept of the development of the ideal human being is the complete neglect of technique and experience by erecting two antitheses which place mind over body and thought over action. It is the concept of an intellectual aristocracy in which knowledge is elevated above experience and experiment.

Professional schools in universities, and especially institutes of technology, have an inherent advantage in adapting the concept of binary education to the unfolding advance in man's knowledge and social development. Although they have rarely used this advantage for educational reform outside of their own domains of influence, there are now distinct signs that higher education will recognize the importance of a broadly conceived technical component. Exploratory programs which have their origins in engineering or applied science are being tried in a number of institutions.

The furthest developed and most thorough-going of these programs is the one conceived and implemented by the faculty at WPI less than a decade ago. The strength of the WPI Plan lies in its assertion in new form of the basic unity of knowledge and practice. But now this unity is enhanced by the explicit recognition that the ultimate purpose is the elevation of the human spirit and the improvement of social relationships. It is asserted that a new educational hybrid is possible, one that can assist us to adapt and contribute to the succession of rapid changes which occur in but one lifetime in our modern society. We have named this hybrid the technological humanist. Its growth requires creating a root system through:

First, the development of competency in a major field of science or engineering; and

Second, a major project which encourages independent initiative and self-confidence.

The cultivation of this sturdy hybrid involves

A humanities sufficiency requirement which develops a focused, in-depth study of an area of humanities, together with

An interactive project which develops an integration between science or technology and social concern and human values.

Observe that, in the WPI seal, humanity is symbolized by the heart, and social unity by the sheaves of grain. It is no longer important to contest the dominance of the head over the human hand, or the human brain over the hand. But what is important is to recognize that both require guidance from the heart and sustenance from society.

I believe that this modern adaptation of the binary concept of education will prove to be a powerful force in the future of higher education. Different institutions will express it in somewhat different forms, but its authenticity is compelling. Further, I believe that such an education will be required for leadership in a world caught up in a maelstrom of change and conflict, a world in which the lamp of liberty stands in peril of extinction after but two hundred years of flickering light. In all our affluence and 65 mile-per-hour pursuit of happiness, we dare not forget that there are serious forces at work which threaten the very basis of our democracy and its system of independent education.

The urgency of the situation can be likened to a riddle, popular with French children, about a farmer, a pond, and a water lily. The lily is doubling in size every day, and in thirty days it will cover the entire pond, killing all creatures living in it. The farmer does not want that to happen, but, being busy with other chores, he decides to postpone cutting back the plant until it covers half the pond. The question is, on what day will the lily cover half the pond? You do not need a course in differential equations to conclude that the answer is, on the twenty-ninth day, leaving the farmer just one day to save his pond!

This riddle illustrates many features of modern living which are ever-present in our daily existence. The tend-

ency of some of our social, technological, and human systems to grow beyond manageable bounds is an unmistakeable feature of our society. In the world of international affairs and the processes of our own government, we witness delays that not only seem to take us to the twenty-ninth day, but they sometimes take us to midnight on that day. Notice that the riddle involves a pond of finite extent which cannot tolerate unlimited growth. Its boundaries are known and the life within must accommodate accordingly. This finiteness gives significance to the important time constant in that riddle — one day. Whereas the time constants of previous generations were sufficiently long to permit adaptation, they have now been truncated to the point where people and their social institutions hardly have time to respond in a manner which permits stability. On any scale of historical time, we are surely living in an era of social and technological mutation, which gives rise to relatively abrupt, irreversible changes in our social conditions.

I wish to emphasize the irreversible nature of this mutation because it is almost certain to be a dominant characteristic of the world ahead. I believe it is a fair description to observe that until quite recently, say prior to World War II, it was popularly believed that many of our problems were somehow imbedded in a reversible system which, under ideal conditions, would in due time be brought to a state of equilibrium within a framework of government and values which were commonly accepted as the self-evident norm of our bountiful Western world.

As every good, or even incompetent, student should know, the concept of reversibility is an ideal one which cannot be realized in practice. Otherwise we could accomplish perpetual motion. The real world is an irreversible, non-ideal system which we ourselves must learn to control or the vision which we hold for humanity will not be realized.

The riddle involves growth, finiteness, and delay combined to form an environment of imminent disaster. The real, irreversible world in which we now live contains the same elements. I will illustrate the effects using several areas where they are clearly evident.

FOR FAR TOO LONG man has treated his environment in a spendthrift manner as though nature's natural resources were without end. It is not difficult to see how man was led into a state of complacency. For Stone Age man, directly usable mineral resources consisted mainly of flint and other kinds of rock which he shaped into tools and weapons, surface water, and perhaps salt. Wood was his only fuel. Keep in mind that the population of American Indians prior to the arrival of the white man in what is now the United States has been estimated to be about one million. With these natural resources of rock, water, and wood, together with a largely food-gathering existence, he is believed to have been more or less in equilibrium with the available resource base.

Even the arrival of Western man did not seriously perturb the resource system, for as any true New Englander is anxious to explain, the early generations lived a spartan life, surviving by limiting their needs and using Yankee ingenuity. The same primitive resource base supplemented by an agrarian economy could still support a total population perhaps ten times as large as the indigenous Indians. Even at the turn of the century after the Industrial Revolution was well underway, only about twenty of the chemical elements were in commercial use. However, the finite fuel pond of wood no longer sufficed, and emerging twentieth-century man was totally dependent upon the mineral fuel, coal. The United States was nearly self-sufficient in minerals and mineral fuels until after World War II.

But the growth in population, combined with a vastly increased level of consumption, began to uncover the boundaries of our finite resources. Our use of oil and gas

grew as the lily in the farmer's pond, to the point where our present economy is absolutely dependent upon it. We are consuming oil and gas at a rate such that it is estimated they will be exhausted in less than 100 years, and some other minerals are showing equivalent rates of depletion. When calculated on a scale of geological time, the time of natural resource formation, we are close to the twenty-ninth day. Whether driven by either exponential growth or a high level of constant consumption, a finite supply will be rapidly exhausted.

Certainly, a natural resource mutation has occurred, and the process is irreversible. As Genesis describes, it is God who creates minerals, but it is man who converts them into resources. And it is this process of conversion which will require a greatly accelerated pace of technological development and human ingenuity. The alternatives may appear to be economically painful to contemplate, but we have only just begun to apply ourselves to the problem.

THE NATURAL RESOURCE POND has a tributary which leads directly into the second major area I wish to describe. The unequal distribution and finite supply of raw materials inevitably give rise to intense international competition. However, it is not the competitive aspect I am concerned about but rather the interdependence of all peoples of the world. Of course, the concept of human unity and our common destiny have been described by philosophers and spiritual leaders. Yet it was only after the relatively recent technological advances in transportation and communications that the full impact of this interdependence was experienced. These advances resulted in an abrupt change in the time constants — by a factor of 100 for transportation, and by a factor of at least 1,000,000 for communications.

International affairs can no longer be considered to be of secondary importance, because the stability and economic welfare of nations combine to create an international imperative. Although originally based on common cultural origins or natural military alliances, in but three decades this international imperative has grown to span at least three political/economic worlds. The destinies of the technologically advanced nations are entwined with those of the less developed countries, countries in which hundreds of millions of people have incomes of only a few hundred dollars a year. The traditional pattern of development involving a 100-year evolution from an agriculturally based economy to one having a major industrial thrust and infrastructure is no longer acceptable. The historical process is far too slow to respond to the socioeconomic and political pressures of today's world. Their political, social, and economic systems too often exist in the twenty-ninth day, with resultant instability and human degradation. Furthermore, these countries possess markets, sources of raw materials, as well as increasingly sophisticated manufactured products, so that they are not ignored by either the first or second worlds. Economic considerations are dominant, with success heavily dependent upon technological adaptation.

Yet in the face of this international imperative, our institutions of higher education have not in any comprehensive fashion perceived the need and opportunity. This opportunity is especially important for schools of science and technology, for it is certain that many of their graduates will be thrust into the international arena. Unfortunately, American students are only sporadically given a glimpse of this dimension, and the many foreign students in our institutions are faced with a program poorly adapted to the needs of their countries. The United States and some of its pioneering education institutions must find a way to alter this situation.

IN A THIRD IMPORTANT AREA, ever-expanding growth is now reaching the boundaries of finiteness and beginning to choke off the vitality of the very system it is intended to nurture. We have moved into an age of big government with its concomitant expansion of public sector responsibilities. Its unrelenting and nonproductive nature is already causing major economic stress. The influence of big government is summarized in the statistics of its growth. In 1950 one out of ten Americans worked for a federal, state, or local government; today the ratio stands at one out of six, so that there are now 14.7 million persons so employed. Over the past ten years, the number of government employees has grown at double the rate of employment in the private sector. Government is now the biggest single employer in the nation.

This is a new phenomenon in the life of our nation, and we have little reason to believe that the system is reversible. I believe that we are witnessing a sociopolitical mutation of far-reaching significance.

The system is complex and very poorly understood. The interplay of regulation, taxation, inflation, and economic expediency results in a system which dampens initiative and erects a confining network of controls.

Our system of higher education has also been influenced by growth in the public sector. In 1950 independent institutions enrolled 50 percent of the students, while the public sector enrolled 50 percent. We are now approaching a configuration where 80 percent of the college students are in public institutions and but 20 percent in independent colleges. As previously mentioned, WPI was initially named the Free Institute of Industrial Science. The word "free" signified the intention of Ichabod Washburn to make the school accessible, especially to indigent and deserving young artisans. The institution has always provided the opportunity for upward socioeconomic mobility, and we must insure that will always be so.

BUT IN THIS AGE of big government, there is another meaning to the word "free," and it strikes at the heart of our concept of the right relation between the citizen and his government. However well-intentioned large bureaucracies may be, their histories are such as to cause serious concern. Their initial well-intentioned open hands of assistance can change to clenched fists of economic and hence social control. If economic stability cannot be achieved, if pernicious inflation cannot be curbed, then we will indeed reach the twenty-ninth day. Under such circumstances, governments respond by appealing to the materialist survival instinct in each of us. C. S. Lewis in his book *Surprised by Joy,* in which he gives his personal account of trying to find truth, shows great insight with his observation that "the materialist's universe has the enormous attraction that it offers you limited liabilities." Undisciplined big government can offer us limited liabilities in exchange for liberty.

Listen to what Justice Learned Hand said on liberty:" . . . Once you get people believing that there is an authoritative well of wisdom to which they can turn for absolutes, you have dried up the springs on which they must in the end draw even for the things of this world. As soon as we cease to pry about at random, we shall come to rely upon accredited bodies of authoritative dogma; and as soon as we come to rely upon accredited bodies of authoritative dogma, not only are our days of liberty over, but we have lost the password that has thitherto opened to us the gates of success as well. . . . Where heterodoxy in what men prize most is a crime, fresh thinking about anything will disappear. Even the loaves and fishes will not be multiplied."

Higher education may yet prove to have a decisive role in our protection of liberty. Learning is essential to liberty. In spite of the certain increase in competition between the public and private sectors, it is crucial that we not let a great rift develop between the two — a San Andreas fault of policy. If that is not avoided, then the ultimate freedom of our society could well rest on that residual 20 percent and the liberty which it represents.

The educational concept of knowledge tempered by experience provides a double mirror in which to view authoritative bureaucracy. If left free and properly directed, binary education can support the cause of liberty, help perfect government to serve the citizenry, and assist in creating a spiritually satisfying social system. Worcester Polytechnic Institute is dedicated to that purpose.

THE PAST TEN YEARS in WPI's history have been ones of remarkable educational vigor. The faculty, students, and staff, with the outstanding leadership of George Hazzard, have transformed the institution from within. We must be alert for further improvements, avoid stasis in our newly acquired orthodoxies, and try to deepen the modern educational meaning of the WPI Plan. Though major improvements will clearly require a partnership of thought and action by all of us responsible for the educational program, I would recommend that we give attention to a number of areas. We need to ask questions of the following kinds:

1. Is it time that we reexamined our educational goals at the graduate level? The history of graduate education in the past 25 years has been one of unprecedented growth; yet that growth has been directed toward almost a single goal — research and the PhD degree. A kind of institutional cloning has occurred. There is a need for an alternate goal — one which extends to the master's degree level and reaches out to professionals needing a binary concept of education for their career development.
2. How can we enhance the place of economic considerations in our program? By that I do not necessarily mean merely more courses in economic theory, but rather weaving economic reality into parts of disciplinary courses and projects. If done properly, this could be a significant contribution to engineering education.
3. How might we include in our program a natural resource dimension that should also involve renewable resources represented by the life sciences?
4. Is it possible to include a more visible and coherent international dimension for both American students and the substantial number of foreign students enrolled at WPI and in other similar institutions?
5. Can we devise ways of making our education more attractive to women and assist them in developing leadership roles? If not enough women have complete high school prerequisites, can we create a bridging experience to compensate?
6. How can we deepen and strengthen the scholarly dimension of our endeavors? This is necessary in a community of scholars, and it requires the opportunity for faculty renewal.
7. Is it possible to create clusters of emphasis which support the scholarly dimensions, complement the concept of the WPI Plan, yet emphasize neglected areas? Examples might be safety and product liability, materials, productivity, or manufacturing processes.
8. Can we achieve a higher level of creativity and use of our extensive instructional television facilities in order to improve our program of education? It is certain that such approaches will expand and give added support to education.
9. How can we strengthen and expand the major and interactive project work of our experiential program? We must try to maintain our Washington Project Center, because it permits an ideal entry to the public sector and government. Although we presently have hundreds of industry-based projects, we should be alert to further expansion of this valuable experience. And could we not find a way to encourage entrepreneurship through our project mode?

If we can refine such questions and implement constructive answers to some of them, we will be able to keep vital our pioneering program.

Institutes of technology and universities containing strong technological components are, in my opinion, at the forefront of education for the twenty-first century. By a technological education, I mean one conceived to encourage mutual exchange between the technical and the liberal traditions, and between knowledge and practice. Such an education provides the opportunity

- to use one's knowledge in a creative and useful manner;
- to understand and cope with the driving forces in a world of change;
- to frame at least some intellectual problems in a man-societal context;
- to cultivate action roles; and
- to experience first-hand knowledge and then use this to assess the authenticity of ideas and social programs.

These ideas have the potential to actually produce a new and vibrant crop of leaders who can give our democracy new directions and new meaning.

[*At this point, President Cranch took off his academic mortarboard and donned the WPI freshman beanie which had been earlier presented to him by the student body president.*]

To the students of WPI, their delegates here today, and the many of you who have made my wife and me so welcome in this community:

A very large part of a student's life is spent studying, and in an institution which holds high standards that is as it must be. But life contains a wider subject matter of relationships, not only among disciplines and ideas, but also relationships among people. And it is from these personal relationships that some of the most meaningful and formative lessons are learned. Group living and social interactions provide the occasion for deepening these associations — in many cases, forming the life-long friendships and shared experiences of alumni. Let us look beyond "Animal House" to the more lasting and higher purpose of these relationships. When you as students achieve this, you add immensely to the quality of the WPI experience.

I am certain you sense my feeling of optimism for your future. The lily ponds are real, but in each case I see nothing but opportunity for persons educated in a program having a liberal spirit with a technological base. You will hear many voices of advice: from your colleagues, from your parents and those who love you, from the faculty, and from society. As in Isaac Singer's story, "A Crown of Feathers," you will receive seemingly authoritative advice from many conflicting sources. Out of it you must find your own crown, whether it be of feathers, thorns, or lilies. Establish goals for yourself. Make them reasonable, but keep them as high as possible in order that they represent the best of you.

Any program of education has a limit as to how far its structure can and should guide you. We can assist you, and we are dedicated to that purpose, but ultimately it is your own firsthand experience and the voice within that must serve as your guide. Martin Buber's tale of the growing tree captures the essence of this beautifully:

> "Man is like a tree. If you stand in front of a tree and watch it incessantly to see how it grows and to see how much it has grown, you will see nothing at all. But tend to it at all times, prune the runners, and keep the vermin from it, and — all in good time — it will come into its growth. It is the same with man: All that is necessary is for him to overcome his obstacles and he will thrive and grow. But it is not right to examine him every hour to see how much has been added to his growth."

Preserve a place for joy and zest in your life, thereby helping us achieve humane survival rather than mere human survival.

Mr. Morgan, in accepting this charge I hope and pray to have the sensitivity to learn, the wisdom to judge, and the courage to act.

WPI

Three WPI Women

Some colleges produce look-alikes, talk-alikes, and think-alikes, but WPI will never be one of them. Although there are over 200 women undergraduates on the campus today, barely a decade ago there were none. WPI tradition, so far as women students are concerned, is only about ten years old. There are no cookie-cutter alumnae from WPI.

This lack of tradition, however, has proved to be far from debilitating. Women students have joined men's groups in order to further their educational or social aims, and have formed their own special interest groups. They have tackled the same tough curriculum and projects as their male counterparts, and have fared as well, or even better, academically. And when they graduate, they are offered the same challenging jobs.

Here are the stories of three recent WPI women graduates. Their careers and life styles are all very different. Only the common thread of their individually-styled WPI backgrounds holds them together.

F. M. Esposito

Michele Wronski — Quality Control

It wasn't a foregone conclusion, but, then again, it's not at all surprising that Michele Beaupre Wronski, '77 is at Norton Company. She has both spirit and intelligence, qualities that successful companies always seek out. She also has a personal reason . . . .

"I'm second-generation Norton," she says with a smile. "My father, Armand Beaupre of West Boylston, has been with the company for over twenty-five years. He's in Central Engineering. I grew up with Norton all around me. So when I graduated from WPI, Norton was high on my list."

Michele started out as a facilities engineer in Central Engineering in January of 1977, and worked right along with her father and about eighty other male engineers. Not only was she the only woman engineer in the department, she was also the only chemical engineer. ("No problem. I was accepted very well. We developed fine working relationships.")

While in Central Engineering, Michele was concerned with air and water pollution abatement, energy conservation, and general utility projects.

"We were almost like an outside consulting firm," she says. "Any Norton department or division could present us with a problem. We'd try to figure out how to solve the difficulty, how long it would take, and how much it would cost."

Her duties were varied. She helped to plan a new ladies' room for Central Receiving in the Greendale complex. While on loan as an environmental engineer to a Norton distributor in Rhode Island, she worked on an odor abatement project.

She also solved a combination dust collector and heating problem at the Worcester plant. The huge collectors were taking out dust-laden air that was at room temperature and had to be replaced through the use of gas-fired make-up air units. "Changing from gas to steam was an economy in our Worcester plant due to our co-generation capabilities in the power house," she reports. "And putting fans that utilize waste ceiling heat over the hot kilns returned both heat and fresh air to the working area."

In March, Michele transferred to the Quality Assurance Department in the Grinding Wheel Division as a senior raw material engineer. She is accountable for the quality of all raw materials used in the division. She assists in defining required quality levels and develops and implements cost-effective control programs. She directs the raw materials quality section and insures that specific raw material efforts support overall business group objectives.

"Basically, I see that raw materials meet our specifications before they are put into production," she explains. "I try to stop trouble before it starts. Take, for example, this sulphur 'cookie.' "

She opens a brown envelope, and a black, yellow-encrusted lump plops out onto her desk.

"See. It does look like a macaroon. Doesn't it?"

It does.

"Well, at first I thought it was hydrocarbon grease mixed with the sulphur, but a laboratory analysis proved that it wasn't," she says. "I called the vendor and told him that we were finding junk in his sulphur. He did some investigating of his own, and discovered that it was a release agent he was using that was globbing things up. He took action against the release agent, and that solved the problem."

She points to a variety of glass vials on top of a cabinet. "Man-made abrasives," she observes. "I suppose it sounds strange, but I think they're beautiful."

The abrasives, it turns out, are made by Norton at a plant in Chippawa, Ontario. And they *are* beautiful. Almost as lovely as the tubes of colored sand one can buy at the Painted Desert. The abrasives, some fine as desert sand, others pellet-sized, are brown, white, black, and multi-hued.

"The green silicon carbide is expensive," Michele remarks. "Because it's pure."

And what would such abrasives be used for?

"For snagging cast iron, grinding steel, and for use with ceramics, glass, bronze, or plastics," Michele answers. "Almost every big business uses grinding wheels. Speaking of big business, Norton is the world's largest manufacturer of abrasives. How about a tour of the plant?"

Tour Guide Michele puts on a pair of thick safety glasses, and selects a coat. She grins. "You never know what to expect around here. I prepare for anything. Some people are always changing hats. With me, it's coats."

Entry into the Grinding Wheel Division factory area is past a massive, antique kiln that reaches up to the ceiling.

"Once this whole room was filled with kilns like this," she reports. "The new ones are long, horizontal, and automated. They're in another area now."

Grinding wheels of various sizes lay stacked on the floor. Some are made with black silicon carbide. Others are made with the "expensive" green abrasive. Premixed bonds in barrels stand close by. In a whirling tank, some white Alundum (registered trademark) is being mixed.

"The whole process is very much like making a cake," Michele explains. "First, there is the mixing, then the molding, the baking, and the cooling. In this case, though, the finished product is a grinding wheel instead of a cake."

In the next room is a big, modern tunnel kiln. "It's kept running 365 days a year," Michele says. "The workers load the wheels just so onto the flat car racks that go through the tunnel. It's an art. Many wheels have different bonds, and have to be put into a certain place on the racks."

The route to the metal parts inspection office, where Michele is due for a consultation, twists along a tunnel beneath a railroad bed and through a factory area beehiving with activity. Both men and women are truing wheels, doing finish work, inspecting, and packing. Several women are cementing metal spindles, many of which have been inspected by the Raw Material Section, into wheels. Grinding wheels vary in size from the very small diameter mounted points used in producing spacecraft instrumentation to wheels of up to five and a half feet in diameter — the kind used to crush logs into pulp for making paper.

Once outside of the factory, across a wide open yard, is another longer tunnel that leads up to the street and the inspection office. "We're pretty spread out," Michele admits. "The complex is located on 300 acres and has 123 buildings. I make this particular trip at least five times a week."

After a brisk, five-minute walk, the building which houses the inspection office comes into view. The office itself proves to be a small, no-nonsense affair, filled with containers full of small metal parts, including bushings, spindles, and wheel backs.

Marie Longbottom, the inspector on duty, explains that raw materials, such as the metal parts, are logged in first. "We then take random samples and inspect them. If they meet our standards, we mark them 'accepted.' Otherwise, they are rejected."

Although the inspection office is not large, it does contain a considerable amount of sophisticated equipment. Another inspector, Robert Sliwoski, who also works with Michele, describes how some of the equipment works.

There is an optical comparator that through a shadow graph projects the angle and the radius of an object. There is a micrometer for checking the external dimensions of an object while allowing the piece to be positioned so that it can roll easily. An internal micrometer with interchangeable contacts can measure holes from four inches to forty inches. Also, there are telescoping gauges, as well as dial gauges for smaller holes. Finally, there is the vernier, which measures outside diameters and depths, and a high-powered microscope.

"These instruments are invaluable to the inspection phase," Michele says. "They help us to root out rejects before they reach the production line."

Michele appears to thrive in her new quality assurance post. "We're just loaded with work, but I like it that way," she enthuses.

She is responsible for the quality of millions of metal parts a year, as well as the other raw materials that make up the wheel, including the abrasives and bonds.

"Every day when I go to work, I write a list of things I have to do, and people I have to see," she reveals. "We have a lot of new personnel, and I spend about forty percent of my time in a supervisory capacity. Fortunately, the new people are coming along very well. I enjoy working with them."

She also likes the traveling aspects of her position. "In October I went to our Chippawa plant to help orient myself to my new job," she says. "I toured the facilities to see how abrasives are made, and also visited the research and development department." She smiles. "How convenient that Chippawa is right next to Niagara Falls!"

How does Michele Wronski manage both a full-time job ınd a full-time marriage?

"We take turns doing some of the household chores and errands," she says. "My husband, Richard, works at Riley Stoker and attends college classes at night. I'm also taking evening management science courses for my master's at WPI, as well as a botany course at Quinsigamond Community College. This doesn't leave us too much extra time. We have a cleaning woman come in every couple of weeks to help out."

When they do have a free moment, the Wronskis like to play with their cats, Tyrodd and Pushrod. They are also into photography, tennis, cross country skiing, and especially, bike touring.

Civic-minded, Michele has served on the West Boylston Conservation Commission for over a year, and is the current chairman. "The committee enforces the Wetlands Protection Act, and has been dealing with the order of conditions for the continuation of I-190," she explains. "We are quite deeply involved in community affairs."

Deeply involved. Motivated, Enthusiastic. That's Michele Beaupre Wronski, wherever she may be.

Roger N. Perry, Jr.

From left, *Tina Perry, '77; Alan Berg, '68; and Winston Fox.*

Tina Perry — Town Engineering

When the town of Holden needed an additional member in the town engineering department, they chose a Holden native, Kristina Tait Perry, '77, who earned her degree in urban and environmental planning after initially majoring in civil engineering. Her background of studies fit the town's need for someone to concentrate on subdivision control in this growing suburb of Worcester.

"I was pretty nervous that first day when I walked into the Town Engineers office to begin my first real job," said Tina, "especially when I saw that big empty desk. But when I saw a coffee mug with my name printed on it right in the middle of the desk, I knew the three men I'd be working with were going to make me feel welcome."

As a member of the engineering department, Tina reports to Alan Berg, '68, the town engineer. She studies the suitability of developments relative to existing and planned town facilities and evaluates preliminary subdivision plans. Other responsibilities include the review of definitive plans for conformance with safeguards, and the preparation of estimates of quantities and amounts for subdivision bonds.

One of her duties is the supervision of the construction of subdivision sewer, water, drainage, roads, and walks. Others are to attend planning board meetings, to prepare studies and designs for recreational or environmental projects, and to assist the town engineer and town surveyor in surveying field projects.

Tina's day starts at 8 A.M. when she checks into the Department of Public Works office. "We usually don't spend much time there," she reports. "We go there to find out what's on the schedule for the day and then we drive to the job site."

The job can be anywhere in Holden's thirty-six square miles. The DPW station wagon, which is equipped with two-way radio and a complete set of surveying equipment, is their transportation. "We're equipped to handle almost any engineering job that we might encounter with what we carry," said Tina. "What I like about the work is that every day it's different."

Most days, Tina teams up with Winston Fox, the town surveyor. A recent job required them to survey Holden's landfill. When they returned to the office, they converted their field notes into a topographic map.

"That's how we determine the life expectancy of the landfill," said Fox. "It's been in use for more than six years now. Our survey will show how many more years the town can plan on using this site."

While surveying the landfill, Tina spotted a teacher she'd known when she was a student at Wachusett Regional High School. He was dumping his rubbish. "What's a woman doing out here with instruments like that," he teased. She gave him a flip answer, one she might not have used had she still been in high school. Women civil engineers are still a rarity and Tina, like a great many WPI alumnae, has learned to expect a male reaction when she's on the job.

"I don't mind a little good-natured teasing from someone I know because I can give it right back," said Tina. "People react strangely to a woman in a job where they

usually find men. There's one developer who didn't take me seriously at first and started to give me a hard time which I understand he does to everyone. He changed his tune when we checked some work he'd done and I told him he had to rebuild some manholes to make them conform to the specifications. He wasn't very pleased, but he changed them."

From the DPW office, Tina can see a problem that she's helping to solve. The junction of Main Street and Shrewsbury Street is a major intersection. Traffic keeps backing up because more "green time" is needed from Shrewsbury Street to Main Street north. The problem, Tina discovered, was in the traffic light controller which has since been sent back to the manufacturer for repair. "The traffic should be flowing more smoothly soon," she says.

Fox says that about fifty percent of Tina's work to date has been concerned with surveys of various types.

"We did one right next door to the DPW office for the state," Tina adds. "The state is looking for locations for road salt sheds, and wanted us to survey the adjoining lot to locate the building site."

"It appears that it will be a suitable location," Fox says. "As it has previously been stored in the open, the salt would drain into a nearby pond, which in turn feeds into the MDC reservoirs in Clinton and West Boylston. Also, Holden needs the pond to be environmentally protected."

The town engineers are always on the lookout for water. Holden has no reservoir of its own, sharing one with Rutland. It isn't that there isn't water in Holden. Three reservoirs in town supply the city of Worcester. The watershed on the other side of town was taken over years ago by the Metropolitan District Commission to protect the waters flowing into the Wachusett Reservoir. Holden is a rapidly growing town and now it's facing a water shortage.

"We have been looking for ground water supplies," Tina reports. "There are so many residences and businesses here, that what little water we have is rapidly becoming depleted. A senior citizen is helping us in the search. From memory, he tells us where he believes the ground water to be."

"If we find a likely spot," Fox interjects, "we call in a consulting engineer from Boston."

Tina has become accustomed to tramping six miles a day or more through the woods. "When I come to a river, I simply take off my shoes, and wade across," she says.

She grins. "Some of the men I work with didn't know how to take me till I passed the 'pressure test,' " she confides. The "test" happened while applying a pressure test to a new water main before Manning Street was paved. The hoses were hitched up to a pump, which was building up to the test pressure. Everyone was watching the pressure gauge.

"It was a dusty, dirty business," Tina recalls. "All at once, the coupling on one of the hoses blew, and the hose started whipping around like a giant snake. All of us were freckled with mud from head to foot. Everyone looked in my direction, wondering how I'd react. I just laughed and wiped the mud out of my eye. It was then that I felt fully initiated into the group."

Because Holden is a fast-growing town, Tina often comes in contact with the developers. Currently, she is involved with a road paving problem. The developer has only the first course of pavement down. Tina estimates that about $20,000 is needed to complete the project. "When the project is completed, the developer will get back the $17,000 he posted with the town for the initial bond," she explains.

Tina and Win Fox have done a layout for land taking for a highway. "A dangerous corner in a heavily residential area will be eliminated through the land taking," Win explains. "Right now a nearby fifty-four lot subdivision (which will benefit) is in three stages: rough, half finished, and finished. We are concerned with the construction of the sewer, drainage, walks, and roads, as well as water sources in the subdivision."

What is on the schedule for winter?

"I expect we'll be doing more inside work, then," Tina replies. One project which she will be dealing with is a drainage plan for an area between Salisbury Street and Wyndhurst Drive. Currently, the drainage from a subdivision on Salisbury Street flows into a brook, which takes the silt ultimately to Wyndhurst Drive. Tina plans to design a drainage system so that the silt will be directed away from residents' back yards.

Meanwhile, she spends considerable time in the basement of the Worcester County Courthouse looking for deeds through books and papers that go back to 1632. "This is a tedious and time-consuming job but it is a necessary preliminary step to all surveys."

But, then, Tina Perry, who is the daughter of Roger Perry, '45, director of public relations at WPI, has a habit of finding what she's looking for. While still a student, she had definite ideas about what kind of summer employment would suit her best. "I wasn't looking for regular, everyday work," she recalls. She ended up being the first woman conservation worker at Rutland State Park.

Being the first woman engineer in the Holden Department of Public Works, then, hasn't been all that unsettling to Tina. She's accustomed to being the only woman in a man's bailiwick. At WPI, she even earned her letter as manager of the WPI Wrestling Team.

"So far, I've tramped the woods, sloshed through rivers, and become familiar with dumps, sewer lines, and construction sites," Tina says, "but I really love what I'm doing. I've lived in Holden all my life but in the time I've worked here, I've seen parts of Holden I never knew existed.

"I like being out of doors. The people I work with are great. The head of the highway department even gave me a lesson in driving the road grader. I don't ever expect to drive it, but his letting me try means that they've accepted me as part of the team. That means everything to me."

Russell Kay

Peggy Staruk — Systems Analysis

Last June, Peggy Moriarty Staruk was one of some three hundred seniors who graduated from WPI. She received her BS in mathematics, and had a good job as a systems analyst ahead of her at State Mutual Life Assurance Company of America.

Not unusual, one might think. Plenty of women major in math at WPI, and have good jobs (or grad school) waiting for them on graduation day. Peggy Staruk, however, had more than a good job waiting. She also had a husband and two children.

How did Peggy Staruk manage to juggle college, marriage, and motherhood all at the same time?

"It wasn't easy," she admits. "And with my job, it still isn't. But, all things considered, it's been well worth the effort."

Peggy Moriarty and Harry Staruk met over a bridge table in the old Riley snack bar. "Every day several of us would meet for a game," she says, "and Harry and I were among the more faithful players. By 1974, we decided to become permanent partners."

Her husband dropped out of school to take a full-time job. (He is now completing his degree in math at Worcester State.) In 1975 their daughter Kathy was born, and in 1976, Barbara arrived. Last year, having earlier completed three years at WPI, Peggy began the last leg of her undergraduate career.

"I took nine courses," she says. "Including four in computer languages at Worcester State. I never could have done it without the support of my husband and mother-in-law, who were in back of me all the way. Also, I can't say enough for our bridge-playing friends at WPI. They often babysat for me in the Wedge, while I attended class."

The bridge players helped with babysitting chores during her evening classes, too. "I depended on one for basic sitting and on four others during emergencies," she recalls. "I don't think I could have ever gotten my degree without them. They were terrific."

Now that she has earned her degree and is working, Peggy and her husband have reversed roles. He is going to college full time, and shares babysitting stints with his mother.

"He takes the girls to the park every day," she reports. "We live on the top floor of a three-decker in a quiet residential neighborhood within walking distance of several parks. They get variety. Kathy goes to nursery school during the week, so often he has only Barbara to take care of."

At State Mutual, Peggy, who "fell into insurance quite by accident," has her children's pictures tacked up on the wall in her office area. Beneath the photos, on top of her desk, is a giant computer printout slashed with notations.

Peggy gestures in the general direction of the desk and says with a sigh, "This is a dump."

There are papers piled on the desk, but they are arranged in neat stacks. There are no stray coffee rings or scattered cigarette ashes. For a working desk, Peggy Staruk's is surprisingly orderly. A dump?

She laughs. "Not the desk, the printout. We call the output of a program that doesn't work, a 'dump.' It simply means that I've got to find out why it doesn't work, and straighten it out. I'll get to the bottom of it later."

Is she working on a specific program at present?

"Yes. The programs for a software system from Dallas are being redone for State Mutual. About forty of us have been assigned to the project. I am modifying the files so that Dallas can read them. It's a conversion process."

In Peggy's area, a woman is head of this particular conversion project. "A woman from Dallas is overseeing installation. Her husband is doing the on-line system," she says.

In order to facilitate her work, Peggy has access to a computer in the basement at State Mutual. She also uses the firm's new teletype terminals to help speed up her testing. On her desk is a microfiche reader, where she can refer to miniaturized copies of her computer printouts.

"I really like this job," she reveals. "Even though for two years I will be considered as a systems analyst trainee, I have been given considerable independent responsibility. Nobody is breathing down my neck. I am allowed to go at my own pace."

Should Peggy want, or need, to work overtime, she can. (Trainees are paid overtime.) State Mutual is open twenty-four hours a day.

"It's not at all unusual for some of the analysts to be here at two or three in the morning," she says. "I work after hours sometimes, myself, but never that late. Outside of working hours, a security guard checks everybody in and out."

Peggy is one of about twenty-one women systems analysts in an area that employs a hundred and twenty analysts overall. "They really try to accommodate women employees here," she emphasizes. "Some experienced women analysts, who now have families, are encouraged to come back to work on a part-time basis. There is a cafeteria in the building, and at lunchtime baby sitters often bring children to eat with their parents who are employees. My husband has brought our daughters to lunch with me several times."

State Mutual offers in-house computer and management programs. "I have already taken subsidized courses on the hardware," she says, "and expect to take a management course in the future. The company also pays half the tuition fee upon completion of a course at an outside college."

Originally, Peggy had thought she would start studying for her master's degree directly after her graduation from WPI. "Being a working mother has definitely changed my mind about this," she admits. "You can quote me. Being a full-time working mother is exhausting!"

For instance, she works at State Mutual from 8:30 to 4:30 five days a week. "Then," she says, "I rush home after work, get supper, and clean the house until nine o'clock. Then my 'free' time begins."

Weekends, however, are a different story. "Saturday morning I finish up any leftover housework," she goes on. "But Saturday afternoon and all day Sunday are reserved for family activities. We go for long rides and visit relatives."

There is one hobby that the senior Staruks continue to indulge in, despite their hectic schedule. Bridge. Not just a quick game with the neighbors, but serious, tournament stuff. They are experts. The trophies, medals, and master points that they have garnered attest to that.

They have won a number of bridge tournaments in the Worcester area. Last year they won enough script money in the regionals in Hartford to help send them to Atlanta for the nationals.

"We, and three other WPI players, did poorly in Atlanta," Peggy reveals, "but there's always next year." They keep Thursday nights open for polishing up their bridge game, with an eye toward the upcoming national competition. They belong to the Cavendish Bridge Club in Worcester and play in as many tournaments as time allows.

Daytimes, however, Peggy Staruk can still be found at State Mutual reading the microfiche or programming a computer, "more or less on my own."

Didn't her employers ever give her a list of 'don'ts,' when she first started out as a systems analyst at State Mutual?

"They don't have many 'don'ts' around here, but I do recall one."

What was that?

' "Please don't charge up $5 million!' "

WPI

WPI football: hitting the comeback trail

by Stephen Raczynski
WPI Sports Information Director

When last we left off the football story—a season marked by seven losses and only one win, ending in the resignation of Coach Mel Massucco and an investigation by a Trustee committee to determine whether football should be continued as a varsity sport—the Trustees had agreed that football should be continued and encouraged. Since then, there have been a great many changes in people, ideas, and the 1978 season has been played out. Well, you ask, **What happened?**

First, the bad news: the Engineers only won two games this year—a 100 percent improvement, but it would hardly seem much to talk about. On the face of it, not much different than 1977.

But it wasn't really that bad at all. The WPI gridders were in fact competitive this season. It is a much better team than the won-lost score indicates. Not since 1962 had any Engineer football team won their final two games. Not until now.

Since the Trustee report, three new people have come to WPI concerned with meeting the stated objectives. They are President Edmund Cranch, Director of Athletics and Physical Education George W. Flood, and Head Football Coach Robert R. Weiss.

The benefits of a successful athletic program are not lost on President Cranch, who considers athletics "a vital, integral part of the entire educational experience."

George Flood has recently said: "I have already found that WPI is highly regarded as an academic institution. It is my contention that good academics and good athletics can be very compatible.

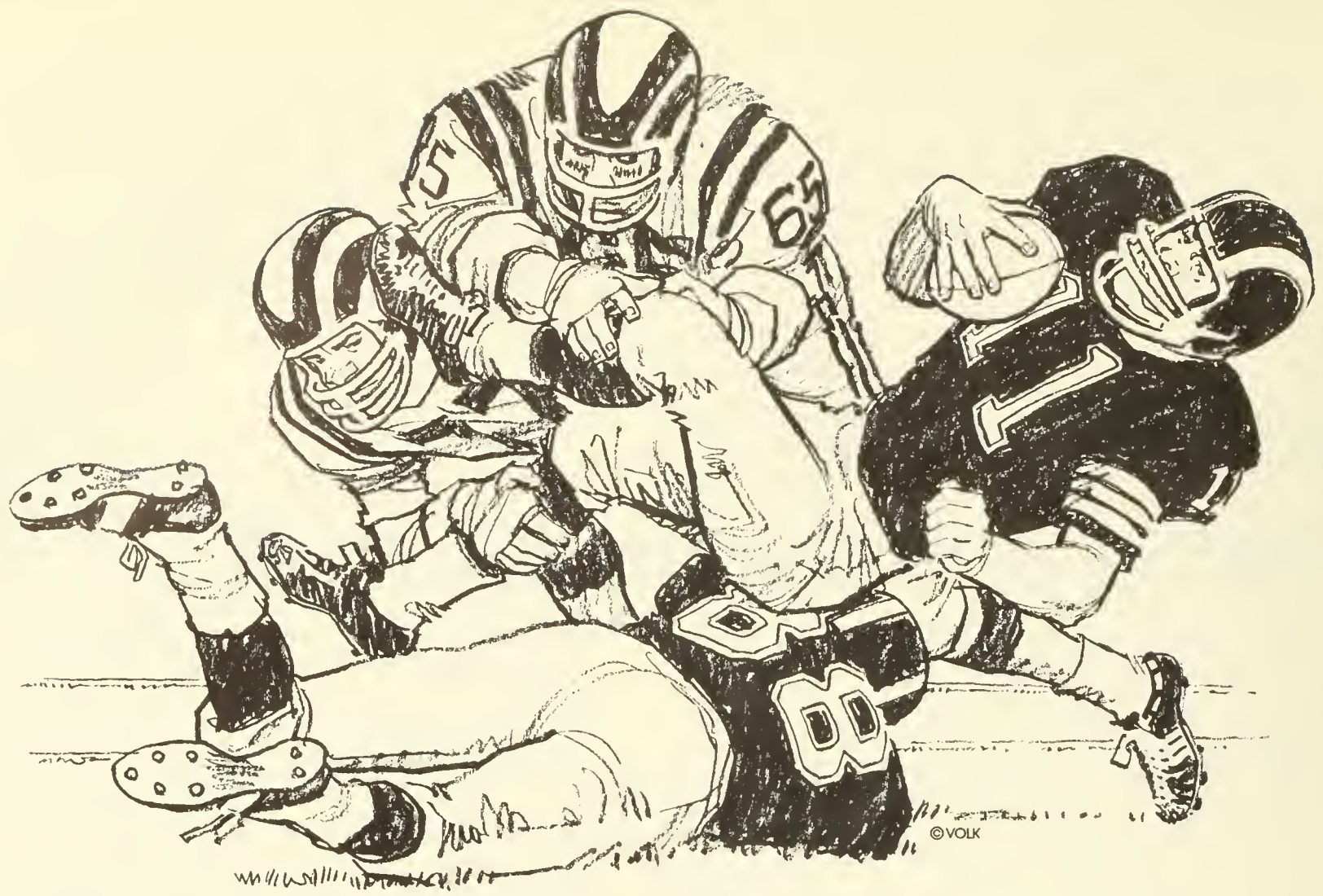
"My major concern right now," said Flood, "is trying to make the two highly visible programs, football and basketball, as competitive as the other sports in our overall program, within the schedules they now play. I'm not concerned with the other programs declining, because we have good people, knowledgeable people, in command of those programs. They will continue to flourish as they always have."

Coach Bob Weiss isn't satisfied with the season record. But he is happy with the team. "I am satisfied with the efforts put forth by my kids. When success didn't come early, they could easily have said, 'Hey, just what is this guy trying to sell us?' But success came because they worked hard. Our two successive wins in the final games were not flukes. We were in total command from start to finish."

And indeed they were. WPI's 28-15 drubbing of RPI was not nearly as close as the final score indicates. WPI raced to a 21-0 halftime lead, upping that to 28-0 before RPI scored 15 points in the closing stages of the game. In that contest, the WPI team chalked up a football rarity as **three** WPI backs gained over 100 yards for the day. Only one other college in the NCAA achieved that feat this past season.

In the final game, at home versus Hamilton College, junior halfback Mike Robinson of New London, Conn., put on an incredible performance, rushing for a school record 228 yards and two touchdowns as WPI easily triumphed 21-8.

Even the losing games had their notable moments. During the Homecoming game against Bates, senior punter Paul Barrett booted a school record kick of 77 yards.



With such a strong finish, local alumni have already begun making comparisons to the Holy Cross football situation. Two years ago, the Crusaders were 0-9 entering their final two games. Not only did they win those two, they went on to record a 7-4 slate this past season. Can Boynton Hill do as well as Mt. St. James?

"Let's hope so," says Bob Weiss. "We actually didn't come far from producing a winning season this year. To be very candid, if we had been here a year sooner, the team may have won three more ballgames. We only lost the Coast Guard (21-13), Union (14-7), and Bowdoin (7-0) games by a touchdown. You have to remember that everything was new for the entire team, and our seniors, juniors, and sophomores were pretty much the same as the freshmen when it came to learning the kind of offense and defense I wanted them to play. When you consider this fact, I believe our players didn't do badly.

"Versus Coast Guard, six times we were inside the opponents' 30-yard line, but did not score," laments coach Weiss. "Versus Union, our defense had a great goal-line stand and we were still leading well into the fourth quarter, 7-6. Versus Bowdoin, we were driving for a tying score when we fumbled on their 7-yard line. If we had tied it, I'm sure we could have gone ahead with the momentum we had gathered to that point. In those three games, we weren't that far away.

"We have established many positive things to build on for 1979," continues Weiss. "I was pleased and surprised—I mentioned this to the president—to see the good support we received at both our home and away games. I know it did not go unnoticed by the players. We seem to possess a family atmosphere at WPI, a closeness unequaled by many schools. That was apparent by the number of people, families and friends of WPI players, who attended our post-game 'coffee and doughnuts sessions' in Harrington Auditorium. It is also apparent that there is a great deal of pride among WPI alumni."

The players seemed to share Coach Weiss's feelings. Certainly, as the season wore on with six consecutive losses, there must have been a temptation to just "play out the string"—an accusation made about WPI gridiron teams over the years. But they didn't do that. They became more confident, stronger, more competitive. That marked a real difference between 1977 and 1978. There were others.

"There was an overall change in attitude," commented senior captain Mark McCabe. "You were expected to work, to dedicate yourself to the sport, to commit yourself to work, but not to the point where it's your life."

"Another difference," said co-captain Bob Reed, "was the fact that, for the seniors, this season was actually fun. The seniors went out on a strong note, and that was important. Now the seniors are going to keep pushing the juniors, sophomores, and freshmen because they have a chance to achieve something the seniors never could—a winning season."

What are the priorities for 1979? "Probably the two most important things we have to do between now and next season," according to Coach Weiss, "are first to establish a solid weight program and upgrade our present weight-lifting facilities, and second, to recruit enough football players to supplement those who will return. By doing this, we will have one more ingredient necessary for creating a winning team—competition for starting positions."

Creating winning teams is nothing new to Bob Weiss. His track record is one of turning football programs around, from losers to winners. His overall record, before he came to WPI, is 65-32, for a winning percentage of .670 that speaks for itself. He feels the key to turning WPI around is recruiting.

"We are in the process right now of asking alumni to help in our recruiting program, mostly through—but not limited to—the Poly Club," says Weiss. "I don't believe this should be an extensively time-consuming job for the alumnus who wants to help. Frankly, we could use alumni help in two areas. First, identifying academically qualified student-athletes (and where they live) to us in the athletic department; and second, following up with those student-athletes whom we are **actively** recruiting. Many times, people don't understand how little they have to do. Sometimes a simple telephone call to a prospect, or personally talking to the family, can give us the edge which ultimately leads to the student's enrolling at WPI.

"I believe we have to spread the word about the great things being done here at WPI. People in the field know the type of school we have here in Worcester. But how about the young man outside of Massachusetts who thinks he wants to be an engineer and has little knowledge about engineering schools? I am a little surprised, and very encouraged, by the number of student-athletes who have indicated they are interested in engineering education. We must, and this is where an alumnus can be of great help, make personal contact with these students in order to give WPI a fair and equal chance. It can be as simple as reading the sports pages in your area and giving us a call."

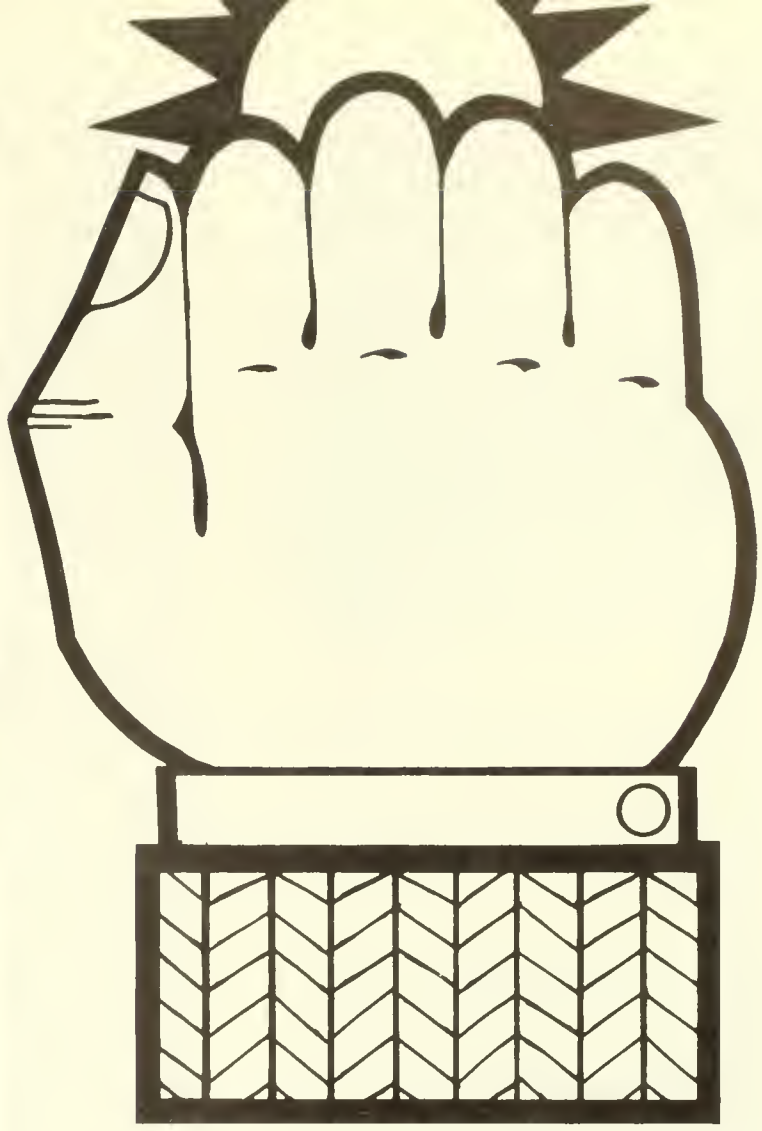
Just how far do we intend to push football at WPI? Are we attempting to become the Alabama of Division III? Are we willing to compromise our academic standards and reputation in order to create a football factory?

No. WPI is merely trying to catch up to the level of football attained by many other outstanding small colleges in New England—schools like Williams, Wesleyan, and Amherst. No one considers those institutions football factories (though consider that Amherst has three pros active in the NFL right now). Yet their academic **and** athletic programs are very highly regarded.

"Our ultimate goal is to be competitive within the structure of Division III of the NCAA," notes Weiss. "We aren't attempting to bring a big-time football program here, but merely trying to install a system and program that will develop pride and promote good feelings among all those associated with WPI.

"We strive for excellence, and we have achieved it, in educating young people here at WPI. Why not try to develop the same goal in a football program that has had only one winning season in the last 19 years?"

WPI



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Director of Graduate and Career Plans
Worcester Polytechnic Institute
Worcester, MA 01609

1926

Secretary:
Arthur C. Parsons

William Crabtree has probably attended more meetings of the Wilmington (N.C.) Transit Authority than the Authority commissioners themselves. Retired from the Chemstrand Research Center, he has represented the local chapter of the American Association of Retired Persons at Authority meetings for several years. In four years, he's missed only two meetings.

He always sits in the front row and listens intently. Whatever is under discussion, a proposed shuttle bus or a route change, he has adopted a diplomatic policy of observation, not comment. "If they ask me to say something about what they are discussing, I oblige," he says.

Although he presently uses his car for most of his transportation needs, between 1972 and 1974, he had cataract trouble and had to ride the bus a lot. "It was then that I mentioned to the WTA that a driver on one of the routes was taking a shortcut. He was cutting out the last couple of blocks from the end of his route."

Mr. Crabtree is also active in the local chapter of SCORE. He tutors remedial reading at his neighborhood elementary school, where he assists second graders who cannot read at first grade level. He writes: "This activity is especially rewarding for anyone with a sense of humor. At the end of the last school year one youngster told me, 'You done real good for an old man.' "

1931

Secretary
Edward J. Bayon

Representative:
A. Francis Townsend

James McWhirter, Jr. has retired as general manager of Pennwalt Corp., Philadelphia, Pa.

1932

Representative:
Howard P. Lekberg

Herbert Borg, formerly with U.S. Steel in Worcester, now summers in Pittsfield, N.H. and winters in Hollywood, Fla.

1934

Secretary.
Dwight J. Dwinell

Representative
Dwight J. Dwinell

Howard Stockwell, director of hydro production for the New England Power Co., was honored at a retirement party in Lebanon, N.H. in September. He joined the New England Electric System companies in 1934 at Comerford Station, which was then a part of Connecticut River Power Co. He later served in various operating positions in Littleton, N.H. and Shelburne Falls. In the early 1960s he worked at system headquarters in Boston as an assistant operating engineer and as an executive assistant. In 1965 he moved to Lebanon as assistant manager of hydro production. In 1969 he became director of hydro production.

Mr. Stockwell is a registered professional engineer. Also, he is a former president and director of the Lebanon Chamber of Commerce, and currently serves as vice chairman of the Zoning Board of Adjustment. He will continue to serve New England Power as a consultant.

1935

Secretary:
Raymond F. Starrett

Representative
Plummer Wiley

Ted Latour, retired after thirty-eight years as a senior chemist and chemical engineer with du Pont, is seeking election to the District B seat on the State Board of Education in Nevada. He has been a resident of Las Vegas for five years. An advocate of competency tests, he believes in the three A's: attendance, attitude, and achievement. He also feels that his being retired would allow him to devote a great deal of time to the educational needs of the state.

1937

Secretary:
Richard J. Lyman

Representative
Richard J. Lyman

Francis S. Harvey is serving as the current president of the Worcester Engineering Society. Among the member societies included in the Society are the American Chemical Society, AIIE, ASME, IEEE, and the Society of Plastics Engineers.

The Good C

Thanks to the collecting bent of the late Enos H. Bigelow of the Class of 1875, and to the generosity of Warren Davis of the Davis Press, who provided us with the Bigelow WPI memorabilia, we are afforded a fascinating glimpse of WPI as it was in the late nineteenth century.

Enos Bigelow, who eventually went on to become a doctor of medicine in Framingham, Massachusetts, was a faithful keeper of WPI mementos. Included in his collection are a WPI song book, a senior examination announcement, a report card, a notice of Class Tree Exercises, his diploma, a class picture, a sumptuous banquet menu, a WPI exhibit catalogue, and a college catalogue.

Ever wonder what it was really like back in the "good old days" on the Hill? Dr. Bigelow's 1872 catalogue of the "Worcester County Free Institute of Industrial Science" gives us some clues.

First, that "Free" in the original school name meant exactly what it said. Any student residing in Worcester County, who was sixteen or over and who could pass an entrance examination, could attend the Institute free of charge.

John Boynton, Esq., who donated land and money for the school, made that perfectly clear in 1865 in his letter of intent which stated: "I give the sum of $100,000 for the endowment and perpetual support of a free school or institute to be established

ld Days

in the County of Worcester, for the benefit of the youth of that county."

He also declared that the aim of the school would be the instruction of youth in those branches of education not usually taught in the public schools, which are essential and best adapted to train the young for practical life: i.e., students would be instructed as mechanics, manufacturers, farmers, mercantile businessmen, or teachers.

To Boynton's generous gifts, Stephen Salisbury added $165,000 to enable the Institute to receive students who were not county residents. His belief was that the "school will not attempt to turn out a Fulton, but it may give [students] facilities which that great mechanic did not possess."

With the general principles for the school thus enunciated, the Institute in 1872 offered the following courses of instruction: Mechanical drawing, civil engineering, architecture, drawing and design, chemistry, and English, French, and German. The curriculum was especially designed to meet the needs of those who had no desire for classical training, but who wished to be prepared as mechanics, civil engineers, chemists, architects or designers — "for the duties of an active life." The course of study for regular students covered three years — Junior, Middle, and Senior. There was also an Apprentice Class, which some students entered prior to joining the Junior Class.

Candidates for admission had to give evidence of proficiency in history, geography, grammar, arithmetic, and in algebra as far as quadratic equations. According to the catalogue, "In general, students at the end of the second year in high school are prepared for the studies of the Institute." In order to enter the Junior Class, students had to pass an entrance examination that would give reasonable promise of their success in studies at the Institute.

The plan of instruction was organized on the basis of lectures, recitations, and examinations. Practice was a major part of the curriculum. In the middle of their junior year, most students were required to choose departments and to devote ten hours a week, and the full month of July, to their area of concentration.

The mechanical engineering course received considerable attention in the catalogue, because of the excellent facilities provided in the new Washburn Machine Shop, "A handsome three-story brick building, 100 feet long, by 40 feet wide, with a wing 65′ by 40′ for engine boilers, and blacksmith shop. These rooms are all equipped according to the directions of the 'benevolent donor.' "

It was the decision of "Benevolent Donor" Ichabod Washburn "to construct a machine shop of sufficient capacity to employ twenty or more apprentices, with a suitable number of practical teachers and workmen in the shop to instruct such apprentices."

Boynton Hall, which has just undergone its first massive renovation since it was originally built, was glowingly described then as "a commodious and elegant granite building 146 feet long by 61 feet wide. . . . It contains a chapel capable of seating 400 persons; a lecture room, in the rear of which are a store room and private laboratory, all fully equipped for instruction in chemistry; . . . a physical laboratory with power from the shop; . . . two commodious drawing rooms, one for free hand, the other for mechanical drawing; . . . an architect's room; . . . a designer's room; . . . and a library and reading room. . . ."

Memorabilia-collector Enos Bigelow was a senior at the Institute in 1875 when Washburn Shop and Boynton Hall were considered the newest and the finest, and when the campus rules and regulations were considered up-to-date. In those days, students from out of the county had no place to room on campus. They had to room with private families nearby. Their total expenses, including tuition ($100 payable semi-annually in advance), plus room, board, and supplies, rarely exceeded $380 a year.

As for attendance, "Students are expected to be present in the chapel at a quarter before nine o'clock and to be punctual in all their exercises. A careful record of absence and tardiness is kept."

The school year began on the second Tuesday of September and ended at Commencement, the last Wednesday in July. Students devoted the balance of the year, mainly the month of July, "to practice under direction of the faculty."

Enos Bigelow, despite the rules (or perhaps because of them), finished up his days at the Institute with a 91.3 average mark. On graduation day, July 7, 1875, he gave the Class Tree Oration at Class Tree Exercises. The ode had the following refrain: "Manhood waits, and beckoning on, Stands with lifted finger. Seventy-five, the hour has come, And we may not linger."

He then attended a banquet at which the following was served: "Chicken soup, boiled salmon, roast chicken, roast loin of mutton, roast spring lamb, lettuce salad, ham, lobster, and tenderloin beefsteak. Also, boiled spring chicken, pyramids of rice, boiled potatoes, beets, cauliflower, green peas, summer squash, stewed tomatoes, Roman punch, cabinet pudding, port wine jelly, squash pie, lemon cream pie, and jelly rolls. Also, lady fingers, cocoanut cakes, watermelons, pineapples, raspberries, filberts, English walnuts, pecan nuts, raisins, almonds, and coffee."

Oh! For the good old days!

WPI

ARTHUR NUTT, '16, trustee emeritus of WPI, was inducted into the OX5 Aviation Pioneers Hall of Fame on May 20th in Hammondsport, New York.

Members of this Hall of Fame are the pilots, engineers, and mechanics, who were particularly concerned with airplanes powered by Curtiss-built Model OX5 engines. These engines represented a period when aviation grew from a sideshow business to an air transportation industry.

To speak of Arthur Nutt is to speak of the birth and growth of the airplane industry in this country. Just thirteen years after the Wright brothers took off from Kitty Hawk, he joined the Curtiss Aeroplane Company, which produced the OX5 engine. This 90-rated horsepower engine (actually 76 HP) was the major engine used for training airplanes in World War I.

Dr. Nutt became a test engineer for Curtiss in 1916, at which time changes were made to up the engine from 76 HP to real 90 HP. From 1916 to 1918 over 9,000 OX5 engines were manufactured. In 1917 Dr. Nutt became the test engineer for the Curtiss K-12 water-cooled 400 HP engine.

When he was named chief motor engineer in 1921, he eliminated weaknesses in the K-12 and C-12, which could not run at full power for over twenty-five hours. He brought out the improved CD-12 model, which won the Pulitzer and Schneider Cup Trophies in 1921. At the time, he says, "I knew of no engine in this country over 350 HP capable of successfully passing a fifty-hour endurance test except the CD-12."

His major contribution in 1922 was the complete redesign of the CD-12 engine into the D-12 model, which was to power planes holding all the world speed records for about ten years.

Later, many engines that Dr. Nutt helped develop, were used in military, civil, and transport planes, such as the Condor. The Curtiss Challenger 6-cylinder, air-cooled engine (185 HP) was used in making the world's record endurance flight of 420 hours.

In 1930 he transferred to the Wright Aeronautical Corporation as vice president of engineering. At Wright, he was concerned with the Whirlwind and Cyclone 9, 14, and 18 engines, the latter being of international fame.

After twenty-five years at Curtiss and Wright, Packard asked Dr. Nutt to become director of aircraft engineering in 1944. He also was named general manager of their Toledo plant where the complete supercharger and accessory unit for the Rolls-Royce Merlin, and two large jet engines, were built.

In 1950, after Packard went out of the airplane engine business, he joined the Lycoming Division of Avco. The firm built Wright Cyclone 7 and 9 cylinder engines under license. As vice president of engineering, Dr. Nutt had charge of both the Stratford (Conn.) and Williamsport (Pa.) engineering departments. The Williamsport Lycoming engines powered 90 percent of the commercial civil airplanes used around the world.

He retired in 1959, and is now permanently settled in Deerfield Beach, Florida.

Arthur Nutt was a WPI trustee from 1941 to 1954. He was named trustee emeritus in 1973. In 1941 he received an honorary doctor's degree from WPI.

He is a member of the Society of Automotive Engineers, the Institute of Aerospace Sciences, the Masons, the Sons of the American Revolution, Tau Beta Pi, PTS, and Sigma XI. He is vice president and current acting president of the Class of 1916.

Prof. **Ray Linsley,** chairman of Hydrocomp, Inc., Palo Alto, Calif., was awarded the 1978 Julian Hinds Award of the American Society of Civil Engineers at their annual convention held in Chicago in October. He was honored for his "outstanding leadership and service in encouraging education and research in comprehensive water resources planning and management, and in implementing programs in the field for civil engineers and planners."

After graduating from WPI, he was employed by the TVA in the river forecasting section of the Hydraulic Data Division. In 1940 he transferred to the U.S. Weather Bureau in Washington, D.C., as a hydrologist. Later he was with the Weather Bureau Office in Sacramento, Calif., where he wrote a manual, *River Forecasting Methods.* In 1945 he became chief of the Procedure Development Section of the Hydrological Services Division in Washington, D.C. In 1950, after serving as chief hydrologist for the Department of Commerce Committee with the Federal Interagency River Basin Committee, and the President's Water Policy Committee, he joined Stanford University as an associate professor of civil engineering. Later he was appointed full professor and appointed associate dean of engineering. In 1958 he became executive head of the department of civil engineering, a post he held until 1969. He initiated a water resource management program which was incorporated in the Stanford program in engineering economic planning in 1960.

While on sabbatical leave from Stanford in 1957-1958, Prof. Linsley was Fulbright Professor at the Imperial College of Science and Technology in London. In 1964-1965 he was staff assistant in the Office of Science and Technology, Washington, D.C., and chairman of the Committee on Water Resources Research.

He is a fellow of the American Geophysical Union and is a past president of the hydrology section. He belongs to the American Meteorological Society and the Society for the History of Technology and the National Academy of Engineers. He is an honorary member of the Venezuelan Society of Hydraulic Engineers and the Japanese Society of Civil Engineers.

Formerly treasurer of Northeast Engineer Co., **Carl S. Otto** is now retired and living in Supply, N.C.

1941

Secretary
Russell W Parks

Representative
Robert A Muir

K. Blair Benson holds the post of vice president of engineering and technical operations at Video Corporation of America in New York City. . . . **Harvey Eddy** writes he is "building a retirement home in Volcano, California, at the 3000-foot level in the Sierra foothills."

1946

Secretary
M. Daniel Lacedonia

Representative
George R. Morin, Jr

Dean **William Grogan** gave an address titled, "Liberal and Career Education: Putting it All Together," at the 32nd Annual National Academic Deans' Conference held at Oklahoma State University in July. Seventy-five academic deans and vice presidents from eighteen states debated the merits of liberal education versus career education at the conference.

1948

Secretary
Paul E. Evans

Representative
John J. Concordia

Roger Cromack has been elected senior vice president of Marsh & McLennan, Incorporated, the nation's leading insurance broker. He has been a senior account executive in the New York office, responsible for major commercial accounts in the telecommunications, aviation and electronics industries, among others. He joined the company in Atlanta in 1960 and relocated to New York in 1966. He was named an assistant vice president in 1967 and elected a vice president in 1969. Earlier he had been with Factory Insurance Association, now Industrial Risk Insurers.

Ernest Fernsten holds the post of manager of airway facilities at the Federal Aviation Administration in Roanoke, Va.

1950

Secretary:
Lester J. Reynolds

Representative:
Henry S. Coe, Jr

Earle Hallstrom, vice president of operations at Spalding in Chicopee, Mass., also serves as a director of Vitramon, Inc. in Bridgeport, Conn. . . . **Richard Pieper** serves as project manager at Hughes Aircraft in Los Angeles.

1951

Secretary
Stanley L. Miller

Representative
John L. Reid

Wallace Preston has been promoted to the newly-created position of vice president of engineering at Toolkraft Corp. in Chicopee, Mass. He will be responsible for all phases of engineering and new product design. After joining the firm in 1972 as engineering manager, he was promoted in 1974 to director of engineering. He has his MSME from RPI and is a licensed professional engineer. He belongs to ASME, the Society of American Value Engineers, and the International Power Tool Institute.

1949

Secretary
Howard J. Green

Representative
James F. O'Regan

Donald Taylor, vice president of operations at Rexnord Inc., became president and chief operating officer of the company on November 1st. He was also elected to the board of directors.

He was employed by the Nordberg Manufacturing Company prior to its merger with Rexnord in 1970. Before going to Nordberg, he had worked fifteen years for the Geo. J. Meyer Manufacturing Company. In 1973, he became president of Nordberg and a vice president of operations at Rexnord. In 1976, he received the Goddard Award from the WPI Alumni Association.

Rexnord, headquartered in Milwaukee, serves the mining, industrial, construction, pollution control and other specialized markets. Worldwide, the company employs more than 16,000 people in 64 manufacturing operations.

1953

Secretary.
David S. Jenney

Edward Mickevicz was recently named general manager of Brand-Rex Ltd., producer of wire and cable at Glenrothes, Fife, Scotland. Formerly, he was manager of marketing and production services for Electronic and Industrial Cable Division of Brand-Rex in Willimantic, Conn. With Brand-Rex since 1955, he has held posts in sales and marketing. He has been manager of marketing and production services for the E & I division since 1976. . . . **Seymour Vershon** has been appointed director of budgets for Tenneco Chemicals, Inc., Saddle Brook, N.J.

1954

Secretary:
Roger R. Osell

Representative.
Roger R. Osell

Milton Meckler, who heads the Meckler Energy Group in Encino, Calif., has been selected by AIA Research Corp. (AIARC) to assist in the development of the national energy performance standards for new buildings. HUD and the Department of Energy have contracted with AIARC to compile energy standards that will place new building plans on an "energy budget." This will apply to commercial and business structures, as well as to residential. According to Meckler, who recently completed his Phase II contract with AIARC, the program appears to be on schedule. In addition to his private practice and AIARC work, Meckler is consultant to the State of California Advisory Committee on Energy Conservation and the State Resources Conservation and Development Commission. He assisted with the preparation of the Energy Conservation Design Manual for non-residential buildings.

1955

Secretary.
Kenneth L. Wakeen

Representative.
Ralph K. Mongeon, Jr

Francis Horan, Jr. was recently appointed division consumer services manager in Worcester for Massachusetts Electric Co. He started work at the utility in 1955 and had been area coordinator of consumer services in Worcester.

1956

Secretary.
Paul D. Schoonmaker

Representative
John H. McHugh

Ted Coghlin, Jr., has been elected president of the Mohegan Council of the Boy Scouts of America. He is president of Coghlin Electric Co., Worcester. . . . **Henry Dumas** holds the post of marketing manager at General Scanning, Inc., in Watertown, Mass. . . . Currently **Richard Emery** serves as plant manager at du Pont in Montague, Michigan.

1957

Secretary:
Robert A. Yates

Representative:
Alfred E. Barry

Alan Gustafson is now general manager for diamond grinding wheels used in carbide and steel markets in Norton Company's Grinding Wheel Division, Worcester. He joined Norton in 1957 as a manufacturing engineer, and has held various engineering and managerial posts both in Norton's U.S. operations and with its Japanese subsidiaries. Most recently he was product manager for organic products. In his new post he will oversee research, manufacturing and product management for his products and markets. . . . **Norman Ristaino** is a program analyst for the federal government in Natick, Mass.

1958

Secretary:
Harry R. Rydstrom

Richard Chapman, vice president of R.E. Chapman Co., Oakdale, Mass., has been appointed by Governor Dukakis to the Water Resources Commission as a representative of the ground water industry. He has been a member of many water well associations, including the Massachusetts, New England and National Waterwell Associations. . . . **James Johnson** is currently in charge of the newly centralized motor vehicle and building management functions at New Jersey Bell Telephone Co.

1959

Secretary.
Frederick H. Lutze, Jr

Representative:
Joseph D. Bronzino

Dr. **Joseph Bronzino,** director of the biomedical engineering program at Trinity College, Hartford, Conn., was invited to be the keynote speaker at an International Congress on Biomedical Engineering held in Naples, Italy last summer. His topic was "The Impact of Technology in Health and the Application of Biomedical and Clinical Engineering in the United States." He also spoke on "Nuclear Medicine Axial Tomography (CAT) Scanning and Computer." He writes: "It was quite an experience, a truly exciting time." His new book, *Technology for Patient Care,* is making an impact, and he's been invited to guest lecture at the "First Iranian Symposium on Biomedical Engineering" slated for November.

Uniloc, Inc., of Irvine, Calif. has appointed **Carl Frova** as executive vice president. He was previously vice president of sales and marketing and assistant vice president and general manager of the eastern division. Earlier, he had been product manager of instrumentation and equipment at Betz, Inc. and sales engineer for Foxboro Co. He did postgraduate work at Drexel Institute of Technology in Philadelphia.

James Lawson, SIM has been elected president and a director of the O.S. Walker Co., Inc. in Greendale, Worcester. He joined the manufacturer of magnetic chucks and lifting equipment as a vice president five years ago. Previously he had been a factory manager at Norton Co.

Continuing with IBM, **Ronald Perzan** is now a senior engineer-manager for the firm's I/S Operations in Tucson, Arizona. . . . **Robert Sharkey** is a sales consultant for Corometrics Med. Systems in Wallingford, Conn. . . . **Gordon Sigman, Jr.** serves as director of tactical technology for the Defense Advanced Research Projects Agency in Arlington, Va.

1960

Secretary:
Paul W. Bayliss

Representative
John W. Biddle

John Haavisto received his PhD in theoretical physics from Boston University in May. He has accepted a position as senior engineer with Northrup Corp. in Norwood, Mass. . . . **Peter Lajoie** holds the post of national sales manager at Disc Instruments, Costa Mesa, Calif. The firm manufactures rotary and linear photoelectronic encoders.

1961

Secretary
John J. Gabarro

Andrew Beaudoin holds the position of strategic pricing analyst at Stromberg-Carlson in Longwood, Fla. He and his wife Carol have four children. . . . Presently, **Edward Desplaines** is with Combustion Engineering in Windsor, Conn. . . . **John Donnelly** holds the post of manager of manufacturing for GE's Instrument Products Operation in Lynn, Mass. He transferred to his new job from Shreveport, La. in August. . . . **Malcolm Low** was elected president of the Hitec Corporation of Westford, Mass. in July. He has a strong administrative, financial and engineering background. As one of the founders of Hitec, he has served the company in many capacities, including those of partner and treasurer.

Phil O'Reilly has been named planning and research director for energy and materials at Air Products and Chemicals, Inc., Allentown, Pa. He will coordinate planning and research in support of the company's worldwide procurement of energy and materials. In 1962 he joined the firm as an estimating engineer. Most recently he was corporate planning manager for the company's European operations in London. He says, "We have enjoyed our six years living in London, England, and now it is time to return to the homeland."

Frank Thomas, who is a writer, resides in Worcester. . . . Dr. **Charles Wilkes** has been appointed director of technology assessment and planning at the BFGoodrich research and development center, Brecksville, Ohio. In this newly created post, he will be responsible for worldwide technology assessment, technological forecasting, technical evaluation of potential acquisitions and R&D program evaluation and planning. He started work at BFG in 1964 as a research chemist in the R&D center, and was subsequently promoted to senior research chemist, section leader, senior research associate, and section manager. He received his PhD from Princeton and belongs to ACS, Sigma Xi, Tau Beta Xi, and Pi Delta Upsilon. . . . **George Yule, Jr.** serves as vice president at Crampton, Runke, & Miller, Inc., in Palo Alto, Calif.

1962

Secretary:
Harry T. Rapelje

Representative
Richard J. DiBuono

Bruce Simmon works as manager of strategy analysis for GE Information Services in Rockville, Maryland.

1963

Secretary:
Robert E. Maynard

Representative
Joseph J. Mielinski, Jr.

Walter Arell currently serves as a network product planner for IBM in Kingston, N.Y. . . . Continuing with Raytheon, **Joseph Beaulac** is presently a group leader in Wayland, Mass. . . . Previously a professor at Texas A & M, Dr. **Richard Dominguez** is now a professor of civil engineering at the University of Maine in Orono. . . . **Robert Mellor** was recently named manager of transmission and distribution work methods at New England Power. In 1963 he joined the firm in Providence as a training student. In 1970 he was transferred to Massachusetts Electric in Worcester as assistant to the division line superintendent and in 1972 was named assistant to the district superintendent in Hopedale. Prior to his latest appointment, he served as acting district superintendent in Attleboro. He is a registered professional engineer in Massachusetts.

1964

Secretary.
David T. Signori, Jr

Representative:
Barry J. Kadets

Continuing with Sylvania, **Dennis Balog** is now plant manager in Seymour, Indiana.

1965

Representative
Patrick T. Moran

Peter Bowes is in sales at Maximent Corp., Cincinnati, Ohio. . . . Still with du Pont, **John Lewis** is presently assistant plant manager at the Toledo (Ohio) works.

Jay Hammett was recently appointed regional sales manager for the southeastern, central, and midwestern regions of the United States and eastern Canada for EMC Controls, Inc. The firm manufactures microprocessor-based distributor control systems for the process industries.

Jay is a member of the Instrument Society of America and holds an MBA degree in international marketing and business from Babson College and an MS degree in mechanical and control engineering from Cornell. He also did graduate work at New Jersey Institute of Technology. Previously

"Du Pont offered me opportunity in terms of career development."

—David A. Dindinger BS, Chemical Engineering

"I interviewed companies on campus and off. About 10 big companies in all. And I felt Du Pont offered me the most opportunity in terms of career development, outstanding benefits and, best of all, the chance to do some traveling.

"I've been getting around a lot since I joined the Company in 1973 out of the University of Illinois-Chicago. As a quality assurance engineer in the Engineering Department, I inspected equipment vendors fabricated for Du Pont. I worked in 10 states in the U.S. and four states in Mexico. My job now is reviewing equipment specs and writing procedures for our inspectors. It's been a good learning and growing experience."

Dave's story is typical of many Chemical, Mechanical and Electrical Engineers who've chosen careers at Du Pont.

We place no limits on the progress our engineers can make. And we place no limits on the contributions they can make—to themselves, the Company or to society.

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The biggest beach ball . . .

The "Tuned Sphere" will never win a trans-oceanic race. It is round, an odd shape for a sea-going vessel, and beside a sleek, powerful, world-range yacht, would look like a giant, floating beach ball with a platform on top.

"But the tuned sphere shows definite promise," says Kenneth E. Mayo, '51, president of Tuned Sphere International, Inc., Nashua, N.H. Mayo should know. His firm has been developing the sphere for ten years, and is the licensee of worldwide rights. "After the expenditure of over $2 million of private funds, it is clear that the tuned sphere is an astonishingly effective, often subtle, technology," he says.

For example, the developers of the tuned sphere envision a number of practical advantages including: a 50 to 80 percent cost reduction in construction when compared with conventional hulls; storm sea motion reductions to the stability of tall buildings; structural integrity that exceeds any known floating vessel; reduced operating and maintenance costs; improvements in cargo, personnel and vessel safety; and unparalleled operating versatility.

During the past decade, Tuned Sphere International has become an experienced designer of spherical vessels. The firm's engineering group, working with chairmen of international oil companies and research and development staff members, constructors and underwriters, has sought out disadvantages or pitfalls anticipated in the design of tuned spheres.

Currently, formalized test data and computer studies performed under government contracts (The U.S. Department of Energy and the Ocean Thermal Energy Conversion project office), consistently show the tuned sphere superior to five other hull forms in a technical competitive selection. Seakeeping characteristics in 250,000 ton tuned spheres surpassed vessels of similar displacement in the form of a ship hull, semisubmersible, slender cylinder, discus or squat cylinder, and submarine. Pitch, roll, yaw, heave, sway and surge were calculated for waves up to eighty feet high.

The Energy Research and Development Administration (ERDA), now the U.S. Department of Energy, reports that "The tuned sphere ocean thermal energy conversion platform was found to exhibit excellent seakeeping response, as compared to the other candidate hull forms."

The National Bureau of Standards (NBS), upon completion of its own independent review by both in-house and private consulting firms, has provided grant funds to the Tuned Sphere Program. By recent count, more than 6,000 inventions were received by the NBS for grant consideration. Only forty-six were selected as having a likelihood of significant impact on energy cost or energy savings, and were recommended by NBS for funded support. The Tuned Sphere Program was one of only three to receive a grant in the first two years of that program.

Reporting its findings, the National Bureau of Standards says, "The utilization of super tankers offloading into large spherical offshore terminals appears to present the most economical solution to our petroleum import problems." Besides helping to solve petroleum import and storage problems, the platform-topped spheres could be utilized to capture offshore wind power and to transmit weather data. They could also be used as offshore power plants, and for ocean thermal energy conversion, the NBS report concluded.

Marine engineers with strong traditional ties, have tagged the tuned sphere, "A funny looking ship." Actually, the spherical hull is the only hull shape wherein the skin is always in compression due to hydrostatic forces. Hydrostatically-induced roll, a major cause of vessel motion, is virtually eliminated. These properties would make the tuned sphere an ideal, economical, concrete vessel.

Because the sphere is identical in all directions, roll and pitch are identical, and because it has the least possible skin area of any volume, frictional effects are minimized. Heave control is excellent and is achieved by reducing the water plane area to the desired level. This patented structure is effected by penetrating the hull vertically with an open well that allows the average water depth at the bottom of a spherical vessel to be expressed as a calm, flat surface within. The vessel cannot be overturned.

The tuned sphere could have a variety of non-petroleum applications. For example, deep ocean mining for minerals can be conducted more economically from a tuned sphere than from any other vessel.

Use as a pipe-laying barge is promising, since the sphere has a greater payload per structure than any other vessel, and it can operate in any weather without interruption.

U.S.-built factories to be floated to underdeveloped nations is another exciting possibility. Offshore nuclear reactors could be designed on a tuned sphere platform with great safety and cost advantage. Tuned spheres could also be used to recover lost submarines and other salvage. They can be moored, towed, or self-propelled in any direction.

Dr. Buckminster Fuller has pointed out that advantages of scale are achieved more dramatically in spheres than in any other structural form. Hence, floating cities on tuned spheres over 600-feet in diameter have been proposed in accordance with Fuller's visions of the future.

Presently, a 150-foot diameter steel drill ball, outfitted for drilling in the North Sea, would cost $20 million. A 380-foot-diameter concrete deepwater terminal, outfitted and operational with up to twenty miles of undersea pipeline, would cost about $100 million.

The drill ball will cost $5 million a year less to operate than a large semisubmersible under comparable conditions, and the terminal with a throughput of one million barrels per day, can pay out its original investment in less than six months, according to Mayo.

Mayo, who is president of Energy Systems Corporation, as well as being president of Tuned Sphere International, Inc., is a registered professional engineer with twenty-seven years of engineering experience. He spent five years designing nuclear reactor installations, hydraulic systems, and laboratory facilities, while with Chas. T. Main, Inc. of Boston.

In 1972, Mayo participated in the founding of Energy Systems Corporation to which he was appointed president and elected as chairman. In the interim he assisted in the founding of a subsidiary corporation, Tuned Sphere International, Inc., in which he serves in the same capacities.

he was marketing manager of Tesdata's Physical Management Division, and had been with Foxboro Company and Exxon Research and Engineering.

A co-author of "Advanced Computer Control of Ethlene Plants Pays Off" published in *Chemical Engineering,* he is also a registered professional engineer in New Jersey and Massachusetts.

George Humphrey is now manager of software design and development for Systems Development Corp. in Lexington, Mass. . . . **James Mills** holds the post of production manager at American Hoechst Corp. in Manchester, N.H. . . . **Richard Murphy** works as a quantity engineer at Perini Power Constructors in Seabrook, N.H.

1966

Secretary: Gary Dyckman

Representative: Dr Donald H Foley

►*Married:* **David Jorczak** and Miss Elizabeth J. Komorek on August 12, 1978 in Adams, Massachusetts. The bride, a teacher at Lanesborough Elementary School, has her bachelor's and master's degree in education from North Adams State College. The groom serves as an analytical design engineer at James Hunter Machine Co., North Adams.

Robert Dolan is employed as district sale engineer for GTE Sylvania in Buffalo, N.Y. . . . **Dan Maguire** has been promoted to manager of special projects at Turner Construction in Chicago. Earlier, while still in the Worcester area, he had served as a Fund Board member. . . . **Dennis Murphy** has earned his doctorate in behavioral science from Nova University in Fort Lauderdale, Fla. Dr. Murphy, who attended Nova on a fellowship grant, is presently involved in a research project at Florida International University. He has his MS in physics from Northeastern University. For five years he was an instructor at Wentworth Institute in Boston. Accomplished in music, he holds degrees from the University of Miami and Broward Community College. He has performed with Tamarac Symphony Orchestra, which presented his original preludium. Currently he is writing an opera.

Kyle Ondricek of Springfield, Mass. has been appointed business development manager for National Blank Book Co. He will be responsible for development of new products and markets, with heavy emphasis on filing and related items. Formerly he had been a new products manager at B.F. Perkins Co. and held several market planning posts at Exxon Corp. He has a master's degree from Northwestern University. His experience includes the areas of paper conversion and printing equipment. . . . Dr. **Charles Roberts, Jr.** is manager of thermal systems for Packer Engineering Associates, Inc. in Naperville, Ill. . . . **Laurence Shea** is head of the site engineering office at Nine Mile Pt. 2 Nuclear Power Station for Stone & Webster Engineering, Lycoming, N.Y.

1967

Secretary: John L. Kilguss

Representative: Raymond C Rogers

John Rahaim was recently named sales support engineer at Simplex Time Recorder Co. in Gardner, Mass. He joined the company after twelve years as supervisor of customer service at United Illuminating Co., New Haven, Conn. . . . **Sudhir Shah** is the newly elected vice president of Purcell Associates, an engineering-architectural-planning firm, where he has been employed since 1967. He is a registered professional engineer, and is located in Glastonbury, Conn. He has a wife, Jyotsna, and three children. . . . **John Soulliere** is manager of industry and application sales operations at Foxboro Co.

1968

Secretary: Charles A Griffin

Representative: William J Rasku

►*Married:* **Henry W. Honeyman** 3rd, SIM, to Miss Mary-Frances White on October 14, 1978 in Providence, Rhode Island. The bride graduated from the College of Our Lady of the Elms and received her master's degree from Providence College. She is an early childhood specialist for the Providence School Department. The groom is employed by United Engineers in Springfield, Mass.

Peter Anderson is a member of the technical staff at Bell Telephone Laboratories in Holmdel, N.J.

After four years of work in Belgium and France for Monsanto in a manufacturing-technical position, **Ken Battle** has transferred to the firm's international engineering department located in London. He is now lead process engineer on a major project to be built in Antwerp, Belgium. His new post is concerned with design, which will be a significant change of viewpoint from his previous, plant-based work. He has done some recruiting for WPI. He says, "An American girl living in Antwerp visited me to learn about WPI and Worcester. She now says WPI is her first choice of schools." This year Ken won a class championship in the Belgian National Production Car Series. With the same car, a Vauxhall Firenza, he placed second in class in the European Championship. He intends to continue racing in England with a new car.

Ken Blaisdell, Jr. currently resides in Thetford, Vt. . . . **Jeffrey Decker** is vice president of Ackerman & Co. in Baltimore, Md. . . . **Berton Gunter,** who received his MS in statistics from the University of Wisconsin this year, is presently a statistical engineer at Corning Glass Works, Corning, N.Y. . . . **Vincent Kubert,** SIM, works as a project engineer at Harris Corp. in Dallas, Texas. . . . **Charles Rinaldi** is now specializing in the construction of custom designed homes in the north central Connecticut

area. He is a civil engineer and a licensed real estate broker. He has his MBA from Western New England College, and is a member of the Greater Enfield Chamber of Commerce. . . . **Fred White** serves as a development engineer at Ingersoll-Rand in Painted Post, N.Y.

1969

Secretary
James P. Atkinson

Representative:
Michael W. Noga

▶*Married:* **Andrew J. Heman** and Fran Beaver of Tarrytown, New York on September 24, 1978. The groom is currently a staff engineer for Union Carbide Corp., Agricultural Products Division, in Jacksonville, Fla.

William Chudzik is a mechanical designer at Pratt & Whitney Aircraft in East Hartford, Conn. He has his master's degree in environmental engineering from UMass. . . . **Neil Glickstein** holds the position of manager of an aquaculture project at NUVA, Inc. in Gloucester, Mass. He says, "This is a federally funded vocational training project in marine techniques and aquaculture." . . . **Joel Greene** is now located with the law offices of Warren C. Lane, Jr. at 1500 Worcester Plaza, 446 Main St., in Worcester. . . . **David G. Healey,** assistant chief engineer of Tighe & Bond, Easthampton, has been appointed to the Holyoke (Mass.) Advisory Board of the Third National Bank. A registered professional engineer in Connecticut, Massachusetts, Rhode Island, and New York, he is also a member of the New England Water Pollution Control Association and American Water Works Association. He belongs to ASME's Solid Waste Division.

Dennis Murphy, president of Professional Support & Development Corp., serves as a consultant to the U.S. Air Force. He is located in Boulder, Colo. . . . **John Poblocki** has been appointed as an industrial development specialist by the Blackstone Valley Chamber of Commerce, Pawtucket, R.I., following a year-long nationwide search conducted by the Chamber. Previously, he was director of the department of planning and development in Woonsocket. In his new post, he will work with the Second Pawtucket Area Industrial Foundation, which is looking for new industrial sites to develop. Eventually, he will assume the total responsibility for industrial development activities in the area. He has a master's in community planning from URI, a certificate in site planning from the University of Wisconsin and has studied real estate business law at Bryant College. In Woonsocket he had the responsibility for the administration of the department of planning and development, which includes planning, development, minimum housing and code inspections divisions, which employ nineteen persons. He was involved in the planning and implementation of the city's economic development programs and activities, including the development of a 130-acre industrial park.

Daniel Pond is a senior engineer at Martin-Marietta in Denver, Colo. . . . **Mark Simpson** is a senior engineer at Air Products & Chemicals in Allentown, Pa.

1970

Secretary
F. David Ploss, III

Representative:
Domenic J. Forcella, Jr

▶*Married:* **Richard W. Jarowski** and Miss Denise A. Bellofatto in Revere, Massachusetts on August 12, 1978. Mrs. Jarowski graduated from Revere High School and is a project clerk for Stone & Webster Engineering Corp. Her husband is a mechanical engineer at Stone & Webster.

Gerry Blodgett has rejoined his father's (Norman Blodgett, '44) law firm at 43 Highland St. in Worcester, where he will practice patent and trademark law. He is a former technical adviser to the U.S. Court of Customs and Patent Appeals in Washington, D.C. He received his law degree from Suffolk University, cum laude. Currently, he is working toward a degree of master of laws in patent law and trade regulation from George Washington University Law School.

David Brown has been appointed manager of Rodney Hunt Company's water control equipment engineering division. He had served as chief product engineer at the Orange (Mass.) firm since April of 1977. He will be responsible for product application engineering and product development for the company's sluice gates and related products used in wastewater and water treatment plants. He has a graduate degree from Wentworth Institute and is also doing graduate work at WPI.

Garrett Graham holds the position of manager of industrial product service at Polaroid in Waltham, Mass. He and his wife Karen have two children, and live in Needham. . . . Formerly with the Trane Co., **Bill Hillner** is now employed at Daystar Corp., the solar energy division of Exxon, Inc. . . . **James Lockwood** is marketing manager for akylamines at Air Products and Chemicals in Allentown, Pa. He has an MBA degree in chemical marketing from Fairleigh Dickinson University.

Under coxswain **Dave Ploss,** the U.S. Intercollegiate National Championship four-man shell racing team from WPI gave a demonstration at the Tri-Community Chamber of Commerce clambake held in August at the Hamilton Rod & Gun Club in Sturbridge, Mass. . . . **Steven Udell** is presently employed by Nippon International Container Services of Japan as regional manager of the east coast of the United States, midwest, and eastern Canada. He has recently assumed the responsibility for establishing and developing the leasing market for "intermodal" containers throughout South America.

1971

Secretary
Vincent T. Pace

▶*Married:* **Anthony R. Weston** and Miss Paula J. Taylor on September 3, 1978 in Providence, Rhode Island. The bride is a graduate of Our Lady of the Elms College, and works at Gilmore-Kramer Co. The groom is chief engineer at Miriam Hospital.

Philip Allfrey III ia a loss prevention consultant for Liberty Mutual in Andover, Mass. . . . **Cornelius "Neil" Collins** has received his master's degree in management science and engineering from WPI. . . . **J. Lee Cristy** serves as a senior industrial engineer at Fairchild Industries in Germantown, Md. . . . Dr. **Paul Furcinitti** is a research associate at Oak Ridge National Laboratory in the Health & Safety Research Division, Oak Ridge, Tenn. . . . **Michael Grady** works as a software engineer at Honeywell Information Systems in Cambridge, Mass. . . . **Wayne Holmes** is now a fire protection specialist for Northeast Utilities of Hartford. His section is responsible for fire prevention programs for all company facilities, including nuclear power plants. . . . **Gerald Kersus** is a senior consultant at Booz Allen & Hamilton in Tinton Falls, N.J.

John Pratt and his brother, **Joseph,** '75 are owners and operators of an earthmoving firm in Plymouth, Conn. The company engages in site preparation, utility installation, and the construction of rural roads. The brothers can also repair engines and transmissions, weld, customize truck bodies, lay bricks, build cabinets, restore antique furniture, cut hair, fix computers, grow food crops, and do chemical engineering. They have a $100,000 a year contracting business. The Pratt Bros. inventory includes two backhoe-loaders, two bulldozers, a wheeled loader, three dump trucks, a tagalong trailer, and several utility trucks. They have one permanent, full-time employee, but hire extra help as needed.

Michael Winn, who joined the Old Saybrook (Conn.) Manufacturing Division of R. R. Donnelley and Sons Company last year, has been promoted to manufacturing supervisor in the preliminary department. Earlier he was an industrial engineer. He has a BS in management engineering.

1972

Secretary
John A. Woodward

Representative:
Lesley E. Small Zorabedian

▶*Married:* **James B. Anderson** and Miss Carol P. Anderson in Mystic Seaport, Mystic, Connecticut on September 9, 1978. The bride graduated from Concord College and received her doctorate in philosophy from the University of Tennessee. She is an assistant professor of chemistry at the University of Connecticut, and is on assign-

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ment with the Coast Guard Research and Development Center at Avery Point. Her husband, a research assistant in crystallography at the Material Science Institute at Storrs, is a PhD candidate at UConn.

James Altoonian, a member of the trust investment department staff, has been elevated to bank officer status as an assistant trust officer at Detroit Bank & Trust. In 1974 he joined the bank as an investment analyst in the management science department. Since then, he has held increasingly responsible posts in the personal trust, trading and trust investment departments. He has his MBA from the Wharton School of Finance at the University of Pennsylvania.

Frances Dupont, MNS, a high school mathematics teacher and department chairman in Millbury, Mass., has been selected as the town's candidate for the national teacher of the year award. She graduated from Worcester State College and has taught in Millbury since 1969. She has been active as the adviser of the Honor Society. Married, she is the mother of five children.

Dr. **Terry Fuller** holds the position of biomedical director of laser surgery at Sinai Hospital of Detroit. He is also with Medlase as president of Photon Sources and director of the Medical Lasers Division. . . . **Thomas Staehr** is a piping engineer for Townsend & Bottom in Ann Arbor, Mich.

1973

Secretary: Jay J. Schnitzer

Representative: Robert R. Wood

▶*Married:* **Michael Divis** and Miss Mary B. Tolland on August 19, 1978 in Natick, Massachusetts. Mrs. Divis attended UMass and Framingham State College. The bridegroom received his master's degree from the University of Montana. . . . **Alan S. Edwards** and Jayne E. Pendergast on September 16, 1978 in Leeds, Massachusetts. The bride, a computer programmer at Monarch Life Insurance Co., graduated from North Adams State College. She is enrolled in the MBA program at Western New England College. Her husband, who graduated from AIC, is with Gerber Scientific Instruments in South Windsor, Conn., where he serves as a writer-photographer.

▶*Married:* **Philip C. Mazzie** and Janet Kurtyka in Indian Orchard, Massachusetts on September 9, 1978. Mrs. Mazzie graduated from Springfield Technical Community College, and is employed by Prudential Insurance Co. Her husband is employed by Atlantic Tool and Machine Co. . . . **Richard C. Whipple** and Christine E. Morin on August 5, 1978 in Massapequa, New York. Mrs. Whipple is an alumna of the State University at Cortland, and was director of recreational therapy at the Convalescent Center in Springfield, Vt. The groom is with Combustion Engineering in Windsor, Conn.

▶*Born:* to Mr. and Mrs. **Daniel L. Eide** a daughter, Carrie Campbell, on October 7, 1978. Dan is plant manager at Hammond Plastics Midwest, Inc. in Owensboro, Ky. . . . to Mr. and Mrs. **George P. Gosselin** a second son, Kevin Patrick on May 27, 1978. Currently, Gosselin is employed as a performance analyst in software development at Digital Equipment Corp. in Marlboro, Mass. . . . to Mr. and Mrs. **Robert Zawada** their first child Kristen Michelle on October 14, 1978. Bob is an actuary at William M. Mercer, Inc. in Boston. Presently the Zawadas are building their first house in Ashland, Mass.

Thomas Beckman is a scheduling and planning engineer at Gilbert Associates, Inc. in Reading, Pa. . . . **David Brown** continues with Westinghouse where he is a mechanical design advanced engineer in the Combustion Turbine Division near Philadelphia. His present job assignments include blade and vane design, rotor dynamics analysis, and bearings. Recently he received an MSME degree and a professional engineer's license. He is currently enrolled in an evening MBA program. The Browns have a son, James, 1, and live in an old, quite large house in Swarthmore, Pa. . . . **William Elliott** is taking an educational leave of absence from GE. He is studying for his MBA degree at Columbia University in New York City. Formerly, he was a field engineer for GE in Salem, Virginia.

Dr. **Mark Erasmus** is serving at Public Health Hospital in Gallup, N.M. He and his wife Dianne have two children. . . . **Mervyn Hamer** is head of R & D at Gamma Diagnostic Labs in Attleboro Falls, Mass. . . . **Glen Johnson** has completed requirements for his PhD in mechanical engineering at Vanderbilt University. Currently he is serving as assistant professor at Vanderbilt. . . . **Darwin Kovacs** works as a computer systems analyst at Northeast Utilities, Hartford, Conn. . . . **Robert Leach** is production engineer at GE in Selkirk, N.Y. . . . **Phil Medeiros** holds the post of project manager at Riley Stoker Corp. in Worcester.

Maryann Bagdis Pace is employed as a project manager at National CSS in Wilton, Conn. . . . **Gregory Pederson** of Wappingers Falls, N.Y. recently accepted a post at Texaco's Beacon Research Laboratories. He is associate mechanical engineer in the automotive lubricants section. . . . **Michael Zack** is a consultant at Touche Ross & Co. in Chicago.

1974

Secretary James F. Rubino

Representative. David G. Lapre

▶*Married:* **Robert P. Cikatz** on October 21, 1978 in Hartford, Connecticut. Mrs. Cikatz, a research assistant at Charles Pfizer, Inc. in Groton, graduated from St. Joseph College, West Hartford with a BS in chemistry. The bridegroom is with United Nuclear Corp. . . . **Bruce A. Webster** to Miss Paula J. Schmitter in Longmeadow, Massachusetts on August 12, 1978. The bride graduated from Westfield State College and is employed as a teacher-counselor in the 3R program with the Cooperative Special Services Center in East Granby, Conn. Her husband is an electronics engineer for ARP Instruments of Lexington, Mass.

Steven Alviti holds the post of vice president of Belair Tool Co. in Warwick, R.I. . . . **Dean Anderson** works as a construction superintendent for the BSP division of Envirotech Corp., Belmont, Calif. He resides in Duluth, Minnesota. . . . **Robert Becker** is a staff programmer at Bedford Computer in Bedford, Mass. . . . **William Block** works as a systems analyst at the Research Corporation in Wethersfield, Conn. . . . **James Edwards,** who has his MS from UConn, is currently a grad student at the University of Delaware in Newark.

Gary Gastiger is a construction engineer with Stone & Webster in Mineral, Va. . . . **Alan Judd** has been promoted to manufacturing engineer for GE in Hickory, N.C. . . . **Jeff Lindberg** is a manufacturing engineer at Norton Co., Worcester. . . . **Robert Lindberg, Jr.** serves as a research physicist at the Naval Research Laboratory in Washington, D.C. . . . **Mary Lynch (Downing) Voshell** is now a contract engineer at Brown & Root, Inc. in Houston, Texas.

1975

Secretary James D. Aceto, Jr.

Representative. Frederick J. Cordella

▶*Married:* **Robert J. Baccaro** and Miss Lorene Erb in Dalton, Massachusetts on August 12, 1978. A biologist, the bride is employed by the City of Pittsfield. She graduated from the College of Our Lady of the Elms. Her husband is a project engineer for Pfizer Corporation in Adams, Mass. . . . **Kenneth M. Dunn** and Susan E. Place on August 26, 1978 in Taunton, Massachusetts. The bride graduated from the Fall River Diploma School of Nursing and is a registered nurse. Her husband works for Betz Process Chemicals of the Woodlands, Texas. . . . **Robert C. Lerner** to Miss Diane L. Turner on September 30, 1978 in Rochester, New York. Mrs. Lerner attended Genesee Community College. Both the

bride and the groom are employed by Xerox Corp. The bridegroom has also attended the University of Rochester.

►*Married:* **Paul S. Loomis** and Theresa E. Klein in Woodbury Heights, New Jersey on September 9, 1978. Mrs. Loomis graduated from Glassboro State College and Gloucester County (N.J.) College with a degree in nursing. She is on the staff of Memorial Hospital in Carbondale. Her husband is a process engineer with Tuck Industries, Carbondale, Ill. . . . **Jeffrey H. Moody** and Miss Donna R. Geyer on September 16, 1978 in Tariffville, Connecticut. Mrs. Moody, who graduated from UConn, teaches at the Living and Learning Center in West Hartford. The groom is with the Torrington Company. . . . **Robert P. Morin** and Deborah J. Coates on September 23, 1978 in Dublin, New Hampshire. The bride, a physical therapist, graduated from Quinnipiac College, Hamden, Conn. . . . **Mark R. Swain** to Diane J. Nakashian on August 19, 1978 in Wayland, Massachusetts. Mrs. Swain, a student at the Worcester Craft Center, attended the Worcester Art Museum School and is employed by Sears, Roebuck & Co. The groom serves as a senior systems programmer for the Boston Systems Office.

►*Born:* to Mr. and Mrs. **David B. Fowler** a daughter Heather Lyndsay on August 25, 1978. . . . to Mr. and Mrs. **Kimberley R. Mains** a son Joshua Kyle on August 23, 1978. Mains is a software engineer at Digital Equipment Corp. in Maynard, Mass.

John Batt holds the post of region technical supervisor of specialty gases at Union Carbide's Linde Division in South Plainfield, N.J. . . . **Martin Burgwinkle, Jr.** is a cost engineer at Arthur G. McKee in Cleveland, Ohio. . . . **Denise Gorski,** former research coordinator in the university relations office at WPI, is now an associate industrial engineer for IBM in Poughkeepsie, N.Y. . . . **Stephen Hernon** works for Lambda Tech, Inc. in Los Angeles, Calif. . . . **Michael Irwin** is a product development engineer at Procter & Gamble Co. in Cincinnati, Ohio.

Clifford Nelson, SIM, has been named plant superintendent for Rathbone Corporation, Palmer, Mass. He will be responsible for all manufacturing and tooling operations, including the development of new shapes and processes. Earlier, he had been product and plant manager for New England High Carbon Wire in Millbury. He has had twenty-five years of experience in the wire industry. Rathbone Corporation is a leading producer of special cold rolled and drawn precision profile shapes and pinion rods in steels, stainless steels, and copper alloys. It is a wholly-owned subsidiary of Handy & Harman. . . . **Paul O'Brien** works as assistant manager at Anchor Wire Rope in Boston. . . . 1/Lt. **Barrett Pett,** U.S. Army, has been assigned to the 3rd Air Defense Artillery at Fort Campbell, Ky.

Penn Pixley is a project engineer at the Celotex Corp. in Quincy, Ill. . . . **Claudio Polselli** is with the Army Corps of Engineers in Waltham, Mass. . . . **Paul Rojko** serves as a mechanical engineer with the U.S. Air Force. . . . **Robert Simon** has taken a new position as supervisor of the pitch forming department at Allied Chemical Corp., Semet-Solvay Division, in Detroit, Michigan.

1976

Secretary
Paula E. Stratouly

Representative:
Lynne M. Buckley

►*Married:* **Fred S. Baker III** and Miss Carol A. Niquette on September 16, 1978 in South Hadley, Massachusetts. Mrs. Baker attended Westfield State College. Her husband serves as a product development engineer for Ludlow Papers and Packaging in Holyoke, Mass. . . . **Daniel A. Garfi** and Suzanne McGalliard on October 21, 1978 in Morristown, New Jersey. Mrs. Garfi graduated from Montclair State College and is presently employed as a systems analyst at INSCO Systems Corp. in Neptune, N.J. Recently the groom accepted a position as a technical representative for Spiridellis & Associates, a New York City-based data processing consulting firm.

►*Married:* **Paul J. Grogan** and Miss Donna M. Roy in Worcester on June 2, 1978. Mrs. Grogan graduated from Holy Cross. Her husband, who has a master's degree from Carnegie-Mellon University, is with the Argonne (Ill.) National Laboratory. . . . **Roger L. Rowe** to Catherine Grondin in Orange, Massachusetts on August 12, 1978. The bride received as associate's degree in graphic design from Greenfield Community College. The bridegroom is an applications engineer for S.P.S. Technologies in Houston, Texas.

Douglas Adams was recently named an associate of the Society of Actuaries. To qualify, he successfully completed five examinations, administered by the Society, on mathematics, probability and statistics, risk theory, compound interest, numerical analysis, and life contingencies. Actuaries are mathematicians who study and evaluate the insurance-related risks posed by uncertain future events and the financial impact these events involve. Adams is an

actuarial assistant with the Massachusetts Mutual Life Insurance Company in Springfield.

Gary Anderson holds the post of vice president of Anderson Artesian Well Co. in Worcester. . . . **Mark Antonio,** who received his MS in chemistry from Fairleigh Dickinson University in June, is currently a graduate teaching assistant pursuing his PhD in chemistry at Michigan State University in East Lansing. Formerly, he was with Warner-Lambert Co. . . . **Al Briggs,** still working as a maintenance engineer for du Pont in LaPlace, Louisiana, has begun working toward his MBA degree part time at the University of New Orleans. He writes: "After two years of retirement and four months of training, I entered and completed my first marathon run in 3:11:12. I had a 2:55 pace going for 22 miles, but the 85 degree heat took its toll. I still hope to qualify for Boston in 1979."

Jeremy Brown and **James Buss,** members of the actuarial department at State Mutual Life Assurance Company, Worcester, were recently designated as associates of the Society of Actuaries. . . . **William Casey, Jr.,** is a systems management programmer at Coghlin Electric Co., Worcester. . . . **Mark Deutsch** is currently studying for his MBA at Wharton. . . . In July, **Ed Griffin** joined Spectral Dynamics Corp., DYMAC, in San Diego as a field engineer. He monitors and analyzes vibration and noise in rotating machines. . . . **John Griffiths** is a transit project planner for the Capitol Region Council of Governments, Hartford, Conn.

Jim Hall is now a staff engineer in the synthetics department at Procter & Gamble in Quincy, Mass. He is in charge of all new formulations' changes and construction. . . . **John Kowalchuck,** who has his MSEE in communications from WPI, is a member of the technical staff at Mitre Corp. in Bedford, Mass. . . . **Joseph Lucchesi** took his first vows in the Passionist Community of the Province of St. Paul of the Cross in West Hartford, Conn. on August 13th. He attended LaSalle University. . . . Currently **John Mangiagli** is a grad student in the ME department at WPI. . . . **Joseph Martowski** works as a sales engineer at GE in Pittsfield, Mass. . . . **Tom McAloon** is a design review engineer for the New Hampshire Water Supply and pollution control commission in Concord, N.H.

Robert Milk, Jr. is a system engineer at Electronic Data System, Dallas, Texas. . . . **William Mullen** is a hydraulic engineer with the Army Corps of Engineers in Waltham, Mass. . . . Continuing with Exxon, **Paula Stratouly** is presently an industrial sales representative for the company in Pittsburgh. . . . **Joseph Winston** serves as systems engineer at IBM in Providence, R.I.

1977

Secretary: Judith E. Scherben

Representative. Christopher D. Baker

▶*Married:* **Paul D. Cadorette** and Joanne C. Racine in Manville, Rhode Island on October 14, 1978. Mrs. Cadorette graduated from Lincoln High School. . . . **Stephen J. LeBlanc** and Lillian M. Prucnal on August 26, 1978 in Hatfield, Massachusetts. The bride graduated from Regis College. She is church organist and choir director at St. Mathias Church in Marlboro. Her husband serves as an electronics design engineer at Analogic in Wakefield, Mass. . . . **Edward J. Smith** and Marie C. Reymore of Swedesboro, New Jersey on August 19, 1978. Mrs. Smith graduated from LeMoyne College in Syracuse, N.Y. The groom is a corporate engineer with Beecham Products of Pittsburgh, Pa. Formerly, he was a manufacturing maintenance supervisor at Bristol Labs in Syracuse.

Allan Clarke is an R & D engineer at American Can Corp., Neenah, Wisconsin. . . . **Stephen Coleman** has been named as an associate of the Society of Actuaries. He is with State Mutual Life Assurance Company in Worcester, where he started working a year ago in the pension actuarial department as an actuarial assistant. . . . **Jeffrey Firestone** serves as a senior manufacturing engineer at Rocketdyne (Rockwell, International), Canoga Park, Calif. . . . **John Foley, Jr.** works as a mechanical design engineer at Pratt & Whitney Aircraft in East Hartford, Conn. He and his wife Deborah reside in Glastonbury, Conn.

Jim Gado has taken a position with W.R. Grace Company in Lexington, Mass. as a process chemist. He resides in Somerville, Mass. . . . **Linda Weiss Kleiman** is a civil engineer I in the Public Works Department, engineering division, in the City of Charlotte, N.C. . . . **Jim Lunney** has been transferred to the Portsmouth location of General Electric Company. He has taken up jogging as a daily activity. . . . **Richard Mazmanian** serves as a highway engineer II for the Maryland State Highway Administration in Baltimore.

John Nowosacki is a communications system design engineer at GTE Sylvania in Needham Heights, Mass. He also is a custom loudspeaker designer for Lebiced Systems in Dedham. Currently, he is in the master's program in computer science at BU. . . . **Andrew Sayles** is site engineer at Walsh Construction Company in Lycoming, N.Y. . . . **Herbert Schiller** works as a quality control engineer at Foremost Mfg. Co., Union, N.J. . . . **William Shoop** is now a manufacturing management trainee at GE in Burlington, Vt. . . . **Igor Shulyak** is employed by Chrysler Corp. in Detroit. . . . **Lance Sunderlin** now works for Anaconda Company in Sycamore, Ill. . . . **Gordon Walton** is a design engineer at Texas Instruments in Houston. He received his MSEE from Northwestern University in September.

1978

Secretary Cindy Grynick

▶*Married:* **Mark S. Belmonte** and **Linda J. Courville** on June 10, 1978 in Worcester. Mrs. Belmonte is with Westinghouse in Monroeville, Pa. Her husband is employed at Bettis Atomic Laboratories, West Mifflin, Pa. . . . **Mark S. Etre** to Miss Ann L. Masiunas in Warehouse Point, Connecticut, on June 17, 1978. The bride attends the University of Connecticut. The bridegroom is with Pratt & Whitney Division of United Technologies, in East Hartford, Conn.

▶*Married:* **Pierre A. Fleurant** and **Catherine A. Kerley** in New Haven, Connecticut on September 23, 1978. Mrs. Fleurant also attended Norwalk State Technical College. She is employed at the Dandelion Green Restaurant in Burlington, Mass. The groom is an assistant electrical engineer in the missile systems division of the Raytheon Co. in Bedford. . . . **John H. Moulton** to Miss Robin Smith in Elmira, New York, on August 12, 1978. The bride graduated from Garland Junior College and attended Boston University. Her husband works for Robert Bosch Corp. in Stuttgart, West Germany.

Bernice Albetski is a programmer for American Can in Greenwich, Conn. . . . **Nels Anderson** recently joined Honeywell's Minicomputer Systems and Terminals Operation in Billerica, Mass. He is an associate engineer in the terminal engineering department. He belongs to Eta Kappa Nu and the Wellesley Amateur Radio Society. . . . **James Burgarella** is an associate engineer in digital electronics at Raytheon in Wayland, Mass. . . . **Michael Castonguay** works as a nuclear engineer at Yankee Atomic Electric Co., Westboro, Mass. . . . **Brian Clang** and **Lawrence Hindle** jointly won a $250 fourth prize in the 1978 student engineering design comptetition of the James F. Lincoln Arc Welding Foundation, Cleveland. Their project was the design of a cable-stayed H-frame structure, while they were undergraduates. WPI students won four out of thirteen national awards in the structural division of the competition.

Andrew Corman has joined Turner Construction Co., Boston, as a field engineer. . . . **Gerard DelPriore** is employed as a custom products engineer for the GenRad Company in Concord, Mass. . . . **Raymond Dunn** has been accepted for graduate work in medicine at Albany Medical College. . . . **Paul Fearnside** has joined VOP Corp., Des Plaines, Ill., as a process engineer. . . . **David Fisher** is in the sales and commercial air conditioning division at Trane Co. in Lacrosse, Wis. . . . **Robert Fritsch** is studying for his MS in electrical engineering at WPI. . . . **Carl Gerstle** designs new computer products at Digital Equipment Corp. in Maynard, Mass.

Karen Hayes is a data processing engineer at J.E. Sirrine Co. in Greenville, S.C. . . . **David Jacqmin** is a teaching fellow at Harvard University. . . . **Kenneth Kummins** has accepted a post as nuclear plant engineer trainee at Westinghouse's Bettis Atomic Power Lab., Naval Reactors Facility in Idaho Falls, Idaho. . . . **Scott Lentz** is a field engineer with control systems at Foxboro Co. in Wrentham, Mass. . . . **Francis Luttazi** has been employed by Camp Dresser & McKee, Boston, as a structural engineer. . . . **Michael Neece** recently joined Honeywell's minicomputer systems and terminals operation in Brighton, Mass. He is a participant in the company's manufacturing management program, a three-year program. He will also attend in-house technical training courses and will pursue two master's degrees in manufacturing engineering and in business administration from BU. . . . **Kevin O'Donnell** has been accepted for graduate study in optics at the University of Rochester.

Bruce Olsen is a graduate student in mechanical engineering at MIT. . . . **Thomas Roberts** works as a field service engineer for Babcock & Wilcox in the Fossil Power Division, Barberton, Ohio. . . . **Barry Rogers** is with Austin Co., mining and metals division, in Cleveland, Ohio. He is concerned with structural design of heavy industrial buildings. . . . **Andrew Tannenbaum** has taken employment with Western Electric Co., Whippany, N.J., where he is an information systems designer and computer scientist. . . . **Patty Tracy** has joined Kemper Insurance Co., North Quincy, Mass., where she is working as a fire safety engineer. She does inspection and failure analysis. . . . **Eduardo Valcarce** serves as a development engineer at Monsanto in Springfield, Mass.

Edward Viner works as a product design engineer at Farrel in Ansonia, Conn. . . . **Michael Walker** is with Turner Construction in Boston. He is involved with construction management. . . . **John Zimmer** is a mechanical design engineer at Bettis Atomic Power Laboratory. He is concerned with the designing and manufacturing of fueling equipment for nuclear-powered ships. He resides in Monroeville, Pa.

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SIGNATURE AND TITLE OF EDITOR, PUBLISHER, BUSINESS MANAGER, OR OWNER
H Russell Kay Editor

12. FOR COMPLETION BY PUBLISHERS MAILING AT THE REGULAR RATES *(Section 132.121, Postal Service Manual)*

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In accordance with the provisions of this statute, I hereby request permission to mail the publication named in Item 1 at the phased postage rates presently authorized by 39 U. S. C. 3626.

SIGNATURE AND TITLE OF EDITOR, PUBLISHER, BUSINESS MANAGER, OR OWNER

3rd Annual Alumni Basketball Night

February 3, 1978

WPI vs. Suffolk

Varsity 8:00 p.m.

JV 6:00 p.m.

Game, Reception, Raffle, Door prizes for the kids!

Bring the whole family and cheer on the "New Look" Engineers.

Victor Siegfried, a former assistant professor of electrical engineering at WPI, died on June 8, 1978 in Stanford University Hospital in California, following a short illness.

He received his BA from Stanford in 1930 and his electrical engineering degree in 1932 after two years as a fellow at the Ryan High Voltage Laboratory at Stanford. He also attended Harvard University.

Prof. Siegfried was an instructor of electrical engineering at WPI from 1933 to 1937, and was named an assistant professor in 1937. He remained at WPI until 1944.

Later, he did research for several firms before joining Lockheed Missiles and Space Co. in 1963. A specialist in high voltage cables, he was an electrical researcher and safety engineer before his retirement in 1975.

Mr. Siegfried, a native of Seattle, was a past president and fellow of the Institute of Electrical and Electronics Engineers, and also belonged to Theta Chi, Eta Kappa Nu, and the First Church of Christ, Scientist.

He had received the IEEE Fellow Award for his contributions to the field of dielectrics and cable insulation and had chaired the 1974 IEEE Symposium on Electromagnetic Compatibility.

James J. Herrion, former head basketball coach at WPI, died in Worcester on August 9, 1978. He was 51.

Born in Yonkers, N.Y. on Sept. 21, 1926, he lived most of his life there. He received his BA from Iona College in 1950, and subsequently did graduate work at New York University, Fordham University, and Worcester State College.

He coached varsity basketball from 1952 to 1964 at Sacred Heart High School in Yonkers, where his teams notched 157 wins against 67 losses. He taught at Sacred Heart for fourteen years, and at Pearl River (N.Y.) High School for one year. As assistant varsity coach and freshman coach at Holy Cross between 1965 and 1968, he had overwhelmingly winning seasons, with one freshman team holding a 19-1 record. In 1968, he became a guidance counselor at Tantasqua Regional High School in Sturbridge.

He was named interim coach of WPI basketball in 1969, and gave the Engineers a winning record (11-10) for the first time in several years. He was appointed to the WPI faculty in the spring of 1970. While at WPI, he also served as assistant track coach, and helped Coach Merl Norcross put together WPI's first undefeated, untied track season.

In 1975 he resigned from WPI to become a guidance counselor at Shepherd Hill High School in Dudley, Mass.

He was a former basketball official, a past president of the Westchester County Board No. 52, and a member of the International Association of Approved Basketball Officials. He was a World War II Navy veteran.

Dr. **Maurice E. Smith,** a professor emeritus in chemistry at WPI, died on June 5, 1978 in Worcester City Hospital.

Affiliated with WPI for over fifty years, he was considered an expert in the field of sanitary chemistry.

Dr. Smith was born in Fredericton, N.B., Canada on July 20, 1891, and came to Worcester in 1920. He received his BA in chemistry and natural science from the University of New Brunswick in Fredericton, and his master's degree and a doctorate in chemistry from the University of Toronto.

For a year he was a lecturer at Queens University in Kingston, Ontario. For two years, before joining the staff at WPI, he was an analyst for the Canadian Food and Drug Administration in Halifax, N.S., Canada.

He was an instructor in the WPI chemistry department for over forty years and became professor emeritus upon his retirement in 1962. He continued directing a private laboratory in analytic chemistry in affiliation with WPI until his retirement from that post in 1974.

Dr. Smith belonged to ACS and Sigma Xi. He was listed in *Who's Who in the United States, Who's Who in Canada, Who's Who in the World,* and the *American Men of Science.* He was a past president of the Worcester Medical Milk Commission.

Benjamin D. Foot, '03, died in Saratoga, New York on June 6, 1978. He was 98 years old.

Born on March 13, 1880 in Pittsfield, Mass., he later graduated from WPI with a BS in electrical engineering. From 1903 to 1946 he worked for General Electric Co., Schenectady, N.Y. in the design of induction gear motors. He was a registered professional engineer in the state of New York.

For over seventy years he remained active in singing, having been a member of the Shubert Club singing group in Schenectady and of several church choirs. He was the author of two WPI songs published in "The Tech Songbook" of 1914: "Polly Wolly" and "Thermodynamics." He was a former president of the Schenectady chapter of the Alumni Association.

W. Bartlett Jones, '16, of Chicago, Illinois, a retired patent lawyer, died on February 6, 1978.

He was born on March 14, 1895 in Quincy, Mass. In 1916 he earned his BS in chemistry at WPI. In 1925, he received his LLB from Chicago Kent College of Law. From 1917 to 1921 he was a chemist at National Aniline & Chemical Co. in Buffalo, N.Y. Later he was a self-employed patent lawyer.

Mr. Jones belonged to Sigma Xi, ACS, Chicago Chemists Club, Illinois Bar Association, Chicago Patent Law Association, and American Patent Law Association. He had served at one time as a secretary-treasurer of the Western New York Chapter of the WPI Alumni Association.

William F. Leland, '16, chairman of the board of directors of the former Leland-Gifford Co., died at the Memorial Hospital in Worcester on June 22, 1978. He was 84.

He was connected with the company for fifty years. In 1965 he retired.

A native of Worcester, he was born on September 2, 1893. During World War II, he served as a methods and procedures consultant to the U.S. government.

Donald B. Maynard, '16, of Yarmouth Port, Massachusetts died on August 11, 1978 at the age of 85.

During his career, he was with Maynard Corset Co., Menarde Coffee Mills, Leland-Gifford Co., and S.H. Reynolds & Sons.

He was born in Northboro on Dec. 21, 1892. He studied mechanical engineering at WPI. A member of the Congregational Church, he also belonged to the American Legion, the Retired Men's Club of Hyannis, and the Friends of the Yarmouth Port Public Library. He was a member of Theta Chi, and a World War I Army veteran.

Roger C. Lawrence, '17, died in Old Saybrook, Connecticut on January 15, 1978.

A native of Ayer, Mass., he was born on Feb. 28, 1896. He received his BSEE in 1917 from WPI.

In World War I he was employed in the Government Turbine Shop, and worked on Curtis turbines for torpedo boat destroyers. He also was in the Signal Corps, Science and Research Division, Meteorological Section. Later he was with the Worcester District of A.S. & W.G. Co., Electrical Research Products, Inc., and Western Electric Co., New York City, where he was employed for many years.

Mr. Lawrence belonged to AIEE, the Masons, Sigma Xi, Tau Beta Pi, and Phi Sigma Kappa.

Dr. **Alfred W. Francis, '17,** of Metuchen, New Jersey, a former member of the President's Advisory Council at WPI, died on October 15, 1978.

He was born on March 11, 1896 in Brookfield, Conn. For many years he was a chemist with the Mobil Chemical Co., a division of Mobil Oil Corp., where he was with the R & D Edison Township Lab. He retired as a consultant several years ago.

Dr. Francis belonged to PSK, Tau Beta Pi, ACS, and Sigma Xi. In 1966 he received the Goddard Award from the WPI Alumni Association. He served on the President's Advisory Council in 1973 and 1974. A classroom in Salisbury Labs was recently named in his honor.

In 1917 Dr. Francis graduated as a chemist from WPI. He received his PhD from Yale in 1924.

Philip W. Lundgren, '23, died on September 23, 1978 at his home in Worcester.

A Worcester native, he was born on March 17, 1900. In 1923, he received his BSME from WPI. In 1962 he retired from Riley Stoker, following twenty years of service. Earlier he had been with Heald Machine, Harrington-Richardson Arms Co., Nichols Products Co., Packard Motor Car Co., and New York Edison.

Mr. Lundgren was a member of Lambda Chi Alpha and St. John's Episcopal Church.

John H. Tsui, '23, retired Westinghouse Electric Corporation engineer, died of heart failure on May 17, 1978 in Pittsburgh, Pennsylvania. He was 78.

He was born in Canton, China on May 1, 1900. He entered WPI on a scholarship awarded by the Chinese government. (The scholarship was one of several awarded to promising Chinese students paid for by funds recovered when the U.S. forgave China financially for damages suffered during the Boxer Rebellion.

In 1922 Mr. Tsui joined Westinghouse, and was graduated as an engineer from the University of Pittsburgh in 1927. He also held an MSEE from the University.

In 1941 he started work as a design engineer at Westinghouse's Sharon (Pa.) transformer division. He retired in 1969.

Mr. Tsui had served as a member of the Local China Relief Committee in 1942. He was a naturalized U.S. citizen. He had been a deacon of the First Presbyterian Church, and a member of the Mariners Sunday School class. He belonged to several Masonic orders, including the Scottish Rite. He was a past president of Hickory Kiwanis Club.

David C. Bailey, '25, retired president of the Bailey Co., died on June 19, 1978 in Newburyport, Massachusetts following a short illness. He was 75 years old.

A native of Amesbury, Mass., he was born on May 24, 1903. Following his graduation as a mechanical engineer from WPI, he joined his family firm, the Bailey Co., which had manufactured auto parts since the early days of the automobile. He retired as president of the company in 1970.

Mr. Bailey, a member of Tau Beta Pi and Sigma Xi, also belonged to the Society of Automotive Engineers. Active in Masonic circles, he was a past master of the Warren Lodge in Amesbury, and he belonged to the Shrine. He served as a major in the Army in World War II.

Jackson K. Sterrett, '25, of Erie, Pennsylvania passed away on April 28, 1978 after a brief illness.

He was born in Erie on Jan. 13, 1904. From 1925 to 1934 he was with Erie Malleable Iron Co. He was a co-owner of Dedon Laboratories from 1935 to 1941. Later he joined Bliley Electric Co., Erie, from which he was retired. He belonged to Phi Gamma Delta.

Thomas E. Ryan, '26, of Seaford, New York passed away on May 30, 1978.

He was born on Jan. 4, 1906 in Fitchburg, Mass. In 1926 he graduated as an electrical engineer from WPI.

He was the retired manager of the property record department of the Consolidated Edison Co., New York City.

Nelson E. Parmelee, '27, of Windsor Locks, Connecticut died of a heart attack on June 24, 1978.

He was born in Windsor Locks on Sept. 7, 1904. In 1927 he received his BS in chemistry from WPI. In 1930 he earned his MS from Tufts. For a while he was with Simplex Wire & Cable Co. A 25-year employee of Pratt & Whitney Aircraft, East Hartford, Conn., he had served there as a chemist, lead engineer, as supervisor in the materials control laboratory, and as a physical test engineer. For thirty years he was also associated with Stanley Home Products.

Mr. Parmelee was a member of the American Society for Metals, the American Electroplaters Society, Tau Beta Pi, and Sigma Xi. He was the father of *Nelson E. Parmelee, Jr.*, '61.

Albert C. Holt, '29, died unexpectedly on July 13, 1978 in Lexington, Kentucky at the age of 71.

After graduating from WPI as an electrical engineer, he entered the engineering cadet corps at Westinghouse in Pittsburgh, where he stayed until 1931. After teaching at Princeton for five years, he went with IBM. During his career, he worked with Codatype and Radiotype, and he was concerned with the development and management of the simultaneous interpretation systems used at the UN and at various international conferences.

In World War II he was on loan to the Signal Corps. He left IBM World Headquarters in New York City in 1968 to continue his work in Lexington, Ky., where he retired in 1972 after thirty-seven years.

Mr. Holt belonged to ATO, Tau Beta Pi, Skull, Sigma Xi, and IRE. He was born on February 20, 1907 in Buffalo, N.Y.

Wendell H. Simpson, '30, died of a heart attack on August 30, 1978 in Watertown, New York. He was 71 years old.

"Del," as he was known to his classmates, was born on July 20, 1907 in Sheffield, Vt. In 1930 he graduated as an electrical engineer from WPI. He received his master's degree in educational administration from the New York State College for Teachers in Albany.

During his career, he was with General Electric, the Catskill (N.Y.) Public Schools, Richmondville (N.Y.) Central School, and Hampton Bays (N.Y.) Union Free School, where he served as principal. From 1942 to 1962 he was employed by the New York State Education Department in Albany. While there, he held the posts of supervisor of business management, and chief of the Bureau of School Financial Aid Planning. He went to Pulaski in 1962 where he was district superintendent of the supervisory district of Oswego County, before retirement. He was instrumental in the establishment of the occupational and special education facilities for Oswego County.

Mr. Simpson belonged to Sigma Alpha Epsilon, the New York State Teachers' Association, the Congregational Church, and the Northern Oswego County Ambulance Service.

Frank H. Madigan, '35, who retired from Warner & Swazey Grinding Machine Division three years ago, died at Worcester City Hospital on September 25, 1978.

For thirty-three years he was a field sales engineer for Norton Company's Machine Tool Division. For three years, he was with Warner & Swasey.

He was born in Worcester on March 16, 1913, and later was a student at WPI. He belonged to Hillcrest Country Club and Worcester Lodge of Elks.

William C. Potter, '35, assistant manager at Industrial Risk Insurers, Chicago, Illinois, passed away last February.

He was born on August 19, 1913 in Springfield, Mass. In 1935 he was graduated as an electrical engineer from WPI. He joined the Factory Insurance Association as an inspector following graduation. While with the firm, he also served as a special agent, and field manager in the New York office. Later he became an executive assistant in the Chicago office.

Mr. Potter belonged to Phi Gamma Delta, Sigma Xi, and AIEE. He was a former secretary-treasurer of the Western New York Chapter of the Alumni Association, and the brother of *Stannard M. Potter*, '41.

James W. Phelps, '36, of Pleasant Hill, California, passed away in December.

He was born on January 11, 1915 in Barnet, Vt. In 1936 he graduated as a mechanical engineer at WPI.

During his career, he was with Keith Paper Co.; Great Northern Paper Co.; Flintkote Co.; and at Fibreboard Paper Products Corporation, Antioch, Calif., where he was project manager.

Mr. Phelps was a member of Phi Gamma Delta, the Papermakers Association of Southern California, Tau Beta Pi, and Skull. In World War II he was an ordnance engineer in the U.S. Navy.

Arthur J. Leary, '37, a former teacher at Greenfield (Mass.) Vocational School, died on June 30, 1978 in Colrain, Massachusetts at the age of 68.

A Worcester native, he was born on Jan. 15, 1910. He studied at WPI, Northeastern, and the University of Massachusetts. From 1941 to 1950 he was a machine instructor at Greenfield Vocational School. Also, he was with Millers Falls Co., from which he retired in 1971.

He had been a Greenfield call firefighter, a town meeting member, and also belonged to the Masons, the American Society of Tool and Manufacturing Engineers, American Society of Metals, the Franklin County Industrial Management Club, Old Timers Club of Millers Falls Co., and the Congregational Church. He was a registered professional engineer in Massachusetts.

William W. Worthley, '37, retired from John P. Slade & Son Insurance Agency since 1975, died on August 9, 1978 in Barrington, Rhode Island. He was 63 years old.

Following his graduation from WPI as an electrical engineer, he worked for the Factory Insurance Association. During World War II, he served as an aviation electronics officer in the U.S. Navy. He was a special agent for the Aetna Insurance Co. from 1945 to 1960. In 1960 he joined the Slade Agency in Fall River, Mass. He owned and operated the agency from 1970 to 1975, when he retired.

Mr. Worthley, who was born on Oct. 14, 1914 in Concord, Mass., was a member of Phi Sigma Kappa, the Congregational Church, the Masons, and many professional insurance organizations. He was the father of **Jonathan Worthley,** '67 and **Dana Worthley,** '71.

Albert E. Rockwood, Jr., '46, of North Andover, Massachusetts, died of a heart attack on September 30, 1978. He was 52.

He was born in Gardner, Mass. on Dec. 4, 1925. At the time of his death he was department chief of computer sytems at Western Electric Co. in North Andover. He was active in the Trinitarian Congregational Church, where he served as church treasurer and past chairman of the board of trustees and the diaconate.

He was a lieutenant in the U.S. Navy, and served during the Korean conflict. He was a member of the Telephone Pioneers of America and the Professional Engineers Association.

Mr. Rockwood, who had an MS from the University of Michigan, graduated as a mechanical engineer from WPI in 1946. He belonged to SAE, Tau Beta Pi, and Sigma Xi. His son, **Thomas D. Rockwood,** is a senior at WPI.

Raymond A. Peabody, '48, of Waterford, Connecticut, a co-founder of Hydrospace Systems, Inc., died of a heart attack on April 18, 1978 at the age of 55.

He was a former design engineer supervisor at General Dynamics-Electric Boat. A systems scientist and development engineer, he joined Electric Boat in 1948 after his graduation from WPI as a mechanical engineer. While with the firm, he was supervisor on all aspects of submarine systems design and operation.

In 1966 he co-founded Underseas Engineering, Inc. The company provided engineering and design services for the development of submersibles for oceanographic research. In 1977 he co-founded Hydrospace Systems, Inc., which promoted and developed the Hydrospace systems concepts.

Mr. Peabody was born on February 19, 1923 in New London, Conn. He received his BSME from WPI. During World War II, he was a forward observer with the 7th Artillery Battalion, participated in the Battle of the Bulge, and was a prisoner of war.

He belonged to Lambda Chi Alpha, and was a former Congregational Church deacon, trustee, and a member of the religious education committee and music committee and the New Parish House Fund drive. He had served on the advisory board of Thames Valley Technical College.

Stanley E. Sherman, '49, of Farmington, Connecticut passed away on September 14, 1978.

He was born on Nov. 28, 1921 in Plainville, Conn. In 1949 he received his BSEE from WPI. Since 1949, he was employed successively by the Plainville Electrical Products Co. as an electrical engineer, vice president, and president.

He belonged to SAE, AIEE, and IAEI. Civic-minded, he served in Plainville as a director of the Community Chest and the Chamber of Commerce, and as a past president of the Lions Club.

Dr. **Paul A. Lilienthal, '64,** president-owner of Aqua Wells, Inc., Thetford Center, Vermont, was accidentally electrocuted on July 18, 1978 in an accident involving his well drilling equipment.

He was born on May 30, 1942 in Montclair, N.J. In 1964 he received his BSME from WPI. He received his PhD from the University of Illinois. While at the University, he received recognition from NASA for his technical innovation, a torsion system for creep testing with multiple stress reversals. He perfected it while working on a NASA contract.

Dr. Lilienthal was a member of the Thetford Volunteer Fire Dept., a veteran of the Vietnam conflict (captain, Army Signal Corps), and had worked at the Army Cold Regions Research and Engineering Laboratory in Hanover, N.H. for two years. He belonged to SPE, PTS, and had served as head agent. He was the brother of Dr. **Peter Lilienthal, '63.**

Navy Lt. **Thomas R. Masker, '73,** died on September 25, 1978 in the tragic mid-air collision over San Diego, California. He was on his way from Monterey, where he was temporarily stationed, to San Diego.

Lt. Masker, a native of Somerville, N.J., was born on December 29, 1951. He was commissioned in the Navy in 1974, and assigned to submarine duty. He belonged to PTS.

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NORTON

February 1979

WPI journal

WPI journal
Vol. 82, No. 5 February 1979

The Cover: This woodcut was created in 1929 by New York artist G. F. Grant. It was used on a cover of The Journal of the Worcester Polytechnic Institute. With this issue's focus on Boynton Hall's history, it seemed appropriate to resurrect this piece of artwork for your enjoyment.

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Bob Pritchard

Robert W. Pritchard, former head of the Department of Physical Education, athletic director, and former head football coach at WPI, died on February 8, 1979, in Worcester. He was 66 years of age.

Bob, as he was known by his many friends and colleagues, served as athletic director at WPI from 1952 until his retirement last June. He was only the second athletic director in WPI's history. From 1947 to 1966, he had been football coach. He had also held the posts of assistant coach of baseball and basketball. At the time of his retirement, he was a full professor.

Active in professional societies, Professor Pritchard was a former president of the New England College Athletic Conference, a former chairman of the drug education committee of the National Collegiate Athletic Association, a former vice president of the NCAA, and a past secretary of that organization's college committee.

In 1954, Bob coached the WPI Engineers to their second perfect football season, finishing by defeating Norwich 33 to 0 at Alumni Field. During the years 1950 to 1959, his teams posted a record of 42 wins, 23 losses, and one tie. Overall, Bob Pritchard was WPI's most winning coach. Not only did he notch the highest percentage of wins, he achieved the greatest number of wins, too.

The year before he retired, Professor Pritchard recalled many fond memories of WPI in a *Worcester Telegram* interview. He said, "the one thing that stands out in my mind was our three straight football victories over the University of Massachusetts in '49, '50, and '51.

"Oh, there are many memories. My associates through the years at WPI, the boys I came in contact with, and, of course, that unbeaten season."

The victory over Norwich that wrapped up the 1954 season stood out vividly in his mind. "I remember that one for many reasons," he said. "First, it gave us a perfect 6-0-0 record, and, second, it came over a team that Bob Priestly (then the Norwich coach) called one of his best teams. And finally, because it was over the same team that had beaten us the year before, 40 to 6.

"Another thrill was the play of little Paul Kerrigan, '57, of Clinton. He was so small, yet so exciting when he carried the ball. He'd bring the crowd to its feet time and again in every game. It was funny. He was too small to be a defensive back, so we made him a defensive end. And believe it or not, he was one of the best we've ever had."

Last May, the Poly Club sponsored a Pritchard testimonial dinner at the Sheraton-Lincoln. Over 150 guests attended, many of them former players on teams that he had coached. Peter Horstmann, '55, a member of the 1954 undefeated football squad, served as master of ceremonies. Bob Pritchard had a lot of friends.

Professor Pritchard was born in Wilkes-Barre, Pennsylvania, and graduated from Kingston (Pa.) High School in 1931. He attended Wyoming Seminary and Pennsylvania State University, each for a year. Then he entered Susquehanna University, from which he graduated in 1936. In 1940, he received his master's degree in education from Penn State. While at Kingston High and Susquehanna, he was a star tackle. In 1934 and 1935 at Susquehanna he played on teams coached by Amos Alonzo Stagg, Jr., under whom he was later to serve as assistant coach.

After a stint as football coach at Berwick (Pa.) High School, Pritchard returned to Susquehanna in 1937 to serve as football line coach, freshman basketball coach, and varsity baseball coach. While studying for his master's degree he published the Pritchard Football Scouting Form. In 1941 he left Susquehanna to become assistant to the new WPI grid coach, Paul Stagg, brother of his former boss.

He left in 1942 to join the Air Force as a lieutenant. A physical education instructor, he worked with aviation cadets in Texas, Alabama, and Mississippi. At the time of his discharge in 1945, he was slated to help coach and scout for the Maxwell Field (Ala.) football team. He returned to WPI and became head football coach in 1952 when Paul Stagg left to go to Pacific University in Oregon.

Pritchard was active in many organizations, always promoting athletics and his own view of sportsmanship. He received many awards, including one in 1954 from the Jewish War Veterans for his outstanding achievements in athletics, and another in 1967 from Worcester B'nai B'rith, which honored him with a special sportsmanship award. In that golden year of 1954, Pritchard was one of 43 college coaches considered for Coach of the Year in a poll of over 700 coaches.

He was elected to serve on the three-member executive committee of the New England Intercollegiate Football Association for 1966. In 1972 he was inducted into the Sports Hall of Fame at his alma mater, Susquehanna.

In the early 1970s, Pritchard founded and served as chairman of the NCAA's drug education committee. He raised $3,000 from Don Meyers, chairman of the 1971 Fiesta Bowl in Phoenix, for a study of the country's drug problem, focusing on athletics. "The approach our committee recently has taken is to try to educate the coaches right down to the elementary school level, so that they can better handle situations involving drugs," Professor Pritchard said.

In the local community, Pritchard was a steward at Wesley United Methodist Church, a member of the American Red Cross, and a Mason. He had been chairman of the water safety committee of the YMCA and was a former president of the Quinsigamond Regatta Association, cosponsor of the annual Eastern Association of Rowing Colleges Regatta — better known as the Eastern Sprints. He belonged to the American Football Coaches Association, served on the executive committee of the New England College Conference on Athletics, and was a founder of WPI's Poly Club.

Professor Pritchard is survived by his wife, Jean E. Pritchard of Worcester, a fourth-grade teacher at Tatnuck Elementary School; a daughter Diane,'73, a professor of computer science at Providence College and part-time computer science instructor at WPI; a brother, Roland, of Dallas, Pa.; a sister, Natalie, wife of Dr. Richard Bailey of Annapolis, Md.; and several nieces and nephews.

WPI's Bob Pritchard — a big man in many ways

by Brian Carter
Sports Editor, Worcester Telegram

HE STOOD SIX-SIX, a big man for his generation. The stern countenance coupled with his height made him look tough and unapproachable.

And 66-year-old Bob Pritchard, the retired Worcester Polytechnic Institute athletics director and football coach who died yesterday, was tough. He possessed the mental and physical toughness needed to accomplish things and overcome things in 32 years with the WPI athletics department.

But his friends and colleagues say Pritchard's frowning exterior belied the real man. It didn't show what was going on inside the man.

"He was very businesslike ... he was dedicated to doing as good a job as possible as a football coach or athletics director. But really Bob was a very gentle man. He was very soft on the inside," said assistant football coach and track coach Merl Norcross, a friend since Pritchard hired him in 1953.

"He was a deep thinker ... he didn't just want to give flip answers to questions. He puzzled them out. He thought about them from all sides before he gave an answer. That was his way. You might say he was old school. He could be tough, but in dealing with people he was a very fair, kind man," said Charlie McNulty, who served side by side with Pritchard since 1946.

It was the tough Bob Pritchard who beat cancer of the throat in the middle sixties. It was the tough Bob Pritchard who bounced back after a freak football accident cost him sight in an eye. It was the tough Bob Pritchard who never complained about a problem that made it difficult sometimes to digest his food. It was the tough Bob Pritchard who tackled one of the NCAA's toughest and touchiest problems — drugs in the locker room. It was the tough Bob Pritchard who, when faced with the possibility — indeed likelihood — of WPI dropping intercollegiate football, set the gears in motion for it to be retained.

That was the kind of tough he was. And when he had to go into the hospital last week, Pritchard didn't want anyone to know. He told only a few people. He didn't think anyone had to know. "He had conquered so many tough things in his life," McNulty said, "that this seemed kind of routine to him. He'd be in and out before anyone knew it. He was taking it in stride and we took it in stride when we found out that he was in the hospital."

In friendships and relationships developed over years of working across the desk and across the field, many memories are built up. "He really loved football," said Norcross. "I don't know whether anyone really knows how much he had to do with football being kept here. He more or less organized things ... he set things up so that the problem could be studied." Pritchard coached the Engineers in football from 1947 to 1966.

Norcross also remembers his first meeting with Pritchard. "I'd come up from Kingston (Pa.) for an interview for a job ... assistant football, basketball, and track coach. I knew Bob was also from Kingston, but we'd never met." And Pritchard didn't show any favoritism for a fellow from his own hometown. "He just told me there were a lot of applicants for the job." Two weeks later Norcross got the job offer. He came and worked for more than 25 years "for a very good and fair athletic director."

Pritchard, Norcross, and Morgan Reese, who was a New England wrestling champ at WPI and also a Kingston, Pa., native, were referred to as the Kingston Trio. "We got a kick out of that. Once, when the Kingston Trio, the singers, were going good, the three of us ... another Kingston Trio ... had our pictures in the paper as sort of a gag," said Norcross.

McNulty remembers Pritchard's pride in football. "He really loved football, especially defense. I remember how hard he'd work with the defense day after day. He took great pride in it. He could really demonstrate things well for the defensive players, too. Especially how to use the hands. He had great hands and great upper body control." Pritchard, of course, was an outstanding two-way tackle at Susquehanna University and is a member of the school's hall of fame.

And McNulty remembers the thoroughness of the man. "Nothing was passed over lightly. He wasn't one of these nine to five guys. He stayed and he worked hard to do everything right. He was great at really tough problems."

One of the tough problems Pritchard himself was glad he tackled was the issue of drugs in sports. He was founder and chairman of the NCAA drug education committee. Pritchard authored pamphlets on the subject. "We may have done more for educating young people about drugs than any other organization in the world," Pritchard once said.

Joe McDonough, the Holy Cross athletics business manager and a longtime friend and associate of Pritchard, remembers the lighter side of the man. "We used to go out to the NCAA conventions together. We'd fly together. He was such a big guy that he'd always have to have the aisle. He stuck me inside, and I'm 6-3!"

"He was really well respected throughout the country. At the NCAA meetings, people were always coming up and talking to him ... asking him about things. He was interested in all things about college athletics. Not just what came under him as an AD but everything about college athletics. He was always swapping ideas with people," said McDonough.

McDonough will remember Pritchard for his friendship. "I just got a letter from him the other day (congratulating McDonough for being named NCAA business manager of the year). That was the kind of guy he was. A good friend. Once you had his friendship, you had it for life."

Bob Pritchard was a big man.

BOYNTON HALL
WPI's enduring symbol

"We surrender to you a tasteful and substantial edifice, alike creditable to him who has designed and to those who have executed it.... For its commanding and admirable location, for the beauty of its architectural design, for the general excellence of its workmanship and finish, for its adaptation to the uses for which it is designed, and for the economy of its construction, we believe it will rank among the model public buildings of the Commonwealth."

WITH THESE WORDS, a bargain was consummated, a promise fulfilled, and a bold dream became reality. They were spoken by D. Waldo Lincoln of Worcester, chairman of the building committee, as he formally delivered the building called Boynton Hall to President Stephen Salisbury and the trustees of the newly established Worcester County Free Institute of Industrial Science. The date was November 11, 1868; the occasion was the dedication of the fledgling school's first structure. Named in honor of its founder and first benefactor, John Boynton (who did not live to see the building rise), Boynton Hall soon became a prominent Worcester landmark and the distinctive symbol of a dramatic new adventure in American education. It remains so today.

Visitors who climbed the Hill that rainy day inspected the chemical laboratory at the west end of the first floor, the large lecture room (which later became the alumni office), and the president's room at the east end of the building. The north side of this floor contained a large physical laboratory, an instrument room (later to become the faculty room), a coat room, and rooms for chemical reagents and balances. On the second floor was a chemical lecture room, a small lecture room, several classrooms, and a drawing room. The third floor included the chapel, a large mechanical drawing room, lecture room, model room, and office. A reporter found the guests to be "hearty in commendation of the beauty of the site, and of the appropriateness of the building."

Although that "appropriateness" was a sometimes doubtful attribute in later years, Boynton at one time or another housed nearly every office and function of the college. Boynton was built in 1868 to serve a school which then consisted of a principal, four teachers, and 32 students. In 1955 it became the administrative headquarters for all the major officers and supporting personnel required to manage a dynamic, contemporary university of increasing size and rapidly growing stature. During Boynton's first century-plus of service, the college's student body has grown from 32 to 2,400 undergraduate men and women, plus another 500 graduate and special students. The number of full-time faculty has grown to 180, and WPI's total annual expenditures are nearly $20 million.

IN THE FALL OF 1864, John Boynton had come down from the hills of northern Worcester County in a horse and buggy with $100,000 and a dream in his pocket. With the advice and concurrence of his younger cousin and erstwhile partner, David Whitcomb, he struck a bargain with the people of Worcester. His proposal was duly reported in the *Worcester Palladium* of March 29, 1865:

"A gentleman, who for the present withholds his name from the public, offers a fund of $100,000 for the establishment of a scientific school in Worcester, upon condition that the necessary land and buildings shall be furnished by our citizens."

So began the first public campaign for voluntary gifts in Worcester, then a community of nearly 30,000 persons and rapidly becoming a major center of manufacturing. Seven railroads already served the city; machinery used in textile manufacturing was being built in several factories, and a new turbine wheel was producing 25 percent more power than the old water wheels it had replaced. The country stood on the threshold of the Industrial Revolution, but there were too few people capable of running and managing these new mechanical marvels. Clearly, John Boynton's desire to establish a "scientific school" had found the right place and a most propitious time. A new and entirely different kind of educational institution was about to join Worcester's 76 public schools, 3 private schools, and college of arts. The need for such a school was evident, and the people of Worcester responded enthusiastically.

As the August deadline for the drive approached, more than 500 individuals and several industries had made gifts ranging in size from $10 to $1,700. Workmen in 20 area factories contributed nearly $1,500, but the total in hand was still more than $10,000 short of the $60,000 goal. Initiating a custom which was to be repeated often in future years, Stephen Salisbury agreed to make up the deficit with his personal funds, and the campaign was declared a success. On September 11, 1865, John Boynton fulfilled his promise to give $100,000, and early the following year Mr. Salisbury donated five acres of his land on a hilltop above the city as a site for the new school. It was agreed by all concerned — architect Stephen Earle, the trustees, and the builders — that the building should be completed by July of 1868.

No part of the building had been started when, on March 25, 1867, John Boynton died. Only the trustees had known his identity as the donor of the funds with which the school began, and he had received no kind of public recognition. The trustees promptly announced that their unfinished building would henceforth be known as Boynton Hall. Construction began shortly thereafter, and on Tuesday, November 10, 1868, the new school opened. Boynton Hall was dedicated at ceremonies the next day when Mr. Lincoln turned over the keys and custody of the building to President Salisbury. The cost of the building, to the penny, was $73,343.68.

At left, the old and the new in staircases. The lovely (if rickety) oval wooden staircase in the east tower has given way to the stronger, if less interesting, angles of steel.
At the immediate left is a view of the new rear entranceway to Boynton, showing the upper and lower first floors, and the elevator.

FROM THE BEGINNING, Boynton Hall has been an important part of the institution; small wonder, then, that a chronicle of the Institute's early history frequently mentions the building.

▶In 1871, James White, Boynton's construction superintendent, contributed the distinguished granite tablet, in the shape of a gothic arch, which stands today above the building's west entrance.

▶Five years later, the students themselves gave the school one of its first gifts — a clock which was placed in the tower of Boynton, where it struck each hour of the day with a curious metallic clang. It was reported to be accurate to within 30 seconds a week.

▶One of Boynton's major embarrassments occurred during the graduation exercises of 1882. An elevator, located just inside the tower entrance, was used to carry distinguished guests to the commencement exercises held in the third floor chapel. On this occasion, it became stuck midway between floors, and all the mechanical genius on the Hill was of no avail in getting it started again. Finally, with the ceremonies nearly over, the recalcitrant contraption was coaxed to the nearest floor and unloaded, never again to be used for passenger service.

▶Shortly thereafter, Boynton was the scene of an episode which has become legend in the Institute's annals. Mr. Milton P. Higgins, first superintendent of the Washburn Shops (and grandfather of the past chairman of the board of trustees), had a horse named Buckskin, which he stabled in the barn adjacent to his West Street home. One night, some enterprising students from the classes of 1885 and 1886 stole the horse away and managed to haul the animal up the two-flight spiral staircase to the chapel, where he was discovered shortly before the next morning's chapel service. It is, of course, much easier to get a horse to go up stairs than it is to make him come back down, and Buckskin's presence on the third floor presented a real problem. After much logistical cerebration, the animal was lowered to the ground, upside down, with the aid of a block and tackle.

This escapade brought every function of the Institute to a full stop. Every student was suspended but, thanks to the intercession of Professor John Sinclair, no one was punished. Afterwards, history tells us, "the faculty discouraged for some time all forms of student activity not connected with the regular work of the Institute."

Unlike most student pranks, the Buckskin incident had a happy, if somewhat belated, ending. Forty years later, WPI president Ralph Earle (son of Boynton's architect) convinced the culprits, then alumni, that the damage done by Buckskin during his brief and unauthorized residence in the chapel could be repaid only by complete renovation of the room. The necessary funds, totalling more than $5,000, were cheerfully contributed by members of the two classes, and in 1926 the remodeled and refurbished room was formally dedicated in memory of John Sinclair. The bronze tablet naming Sinclair Hall testifies to the universally high esteem in which he was held by students and alumni.

INEVITABLY, AS THE INSTITUTE GREW and other buildings rose on the developing campus, changes took place in Boynton Hall. When Salisbury Laboratories opened in June of 1889, much equipment and apparatus was transferred from Boynton to the new facility. For the first time, Boynton was free to clean out its corners and take a deep breath. Interior renovations (at a total cost of $12,840) included a new heating plant, toilet facilities and locker rooms, a drafting room for civil engineering, hardwood floors throughout the building, and full interior painting.

Thirteen years later, in 1902, Boynton was connected to the Institute's main heating plant, and the boilers were removed from the basement. In the spring of 1914, the library was moved from its cramped first-floor quarters to the old chapel on the third floor, and the vacated space was converted to administrative offices and a large faculty meeting room. By 1924, increased student enrollment and the growing number of courses being offered demanded major remodeling of the third floor to provide badly needed space for additional classrooms. Construction of Alumni Gymnasium provided the Institute with a long-overdue athletic facility and allowed students to clean out the lockers which had formerly occupied a large area in Boynton's basement. Off and on during these same years, Boynton's basement also contained a lunchroom known as the'Rathole.' With understatement, its fare was said to be "generally unsatisfactory."

With the opening of Kaven Hall in 1955, the Civil Engineering Department at long last had a home of its own, and the first two floors of Boynton were extensively remodeled in a project which occupied most of the spring and summer. When completed, these renovations provided space for the offices of the president, the registrar, the business manager, the Alumni Association, and the director of admissions. Classrooms still occupied the third floor, but by 1964 — 96 years after it opened — the last classes had been held in Boynton Hall. The sturdy granite exterior had withstood decades of weathering without noticeable change, but Boynton's interior was clearly beginning to show its age.

A structural engineering firm studied Boynton's interior from top to bottom and found "serious interior structural weaknesses" which required corrective action to ensure the safety of the building and its inhabitants. Jacks were brought into the basement to help shore up sagging beams and girders while files, bookcases, and other pieces of heavy furniture were moved from upstairs rooms to help ease the strain on the overburdened floors. As the Institute completed its first century of service, it could point with pride to a campus and physical plant comparable to that of other colleges many times its size. At the same time, the need for major restoration of its original building could no longer be ignored. The question became not whether, but when.

At left, top, the central hallway in Boynton's first floor, perhaps the least changed part of the building's interior. Middle, the Admissions Office doing a rousing business. Bottom, Prof. Robert Hall in his new Continuing Education office on the first floor.
At right, Helen Bugdenovitch, President Cranch's secretary, in her new office.

IN 1970, THE DIRECTORS of the George I. Alden Trust of Worcester approved a grant of $750,000 to WPI, to be used for whatever purpose deemed most urgent by the trustees. Recognizing the far-reaching implications of the then-new WPI Plan and its stringent demands upon the faculty, the trustees elected to endow a faculty chair with the Alden grant, thereby providing valuable momentum and timely impetus for the emerging program. While a persuasive case could have been made for allocating the Alden funds for permanent renovation of Boynton Hall, the trustees reluctantly opted to 'make do' a while longer with the temporary measures taken six years earlier.

When the WPI Plan to Restore the Balance capital campaign was formally announced in the summer of 1972, one of its objectives was to raise some $900,000 for the renovation and restoration of Boynton Hall. Clearly, the imperatives of the situation called for action. The time for temporary measures had passed.

Still, Boynton was near the bottom of the list of priorities in the campaign, as attention was focused on increasing endowment and improving academic, not administrative, facilities. But concern continued to grow over the sagging floors, which showed a 4 percent or worse grade in places! A study by civil engineering professor Robert Fitzgerald revealed a serious fire hazard in the amount of paper stored in the basement, blocking the sprinklers in some cases.

At the request of the trustees, a special task force under the direction of civil engineering professor Carl Koontz conducted a follow-up study in the spring of 1976 to determine whether the condition of Boynton had deteriorated significantly since the 1964 report and the temporary measures that had been taken then.

The group concluded that, due to far heavier floor loads than the building was ever designed to support, Boynton's interior structure had deteriorated to the point where renovation could no longer be safely postponed. The Koontz report said, in essence, that it was not a question of *whether* the overburdened floors would collapse, but merely when. It urged that the building be evacuated immediately and that major interior renovations begin as soon as possible. The group's recommendations were carried out swiftly, and by midsummer Boynton had been vacated and some 15 administrative offices were temporarily relocated in nooks and crannies of other campus buildings. It was said that, when the filing cabinets were taken out, some points on the third floor rose six inches!

At this point, no money at all had been raised for the Boynton renovation, and there was considerable discussion about the degree of work that should be done and the amount of money to be spent. The engineering andarchitectural firm of Harvey and Tracy was authorized to draw up preliminary estimates for three different levels of restoration. They presented the Trustees physical facilities committee with their determination that the *least* that could be done — putting in steel beams, patching the walls up, and complying with code requirements — would cost over half a million dollars. A relatively complete job would carry a pricetag of nearly $1.3 million, and there was an intermediate option priced at slightly over $900,000.

Initially, there was some feeling that the'band-aid' job for the least expenditure was the proper course of action. Others thought that it was silly to sink half a million dollars into the project and end up with a building whose plumbing, heating, and wiring were over half a century old. It was also pointed out that it would be terribly hard to raise money for the restoration when, in the end, there would be no *visible* differences between the before and after except leveler floors. In a preliminary decision, Harvey and Tracy were authorized to proceed at a level midway between the lowest and the middle levels. This included no change to the heating system, which was known to be troublesome and likely to need changing in the future. By the end of 1978, however, the trustees, after much debate, decided that half measures would prove a false economy in the long run, and the project was budgeted at just under $1 million. Boynton's interior would be converted into a modern, functional office building.

BIDS WERE LET IN EARLY 1977, and the contract was awarded to Granger Contracting Company for $1,073,360. Among the jobs that had to be done were the installation of steel beams, an elevator, complete access for the handicapped, and a new heating and air-cooling system. The basement was to be dug out to a usable height, and the second and third floors were to be extensively redesigned.

As work began, some interesting facts came to light. Measurement from the top of the tower to the basement revealed that the century old granite structure was only *one-quarter inch* away from plumb vertical! Drilling the shaft for the new elevator was expected to be a three-day job or thereabouts. Unfortunately, they ran into two enormous boulders underground — rocks that couldn't be dug out or pushed aside. They had to be drilled through. The three-day job took a month to complete. Slanting beams on the third floor had been completely boxed in before. Opening these up around the bottom added some 200 square feet of usable space.

Along with the new heating system, Boynton was insulated and all new double-glazed windows were installed — even in the pointed arch windows on the third floor. The building is now air-cooled in the summer, a move which saved nearly $75,000 over the cost of air-conditioning. The old second and third floors were not completely replaced, and this alone saved nearly $200,000.

In any sizeable building renovation, current laws require that access for the handicapped be made available. Since Boynton's three entrances were all raised well above ground level, it was thought that a long ramp would have to be built to one of them. Relocating the elevator near the main entrance, however, also brought it near the back door, and a second "first-floor" stop was added at ground level, and the outside door lowered to match. On the second floor, where the Alumni Office used to be, the sunken floor was raised. In Sinclair Hall, home of the office of graduate and career plans (placement), a small three-foot lift was installed.

Above, Dean of Faculty Ray Bolz's outer office on the second floor. At right, the Business Affairs office.

AS YOU WALK THROUGH the new Boynton Hall, it changes character subtly from floor to floor. The first floor is most like it used to be, with a long central corridor and many offices opening onto it. The second floor is divided into two major office areas — business affairs and academic affairs, each consisting of a suite of offices. The third floor likewise houses two departments — graduate and career plans, and university relations, but each is essentially contained in a single large room, with medium-height partitions dividing individual areas.

The basement of Boynton has been drastically changed. If you visited it in the late 60s or early 70s, you will remember the poorly lit cellar whose ceiling was so low even short people had to stoop to get under the pipes and beams. You will certainly remember the many floor jacks, raised up on piles of timbers. You might have known that they had to give several more turns on those jacks every year. But no more. The basement was dug out to allow a full-height floor, housing the mailing and duplicating department and extensive storage space. (More and safer storage than there was — but still not enough!)

Early on in the planning, it was decided that the traditional feeling of Boynton Hall should be maintained in all public areas of the new interior, and in a unified manner from floor to floor with exposed woodwork and imitation wainscoting in the hallway areas. The layout of each office area, though, was designed by the department which was to inhabit it.

(Gardner Pierce, director of physical planning and plant services, says that one of his most trying jobs was trying to reach some kind of consensus on colors! Finally, the public hallways (but not the stairwells) were done in two shades of blue, while each office area has its own color scheme.)

The president's office, which has always been in the southeast corner of Boynton it still occupies, was carefully preserved. The gumwood panelling, installed in an earlier renovation, was refinished and given new luster. The outer offices were remodeled, and the whole renamed the Fletcher Suite, in honor of Trustee Emeritus Paris Fletcher, who has been an advisor to six WPI presidents.

IT IS REALLY IMPOSSIBLE to list here the numerous donors who made the Boynton Hall renovation possible. But certainly we should mention the Fuller Foundation gift of $250,000, the generous gifts of alumni trustees Raymond Perrault,'38, and Arthur Smith,'33, and the reunion gifts of the classes of 1927, 1928, 1934, 1937, 1938, 1952, and 1953.

Above, Sinclair Hall, a.k.a. the chapel, a.k.a. OGCP, a.k.a. Placement.
At left, a view of the University Relations Office.

Hank

IF YOU THINK that the grounds at WPI have been looking super lately, you are not alone. The Professional Grounds Management Society, a national association, has given WPI the second highest award in its category in the 1978 Grounds Maintenance Awards Program, following an entry submitted by Gardner T. Pierce, director of physical planning and plant services. And the man responsible for keeping WPI "Loooking Goood" is Henry F. Wagner, manager of grounds services and plant services.

Wagner, who answers to the name of "Hank," gives the lion's share of the credit to his crew. In fact, he sent one of his men, Frank Pajka, head groundskeeper, to Indianapolis on October 11th to pick up the award at the Society's banquet, instead of going himself.

"I was too busy to make the trip," he says.

Keeping WPI up to snuff, is pretty nearly a 24-hour-a-day job. And then there was that horrendous February snowstorm. "Some of us hardly slept for three days during that mess," he reports. "It was the worst storm we-were ever up against."

But if awards had been given out for snow removal efficiency in the city of Worcester in February, certainly Hank Wagner would have snared another prize.

Hank Wagner and Frank Pajka

He learned about the severity of the storm at his 3 A.M. breakfast (That's right, folks — 3 A.M.!), when his wife Hannolette was serving his coffee.

"You aren't going anywhere today (Feb. 7th)," she told him. "All of the roads are closed."

In spite of his wife's warning, and in spite of the fact that the snow was practically up to the window sills, Hank took a chance. He called one of his men on campus, and asked him to come across town to get him on a sidewalk snowplow.

The round trip took over two hours. Once at the WPI garage on Prescott Street, it took another two hours of plowing to free the snowbound vehicles. "Then we had to drive around town to pick up the rest of the crew. By a quarter of ten Tuesday morning, we had begun plowing the campus. By 2 A.M. Thursday morning, we had the campus wide open," Hank recalls.

WPI was practically the only school in the city that could function so soon after the storm. Some public schools were closed for the rest of the month.

Hank and his eight-man crew are adept at handling equipment other than snowplows. There is hardly a day that goes by that they aren't utilizing lawn mowers, hedge clippers, shovels, or trimmers. "We are responsible for maintaining the athletic fields, putting in sod, and reseeding after the football season," he says.

In October, prior to the Boynton Hall open house, he and his men were setting out plants and clipping around the newly renovated building. They also raked leaves, and picked up stray patches of litter.

Year-round, Hank's department is responsible for the grounds at the president's house, the vice president's house, and the dean's house. "This includes everything from gardening to snow removal," he reports.

When Salisbury was renovated, it was Hank who directed the furniture removal prior to the beginning of the project. He also saw that everything was returned safely after renovation.

"If you ever need anything moved, just call on Hank," he says with a grin. "Moving is one of our specialities."

But it is for the beautification of the campus that Hank is best known. Freeman Plaza, with its shrubs, flowers, benches, and mall-like walkways, is a testimonial to his creativity and hard work.

"Don't forget my crew," he adds. "Without them, we couldn't get anything done around here."

He is openly fond of WPI students in general, and in particular those he works with the year around. "Great kids," he enthuses. "Wonderful to work with."

His admiration of them is returned in kind. Last spring, he was initiated into Skull, an occasion he considered a singular honor.

Hank Wagner has been at WPI since 1962, when he started out as a custodian at Stratton. Later Tony Ruksnaitis, '53, now WPI campus engineer, made him foreman of the ground crew, a job he held for fourteen years.

Prior to coming to WPI, Hank was in the service for 25 years. "I was a paratrooper in the Airborne in World War II," he reveals. "I also served in Korea."

He attended army technical schools, and graduated from the Noncommissioned Officers' Academy. A member of the Seventh Field Artillery Association, First Infantry Division, he served as the second president of the association. For four years, he instructed ROTC at Boston College. He retired as a sergeant major in the U.S. Army.

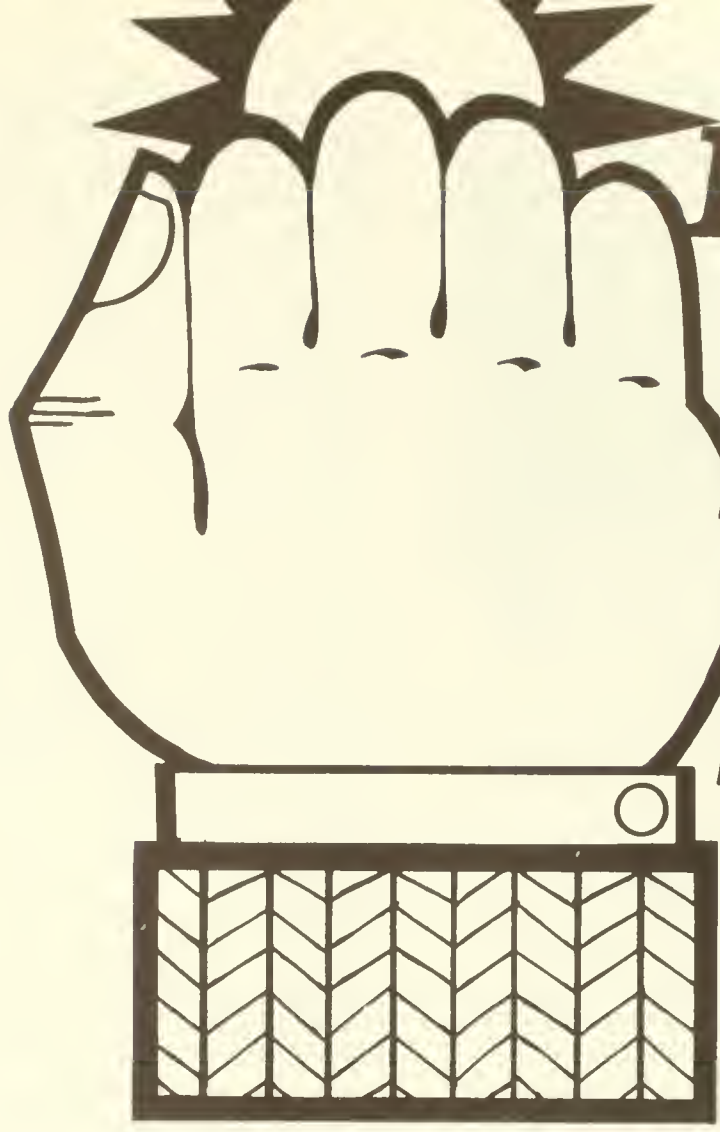
Hank and his German-born wife, Hannolette, whom he married in 1949, have spent their past five vacations with her relatives in Germany. "We really enjoy ourselves over there," he says. "Almost like a second home."

The Wagners have three children: a daughter Charlotte, a graduate of Worcester State College, who is married to a serviceman, and who is the mother of their grandson; and two sons, who graduated from Quinsigamond Community College.

"Henry, Jr. is a counsel computer officer at Thom McAn in Worcester, and William, following in dad's footsteps, is an Army corporal in Korea," Hank says proudly.

"Mustn't forget our German police dogs," he goes on. "They're from Texas. We keep them inside a six-foot high cyclone fence. One is a softy and the other is a meany. They both love to ride in the car, and one always hogs the front seat."

Best not to tamper with Hank, should he be seen riding with a canine friend. He didn't say whether it was the softy or the meany who prefers the front seat!



Knock

knock

knock

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William F. Trask
Director of Graduate and Career Plans
Worcester Polytechnic Institute
Worcester, MA 01609

1909

Charles Goldthwait was the author of "Alcoholic Dyeing: A Test for Variations in the Fine Structure of Cotton Fibers" in the November issue of *Textile Chemist and Colorist.* He is a charter member of AATCC, the recipient of the association's Olney Medal for Outstanding Achievement in textile chemistry, and is one of the world's foremost authorities on mercerization of cotton. Now 92, Dr. Goldthwait is still actively researching the structure of cotton and continues studying the theory and mechanisms of cotton finishing and dyeing. He resides in Raleigh, N.C.

1915

Arthur Miller continues as an agent for the Chicago office of New England Life Insurance Co.

1916

Secretary:
C Leroy Storms
135 West 6th Ave
Roselle, NJ
07203

Wellen Colburn and his wife Margaret (Goodspeed) Colburn celebrated their sixtieth wedding anniversary on September 14th at a dinner party arranged by their son, Dr. Charles Colburn, chief of staff at Bedford Veterans Hospital, and their daughter-in-law. Present at the party were Mr. Colburn's brother-in-law, George, president of Goodspeed's Bookshop in Boston, and his wife; Margaret's sister, Miriam, Mrs. Gordon Banks, and her husband, vice president of the bookshop; the Colburns' daughter, Nancy Tigner, whose husband is the Cornell professor responsible for the university's 30 gev. synchrotron; and their granddaughter, Mrs. Janet Bush, whose husband is interning at Yale University Hospital in New Haven. Writes Mr. Colburn: "The dinner and party were enjoyed by all. Now we are prepared for whatever the next sixty years bring forth!"

1920

Secretary
Dr Frederic R Butler
228 Burncoat St
Worcester, MA
01606

Gilbert Perry recently retired as city engineer of Putnam, Conn., the post he had held since 1942. (His father, **George Perry, '90,** preceded him in that capacity for over thirty years.) Mr. Perry continues in his practice of private engineering, which he began 37 years ago.

1921

Secretary
Carleton F Bolles
Green Pastures, RFD
Walpole, NH
03608

Joseph Kushner still works as a consultant to Arnold's Meats in West Springfield, Mass.

1922

Secretary:
Philip H White
164 Meadowbrook Rd
Needham, MA
02192

Clarence Barrington may be informally retired from bassoon mending, but it still is not uncommon for a well-known bassoonist from a major symphony orchestra to stop in Worcester to consult with him about adjustment or repair. Although he spent 31 years as an electrical engineer for Riley Stoker Corp., Barrington also has become one of only a handful of artisans in the country who can deal with the precision of double reeds, valve pads, and involved mechanisms that insure good tone in valuable bassoons that often carry a $6,500 price tag.

"I picked up the bassoon rather late in life," he says. At first he taught himself to play the difficult instrument, then took lessons in Rochester, N.Y., and practiced in the boiler room during the week. Both as a musician and an engineer, the bassoon intrigued him. Critical judgments and mechanical linkage challenged him. He repaired his own instrument as well as those of other players while located professionally in Schenectady and Detroit. His reputation as an expert reed instrument technician grew.

He invented machinery on which he could turn out hundreds of reeds with precise dimensions of thickness and width. Among professionals, the Barrington reed made a name for itself.

For many years, Barrington and his late wife Elizabeth performed with several orchestras, including the Worcester Philharmonic. Earlier, in 1921, as a cornet and saxophone player, he helped to form the WPI band. He also assisted in the forming of the Springfield Symphony.

A long-time sincere observer of the Worcester music scene, he has been recognized by the Worcester Musicians' Association for his more than 50 years of membership. The University of Lowell's Double Reed Society honored Barrington last May with its first award for distinguished service.

Stanley Townsend, who retired from Jensen-Townsend Printing Co. of Port Huron, Michigan in 1977, has sold his property there. He writes: "Currently we are building a house at Uplands Retirement Center in Pleasant Hill, Tenn., which we hope to occupy in May." The Townsends are wintering in Fort Myers, Florida.

1926

Secretary.
Arthur C. Parsons
51 Andover St
Worcester, MA
01606

Stanley Johnson, a self-employed fire protection engineer-consultant, has recently been involved with fire hazard analysis surveys of nuclear electric plants and the design of fire protection improvements for them. He has been to nuclear electric plants in New England, Minnesota, and Michigan. Also, he spent a month in Japan where he and a colleague made a fire hazard analysis survey of a cargo vessel, the nuclear ship Mutsu, which appeared in U.S. newspapers and TV news in October. He retired eleven years ago from the FIA, now Industrial Risk Insurers.

Mr. and Mrs. **Mabbott Steele** celebrated their golden wedding anniversary last June. Mr. Steele says, "We didn't have a big bash, just a quiet dinner together with our daughters and their families at a very fine restaurant. We enjoyed about three hours of reminiscing and snapshot taking, then returned to our temporary quarters in Lexington, Mass." (The Steeles reside in Leesburg, Fla.) In August he visited **George W. Smith, Jr., '15,** in South Carolina and "had a delightful luncheon renewing our old friendship."

Robert Wright of Knoxville, Tenn. continues as treasurer of the Indoor Gardener Publishing Co.

1927

Secretary
William M. Rauha
4 Whiffletree Rd.
West Yarmouth, MA
02673

Charles MacLennan's holiday letter this year was written in London, England, in the red cedar paneled British Columbia room of the Royal Commonwealth Society, just off Trafalgar Square. "Not far away," he writes, "is Piccadily Circus, the hub of London, which is filled with thousands of European Christmas shoppers taking advantage of favorable foreign exchange rates." He continues, "It was with mixed feelings that I just returned from a visit to St. Luke's Church in London where we were married forty years ago. It is the church where Charles Dickens and thousands of others were married."

He has been continuing his part-time work in energy development. He also plans to continue with spade work aimed toward the establishment of Cheshire Homes for the physically handicapped in his province of Nova Scotia.

1929

Secretary:
Holbrook L. Horton
120 W Saddle River Rd.
Saddle River, NJ
07458

Representative:
Holbrook L Horton

Fred McGowan, now retired, resides with his wife Dorothy in St. Augustine Shores, Florida.

1930

Secretary:
Carl W Backstrom
113 Winifred Ave
Worcester, MA
01602

Representative.
Carl W Backstrom

Last May **Bill Doyle** was made a fellow of the Society of Fire Protection Engineers. In October he gave a slide presentation on explosions to the WPI student chapter of SFPE. He says of his trip to his Alma Mater, "After many years, I had trouble finding my way around Worcester."

1931

Secretary:
Edward J Bayon
45 Pleasant St
Holyoke, MA
01040

Representative
A Francis Townsend
P O Box 267
150 Shell Lane
Cotuit, MA
02635

Ed Amsden, who has already had several careers, is now neck deep in another project. He is making a tax map for the town of Hill, N.H. Since the Franklin Falls dam was constructed in 1939 and the old part of town was flooded, making the map is not all that easy. Luckily, Ed was a selectman back in '39 and took movies as the town of Hill was moved to higher ground. The movies are helping him to lay out the map as accurately as possible.

Civic-minded, Ed served as selectman from 1936 to 1941 and again during the 1950's. He has also acted as moderator and now is the chairman of the Board of Adjustment.

For over forty years he has been active in the Hill Volunteer Fire Department and in the 1950s served as chief. This association has permitted him to use his home communication center to fullest advantage. His base radio station for the fire department is on the forestry frequency, and he also has a radio on the mutual aid frequency, both of which keep him in constant touch with emergencies.

After graduating from WPI in 1931, he bought a crutch factory which he operated until 1966. He employed up to eight workers who produced about 60 thousand pairs annually. From 1966 to 1976 he worked at International Packings Corporation in Bristol in the sample department.

An amateur musician, he has played the organ in the Hill church for 20 years. He also plays the clarinet.

But for now, the town tax map is his "labor of love."

1933

Secretary:
Sumner B Sweetser
100 Pine Grove Ave
Summit, NJ
07901

Representative:
Robert E Ferguson
36 Lake Ave.
Leicester, MA
01524

Ed Perkins and his wife Mildred went on a 45-day around-the-world AARP tour last fall. They visited fourteen countries in the northern hemisphere. Ed comments, "It was a super experience, a culmination of a longstanding promise to my wife." The travelers are now at home for the winter in Tavares, Florida.

1935

Secretary:
Raymond F Starrett
Continental Country Club
Box 104
Wildwood, FL
32785

Representative:
Plummer Wiley
2906 Silver Hill Ave
Baltimore, MD
21207

Herbert Hoffman retired in September after nearly 42 years with General Electric. His final post was that of senior engineer in industrial products engineering. Herb started his GE career in Lynn, Mass. in the test program. Before going to Fitchburg permanently in 1950, he also held several assignments in Fitchburg and Schenectady. He received 22 patent awards and is the recipient of the GE Gold Medallion Inventors Award.

In 1973 Herb received the Gerald L. Phillippe Nominee Award in recognition of his distinguished public service and also the Elfun Society Territorial Award for outstanding individual performance in the fields of community service. His civic activities ranged from his being chairman of the Planning Board and School Housing Committee in his home town of Lunenburg to his representing Lunenburg in the Montachusett Regional Vocational Technical School.

Herb plans to spend his "leisure" time restoring old and antique cars, doing household projects, and perhaps traveling through the southwest. He is doing some consulting work.

1937

Secretary
Richard J. Lyman
10 Hillcrest Rd
Medfield, MA
02052

Representative
Richard J Lyman

Morton S. Fine, executive director of the National Council of Engineering Examiners, has been elected to "eminent engineer" membership in Tau Beta Pi by the New York Theta chapter of Clarkson College of Potsdam, N.Y. Initiation ceremonies were held in conjunction with the association's annual convention hosted by the New York Beta Chapter of Syracuse University in Syracuse, N.Y. on October 21st.

Collegiate chapters elect persons to Tau Beta Pi's "eminent engineer" category of membership in recognition of exceptional achievements and outstanding contributions to the engineering profession.

1938

Secretary:
Emory K. Rogers
141 Lanyon Dr.
Cheshire, CT
06410

Representative.
Albert L. Delude, Jr
261 Garden City Dr
Cranston, RI
02910

Robert Evans is now on loan from Northeast Utilities Service Co. in Connecticut to Helium Breeder Associates in San Diego, Calif., where he is working as a project manager on the gas-cooled fast reactor program for a year.

1939

Secretary:
Charles H Amidon, Jr
636 Salisbury St
Holden, MA
01520

Representative.
C. John Lindegren, Jr.
21 Prospect, St
Shrewsbury, MA
01545

Gleason Jewett currently serves as a technical representative for Standard Manufacturing Co., Inc. in Dallas, Texas.

1940

Robert E. Dunklee, Jr
Rocky Hill Rd
North Scituate, RI
02857

Representative:
Kenneth R Blaisdell
17 Savoy Ave.
East Longmeadow, MA
01028

Howard Freeman was recently elected a new member of the board of trustees for a three-year term at the Worcester Art Museum. He is president and chairman of the board of Jamesbury Corp., and has been a museum corporator since 1970. Currently, he is secretary to the board of trustees at WPI.

The Nashua Valley Council, Inc., BSA, has presented its annual Good Turn Award to **P. Warren Keating** for his outstanding service to the community, state, and nation. The presentation was made at the fourth annual Distinguished Citizen Award dinner held in November in Leominster. The award exemplified the Good Turn principle of the Boy Scouts for the betterment of their community within the jurisdiction of the Council. The recipient may be male or female and may not have any affiliation with the Boy Scouts.

Keating, who has been with P.J. Keating Company since 1940, has served the firm as president and is presently chairman and treasurer. He is president of the Fitchburg Art Museum, a director of First Safety Fund National Bank and Fitchburg Mutual Fire Insurance Company, and a trustee of the Fitchburg Public Library. Previously, he was chairman of the Bishop's Fund, Worcester Diocese, and president of the Massachusetts Asphalt Pavement Association Catholic Social Service of Worcester, National Asphalt Pavement Association, Massachusetts Ready-Mixed Concrete Association, Massachusetts Catholic Conference, and the Greater Fitchburg Chamber of Commerce.

1941

Secretary:
Russell W Parks
7250 Brill Rd.
Cincinnati, OH
45243

Representative:
Robert A. Muir
529 Pearl St.
Reading, MA
01867

Frederick Benn, retired from Norton Company as a sales representative in Ohio, is now located in Carmel, Calif.

1943

Representative:
Behrends Messer, Jr
Mobil Research &
Development
P O Box 1026
Princeton, NJ
08540

Jackson Durkee writes that he has taken friendly leave of the partnership of Modjeski and Masters, consulting engineers, Harrisburg, Pa., in favor of reopening his own structural engineering consultancy with an office in Bethlehem, Pa. He will be specializing in bridge construction engineering problems, and is prepared to travel anywhere in the world. At the present time, one of his clients is a contractor on the Second Hooghly Bridge in Calcutta, the world's longest-span (1500 ft.) cable-stayed girder bridge.

Jack is a fellow of the American Society of Civil Engineers and a member of the International Association for Bridge and Structural Engineering. A fellow of the Institution of Civil Engineers (U.K.), he is also a registered professional engineer in Pennsylvania, California, and New York. Formerly he was chief bridge engineer in Fabricated Steel Construction at Bethlehem Steel Corporation.

1944

Secretary.
John G. Underhill
6706 Barkworth Dr
Dallas, TX
75248

Representative:
John A. Bjork
11 Tylee Ave.
Worcester, MA
01605

William Hermonat continues as owner-operator of the Dairy Queen Brazier in Rochester, New Hampshire.

1946

Secretaries:
M. Daniel Lacedonia
106 Ridge Rd.
East Longmeadow, MA
01028

George H Conley, Jr
213 Stevens Dr
Pittsburgh, PA
15236

Representative.
George R. Morin, Jr
81 Park Ave
Keene, NH
03431

Dr. **John Lott Brown,** president of the University of South Florida in Tampa, was named president of the Association for Research in Vision and Opthalmology last year.

WPI Dean **William Grogan** was the keynote speaker at the Science and Engineering Day program held at the Massachusetts Electric Company Corporate headquarters in Westboro last December. High school science teachers and students attended the program and participated in

The "biggest" little computer

Who is the father of the world's smallest "big" computer? He was a recent senior executive at Xerox, who broke out of the company mold a year ago September to help form a new company, Durango Systems, Inc., in Cupertino, California. Last Sept. 26th his fledgling firm unveiled an impressive first product, the Durango F-85, a typewriter-sized unit packing the power of a minicomputer.

Enough clues for an educated guess? If you guessed that the revolutionary computer was the brain-child of GEORGE E. COMSTOCK, '46, you'd be absolutely right.

George Comstock enjoys coming up with hot, new products. It's in his life's blood. Developing a desk-top computer was right up his alley. And what's more, he likes the independence of running his own firm.

He was the founder and former president of Diablo Systems, Inc., Xerox's subsidiary which makes printers for computer and word-processing systems. He had been with Xerox since 1972, the year that he and a small group sold Diablo to the copier company. Under his leadership the printer maker grew from around $5 million to over $100 million in annual sales. Despite his savvy shepherding, though, Comstock felt miscast at Xerox. He decided to leave a year and a half ago.

"I'm definitely uncomfortable in a large company environment," he says.

He is much more at home with Durango and his own design team. Together they managed to combine a keyboard, matrix printer, central processor, display screen, and a pair of mini-diskette storage modules into a $13,500, 65-pound desktop computer.

Hailed as the ultimate in design integration by early observers, the Durango F-85 stands head and shoulders above its competitors. Computers with equivalent power from major manufacturers require three separate units: a desk for the keyboard, central processor, and display screen; a printer, and a disk memory. One competitor commented outright, "Any business system that can be integrated into a desk-top version makes a lot of sense."

In order to accomplish his packaging breakthrough, the Comstock team designed the computer around a 165-character-per-second matrix printer. The Durango group, which includes ten engineers and marketers from Diablo, then reduced the number of printed circuit boards from fifteen down to four. They slashed the number of moving parts by one-third, and cut power requirements in half. Competitive computers with similar capabilities weigh four times as much and cost up to $7,000 more, Comstock says.

Industry experts believe that the only weakness of the Durango F-85 is in the matter of recognition. (It doesn't say IBM on it.) But this isn't stopping Data Dimensions, Inc. of Greenwich, Conn., from distributing it. According to Lester M. Gottlieb, president of the firm, which also distributes equipment from Texas Instruments, Digital Equipment, and Diablo, the F-85 is the best product he's seen in twenty-two years. "The first truly integrated desk-top computer that is portable in the office environment."

Gottlieb, who usually does not do business with start-up companies, is impressed with Comstock's track record. He's developed new products before and knows how to get a product into production.

Equally confident are Durango's prime backers, which include Citicorp Venture Capital Ltd. and Sutter Hill Ventures. They expect a generous return on the several million they've invested in the company during the past year.

Such confidence is not misplaced. Comstock introduced the highly successful daisy-wheel printer while with Diablo, and everyone now concerned with Durango feels he can pull off a repeat performance. Comstock, himself, figures that the F-85 should cost 40 percent less to make than competing products, allowing him to charge 20 percent less and still maintain a healthy profit margin.

His strategy is to hit the market across a broad front. He hopes to be able to meet the distributed-processing needs of large companies and the general business and accounting needs of small business.

In the beginning, Durango will not make much of an impact at the market-place, Comstock concedes. It takes time to build up production. The company plans to produce a thousand units its first year.

However, Comstock projects that by 1983 Durango sales should hit $100 million annually. Comstock is two years ahead of other computer makers with his desktop model. He intends to use that two-year window to build volume.

Customer reaction to the F-85 has been both enthusiastic and positive. One company president, who had already placed an order for a competing machine, changed his mind once he got a good look at Comstock's brain-child. He cancelled his order so that he could go with Durango. "The F-85 cost $7,000 less and could do more," he explains.

Such heartening initial response has prompted Comstock to predict that Durango will enjoy the same kind of growth as that of Diablo. This time around, however, he intends to hold the corporate reins a little longer.

alternative energy programs and in an awards ceremony. Two teachers and two students were selected from the group to represent the Massachusetts Electric Company at the 23rd International Edison Birthday Celebration in February in Orlando, Florida. . . . **Frank Gross, Jr.,** was recently named vice president of manufacturing for E.A. Adams and Son, Inc., a Pawtucket (R.I.) manufacturer of jewelry and jewelry specialties. He is responsible for all manufacturing facilities located in Pawtucket, Wareham, Mass., and Barbados in the Caribbean. He has been with the company since 1965 and developed the Barbados operation in 1966. He has his MBA from New York University, and has been active in scouting, Little League, St. Luke's Episcopal Church, East Greenwich Recreation Commission, and the East Greenwich Development Commission of which he was chairman. . . . **August Kellermann** has been appointed to the position of vice president of International Operations of Conoco Chemicals Company, a division of Continental Oil Co. In this capacity, he is responsible for Conoco's chemical activities outside of the U.S., which are primarily concentrated in Europe, South America, and the Far East. The Kellermanns reside in New Canaan, Conn., and in between numerous trips abroad, find some time for tennis, golf, and sailing. Their children, Bartt, Krista, and Rodger, are away at school.

1947

Secretary:
Alfred F. Larkin, Jr
1440 E. Standish Pl.
Milwaukee, WI
53217

Representative:
Allan Glazer
20 Monadnock Dr
Shrewsbury, MA
01545

Robert Yereance, president of Ydeas, is now located in Phoenix, Arizona.

1949

Secretary:
Howard J. Green
1 Kenilworth Rd
Worcester, MA
01602

Representative:
James F. O'Regan
17 Hundreds Rd.
Westboro, MA
01581

Currently, **Charles Allen** is technical staff engineer for Antenna Systems Engineering at GE's Valley Forge Space Center in Pennsylvania. He writes, "The work is very interesting and involves advanced antenna systems for communications satellites, space shuttle, and earth sensors."

Matthew Babinski, formerly an international patent attorney with Eastman Kodak in Rochester, N.Y., is now the author of a novel, *By Raz 1937,* which he has had published in paperback through W.F. Hall Printing Co., a Chicago subsidy publisher. The Worcester native has sold, largely through his own efforts, over 3,500 copies Chicago alone. His story focuses on a Polish-American family living in Worcester in 1937, his premise being, "what is a genius like at twelve years old?" Chicago has a massive Polish-American population, and his book is selling well at Marshall Field & Co. and Krochs Brentano's. But one of his best outlets is a Polish-run restaurant, Przybylo's House of the White Eagle, on the city's northwest side. Babinski plans to market the book in Worcester.

Arthur Dinsmoor, district manager of Marshall R. Young Oil Co., Midland, Texas, spoke on the topic, "An Independent Producer Looks at Future Domestic Supplies of Oil and Gas" at the Carl Gunnard Johnson Memorial Colloquium Series sponsored by the ME department at WPI in October. . . . **Bill Julian,** president of the WPI Alumni Association, spent the Christmas holidays at his new summer home at Willoughby Lake in Westmore, Vermont. Bill is a self-employed land developer in McLean, Virginia.

1952

Secretary:
Edward G. Samolis
580 Roberts Ave.
Syracuse, NY
13207

Representative:
Philip B. Crommelin, Jr
P.O. Box 38
Stanton, NJ
08885

Presently, **Harold Althen** holds the position of vice president of fabric filters-scrubbers at Peabody Process Systems in Stamford, Conn.

1955

Secretary:
Kenneth L. Wakeen
344 Waterville Rd
Avon, Ct
06001

Representative
Ralph K. Mongeon, Jr
Riley Stoker Corp
P.O. Box 547
Worcester, MA
01613

Robert Stempel has been promoted to vice president and general manager of the Pontiac Division at General Motors in Detroit. He joined GM in 1958 and had served as director of engineering for Chevrolet since 1975. In June of 1977 he received an honorary doctor of engineering degree from WPI.

1956

Secretary:
Rev. Paul D. Schoonmaker
325 North Lewis Rd
Royersford, PA
19468

Representative
John M. McHugh
431 Beacon Hill Dr
Cheshire, CT
06410

Bernard Danti is president of Bernard R. Danti, Inc., Bedford, Mass. . . . **Robert Farrar** recently became president of Frederick A. Farrar, Inc., in Keene N.H. He is the son of **Frederick Farrar, '31.**

William Jordan, Jr., has been named vice president of engineering at Boschert Inc. Previously, he was head of the Honeywell team that helped engineer the first practical dynamic random-access memory for memory systems, and then founding manager of Intel Corporation's Memory Systems Division. In the latter post, he produced a mass market for the product. "I like the idea of a new venture," he declares.

In his new post, he will direct Boschert's technological attack on the entrenched linear power supplies by trying to beat them on cost, efficiency, and size. He acknowledges that power supplies are not a glamorous part of the industry, saying, "that's one of the things that make it a neat business."

After graduating from WPI, Jordan worked for CBS Electronics and Avco's R&D Division before joining Honeywell's Computer Control Division, where he spearheaded development of the 1103 RAM. In 1971 he became founding manager of Intel's Memory Systems division and corporate vice president.

John McHugh is the new general chairman of the Mattatuck District Sustaining Membership Enrollment for the Boy Scouts of America in Connecticut. McHugh, who is president of the Royal Screw Machine Products in Waterbury, will give leadership to the annual enrollment of parents and friends of scouting. He has a master's degree from RPI, and is a past president of the Small Manufacturers Association of Waterbury and the Waterbury Exchange Club. The Mattatuck District serves 2,800 Cubs, Scouts, and Explorers in 85 packs, troops, and posts. . . . **Gerald Wootton** was ordained a permanent deacon at St. Joseph's Cathedral in Hartford, Conn. on December 1st. He has completed a three-year program of study at St. Thomas Seminary in Bloomfield, and has been assigned to his home parish, St. Thomas Church in Thomaston. He is a chief engineer at Bicron Electronics Co. in Canaan.

1957

Secretary:
Dr. Robert A. Yates
11 Oak Ridge Dr
Bethany, CT
06525

Representative:
Alfred E. Barry
1 Algonquin Rd
Worcester, MA
01609

▶*Born:* to Mr. and Mrs. **Robert A. Propper** their first child, Octavia, on July 17, 1978. Propper was recently appointed to the U.S. Department of Transportation as a visual information officer. Previously, he was a partner in a design-planning firm in New York City. His book, *High Diddle Diddle,* was the first children's book to be published by the Museum of Modern Art in New York. In addition, he has written numerous articles on visual communications. He has a BFA and MFA from Yale University.

Robert Beckett now holds the post of president of ROBEC, Inc. in Montgomeryville, Pa. . . . **Allan Devault** serves as manager of product marketing at Rolm Corp., Santa Clara, Calif. The Devaults have one child and live in Foster City.

Edward Foley has been named assistant treasurer at Norton Co., Worcester. With the company since 1960, he has held various manufacturing, engineering, and finance posts. Prior to his promotion, he was cash administrator. He has an MBA from Clark University.

1958

Secretary
Harry R Rydstrom
132 Sugartown Rd
Devon, PA
19333

Michael Mullo of Pocasset, Mass. is now director of plans and management at Codex Corp. in Mansfield.

1959

Secretary:
Dr Frederick H Lutze, Jr
110 Camelot Court NW
Blacksburg, VA
24060

Representative:
Dr Joseph D Bronzino
Trinity College
Summit St
Hartford, CT
06106

Roger Pekrul was recently named vice president of manufacturing for the Dunlop Sports Co., a division of Dunlop Tire & Rubber Corp. He is located at the company's plant in Westminster, S.C., where he is responsible for the manufacturing and technical areas of the Dunlop line of golf and racquet sports products. Formerly, he was divisional manager of manufacturing for the Acushnet Co.

Continuing with Hamilton Standard, Windsor Locks, Conn., **Joseph Swider, Jr.,** now serves as program manager for the space shuttle orbiter. The Swiders have moved from Suffield, Conn. to Windsor. . . . **Edward Wysocki** and his family of Ellington, Connecticut visited WPI's ME department in October. Wysocki, who is with United Technologies at Pratt & Whitney, also operates Airfoto Service, specializing in color and infra-red aerial photos. **Edward Wysocki, Jr., '81,** following in his father's footsteps, is enrolled in the field of mechanical engineering at WPI.

1960

Secretary:
Paul W Bayliss
170 Wyngate Dr
Barrington, IL
60010

Representative:
John W Biddle
78 Highland St
Holden, MA
01520

After thirteen "comfortable" years in Connecticut with United Technologies, the **Robert Chechiles** and their four children have relocated in Thousand Oaks, Calif. Robert is a senior member of the technical staff for Litton Guidance & Control Systems, Woodland Hills. . . . **Edward Donoghue** of Westboro, Mass. holds the post of branch manager in Boston for Four Phase Systems, Waltham. The Donoghues have four children.

1961

Secretary
John J Gabarro
8 Monadnock Rd
Arlington, MA
02174

Dr. **John Quagliaroli** serves as president of Fowler, Anthony & Co. in Wellesley, Mass. The firm arranges mergers and is concerned with financing, private placements, and venture capital. . . . **Merrill Rutman** is an electronics engineer for U.S. Army Communications & Electronics Materiel Readiness Command at Fort Monmouth, N.J. He expects to be relocated in June.

1963

Secretary:
Robert E Maynard, Jr
8 Institute Rd
North Grafton, MA
01536

Representative:
Joseph J Mielinski, Jr
34 Pioneer Rd
Holden, MA
01520

▶*Born:* to Mr. and Mrs. **Edward J. Kalinowski** a son Steven on September 16, 1978. The Kalinowskis also have two other children, Tony, 8, and Nicole, 17 months. Eli Lilly and Company has transferred Ed to their Roanoke, Va. plant as director of industrial relations. Prior to the transfer, Ed and his family spent five years in London, England. Three of those years, he was manager of European Requirements Planning for Elizabeth Arden, Ltd., a division of Lilly. For the past two years, he was director of personnel services for the United Kingdom and Scandinavia for Eli Lilly.

Joseph Bucciaglia was recently appointed operations manager of chemicals for Uniroyal Chemical Company. In his new post, he will be supporting operations and near-term implementation of sales plans and strategies. Bucciaglia, who will be headquartered in Naugatuck, Conn., joined the firm in 1963 as a chemist. Among his posts were research and development senior group leader, pilot plants, and production superintendent in chemicals. Prior to his promotion, he was managing director of Uniroyal Chimica S.P.A., the company's Italian subsidiary.

Now at home in Ballston Lake, N.Y. following a three-year stint as a consultant in Iran, **James Daily** has been appointed as division engineer-outside plant for New York Telephone Company's northeast area. He writes: "It's fun to be back and experience reverse culture shock." The Dailys have two children, Jamie, 13, and Janet, 10.

Dr. **Stephen Nagy** is presently located at Hackensack (N.J.) Hospital, where he is with the Department of Radiation Therapy. . . . Still with Merrill Lynch, **A. Stephen Otis** is now a vice president for the firm in Los Angeles. . . . **Harold Wright** holds the position of regional manager at WER Industrial in North Andover, Mass.

1964

Secretary
Dr David T Signori, Jr
6613 Denny Pl
McLean, VA
22101

Representative:
Barry J Kadets
7 Bellwood St
Framingham, MA
10701

▶*Married:* **Peter R. Fenner** to Suzan E. Riddle on November 24, 1978 in Dallas, Texas. The bride graduated from Texas Tech University and the university's law school. She is a partner in the law firm of Gardere, Porter, and DeHay in Dallas. Her husband, who has a master's degree from Northwestern University, is a regional analyst manager with Systems Engineering Laboratories, Inc.

Dr. **Bill Ferguson** began working as a research investigator for the Squibb Institute for Medical Research in New Brunswick, N.J. last September. He says, "For some time I had been seeking a change from teaching chemistry at Rhode Island Jr. College and assisting in the administration of the Gordon Research Conferences during the summer. I am back at my old discipline, process R&D, and enjoy it very much. The family has taken well to New Jersey and we are happy living in the town of Lawrenceville near Princeton."

Bradley Gale now serves as director of research for the Strategic Planning Institute (PIMS Program) in Cambridge, Mass. . . . **Donald Ghiz** is director of steel purchases for Continental Oil Co. in Houston, Texas. . . . **Alfred Hemingway, Jr.,** continues as a lawyer with Bryan & Bollo in Stamford, Conn. He, his wife Julie, and two children reside in Wilton.

At left, Governor King swearing in Dean Amidon.

Above, Ellsworth Sammet

Public Workers

Dean P. Amidon, '49 of Monterey, Massachusetts, was sworn in as Commissioner of the Massachusetts Department of Public Works by Governor Edward J. King on January 5, 1979.

Commissioner Amidon has been serving as district highway engineer since 1969 for the Massachusetts Department of Public Works' District One Office, which consists of Berkshire County and eight towns in Hampden and Hampshire Counties.

Amidon is a career employee with 29 years of service with the department. He previously held positions in District One as district maintenance engineer, district construction engineer and as location and survey engineer at the DPW headquarters in Boston.

Married with four sons, Amidon spent four wartime years in the U.S. Navy before enrolling at WPI, where he received his civil engineering degree in 1949.

The new commissioner is a registered professional engineer, a registered land surveyor, and a member of both the American Society of Civil Engineers and the American Public Works Association. In 1975 he was honored with the "Outstanding Engineer of the Year" award by the Berkshire Chapter of the Massachusetts Society of Professional Engineers.

The new DPW head has been quite active in local affairs having served as President of the Board of Trustees of Fairview Hospital in Great Barrington, member of the Monterey Regional School Committee, Planning Board and Board of Appeals. He also served as a Monterey Boy Scout leader and Little League coach.

In assuming his new duties, Commissioner Amidon will direct the activities of about 4100 employees with an operating budget of $80 million and with $300 million in statewide construction projects underway.

Taking over Amidon's previous post as district highway engineer for the DPW's District One office is his WPI classmate, Ellsworth Sammet, '49, former District One construction engineer. He began his career 29 years ago in the District Three Worcester office as an assistant resident construction engineer. Within two years he was promoted to resident engineer. He also worked in the District Two Northampton office as assistant construction engineer and maintenance engineer. For the past eight years he has served as District One construction engineer. He is a resident of Pittsfield.

Mr. Sammet has been involved in both civic and charitable organizations, serving on the board of directors of Mt. Watatic Ski Area in Ashby, and as a member of the Ashburnham board of the Water Commission, the Gardner Rotary Club, and Ashburnham Alternate Montachusett Regional Planning Commission. For the past four years, he has been active in the Pittsfield Rotary Club as secretary, vice president, president, and aide to the governor for Rotary District #789. In 1978 he was appointed to the Pittsfield Beautification Commission and was solicitor for the United Way of Central Berkshire.

A World War II Navy veteran, Sammet earned his gold wings as a naval aviator in 1945. After his release from active duty, he joined the Naval Air Reserve and served as a jet fighter pilot, anti-submarine patrol pilot and executive officer of VP 914 located at Naval Air Station, South Weymouth. He retired from the Naval Reserve with the rank of Lt. Commander.

Sammet is a registered professional engineer and land surveyor and a member of the American Society of Civil Engineers. He and his wife, Jeannine, have four children.

J. James Tasillo, Jr., was recently appointed vice president of rates at NEGEA Service Corporation. NEGEA provides gas and electric public utility services to communities in central and southeastern Massachusetts. Tasillo has a master's degree in engineering management from Northeastern. He began at Public Service Company of New Hampshire in 1964 with marketing responsibilities. Later, he became research engineer in the rate department. He joined NEGEA in 1972 as assistant rate manager and the next year was named rate manager. He belongs to the Rate Research Committee of the Edison Electric Institute and the American Gas Association Rate Committee. The Tasillos have four children and live in Auburn.

1965

Representative:
Patrick T Moran
100 Chester Rd
Boxboro, MA
01719

Robert Johnson is a senior computer engineer for Technicon Inst. Corp. in Tarrytown, N.Y. He and his wife Nancy have three children.

1966

Secretary
Gary Dyckman
29 Skilton Lane
Burlington, MA
01803

Representative.
Dr Donald H Foley
Indianfield Rd
Clinton, NY
13323

Larry Penoncello continues as plant manager at Torrington (Conn.) Co. He has an MBA from the University of Hartford. . . . Presently, **Paul Peterson** serves as director of the technical services staff for the central region of Software AG of North America, Inc. He is located in Evergreen, Colorado.

1967

Secretary:
John L Kilguss
5 Summershade Circle
Piscataway, NJ
08854

Representative:
Raymond C. Rogers
92 North Common Rd
Westminster, MA
01473

Lt. Commander **Wallace Fini** has reported for duty as a member of the staff of Commander, U.S. Naval Forces, Guam, Marianas Islands. He joined the Navy in 1967. . . . **William Goudie,** who has his MS in chemical engineering from Stevens Institute of Technology, is now a senior engineer with du Pont in Wilmington, Delaware.

Major **David Heebner** is presently stationed at the U.S. Army Command & General Staff College in Ft. Leavenworth, Kansas. He has an MS in operations research from Naval Postgraduate School in Monterey Calif. The Heebners have two children. . . . **Anil Kadakia** continues as a project engineer at Urban Engineering Inc. in Philadelphia.

Edward Lally, Jr., holds the post of president of Ed Lally & Associates in Windsor, Conn. . . . Dr. **Stephen Luber** is a pediatrician at a clinic in Sun Valley, Idaho. He holds an MD degree from the University of California and an MBA from Harvard. . . . **Edward Semple** serves as a product planner at Digital Equipment Corp., Marlboro, Mass. . . . Currently, **Richard Symonds** is with GE in Schenectady, N.Y. He and his wife, Charlotte, have five children and live in Clifton Park, N.Y. . . . **Charles Wojewoda** is employed as a senior process engineer at Monsanto Co. in Springfield, Mass.

1968

Secretary:
Charles A Griffin
2901 Municipal Pier Rd
Shreveport, LA
71119

Representative:
William J Rasku
33 Mark Bradford Dr
Holden, MA
01520

▶*Married:* **Leif M. Erickson** and Carol A. Mielke in Florence, Massachusetts on September 30, 1978. Mrs. Erickson, who graduated from Westfield State College, is a substitute teacher at Hampshire Education Collaborative. Her husband has a PhD in chemistry from UMass, and is a captain in the Army reserves at Westover AFB.

▶*Born:* to Mr. and Mrs. **Stephen W. Petroff** a daughter, Sasha. Steve owns the Shellback Tavern in Manhattan Beach, Calif. . . . to Dr. and Mrs. **E. Wayne Turnblom** their first child, a daughter, Laura Kirsten, on December 11, 1978. Wayne is head of the research laboratory at Eastman Kodak Co. in Rochester, N.Y.

Francis Addessio is a member of the staff of the Los Alamos Scientific Lab., University of California. He has his MS from Stanford and a PhD from Purdue. . . . **Robert Balmat III** presently holds the position of controller at Rockwell International in Downey, Calif. The Balmats have two children and live in Fountain Valley . . . . **Jeff Shaw** is now manager of manufacturing engineering for Digital Equipment of Salem, N.H. He and his wife Carole have two children.

1969

Secretary:
James P. Atkinson
41 Naples Rd.
Brookline, MA
02146

Representative:
Michael W Noga
West Bare Hill Rd.
Harvard, MA
01451

▶*Married:* **Richard Furman** and Miss Diana Bachus in Wichita, Kansas on September 17, 1978. The bride graduated from the University of Texas with a BS in nutrition. She served her dietitian internship at Peter Bent Brigham Hospital in Boston. A registered dietitian, she also has an MBA from the University of Miami in Florida. The groom, a research coordinator at Florida Power & Light Co., Miami, has a master's degree in chemical engineering from MIT.

▶*Born:* to Mr. and Mrs. **Warren F. Follett,** a son, Patrick Christian, on November 18, 1978. Rick is a senior engineer at Raytheon in Bedford, Mass. and resides in Westford with his wife, Cheryl, new son, and daughter, Heidi Lynn, 8. . . . to Mr. and Mrs. **Douglas Morash** their first child, a daughter, Kristin, on June 26, 1978. Doug is a project engineer at Moog, Inc. in East Aurora, N.Y.

Capt. **Warren Anderson,** who has an MBA from the University of North Dakota, serves as a pilot on a C-5 Galaxy for the U.S. Air Force. Presently, he is located at Dover AFB in Delaware. . . . **Joel Cehn** is a health physicist at Teknekron, Inc. in Washington, D.C. Recently he was certified by the American Board of Health Physics. . . . **Arthur Evans** has been appointed utility market manager for the corporate marketing group at Goulds Pumps, Inc., Seneca Falls, N.Y. With the firm since 1971, he has held several sales positions including that of branch manager at the company's Kansas City office. He is a graduate of the U.S. Army Engineering School. . . . **Arthur Katsaros** was recently promoted to marketing manager for nitration products at Air Products and Chemicals, Inc. in Allentown, Pa. He will be responsible for marketing dinitrotoluene and toluenediamine to the urethane industry. He started out in 1973 as a senior process engineer at the company and has an MBA from Lehigh University. . . . **Michael Punchekunnel** is a senior manufacturing engineer for Martin Marietta Corp. in Orlando, Fla.

1970

Secretary:
F David Ploss, III
208 St. Nicholas Ave
Worcester, MA
01606

Representative.
Domenic J Forcella, Jr.
25 Hough St.
Plainville, CT
06062

Capt. **Kenneth Bassmann,** who previously held a reserve commission as an Officer Training School graduate, has been named for regular status on the basis of his educational background and outstanding duty as an Air Force officer. He is assigned as a communications systems officer with a unit of the Air Force Communications Service at Kapaun Air Station in Germany.

Gary Fritz currently manages Air New England's new operation at Bradley International Airport in Hartford. Formerly, he was manager for the firm at Martha's Vineyard Airport. The Fritzes and daughter Lori are now living in Broad Brook, Conn.

en•tre•pre•neur *(än'tre-pre-nûr')* n. *A person who organizes, operates, and assumes the risk for business ventures.* [*from Old French* entreprendre, *to undertake.*]

Dr. Joseph R. Mancuso, '63, has come up with a new and different idea — a survival training school for entrepreneurs. The author of a number of books dealing with entrepreneurship, and an experienced pro in the field, Mancuso founded a unique, non-profit organization last year — the Center for Entrepreneurial Management. While there are management associations for corporate executives, labor unions for nearly every job classification, and national lobbying interests for various groups with special concerns, until now there has not been an overall source of information and educational and moral support designed specifically for entrepreneurs and the people who advise them.

Entrepreneurs are different from other businesspeople. While the professional manager seeks to protect resources, the entrepreneur creates them. One result of this is that it can be hard for the entrepreneur to find answers.

According to Mancuso, the government and several private organizations have produced a mountain of generalized business information so immense that merely finding an appropriate answer for any specific question presents a new and imposing problem. "At the Center we begin with the assumption that time is valuable," continues Mancuso. "Through a special three-dimensional approach to entrepreneurial guidance, we are able to help an individual quickly isolate what information is needed. Using combinations of what we call our Overview, Update, and Lifecycle modules, a management program can be distinctively tailored to specific business goals."

In the first phase, CEM members may obtain direct and practical books dealing with all aspects of entrepreneurial management, reaching all the way from the basic philosophy underlying it to ways of seeking venture capital and how to survive bankruptcy. High on the Center's reading list are Dr. Mancuso's own books: *How to Start, Finance, and Manage Your Own Small Business; No Guts, No Glory (or, How to Fight Dirty Against Management);* and *Fun and Guts – The Entrepreneur's Philosophy.* The first of these books is well into its fourth printing now, and has been featured as an Executive Program Book Club selection. Others of Mancuso's works include *Entrepreneurship and Venture Management* (co-authored), and two books he edited, *The Entrepreneur's Handbook,* and *Managing and Marketing Technology Products.*

With the second of its three dimensions of service, the Center keeps its members abreast of business and news items that affect them personally, by publishing a newsletter and special reports. "Every day the world generates a tidal wave of information about business and government changes," says Mancuso. "We wade through the information for pertinent items and act as a personal worldwide news service."

For example, the monthly "Entrepreneurial Manager's Newsletter" weeds out the unnecessary and gets down to basics: new sources of information, case histories of business success, clarification of new laws and regulations. Other topics include how to raise venture capital, special marketing information, sources of help (such as where to get patents, how to handle inventions), and employee relations — all from the entrepreneur's point of view. New legislation affecting entrepreneurs is another important topic. "Today you can't be in business without knowing the government's official attitude about ventures like your own," Mancuso reports.

Newsletter subscribers also receive special reports as needed. These cover in depth such issues as pension policy or cash flow management in a personal business. The reports are prepared by the Center for an individual member's personal file.

Beginning this spring, the CEM is holding one-day seminars cosponsored by the Small Business Administration, and is also joining the SBA and the Tarrytown Conference Center in sponsoring an intensive two-weekend course.

"Lifecycle," the third phase of the Center's activities, denotes the research wing of CEM which studies the evolution of businesses. All businesses generally pass through a predictable set of stages in their development. Problems often arise when a

business is making the transition from one phase to another. The Center's Lifecycle business essays, seminars, audiotapes, classes, and conferences, are designed to help the businessman or businesswoman anticipate and manage those pivotal phases successfully.

"All successful small businesses start with an idea and proceed through a given lifecycle," says Mancuso. "From the original idea, the business then goes from start-up and financing through growth and maturity. At every stage of development, the business requires special courses of action. To help an entrepreneur recognize his current position and show him what to do about it — that's the purpose of the Lifecycle program," Mancuso explains.

For more information about its activities, write the Center for Entrepreneurial Management, Room 402, 311 Main Street, Worcester, Mass. 01608.

Joe Mancuso, founder of the Center and until recently an associate professor of management at WPI, is not only a respected educator and author but is, himself, a compulsive entrepreneur. He launched his first business at age 19, while still a WPI undergraduate. In all, he has started seven businesses and currently serves as a board member and advisor for a score of entrepreneurial ventures.

He holds an MBA from Harvard Business School and an EdD from Boston University. Besides the books mentioned earlier, he has published many articles in *The Harvard Business Review, The Journal of Marketing, The Journal of Small Business, Business Horizons,* and many other national magazines.

Mancuso has years of solid entrepreneurial experience in back of him as he launches the Center for Entrepreneurial Management. His goal is to help others following a similar independent route to overcome the pitfalls. "After all," he says, "it's one thing to be independent, but there's no real reason why one should have to go it alone."

John Galvin has been promoted to systems consultant within the systems development organization at State Mutual Life Assurance Company of America in Worcester. He has his MBA from Clark University. In 1970 he joined State Mutual as an actuarial assistant in the company's actuarial organization. In 1972 he transferred to the systems development organization as a systems analyst. He was named senior systems analyst in 1976.

The **J. Geils** Band played in the Providence (R.I.) Civic Center in December. . . . Presently, **Raymond Hudson, Jr.,** serves as a system architect at NCR Corp. in Millsboro, Del. He and his wife Ann live in Delmar, Md. They have one child. . . . **Stephen Joyce** is employed as an application engineer at Allis-Chalmers in Cincinnati. . . . **Peter Lalor** is a senior development engineer for Combustion Engineering in Windsor, Conn. The Lalors, who have three children, reside in Enfield. . . . **Alan Miller,** still with IBM in Waltham, Mass., has moved to Bedford, N.H.

Robert Soffel was recently transferred from the Carbon Products Division of Union Carbide, Parma, Ohio to the Linde Division, Tarrytown (N.Y.) Technical Center. He is now staff engineer in the adsorption technology group of the Molecular Sieve Department. His article on activated carbon for J. Wiley's *Kirk Othmer Encyclopedia of Chemical Technology,* 3rd edition, was published in December. Bob and his wife Janet live in Brookfield, Conn.

1971

Secretary
Vincent T. Pace
4707 Apple Lane
West Deptford, NJ
08066

▶*Married:* **Stephen J. Barlow** to Miss Cynthia J. Colella on August 26, 1978, in Worcester. Mrs. Barlow graduated from Worcester State College and is a first grade teacher at Nelson Place School. Her husband is vice president of Northeastern Construction Co. in Framingham, Mass. . . . **Anthony E. Yankauskas** and Miss Toby Sachs in West Long Branch, New Jersey on July 16, 1978. Formerly a financial analyst for the Continental Group in New York, the bride is a graduate of Northeastern University. Her husband is a director of finance at Continental Can in London, England. He holds an MBA degree from Northeastern.

Bob Allard of Croman/Allard Development Co., East Orange, N.J. writes that his company owns and operates a half a million square feet of shopping center space in the state of New Jersey. Expansion plans include two new centers which are projected to open in 1980. Bob and his wife, Roberta, who recently moved to West Orange, are renovating a 50-year-old English Tudor. . . . **David Bailey** is studying for his master's in computer science at the University of California, Santa Barbara. He is with Raytheon in Goleta, Calif.

Allen Downs is still maintaining his interest in "alternative power" vehicles that was formerly highlighted by his work on the WPI Steam Car prepared for the 1970 Clean Air Car Race. (The Steamer, you may recall, was never quite finished in time, and made only a token appearance at the race's start.) Anyway, Allen writes that when their VW bug started showing signs of impending senility, he and his wife, Sauce, bought a diesel Rabbit. His latest acquisition, in November, is an electric car, a "Charles Townabout" built about 1958. The vehicle has a fiberglass body, two motors, and 18 batteries. Allen reports that what was supposed to be a woodworking shop has now been transformed into an electric car shop as repairs are underway. He hopes to begin commuting in the car this spring.

Sauce has returned to monoprinting in her new studio in their Scotia, N.Y. home, and she was accepted this year into the Mohawk Regional Art Show, the Cooperstown Art Show, and the Schenectady Stockade Art Show.

The Downses served as chairpersons of the "Super Scare" section of the Schenectady Museum's Haunted House recently. "For 11 days we almost lived at the Haunted House, training characters, making repairs, and patrolling Super Scare's 10 rooms."

Along with other activities of the year, the Downses are outfitting a log cabin. Among their accomplishments, Allen reports, "We finally got an outhouse built!"

Michael Gitlen is currently with the firm of Blum, Gavens & Kaplan, P.C. in West Hartford, Conn. He has an MBA from UConn and an MS in professional accounting from the University of Hartford. . . . **Andrew Griffin** works as a project engineer at American Optical, Bedford, Mass. He is studying for his MSEE at Northeastern. . . . **Ben** and Nancy **Katcoff** have adopted a son, Gregory Louis, born on June 4, 1978. . . . **George Simmons** is a sales representative at Corbin-Gentry in Somerville, Conn.

1972

Secretary:
John A. Woodward
101 Putnam St
Orange, MA
01364

Representative:
Lesley E. Small Zorabedian
16 Parkview Rd
Reading, MA
01867

▶*Married:* **Robert I. Parry** and Donna Colby in Gloucester, Massachusetts on July 29, 1978. Mrs. Parry attended Salem State College and is a computer programmer at Blue Cross, Blue Shield in Boston. The couple lives in Rockport. . . . **John T. Poreda** and Miss Barbara B. Anderman on October 22, 1978 in Rosalyn, New York. The bride, who has a master's degree from the University of Colorado at Boulder, is a speech pathologist in Sunnyvale, Calif. Her husband serves as a systems analyst in Hayward, Calif.

Capt. **Scott Graham** is the officer in charge of training management for the U.S.A.F. at Myrtle Beach AFB, S.C. . . . Dr. **Daniel Lusardi** writes that he is employed as a research associate with Betz Labs, Inc., Trevose, Pa. He is in the analytical testing and development group. Recently he received his PhD degree in analytical chemistry from Notre Dame. Currently, he resides in Warminster, "located in beautiful Bucks County, Pa." . . . **Kenneth Wadland** has completed requirements for the degree of doctor of philosophy in mathematics at the University of New Hampshire. His dissertation, entitled "Contractions With Infinite Defect Index," is a study of bounded linear transformations on complex, separable Hilbert spaces. He and his wife Vera live in Fitchburg, where he is an assistant professor of computer science at Fitchburg State College.

1973

Secretary:
Jay J. Schnitzer
322 St. Paul St.
Apt. #3
Brookline, MA
02146

Representative:
Robert R. Wood
14 Stone Brook Rd
Sudbury, MA
01776

▶*Married:* **Stephen R. Slavick** to Miss Patricia J. Maresca recently in Schenectady, New York. Mrs. Slavick graduated from Schenectady County Community College and is a current business administration student at the College of St. Rose in Albany. She is employed by GE Corporate Research and Development. The groom is a senior rail transportation specialist for the New York State Department of Transportation in Albany.

▶*Born:* to Mr. and Mrs. Lawrence Franciscus **(Dorothy O'Keefe)** a son Michael on August 11, 1978. Dorothy is an industrial engineer at Norton Co., Worcester.

Robert Evans holds the post of production manager at Kaiser Aluminum & Chemical's Trentwood Works in Spokane, Washington. Bob was formerly an assistant professor of military science at WPI. . . . Continuing with General Electric, **James Foster** presently serves as a project engineer in the Gas Turbine Division, Schenectady, N.Y. He and his wife Faith reside in Delmar. . . . **Joseph Luszcz,** a development engineer for Hewlett-Packard Co., Andover, Mass., is working on his MSEE in the evening program at Northeastern. . . . Currently, **Richard Page** is chief planning engineer for Schneider, Inc., Pittsburgh, Pa. The Pages and their two children live in Monaca. . . . **Joe Pault** has just relocated with Occidental Oil and is working in oil shale research in the mountains around Grand Junction, Colorado. He had been with du Pont in Delaware. He has a master's degree from the University of Kentucky. . . . **Stuart Roth** of Sherman, Texas is a reliability engineer at Texas Instruments.

1974

Secretary:
James F. Rubino
18 Landings Way
Avon Lake, OH
44012

Representative:
David G. Lapre
P O Box 384
Tunkhannock, PA
18657

▶*Married:* **James M. Briggs** and Miss Diana M. Louis in Westville, New Jersey on July 29, 1978. Mrs. Briggs graduated from Glassboro State College and is presently teaching in the Catholic school system in Arlington, Va. Her husband is a project design engineer for the Department of the Navy in Washington, D.C. . . . **James T. O'Bray** to Miss Pauline D. Zielinski in Worcester on October 28, 1978. The bride attended Assumption College, graduated from Bentley College, and is employed as a senior cost analyst at Gillette Co., Andover, Mass. The bridegroom works as a purchasing coordinator for Gillette in Boston. . . . **Ronald Sarver** and Miss Rhoda I. Kaplan on October 29, 1978 in Brookline, Massachusetts. Mrs. Sarver graduated from UMass-Amherst and is a vice president of Metropolitan Furniture Co. in Jamaica Plain. The groom is president of Ronnie's Catering, Inc., and Ronnie's Kosher Restaurant in Randolph. . . . **Robert L. Smith** and **Paula A. Sabaj** in Webster, Massachusetts on October 21, 1978. The bride is a programmer-analyst for the American Optical Co., Southbridge, Mass. Her husband is with Yankee Atomic Electric Co., Westboro.

▶*Born:* to Mr. and Mrs. **James W. Bowen** a daughter, Andrea Page, on November 12, 1978. Jim is with the Torrington (Conn.) Company.

Steve Dacri is presently a magician-actor-comedian with the Mary Grady Agency in North Hollywood, Calif. . . . Still with IBM, **Francis Dempsey, Jr.,** is now a senior associate programmer for the company in Kingston, N.Y. . . . **David Korzec** is employed as a resident mechanical engineer by Northeast Utilities Service Company, Waterford, Conn. . . . **Timothy Murray** is a member of the research staff of du Pont. He is located in Wilmington, Del. . . . **Janice Painter** holds the position of product marketing manager at Grason-Stadler, Inc., Littleton, Mass. . . . **Jonathan Wood,** who is working on an MS in environmental engineering at Northeastern University, is a technical service engineer at Barnstead Company in Boston.

1975

Secretary:
James D. Aceto, Jr
70 Sunnyview Dr
Vernon, CT
06066

Representative:
Frederick J. Cordella
24 Imperial Rd
Worcester, MA
01604

▶*Married:* **David Cyganski** and Miss Janet M. Waite on November 4, 1978 in Worcester. The bride, a graduate of Hahnemann Hospital School of Nursing, Worcester, is a registered nurse at the hospital. She is studying for her BS in nursing at Worcester State College. The bridegroom is adjunct professor in the graduate program of electrical engineering at WPI. . . . **William DiBenedetto** to Christine Latham on June 3, 1978 in Worcester. The bride is a graduate of Assumption College and serves as a production supervisor at Digital Equipment Corp., Salem, N.H. Her husband is a production manager at Data General Corp., Southboro, Mass. . . . **Donald R. Drew** and Miss **Diane C. Gramer,** '73 recently in Canton, Massachusetts. Mrs. Drew is a thermo-analyst with Hamilton Standard in Connecticut. The groom, who has an MBA from Cornell, is a consultant at Arthur Young Company in Hartford, Conn.

▶*Married:* **Peter J. Hatgelakas** and Anne M. Connaughton recently in Weston, Massachusetts. The bride graduated from Regis College. Her husband is a geologist at the Seismograph Service Corporation in Houston. He has a master's degree in geology from Boston College. . . . **Robert D. Jamieson, Jr.,** and Miss Mary E. Ventre in Paxton, Massachusetts on August 26, 1978. Mrs. Jamieson graduated from Anna Maria and is employed in the special needs department of the Millbury public school system. The groom is a chemist at New England Nuclear Corp. in Boston. . . . **Craig C. Smith** to Miss Cynthia L. Dickman in Jefferson, Massachusetts on October 7, 1978. The bride attended Quinsigamond Community College in Worcester. She is an accounting clerk for H.C. Cook Co., Ansonia. The bridegroom serves as a supervisory engineer at Bic Pen in Milford, Conn.

Michael Amaral, an electronics engineer at Naval Underwater Systems Center in New London, Conn., is presently working

on active sonar systems for attack class submarines. . . . **Peter Arcoma** holds the post of project manager at H. Wales Lines in Meriden, Conn. . . . Still with Sikorsky Aircraft, Stratford, Conn., **Allen Carnicke** is now an instrumentation engineer.

Rick Caruso, with BASF Wyandotte Corp., is presently assistant to the plant manager in Geismar, La. He and **Lorri Lind Caruso, '73,** have two children. They live in Baton Rouge. . . . **Alan Destribats** holds the post of manager of strategy development at GE in Lynn, Mass. . . . In addition to his usual duties as a process engineer for Monsanto, **Mario DiGiovanni** is supervising the quality control laboratory at the Avon plant in Martinez, Calif. He writes, "I have bought a house in Antioch."

Paul Feltri was a recent winner of the GTE Leslie H. Warner Technical Achievement Award for excellence in research and development. He was one of six employees at the GTE Sylvania Lighting Center, Danvers, Mass., to share $10,000 for work done in developing a new water-base phosphor coating system. The pollution-free coating is for the inside surface of fluorescent lamps. Feltri, a project chemical engineer, has worked at Sylvania for three years. He and his wife Sharon reside in Salisbury, Mass.

Mark Ketchum, who has his MS from the University of California at Berkeley, serves as a structural engineer at T.Y. Lin International in San Francisco. . . . **Philip Ledoux** is employed as a biochemist at Abbott Laboratories in North Chicago, Ill. . . . **Richard Newhouse** has accepted a post as structural engineer with Petro-Marine Engineering, Inc., of Gretna, Louisiana. He and his wife Barbara are living in River Ridge, just outside of New Orleans. . . . **Jean Reny,** still with the Upjohn Co., is currently a chemistry assistant II for the firm in Kalamazoo, Michigan. . . . **Michael Rocheleau** is with Travenol Labs, Inc. in Round Lake, Ill. He has a master's degree from Northwestern University.

Lt. **Douglas Sargent** serves as processing officer for the U.S. Army in Portland, ME. . . . **Victor Sawicki** is a graduate student and research assistant at UMass in Amherst. . . . Still with Westinghouse, **John Taylor** now is a maintenance engineer for Westinghouse Aerospace in Lima, Ohio. . . . **Mark Youngstrom** works as a project engineer at Wright Engineering in Rutland, Vt.

1976

Secretary:
Paula E. Stratouly
318 Thornberry Court
Pittsburgh, PA
15237

Representative:
Lynne M. Buckley
648 Commercial St.
Braintree, MA
02184

▶*Married:* **Gregory J. Bowles** to Miss Dorothea L. Coakley in Sudbury, Massachusetts on October 8, 1978. The bride graduated from Fitchburg State College and is studying for her master's degree at Boston College. The bridegroom is with Warren Brothers of Brockton. . . . **John C. Forster** and Catherine L. Daily on October 7, 1978 in Easthamptom, Massachusetts. Mrs. Forster is a graduate of Mount Holyoke College. She has received certification as a paralegal assistant in corporate law from the Institute for Paralegal Training in Philadelphia. She is a corporate paralegal at the law firm of Sherburne, Powers and Needham in Boston. Her husband, an environmental engineer with Camp Dresser and McKee, Boston, is also a graduate student at Northeastern University. . . . **John A. Kowalonek** and Miss Ann M. Sancus on June 3, 1978 in Worcester. The bride, a graduate of Quinsigamond Community College, is a secretary for Dr. Theodore Lambert. The groom is a publications engineer at Data General Corporation in Westboro, Mass. . . . **William C. Moodie** and Barbara A. Sullivan recently in Weymouth, Massachusetts. Mrs. Moodie attended UMass in Boston. After leaving WPI, her husband attended the University of New Hampshire.

▶*Born:* to Mr. and Mrs. **Jeremy J. Brown** a daughter Emily recently. Brown is an actuarial assistant at State Mutual in Worcester. . . . to Lt. and Mrs. **Edward J. Perry II,** their first child, a daughter Marcy, on July 23, 1978. Perry was transferred to Wright-Patterson AFB, Ohio from Robins AFB, Georgia last fall. He was promoted to first lieutenant in October.

Keith Bennett works for DEC in Maynard, Mass. . . . **Robert D'Orazio** has accepted a post at New England Nuclear. He resides in Arlington, Mass. . . . **Mark Ducharme** serves as a software consultant at Interactive Systems, Inc., in Boston.

Paul Kalenian, owner of the G and S Mill on Otis Street in Northboro, Mass., has just put out a "Waste Wood Directory," which lists 109 sources of waste wood. His company designs and manufactures industrial woodburning furnaces and domestic woodburning stoves. "Many manufacturers in the New England region create wood waste byproducts and dispose of them with little regard for their fuel value," he says. He urges wood consumers to seek out wood product manufacturers to obtain inexpensive fuel. His directory is available at wood stove shops, local libraries, and at his Northboro mill.

Elizabeth Papandrea Lariviere is now a market analyst at Westinghouse Electric Corp. in Lester, Pa. She is the wife of **Leonard Lariviere, '78.** The couple is living in West Chester, Pa. . . . **Vernon LeBlanc** is with Universal Engineering Corp. in Boston, Mass. . . . **Paul Prouix** is employed in the advanced development department of Milton Bradley Co. . . . **Jonathan Rourke,** who receives his MSME from MIT in February, will start his PhD work in the spring. He is a research associate at MIT. . . . **Rosemary Ruksnaitis** was recently promoted to administration analyst for the vice presidents of finance and administration and development at Wright Line, Inc., Worcester. She has an associate's degree in business administration from Quinsigamond Community College and attends Clark University. . . . **Steven Silva** serves as a sales engineer at Tektronix, Inc. in Rockville, Md. . . . **Ivo Slezak** works as a service engineer at Riley Stoker Corp. in Worcester.

1977

Secretary:
Kathleen Molony
Apt #1
29 Seaview Ave.
Norwalk, CT
06855

Representative:
Christopher D. Baker
P O Box 35
Page, AZ
86040

▶*Married:* **Paul B. Deschamps** and Patricia K. Quinn in Stuart, Florida on September 12, 1978. Mrs. Deschamps is a graduate of the University of New Hampshire with a BS in civil engineering. Her husband is with Digital Equipment Corporation, Phoenix, Arizona. . . . **Marc P. DeVoe** and Catherine C. Leether in Farmington, Connecticut on October 7, 1978. The bride attended Eastern Connecticut State College and was a teller at the Meriden Trust & Safe Deposit Company. Her husband is a systems development engineer at IBM in Boca Raton, Fla. . . . **Charles C. Nixon** and Miss Kerry L. Corbishley on December 9, 1978 in Cumberland, Rhode Island. Mrs. Nixon attended the University of Rhode Island. The groom works for Electric Boat in Groton, Conn. . . . **Richard H. Wheeler** and Miss Linda J. Carroll on November 25, 1978 in North Brookfield, Massachusetts. The bride graduated from Bridgewater State College. She is a rehabilitation counselor in the mental health division of Hedwig House in Pottstown. The bridegroom is employed in the Plastics Division of Firestone Tire & Rubber Co., Pottstown, Pa.

Paul Avakian is a sales application engineer at Zilog, Inc. in North Billerica, Mass.

. . . **Thomas Buccino, Jr.,** works as a process control engineer at GE in St. Petersburg, Fla. . . . **Joseph Hillery** is employed as an administrative officer with the U.S. Army at the Armed Forces Institute of Pathology in Washington, D.C. . . . **Robert Hunter, Jr.,** recently completed the U.S. Army non-commissioned officer professionalism course at Camp Darby in Italy. The course covers over 20 subjects including leadership methods, communication, and counseling. Hunter is a pharmacy technician with the 45th Field Hospital. . . . **Thomas Murtha** is a manufacturing management trainee at GE in Louisville, Ky.

John Osowski and **George Harding,** both civil engineers, ran in the Rochester (N.Y.) Marathon on Labor Day. John took 12th place in a time of two hours and 45 minutes in the 26-mile run. It was his eighth marathon. It was George's first marathon, which he ran in four hours and fourteen minutes. He placed 259th. Three hundred and sixty people entered the marathon and 310 finished. . . . **Clifford Parizo** works as a ground test engineer at Sikorsky Aircraft in Stratford, Conn. . . . Lt. **David White, Jr.** serves as commanding officer for the U.S. Army 88th Ordnance Detachment in New Brighton, Minnesota.

1978

Secretary:
Cynthia Grynick
303 Wolcott St
Waterbury, CT
06705

▶*Married:* **Neil A. Bagdis** to Miss Janice E. Benson in Paxton, Massachusetts on October 28, 1978. Mrs. Bagdis graduated from Bridgewater State College. The groom is a sales supervisor for Norton Co., Worcester. . . . **Daniel A. Boudreau** and Donna M. Kelleher in Springfield, Massachusetts on October 21, 1978. A registered nurse at Providence Hospital, the bride graduated from St. Vincent Hospital School of Nursing. Her husband works for Honeywell Computers in Billerica, Mass. . . . **Robert C. Chapell** and Miss **Robin L. Paisner** in Tuckahoe, New York on June 12, 1978. Mrs. Chapell has a BS in environmental health studies. The groom is a sanitary engineer at Consoer Townsend & Associates. The couple resides in Chicago.

▶*Married:* **Patrick J. Donahue** and **Elizabeth L. McCauley** on November 25, 1978 in Hull, Massachusetts. Mrs. Donahue has a BS in public administration. The groom is with du Pont in Aiken, S.C. . . . **Stephen M. Kuczarski** to Miss Carole M. Lafayette on October 14, 1978 in Rochdale, Massachusetts. The bride graduated from St. Vincent Hospital School of Nursing, Worcester, where she is a registered nurse. The bridegroom is an aerospace engineer at Goddard Space Center in Greenbelt, Md. . . . **John MacWilliams** and Katherine Phillips on October 7, 1978 in Newburgh, New York. Mrs. MacWilliams graduated from SUNY at Delhi and is a dental assistant in Stamford, Conn. Her husband is with the marketing division of H.H. Robertson Co.

Michael Ahern is an assistant analytic engineer at Pratt & Whitney Aircraft in East Hartford, Conn. . . . **John Anderson** is with Bailey Controls Co., Wickliffe, Ohio. . . . **Paul Angelico** holds the post of mechanical manager at Procter & Gamble Mfg. Co. in Quincy, Mass. . . . Navy Ensign **Bramwell Arnold, Jr.,** was recently commissioned to his present rank upon completion of Aviation Officer Candidate School at the Naval Air Station in Pensacola, Fla. The course included military, academic, and leadership training and aerodynamics, sea and land survival, aviation physiology and basic aircraft engineering.

Theodore Balcezak, Jr. serves as a process engineer at Fafnir Bearing in New Britain, Conn. . . . **Diane Ballou** is a process engineer at Monsanto Co. in Trenton, Michigan. . . . **Mike Beaudoir** has joined Golden Associates Inc., a consulting geotechnical (civil) engineering firm in Atlanta, Ga. He is a junior engineer doing engineering analyses, laboratory testing, report writing, and field inspections. About 20% of his time is spent traveling nationwide and worldwide for the company.

Bruce Bertrand is a research technician at St. Vincent Hospital in Worcester. . . . **Theodore Biadasz, Jr.,** holds the post of marketing specialist for GE in Ft. Wayne, Indiana. . . . **Howard Bleakie** has joined Mobil Oil Corporation, Inwood, N.Y. . . . **Alex Boutsioulis** serves as assistant electrical engineer at the United Illuminating Co. in New Haven, Conn. He works as a distribution project engineer for the electric utility, which covers southern Connecticut. . . . **Cynthia Bouvier** is a highway-engineer-in-training for the North Carolina Dept. of Transportation in Raleigh. . . . **Gerald Bujaucius** is employed as a programmer for Multi Circuits, Inc. in Manchester, Conn. . . . **Robert Caless,** a metallurgist at Pratt & Whitney, East Hartford, Conn., is working for his master's in metallurgy at RPI-Hartford Graduate Center. . . . **Jean Lucrezia Cariglia** is a component engineer at Honeywell Information Systems, Billerica, Mass. . . . **John Contestabile** holds the post of highway engineer I with the Maryland State Highway Administration in Baltimore. . . . **Andrew Corman** is now a field engineer for Turner Construction Co. in Cleveland, Ohio. . . . Navy Ensign **Richard Cote** has been commissioned in his present rank upon graduation from Officer Candidate School at the Naval Education and Training Center in Newport, R.I.

Steven Diaz serves as a teaching assistant at Brown University, Providence, R.I., where he is a grad student. . . . **Rodney Dill** works as a product service representative for GE Ordnance Systems at Portsmouth (N.H.) Naval Shipyard. His job entails troubleshooting and testing of fire control computers on board the Navy's Poseidon class submarines. . . . **Mary Donovan** has joined the David Taylor Naval Ship R&D Center in Bethesda, Md., where she is a structural engineer.

Gregory Dunnells is a process engineer I for Cities Service Company in Lake Charles, La. . . . **Daniel Durbak** is in the corporate engineering training program at GE in Schenectady, N.Y. . . . **Douglas Edwards** has accepted a field engineering post with GE's Installation & Service Engineering Division in Schenectady. . . . **Francis Elliott, Jr.,** holds the position of manufacturing manager at Decitek, a division of Jamesbury in Westboro, Mass.

Richard Fair, who is working for his master's degree at Hartford Graduate Center, is also a test engineer at Pratt & Whitney Aircraft in East Hartford, Conn. . . . **Robert Flynn** is with ACCO — Wilson Instrument Division in Bridgeport, Conn. . . **Jayne Franciose** has joined Estee Lauder in Melville, N.Y., where she is a management engineer. . . . **Jeffrey Fraulino** is employed as a junior engineer at Seelye, Stevenson, Valve & Knecht in Stratford, Conn. . . . **Mark Freitas** is a graduate assistant in computer science at WPI. . . . **Edward Freniere,** who has his MS from WPI, is an associate development engineer at the Electro-Optics Center of Honeywell, Inc. in Lexington, Mass. . . . Hamilton Standard of Windsor Locks, Conn. has employed **John Furman** as an electrical design engineer. . . . **William Gagne** works as a design engineer at O'Brien & Gere Engineers in Syracuse, N.Y. . . . **Michael Gantick** is a sanitary-environmental engineer at Keyes Associates in Wethersfield, Conn. . . . 2/Lt. **Alan Geishecker** recently completed a field artillery officer basic course at the Army Field Artillery School at Fort Sill, Okla. The course emphasized artillery techniques and new weapons and doctrine.

John Giordano, who is located in West Palm Beach, Fla., is a mechanical design engineer with Pratt & Whitney. . . . **Thomas Gudewicz,** a research technician at Baylor College of Medicine in Houston, is doing research in viral oncology. . . . **Michael Guile** has joined Babcock & Wilcox in Lynchburg, Va. as a manufacturing engineer. . . . **Herbert Holmes** serves as a federal highway engineer with the Federal Highway Administration. He notes that he'll be "temporarily mobile for the next two years."

Lt. **Peter Hunt** continues as a Titan III systems engineer for the U.S.A.F Space Test Group at Vandenberg AFB, Calif. His wife Barbara, also a lieutenant in the Air Force, is stationed at Vandenberg. . . . **Kevin Ingle** works as a financial analyst at Jamesbury in Worcester. . . . **Christopher James** holds the post of staff engineer at Dynatech R/D Company in Cambridge, Mass. . . . **Peter Johnson** is a first year medical student at the University of Massachusetts Medical School in Worcester. . . . **David Jones** is a materials consultant for du Pont in South Carolina.

William Kelm has joined the structural division of LAN in Houston. . . . **Michael Kenniston** is a grad student and research assistant at Stanford (Calif.) University. . . . **Kevin Keough** has accepted a position with Polaroid Corporation in Waltham, Mass. . . . **Stephen Koch** is a senior programmer at Computer, Inc. in Burlington, Mass. . . . **Robert Lavieri II** serves as a mechanical supervisor for Procter & Gamble in Quincy, Mass. . . . **Paul Lefebvre** is a development engineer at the Foxboro (Mass.) Company. He has an MS in mechanical engineering from WPI. . . . **Brian Lynch** is a design engineer at Intronics, Inc. in Newton, Mass.

Fafnir Bearing-Textron in New Britain, Conn. has employed **Francis Marchand, Jr.** as an applications engineer. . . . **Jerome Marcotte** is presently an environmental engineer for the U.S. E.P.A. in San Francisco. . . . **Wayne Martin** has joined GE's Knolls Atomic Power Lab., Schenectady, N.Y., where he is a nuclear engineer in operations. . . . **Laura Mattick** serves as a team manager at Procter & Gamble in Mehoopany, Pa. . . . **Brian McLane** works as a project engineer at CBS Technology Center in Stamford, Conn. . . . **David Mendrek** holds the post of development engineer at UOP Process Division in Riverside, Ill. . . . **Steven Mickool** is a project engineer at Pratt & Whitney Aircraft in East Hartford, Conn. . . . **James Monroe** is employed as a hematology research technician at St. Elizabeth's Hospital in Brighton, Mass. . . . **Kevin Northridge** has joined Storch Engineers in Florham Park, N.J. . . . **Sergej Ochrimenko** is with Raymond International Builders, Inc., Houston, where he is a civil engineer.

Lucian Ograbisz works for Sanders Associates in Nashua, N.H. . . . **Paul Peterson** is a process engineer at Valtec Corp. in West Boylston, Mass. . . . **Robert Pierce, Jr.** is employed as a service engineer at Babcock & Wilcox in San Francisco. . . . **Ernest Poulias** serves as a manufacturing engineer at Boston Digital Corp. in Hopkinton, Mass. . . . The Foxboro Company has employed **James Pownell** as a research engineer. . . . **Angelo Privetera** is an area commander for the U.S. Army in Denver. . . . **Anthony Raymond** has joined Electronics for Medicine in Sudbury, Mass., where he is a systems engineer. . . . **Stephen Robichaud** is with the manufacturing management program at GE in Shelbyville, Indiana.

Peter Rowden holds the post of production control planner at Data General, Southboro, Mass. . . . **Bruce Rutsch** works as a CPU engineer at Prime Computer in Newton Lower Falls, Mass. He is studying part time for his master's degree at WPI. . . . **Joseph Sage** is a teaching assistant in the School of Architecture at the University of Wisconsin in Milwaukee. . . . **John Salvatore** serves as vice president of Lupachino & Salvatore, Inc., Bloomfield, Conn.

Richard Schonning is a field engineer at Perini Corp. in Framingham, Mass. . . . **Thomas Skinner,** who has his MSEE from WPI, is the president and owner of Microcom Associates, Framingham. . . . **Edmund Sprogis** is with IBM in Essex Junction, Vt. . . . **Edgar Stanley** has his MS in management science and engineering from WPI and is a senior industrial engineer at ITT Surprenant in Clinton, Mass. . . . **Kenneth Steinhardt** holds the position of sales associate at Digital in Waltham, Mass. He is also a multi-keyboardist with the rock band, Jove. . . . **Lalit Sudan** is product manager at Codex Corp. in Mansfield, Mass. He has an MS in management science and engineering from WPI. . . . **Gary Sylvestre** works as a programmer for Travelers Insurance in Hartford, Conn.

Bradford Tannebring is a program engineer for the GE Aircraft Engine Group in Lynn, Mass. . . . **Daniell Tarpley** has accepted a field engineering position with GE's I&SE Engineering Division in Schenectady, N.Y. He will receive technical training at I&SE's Field Engineering Development Center and on-the-job assignments with I&SE and GE product departments as a member of the company's field engineering program. Tarpley belongs to ASME. . . .

Douglas Thompson is involved with microwave radio systems at Western Electric Co. in North Andover, Mass.

Eric Thompson has been named an environmental engineer for the U.S. E.P.A. Currently, he is a state assignee to the state of Connecticut in Hartford. . . . **Alan Turniansky** serves as a programmer-analyst at TMI Systems, Inc. in New York City. . . . **Andreas von Huene** is a field service engineer for General Electric Technical Service Co. in Schenectady. . . . **Jonathan Waldo** has joined Russell Waldo & Associates in Guilford, Conn. . . . **John Wallace,** a member of the technical staff at Bell Labs in Naperville, Ill., is currently pursuing a graduate degree in electrical engineering at Carnegie-Mellon University in Pittsburgh.

Wesley Wheeler holds the position of cost engineer at Exxon Research & Engineering Co. in Florham Park, N.J. . . . **Charles Winters** has joined Brown & Sharpe Mfg. as an electronics service engineer. The firm is located in North Kingstown, R.I. . . . **Wayne Wnuk** is with the United Technologies Power Systems Division as a test engineer. He is located in South Windsor, Conn. . . . **Roger Yelle** is a graduate student at the University of Wisconsin in Madison. . . . **Francis Zarette** has been certified as a registered professional engineer by the Massachusetts Board of Registration of Professional Engineers and Land Surveyors. Also a professional engineer in New Hampshire, he is a project engineer at Bay State Abrasives in Westboro, where he is involved with pollution control. He is a registered grade 5 wastewater facilities operator. . . . **Robert Zawistowski** is a field engineer in the service department at Babcock & Wilcox in New York City.

Natural Science Program

Gordon Eaton, '66, teaches at Goddard High School in Roswell, N.M.

James DeVries, '72, associate professor of mathematics and physical science at Barrington (R.I.) College, recently participated in a short course for college educators at Hampshire College in Amherst, Mass. The course, which was offered by the National Science Foundation, concerned the study and applications of lasers. In March he will attend a second two-day study program. He is a graduate of Barrington College and earned an associate degree in electronic engineering from Worcester Junior College and a master's in secondary education from Worcester State College.

K. Scott Blake, 78, is a biology teacher in Woburn, Mass. . . . **Larry George, '78,** is with the town of Amesbury (Mass.) Middle School. . . . **James Kalloch, '78,** teaches at Swampscott (Mass.) High School. He and his wife Sue live in South Hamilton, Me. . . . **Louis Lowell, '78,** teaches in Georgetown, Mass. . . . **Philip Wilson, '78,** is employed as a teacher at Lynnfield (Mass.) High School.

School of Industrial Management

Earl W. Shaw, Jr., '53, has been appointed as senior vice president of Bird Machine Company, Walpole, Mass. Previously, he was vice president of operations and assistant to the president. Bird Machine, established in 1909, manufactures pulp and paper-making equipment, and solids-liquids separating equipment used in mining, chemical, and process industries. It also produces waste treatment equipment including waste sludge dewatering centrifuges.

Everett Sinclair, '65, technical director for the grinding wheel division at Norton Co. in Worcester, has been elected 1979 chairman of the board of the Grinding Wheel Institute, a national association for the grinding wheel industry. He held the post previously in 1975. Since joining Norton in 1939, Sinclair has held various product engineering and managerial positions for both coated and bonded abrasives. He is a professional engineer in Massachusetts. Norton, the world's leading producer of abrasives, had sales of $848 million in 1977. It is 272nd on the Fortune 500 list.

Richard Alliegro, '67, was recently named director of marketing and sales for Norton Company's Industrial Ceramics Division in Worcester. His most recent Norton post was that of director of research and new business development. He holds a BS and MS in ceramic engineering from Alfred University, and has also studied at Northeastern. He started with Norton in 1957. He is a fellow of the American Ceramic Society, a member of the Refractories Division, a past president of NICE, and a newly installed trustee of Alfred University in New York.

Thomas Bentley, '75, is with Digital Equipment Corp. in Salem, N.H.

David Starrett, '77, holds the post of field service branch manager at Digital Equipment Corp., Maynard, Mass.

Roger Towne, '78, is a regional manager for Digital in Bedford, Mass.

SIM's Schwieger Award to Jack Shields

The Albert J. Schwieger Award of WPI's School of Industrial Management for 1979 has been presented to John J. Shields. The citation reads, in part:

"In an age when a sophisticated educational background is a prerequisite for success and upward mobility, you vividly represent the exception. You have demonstrated outstanding technical and management skills which have served you and your employer well, without the benefit of an undergraduate college degree.

"Your exceptional organizational instinct has catapulted you through a challenging career at Digital Equipment Corporation. Qualities such as fairness and impartiality have played a key role in your outstanding success, and your unique leadership capabilities are known and recognized throughout New England as you represent one of the fastest-growing corporations in the world.

"You have distinguished yourself in both WPI's School of Industrial Management and the management development program at the Harvard Business School. Today, your dynamism and drive serve you well in your position as Vice President — Customer Services for Digital Equipment Corporation...

"Superb manager and unique individualist, it is with a great sense of pride that WPI presnets you the 1979 Albert Schwieger Award for outstanding professional achievement."

Completed Careers

Hyman J. Friedman, '25, a retired electrician from Morgan Construction Co., passed away on December 7, 1978 in Worcester.

He was born in Russia on Jan. 31, 1899. In 1925 he received his BSEE from WPI. He retired in 1963 after many years with Morgan Construction.

Mr. Friedman belonged to Alpha Epsilon Pi, Shaarai Torah Synagogue West, Brotherhood of Beth Israel Synagogue, Jewish Home for Aged, Worcester Lodge of B'nai B'rith and the Jewish War Veterans. He was an Army veteran of World War I. He was the father of **Stanley Friedman, '50.**

William H. Welch, '25, former president of Sleeper and Hartley, Inc., Worcester, died in Worcester on October 28, 1978.

A Worcester native, he was born on June 13, 1902 and later studied mechanical engineering at WPI. For sixteen years he served as president of the Sleeper firm, retiring in 1973. He was also a heating engineer and manager of the home building department of Sawyer's Lumber Co. for twenty-five years. Earlier he had been with Baker Lumber Co.

Mr. Welch belonged to Phi Gamma Delta and Tatnuck Country Club.

Gordon S. Bird, '26, passed away suddenly at his home in Warner, New Hampshire on October 22, 1978. He was 74.

Prior to his retirement in 1964, he was a regional sales manager for Mobil Oil Co. for 38 years. A deacon of the Congregational Church, he was also active with the Boy Scouts, the Masons, and the Eastern Star.

Mr. Bird belonged to Sigma Phi Epsilon and the class of 1926 at WPI. During World War II he served as a member of the U.S. Coast Guard Reserve. He was a former member of the Winchester Board of Health and an auxiliary member of the Winchester Police Department. He was born on August 23, 1904 in Brockton, Mass.

Stuart D. Pike, '31, died on December 2, 1978 in East Greenwich, Rhode Island following a two-week illness.

Until his retirement in 1967, Mr. Pike was the purchasing agent for the former Edmunds Company of Cranston, R.I. for eighteen years.

Born in Everett, Mass. on July 31, 1910, he later became a student at WPI. He was a Navy veteran of World War II and a member of the East Greenwich Methodist Men's Club.

Irving S. White, '31, died in Westwood, New Jersey on October 9, 1978.

A native of Great Barrington, Mass., he was born on August 9, 1909. In 1931 he received his BSEE from WPI and in 1932, his MSEE. He had been associated with S.S. Kresge, Joseph Bancroft & Co., and Robert Gair Co., where he served as manager of industrial engineering before it merged with Continental Can. Other firms where he had been employed were Kraft Paper and Board Division of Continental Can Co., Q-Tips, Inc., and Standard Packaging Corp. of Holyoke, Mass.

Mr. White had served as a lieutenant in the Navy in World War II, and had worked on the Atomic Bomb Project at Oak Ridge, Tenn. in the mid-1940's. He belonged to Phi Sigma Kappa, the American Legion, and the Masons.

Edwin S. Brown, Sr., '32, died unexpectedly on November 22, 1978 while visiting relatives in Portland, Maine.

He was born on August 29, 1908 in Worcester, and later enrolled at WPI. During his career he was with Electric Boat Co., Bostitch Co., and Davis Standard Division in Pawcatuck, R.I. He retired several years ago from Davis.

In 1956 Mr. Brown was commodore of the Westerly Yacht Club. He was a life member of the U.S. Power Squadron and of the U.S. Coast Guard Auxiliary. He belonged to the Congregational Church and the Masons.

Milton M. Schultz, '33, died in Worcester on November 1, 1978. He was 67 years old.

The chairman of the board of Schultz Lubricants, Inc., West Boylston, Mass., he had worked for the family company for 45 years.

Mr. Schultz was a member of the class of 1933 at WPI, and also belonged to Temple Emanuel and its Brotherhood, the Masons (32nd degree), and was a past master of the Level Lodge of Masons. He was a past district deputy grand master for the Worcester 22nd Masonic District, a member of Aletheia Grotto, Massachusetts Consistory, Mount Pleasant Country Club, and a contributing member of the Jewish Home for Aged.

Loring Coes, Jr., '36, a research and development consultant in the grinding wheel division of Norton Co., Worcester, died in Worcester on December 3, 1978 after a long illness. He was 63.

In 1953 he produced a new form of silica not found in nature, which was named coesite after its discoverer. His continued research in high pressure synthesis later resulted in his successful development of several other man-made materials, including man-made diamonds.

He was active in the field of grind theory and his work has been described in technical journals. Since joining Norton in 1938, his research had resulted in many patents. In 1967 he received the Scientific Achievement Award from the Worcester Engineering Society.

A life-long interest in horses led to his sponsoring of an annual horse show at his home, Boylston Manor. A Worcester native, he had both a bachelor's and a master's degree in chemistry from WPI. He was a member of Sigma Xi.

Winthrop E. Wilson, '43, died at the University of Massachusetts Medical Center in Worcester on October 9, 1978.

He was the owner and operator of National Alarm and Security Systems in Oakham, Mass., and an owner of Warren Leather Goods Co., Worcester. He served in the Army Air Corps. from 1942 to 1945, seeing duty as a first lieutenant in Africa and Italy.

Mr. Wilson was born in Worcester on July 20, 1919. He was a member of Phi Sigma Kappa.

Karl R. Berggren, Jr., '49, was found stabbed to death beside a New Jersey Turnpike overpass in Burlington, New Jersey on October 22, 1978. He was 53.

Mr. Berggren, a native of Oxford, Mass. and a project engineer for Gold Bond Products, had been assigned to work on the dust compression system of a ship docked at the National Gypsum Co. plant in Burlington Township. Last year he and his family had moved from East Aurora, N.Y. to Charlotte, N.C.

A mechanical engineering graduate, Mr. Berggren joined Buffalo (N.Y.) Forge in 1949. Later he went with the Buffalo Pumps Division, where he subsequently served as assistant chief engineer and manager of engineering services. At one time he held the post of quality control manager for Buffalo Forge.

Mr. Berggren belonged to Sigma Phi Epsilon and had an MBA from the State University of New York. He was a professional engineer in New York, and had served as a past chairman of the Niagara Frontier section of the National Association of Corrosion Engineers. For many years he was active in scouting. He had held district posts with the BSA. He was a past president of the Western New York chapter of the WPI Alumni Association.

To the Editor: Just a line to tell you that I found the October issue of the Journal one of the best yet in editing and subject matter. What I particularly appreciated was the inclusion of differing, even conflicting viewpoints on this timely subject of "Computers and Society."

Since I graduated in 1927, you can guess how many issues of the Journal I have read, and I believe the publication is continuing to improve. Both my sons graduated from Princeton (one in engineering), and I read Princeton's *University* regularly. I state this fact simply so you will see how I can make some comparisons.

Arthur C. Manning,'27
Upper Montclair, N.J.

To the Editor: We think that your obituary column entitled "Completed Careers" is the most tacky, misused label that we have seen during our careers in publications. We suggest you consider a new heading.

Two Anonymous Readers
Washington, D.C.

Editor's Note: The article, "What is smaller than..." by Jack O'Reilly which appeared in the August 1978 Journal has been reprinted in the January 1979 issue of *Chemistry*, published by the American Chemical Society.

2 alumni create WPI unitrusts

Through the enlightened generosity of two WPI graduates who live at opposite ends of the country, WPI's future endowment resources will be significantly strengthened.

Each of the two men (who have asked to remain anonymous) recently established a charitable remainder unitrust naming WPI as the ultimate beneficiary. These two trusts have a combined value of over $350,000, and they bring the aggregate value of existing unitrusts written to benefit WPI to nearly $1,000,000.

In addition to making a major contribution to WPI's future well-being, these donors have also enhanced their personal future security and that of their families. Each unitrust agreement guarantees a regular annual income to the donors (and their spouses), and also provides significant federal income tax and estate tax savings. When the trusts terminate, their assets will revert to WPI to be used for general educational purposes.

The first donor transferred a parcel of West Coast real estate to WPI. We subsequently sold the property and used the proceeds of the sale to fund the unitrust contract. In the second instance, the donor gave WPI a block of securities which had appreciated considerably from their original cost. Under IRS regulations, he realized substantial tax advantages and avoided completely any capital gains tax liability.

A creation of the 1969 Tax Reform Law, the unitrust is becoming an increasingly popular vehicle for alumni and friends who are considering gifts of substantial size to WPI (the minimum amount is $50,000), and who wish to continue to receive an annual income from their assets. Because the amount of annual income to each donor reflects the value of the trust assets, as computed annually, the unitrust also provides an excellent hedge against inflation.

Dan Harrington, '50, hands over the keys to a brand new 1979 Ford Fairmont to WPI Basketball Coach Ken Kaufman (center) and Football Coach Bob Weiss (right). Dan, who owns and operates Sunnyside Motors in Holden, Mass., offered the use of the courtesy car to the WPI Athletic Department so that the coaches could make efficient recruiting trips, attend clinics, and scout opponents. The use of the car will reduce the Athletic Department's cost of these programs by a substantial amount. The athletic staff is most grateful that Dan Harrington is adding wheels to help his alma mater move faster down the road of success. According to George Flood, WPI Director of Athletics and Physical Education, the alumni comment to date has been, "What a really great idea!"

What's happening?

* = home games

BASEBALL

*April 7	Northeastern
April 10	Lowell
April 12	Clark
April 14	Hartford
April 16	AIC
April 18	Amherst
*April 21	Bates
*April 24	Trinity
*April 26	Assumption
*April 28	Coast Guard (2)
*April 30	Tufts
*May 3	Suffolk
*May 5	MIT (2)
May 7	Brandeis
*May 10	Wesleyan
*May 12	Baruch (2)
*May 16	Bentley

GOLF

April 7	Coast Guard
April 10	at Providence with Bentley
April 12	at Babson with MIT
April 17	at Holy Cross with Assumption
*April 20	Tufts with Clark
April 23	Lowell
May 3	at Amherst with Springfield
*May 7	AIC with Nichols
*May 10	Trinity

TENNIS

April 7	Bentley
*April 11	Holy Cross
*April 14	Babson
*April 17	Clark
*April 19	Bates
April 21	RPI
April 26	Nichols
April 29	Assumption
*May 2	Lowell
*May 5	Brandeis
May 10	AIC

TRACK

April 7	Boston University Invitational
*April 14	Wesleyan with Colby
*April 17	Assumption with Clark
	with Worcester State
April 21	MIT
*April 25	Coast Guard
*April 27	Bentley
*May 2	Trinity
May 5	Easterns
May 12-13	New Englands, at UMass
May 24-26	NCAA Division III Nationals

WOMEN'S SOFTBALL

*April 10	Clark
*April 12	Assumption
April 17	Stonehill
*April 19	AIC
April 27-28	MAIAW tournament at MIT
*April 30	Brandeis
May 1	Bryant
May 3	Regis
*May 8	Rhode Island College

FILMS ON CAMPUS

(* = admission charge)

March 6	*The Best Way*	Kinnicutt, 7:30
*March 10	*Blazing Saddles and Young Frankenstein*	Alden, 7:30
*March 11	*High Anxiety*	Alden, 8:00
March 13	*Effie Briest*	Kinnicutt, 7:30
April 10	*Three Women*	Kinnicutt, 7:30
April 17	*That obscure object of desire*	Kinnicutt, 7:30
*April 22	*Saturday Night Fever*	Alden, 8:00
April 24	*The wonderful crook*	Kinnicutt, 7:30
*May 6	*The Gauntlet*	Alden, 8:00

LACROSSE

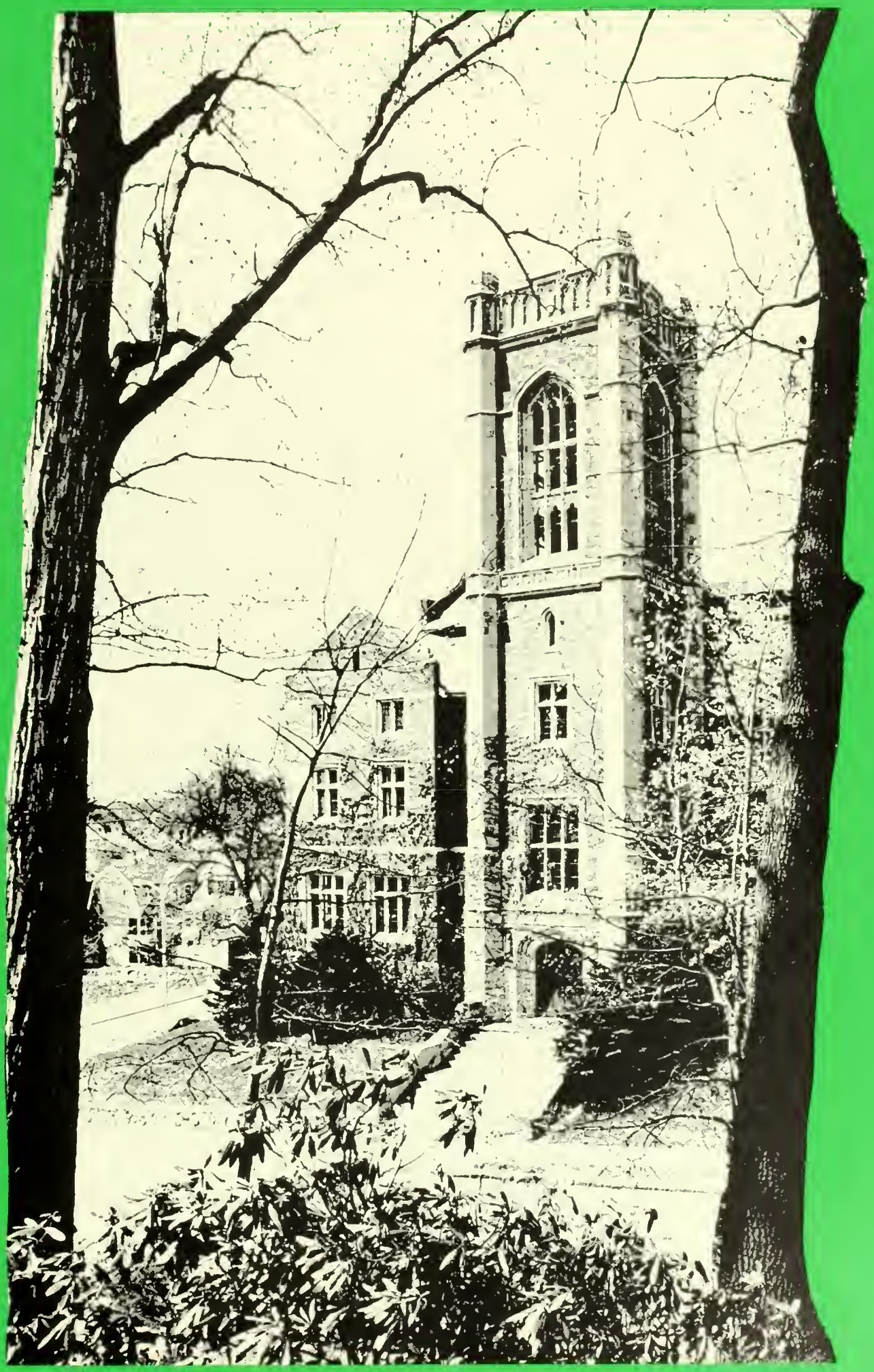
*April 4	Assumption
*April 7	Castleton State
*April 11	Lyndon State
*April 14	Colby
April 16	Lowell
*April 21	Holy Cross
April 23	Merrimack
*April 26	New Hampshire College
April 27	Boston University
May 2	Nichols
May 5-6	NECCL tournament at URI
May 10	Brandeis

CREW

*April 7	Amherst
*April 14	University of New Hampshire
*April 21	Davenport Cup (Harvard, Manhattan, Assumption)
*April 28	Worcester City Championships
April 28	at Williams College with Columbia University
*May 5	New England Open
May 11-12	Dad Vail Regatta, Philadelphia
*May 19	Cambridge Boat Club
May 31-June 2	Intercollegiate Rowing Association Championships, Syracuse
June 4-5	Pan American Games Trials
*July 12-15	U.S. National Championships

April 1979

WPI journal



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The Regulations Rat Race

by Russell Kay

"The entangling web," the article which follows this, paints a rather sad and depressing picture of the effects of massive government regulation on colleges and universities across the country. It talks about problems that affect the major research universities, the small liberal arts colleges, the professional schools. There remains the question, how has WPI been affected by the onslaught of regulation and social legislation?

To summarize briefly, David E. Lloyd, vice president for business affairs and college treasurer, puts it this way: "We're in a mess! The law as developed and pushed by special interest groups and techniques, although intended to correct some abuses of human rights, has almost completely disrupted whole areas of our operations."

Take the matter of employment. (As Henny Youngman would say, *"Please!"*) In 1976, WPI received its first federal research contract (as distinguished from a grant, mind you) of over $50,000. Within 120 days, WPI had to establish policies and procedures clearly showing that WPI does not discriminate with regard to race, color, sex, national or ethnic origin, veteran status, or physical handicap. This last provision, by law, today also includes rehabilitated alcoholics and drug addicts.

In four months, all these policies, goals, timetables, grievance procedures, evaluative mechanisms, etc., had to be in place. A. Frank Tamasy, director of personnel services, estimates it took over half his time during the entire period to comply. He only had the "nonexempt" (hourly paid) employees to deal with. Gardner Pierce, director of physical planning and plant services, had to draw up similar policies and procedures for WPI's faculty and professional staff. That took between 30 and 40 percent of his time.

But now that's all done, that's it, right? Wrong. There is the reporting and record-keeping. Tamasy estimates that it takes about one hour per employee per year just to fill out the various forms that have to be submitted to the various state and federal agencies. Consider the EEO-6 form, to be filed biennially with the Equal Employment

Opportunity Commission. This requires a breakdown of all WPI staff by length of employment contract (9-10 month or 11-12 month), tenured, non-tenured, temporary, part-time, paid from "hard" money or "soft" money, up to eight different salary groupings, and the following racial groups: White, Black, Hispanic, Asian or Pacific, and American Indian or Eskimo (no room for "other"). At WPI this data has to be compiled manually.

In addition to the annual OSHA report showing on-the-job occupational injuries and illnesses broken down into 15 categories, Tamasy has to file a quarterly report with the Commonwealth of Massachusetts on all new hires. On this form he must indicate whether the person falls into one of the categories being watched — whether he or she is a veteran, a Viet Nam veteran, or a disabled veteran. He noted that the state is currently urging WPI (and others) to hire rehabilitated ex-offenders and ex-drug users.

Commenting on a recent complaint of racial discrimination filed against WPI with the Massachusetts Commission Against Discrimination, the EEOC, and HEW's Office of Civil Rights, he observes that WPI policy regarding the traditional minimum qualifications requirement for faculty is a potential source of problems. "For example, we can no longer arbitrarily stipulate a PhD for tenure track positions as in the past, because available candidates have been primarily white males. Coupled with the fact that there are very few minorities and women with PhDs to meet the educational needs of WPI, the PhD requirement serves to exclude those women and minorities with less than a PhD, and who would be otherwise qualified. The solution? A detailed analysis of all tasks to ensure that the minimum qualification requirements are not inflated. Time-consuming? You bet! However, it is one way we can meet our affirmative action commitments. Consequently, we are forced to be much more objective than ever before, knowing that all our personnel actions are subject to a grievance and review by the EEOC.

In addition to our faculty and staff statistical profile, EEOC is also interested in our "good-faith" efforts. And since the burden of proof rests with the employer, it behooves us to keep accurate and detailed documentation on hand in case of inspection or in potential charges of discrimination.

The laws, rules, and regulations that govern personnel administration today are, of course, subject to interpretation. Unfortunately, there are so many, and some are so ambiguous and in conflict with others, that they defy timely or effective implementation. The resultant cost of legal advice is a significant but unavoidable expense which WPI must bear. In frustration, Tamasy states: "Although I'm not an attorney, I often feel like one by having to keep on top of all the officialese, governmentese, and gobbledygook coming from Washington, Boston, and the courts. To be sure, much of it is well-intentioned, though very costly in time and money. Worst of all, you can *never* keep up. Someone once said that 'democracy, if it knows its business, has no reason to fear bureaucracy.' It seems to me, however, that bureaucracy has lost sight of its role as the agent of public purpose."

Dave Lloyd doesn't worry so much about EEOC. He has to take on the Internal Revenue Service. IRS is looking for more money for Uncle these days, and looking to non-profit organizations for some of it. WPI's tax-exempt status has been under fire in recent years because of "unrelated business income" generated by WPI's computer center.

Each time the IRS auditors come around, they find something new to tax. One shall-be-nameless IRS auditor once told Lloyd: "Face it. Before we get through, colleges will be paying income taxes on dormitories." IRS comes through about every two years. And when they do, we have to justify our academic program to them — does it meet their criteria for being educational.

For Lloyd, though, the law of the moment is ERISA, the Employment Retirement Income and Security Act, designed to regulate pension plans. Lloyd and Bill Barrett, WPI controller, currently spend about 200 hours per year in reporting to ERISA. "I want to try and upgrade the general retirement plans and benefits we have, to take account of the vastly changed economic climate. But I don't have the time to do this, which would help our people. Instead I have to fill out reports."

Another issue is HEW's Title IX, regarding sex discrimination. Dave figures that has taken 50 percent of his time for the last three months. Allen Harper, manager of technical and administrative services, is spending nearly all his time on evaluation and compliance work for Title IX and for Sections 503 and 504, dealing with the handicapped.

Looking at the overall situation, Lloyd estimates that WPI ought to have a full-time person with a staff of two or three, just to supervise and coordinate the compliance with and reporting on the various regulations. We currently have no one — the duties are tacked onto the existing staff, with some help in the paperwork from our public accountants.

Because of this, Lloyd and his business affairs staff have to keep tending to one crisis after another. "Because of the increased workload and the extra time needed, our operational managers simply can't meet their day-to-day requirements and responsibilities the way they should. They're too tired, and there isn't enough time left to do the job right. I'm having to defer the basic financial planning for WPI, for example, to take care of all these other things. I can't even make financial plans to deal with these new laws themselves, much less the normal planning for WPI's future."

"Consistency," Justice Holmes once said, "is the hobgoblin of little minds." Using that criterion, one certainly can't accuse the federal government of having little minds. Contradictory rulings by different agencies are one of the major headaches in trying to comply with the law.

A few years ago, WPI under some grants from the government was paying graduate research assistants a larger than normal stipend. Larger than normal because HEW refused to allow its money to be used for tuition remission.

But paying it to the students as stipend, and having them pay tuition from it, was apparently OK. Enter the IRS. The students didn't want to have to pay taxes on the tuition part of their pay, so they filed a special form with IRS that made everything OK. Now HEW hears about this and says, "You mean that you're paying these students tuition money?! For shame." And WPI shortly thereafter receives a bill from HEW for $55,000, to refund the 'misapplied' monies. Since this is a problem all across the country, there is a big confab in Washington between IRS and HEW and college representatives. Afterwards, HEW phones WPI and says everything's fine now. But they won't put it in writing. And another $55,000 bill soon lands in Worcester.

Lloyd, who has been at WPI since 1954, sounds discouraged when he ponders the morass of regulation, reporting, and paperwork. "I don't know. I spend all my time reporting to the government. We used to get along by following the spirit of the law. Now every last little bit of paperwork is mandated by law, and damn the spirit!"

Gardner Pierce is in charge of the campus physical plant, among other things. He runs into government regulation every day, in one form or another. One prime concern has been meeting regulations concerning access to campus facilities for the handicapped — which, in practice, seems to mean access for those in wheelchairs. No building can be built anymore, nor any major renovation undertaken, without approval from Massachusetts' Architectural Barriers Board.

When Sanford Riley Hall was renovated two years ago, access for the handicapped might have meant the installation of an elevator — and because of the design of the building and the pressing need for dormitory rooms on campus, it would have had to be an outside elevator, at a cost estimated at close to $500,000. WPI was lucky in this instance. The Board was convinced that students didn't need this kind of access to every single dormitory building, that instead provision could be made for ramp access to Daniels Hall, which already had an elevator inside, as well as conforming washrooms, and it also provided single level access to the Bookstore, Morgan Hall, the snack bar, the dining halls, and computer terminals.

But in general it's no picnic trying to conform to the regulations. According to Pierce, "the things we did in Salisbury, just a couple of years ago, are already outdated. In some areas we did too much, in others too little. We complied with the standards in effect at the time." Pierce mentions in passing that we build washrooms these days to meet federal standards — but they don't necessarily meet state requirements. "Our policy nowadays is very straightforward: We will build to the regulations of the day, knowing full well that they are temporary."

Since making these efforts to bring the campus into compliance with these access rules, WPI has had one student in a wheelchair. He got along fine during A and B terms in the fall. In some cases, classes had to be scheduled in first-floor rooms that might not otherwise have been used for that purpose, but the student did indeed have access to WPI and our programs. Then winter came. Wheelchairs simply don't cope very well with snow drifts. The student was forced to drop out, after making extreme efforts to continue. It would appear that, in this part of the country at least, complete access requires a dome over the campus — or perhaps a leveling of the hill and a monstrous and continuous snow-removal effort during the winter months....

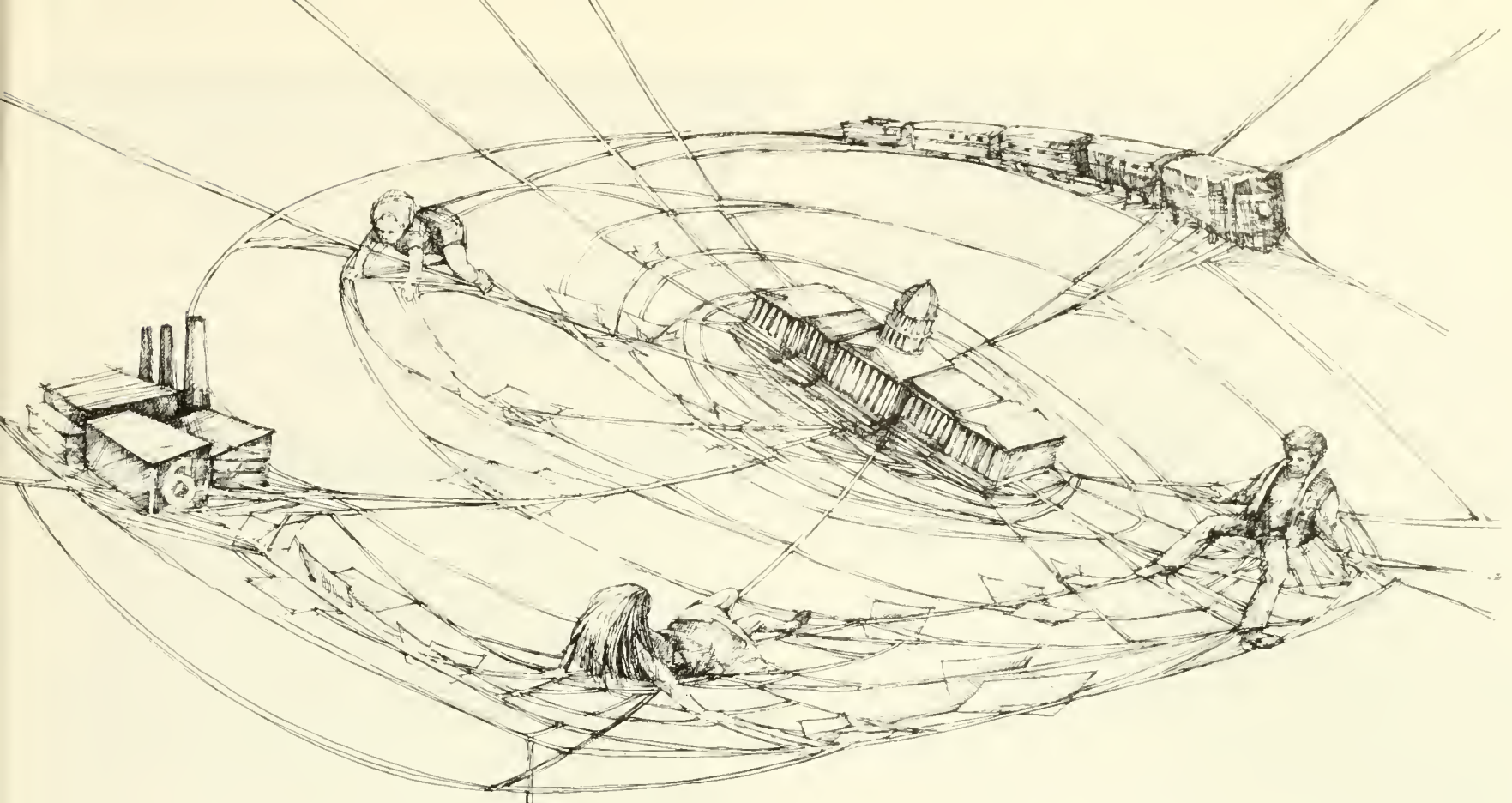
A study was recently conducted by the Higher Education General Information Service (a part of HEW). Seven colleges, including WPI, were looked at to determine the costs of complying with federal regulations on the books. (WPI was apparently picked because we have made special efforts to meet the regulations.) The study found that it would cost WPI well in excess of $500,000 to overcome the basic restrictions.

Given that example, is it possible to say whether the regulations, well-intentioned or not, have any real, practical value? "It's hard to be sure," notes Pierce, "but it seems as if we see more people in wheelchairs in general these days — downtown, for instance. We don't hide the handicapped away, as we used to. I think in general we're more open to people who are different from ourselves for whatever reason — and that's a result of Dr. King's refusal to sit in the back of the bus."

These are only a few examples of WPI's involvement with the red-tape-ridden rat race of bureaucratic regulation. Many more could be adduced and described — in fact, this entire issue of the *Journal* could be filled with stories of compliance and record-keeping and regulation and reporting requirements and litigation and time and money spent.

All of this, of course, detracts from the basic business of WPI, education. I once heard the concept of a school described in metaphor as a log with a student at one end and a teacher at the other. If that definition, that concept, still holds true, I bet we can now find a government agency, somewhere, concerned with drawing up detailed specifications for the log, another requiring a report on the nationality of the logger, and a third conducting a safety study on the model of saw used to cut down the tree. What, one wonders, does all this have to do with the process of education?

What indeed?



The Entangling Web

Federal Regulation of Colleges and Universities

A Special Report for Alumni

DESCRIBING THE KIND of despotism that democratic societies like ours could be most vulnerable to, Alexis de Tocqueville foresaw a government that "covers the whole of social life with a network of petty, complicated rules that are both minute and uniform" — a situation, he warned, that does not break the human will so much as it "softens, bends, and guides it."

There are those in this nation — and their number appears to be growing — who fear that Tocqueville's vision is rapidly becoming our reality. They point to the enormous and proliferating body of laws and government regulations now controlling virtually every aspect of human life and behavior. They protest the dollar cost of "over-regulation" (estimated at more than $100 billion annually), the stifling impact it has on the economy, the bureaucracy and waste which it spawns, and its "basic incompatibility with the democratic processes."

Once, such complaints came almost exclusively from the business community — the first and most heavily regulated segment of society. No longer. Excessive government regulation is an issue for everyone. And it is by no means a simple issue. Most regulations seek to accomplish worthy objectives — objectives that society has largely agreed upon and expects government to attain. The rub is that as our society has become larger and more complex, so have its aspirations and its problems. Rights come into conflict. Interests clash. Choices must be made, not just between 'good' and 'bad' but between 'good' and 'good.' It is through law and regulation that government attempts to solve these problems and reconcile these conflicts.

Following is a special report on federal regulation of American higher education and the impact it has on colleges and universities which now find that they, too, are caught in the entangling web.

IN THE SUMMER of 1977, Nelda Barnes, a 53-year-old school teacher, enrolled in two courses at Converse College in Spartansburg, S.C. She needed the courses to meet state requirements and keep her teaching job.

Mrs. Barnes is deaf. When she had difficulty following the lectures, she asked the college to provide her with a sign-language interpreter. Converse declined, pointing out that the cost of doing so would far exceed the $210 that Mrs. Barnes paid in tuition.

So Mrs. Barnes sued in federal court under new H.E.W. regulations implementing Section 504 of the Rehabilitation Act of 1973 as amended. The regulations ban discrimination against handicapped persons and stipulate that students shall not be denied the benefits of education "because of the absence of educational auxiliary aids."

Federal district court judge Robert W. Hemphill ruled in favor of Mrs. Barnes and ordered Converse to provide her with an interpreter. He also expressed considerable sympathy for the college and said: "No educational administrator needs to be reminded of the sad fact that federal money means pervasive bureaucratic control."

Judge Hemphill was right. No such reminder is necessary these days. The threat of federal control is very real on the nation's campuses. Indeed, it may not be much of an exaggeration to suggest that increasing government regulation, with all of its complicating side-effects, is the most serious problem facing American higher education.

Harold Enarson, president of Ohio State University, obviously a man accustomed to dealing with government, claims "the federal presence is felt everywhere in higher education, and federal laws and regulations are changing the academic world in ways that justify our alarm."

Stanford vice president Robert Rosenzweig feels that higher education has lost its "immunity to the burdens" of an increasingly regulated society and says: "Virtually the whole range of public regulatory activity now bears on the university."

The problem is not limited to large universities which receive the lion's share of federal dollars. Every institution of higher learning is affected — large and small, private and public, liberal arts and technical, community colleges and professional schools.

Until 1975, colleges and universities which did not receive direct federal grants were exempt from much of the regulation. Then H.E.W. adopted regulations to enforce Title IX against sex discrimination and declared that a recipient institution was an institution that received federal funds indirectly as well as directly. In other words, if one student received one dollar in federal student aid, the entire institution and all of its activities would be subject to regulation. This prompted Nobel prize-winning economist Milton Friedman to observe that the "corner grocer and the A&P are recipient institutions because some of their customers receive social security checks." He added, "no argument is too silly to serve as a pretext for extending still further the widening control over all of our lives that is being exercised by government. Several institutions have now challenged H.E.W.'s all-inclusive definition of 'recipient.'

"No educational administrator needs to be reminded of the sad fact that federal money means pervasive bureaucratic control."

The more than 800 church-related colleges in the United States — many of which have not sought or accepted federal aid — are especially concerned. They fear that "as the State moves in, the church must move out." And recent federal regulations dealing with such sensitive issues as abortion, marital status, integration of the sexes, and religious preference, clash directly with the religious beliefs and practices of many of these schools.

Father Ernie Bartell, head of the Fund for the Improvement of Postsecondary Education, notes that "some of the nation's oldest and most fiercely independent colleges and universities were founded as diverse religious institutions." And he worries that "the further erosion of such diversity under additional pressures of governmental regulation might thus be most symbolically disturbing among already beleaguered smaller institutions, many of them church-related and lacking the expensive and specialized expertise to respond and to adapt creatively to the changes implied in federally mandated programs."

The president of Asbury College in Wilmore, Ky., has been outspoken in his criticism of government interference. He says: "The careful respect by government for the independence of the educational world is long gone. Noninvolvement has changed to intrusion, respect to financial and regulatory control. The extent is frightening."

THE EXTENT is indeed frightening. Today there are 34 Congressional committees and at least 70 subcommittees with jurisdiction over 439 separate laws affecting postsecondary education. The number of pages of federal laws concerning higher education rose from 90 in 1964 to 360 in 1976.

And those laws have generated millions of words of regulations. The number of pages in the Federal Register devoted to regulations affecting higher education grew from 92 in 1965 to nearly 1,000 in 1977 — a 1,000 percent increase in the quantity of federal regulations with which colleges and universities must comply. Duke University president Terry Sanford understandably refers to "the avalanche of recent government regulations that threatens to dominate campus management."

It was not long ago that colleges and universities were exempt from almost all federally mandated social programs, even including social security and workmen's unemployment insurance.

Things began to change in the mid-1960's with the adoption of civil rights legislation and regulations, which at first banned discrimination on the basis of race, color, religion, and national origin. Then they went further: nondiscrimination alone was not enough — an organization was required to take affirmative action to develop hiring goals for minorities and plans to achieve those goals. Sex was subsequently added to the list, followed by age, and, more recently, by physical and mental handicaps.

In 1969, the National Labor Relations Board rather impulsively extended coverage of federal collective bargaining laws to college and university faculties, thus clearing the way for the faculty unionization movement. (A recent lower court ruling that the faculty at Yeshiva University are supervisors and thus not entitled to collective bargaining rights is now on its way to the Supreme Court.)

Most of these laws and regulations affecting higher education were not aimed specifically at campuses but rather at broad social problems; colleges and universities were either caught in the backwash or subsequently included by specific Congressional or regulatory action.

In 1974, with the passage of the Buckley Amendment to the Family Rights and Privacy Act, a new stage of regulation began which was aimed directly at postsecondary education. The Buckley Amendment granted students access to their educational records, limited access by others (including parents), and required institutions to inform all members of the campus community of their rights and obligations under the act.

After Buckley came a new version of the Health Professions Educational Assistance Amendments, which attempted to coerce U.S. medical schools into admitting students from a register established by the Secretary of Health, Education, and Welfare. Then came regulations implementing Section 504 of the Rehabilitation Act of 1973, requiring institutions to make changes in their physical facilities in order to accommodate the handicapped.

The Education Amendment Act of 1976 struck a blow for consumer protection in education. It requires colleges and universities to make known their policies and practices in numerous areas such as financial aid, refunds, and descriptions of facilities, faculties, and educational programs. Institutions may have their various written and spoken statements assessed by the government according to "truth in advertising" standards. In other words, if the old college catalog still promises to "educate the whole person," the institution had better be prepared to prove it — to a federal agency, or maybe in court.

In short, there is virtually no aspect of academic life that is not covered in some way by federal regulations. They cover hiring

romotion/firing of personnel (including professors), wage and salary administration, pensions and personnel benefits, physical plant construction and management, record-keeping, admission, financial aid, athletics, fundraising, research, and even curriculum and educational programs to some degree.

THE ISSUE OF GOVERNMENT REGULATION poses a painful dilemma for much of higher education. On the one hand, educators recognize the need for regulations; on the other, they are appalled and alarmed by their growth and impact on the campuses.

The academic community, traditionally liberal, has favored laws extending rights and benefits and has supported regulations to protect consumers, assure equal opportunity and treatment, and safeguard the environment. As William McGill, president of Columbia University, put it: "No experienced president would think of criticizing a process that has liberated America's minorities, protected our consumers, and provided a standard of living for American workers unequaled elsewhere in the world."

It has also been pointed out by some observers that colleges and universities were not as assertive as they might have been in providing access to disadvantaged students and assuring equal rights to minorities and women. Most of the progress made in these areas was the result of federal funding and federal regulation. Says one government official, formerly a college president: "Unjustified discrimination in hiring and admission, exaggeration of performance claims for the sake of institutional development, defensive failure of accountability in return for social privilege, and other social sins mark and mar the history of American higher education. Nor has the record of voluntary self-regulation been much more distinguished in higher education than elsewhere."

Could higher education have avoided government regulation if it had been more vigorous in regulating itself? Perhaps in some limited area, replies one college official. But, he adds, "I don't think we would have taken major steps at our institution, for example, to accommodate the handicapped. The cost would have been too high, the available dollars too few, and the number who would benefit too minimal."

G. William Miller, chairman of the Federal Reserve Board, says: "Generational regulation is fundamental to any system. It is designed to regulate human behavior and to set certain necessary standards. Without regulations, the free enterprise system would not move on its own to correct social inequalities. Self-regulation is our greatest desire, but can it be done? It is almost impossible because of human behavior and human nature. The need is for good regulations, and we must work to make necessary regulations as sensible and workable as possible."

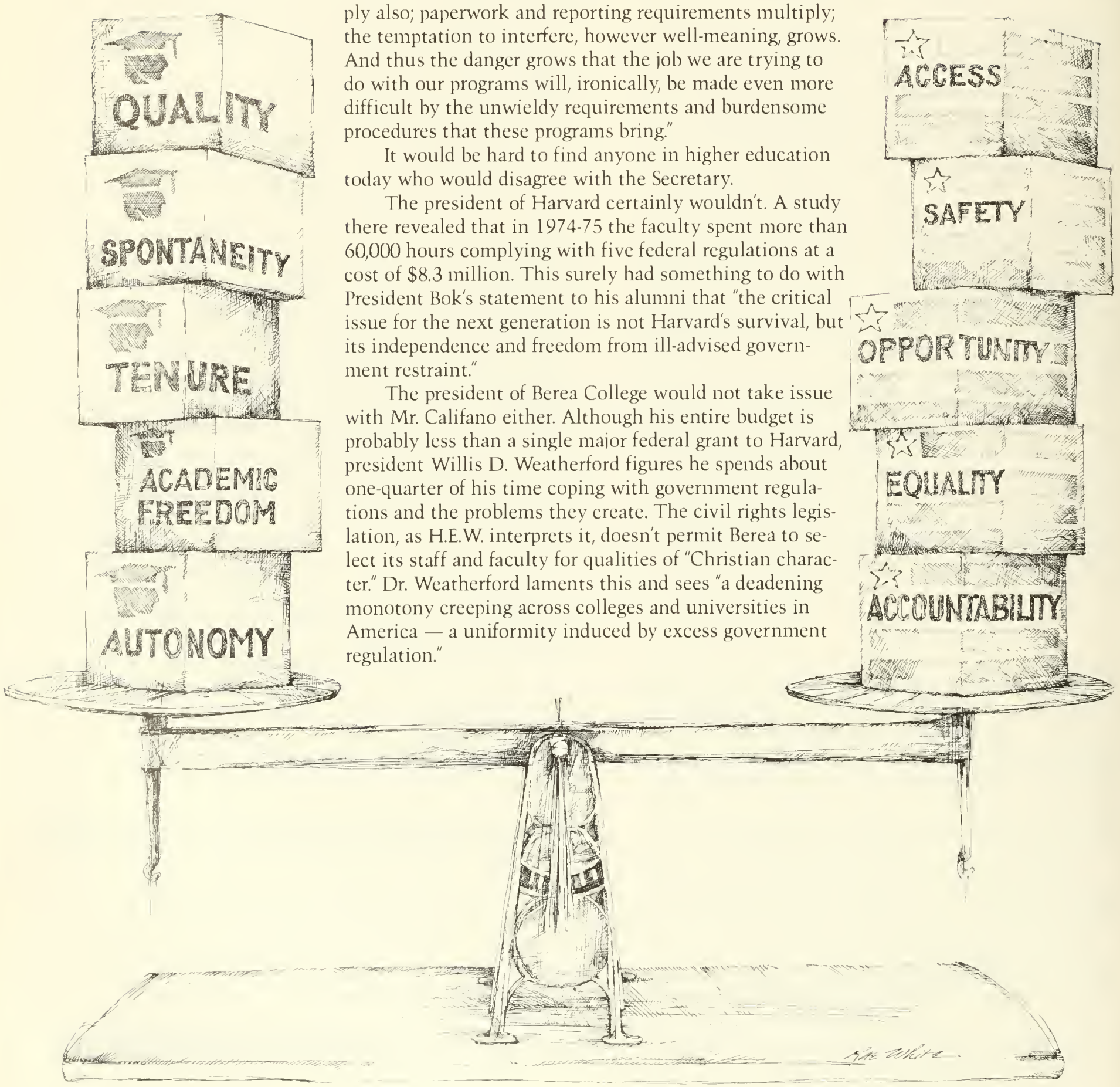
"If the old catalog still promises to 'educate the whole person,' the institution had better be prepared to prove it."

DETERMINING WHICH REGULATIONS are "absolutely necessary" and making them "sensible and workable" are extremely difficult tasks. There is no evidence at present that they can or will be accomplished. Joseph A. Califano, Jr., Secretary of H.E.W., recently issued a warning "against the domination of education by the federal government." And, he said, "if I have seen anything made plain in the last year and a half, it is that when programs and dollars multiply, bureaucracies and regulations multiply also; paperwork and reporting requirements multiply; the temptation to interfere, however well-meaning, grows. And thus the danger grows that the job we are trying to do with our programs will, ironically, be made even more difficult by the unwieldy requirements and burdensome procedures that these programs bring."

It would be hard to find anyone in higher education today who would disagree with the Secretary.

The president of Harvard certainly wouldn't. A study there revealed that in 1974-75 the faculty spent more than 60,000 hours complying with five federal regulations at a cost of $8.3 million. This surely had something to do with President Bok's statement to his alumni that "the critical issue for the next generation is not Harvard's survival, but its independence and freedom from ill-advised government restraint."

The president of Berea College would not take issue with Mr. Califano either. Although his entire budget is probably less than a single major federal grant to Harvard, president Willis D. Weatherford figures he spends about one-quarter of his time coping with government regulations and the problems they create. The civil rights legislation, as H.E.W. interprets it, doesn't permit Berea to select its staff and faculty for qualities of "Christian character." Dr. Weatherford laments this and sees "a deadening monotony creeping across colleges and universities in America — a uniformity induced by excess government regulation."



A predecessor of Mr. Califano's also agrees with him. David Mathews, before becoming Secretary of H.E.W. in 1975, said: "The body of higher education is bound in a lilliputian nightmare of forms and formulas." The results, he said, are "a diminishing of able leadership on the campuses, a loss of institutional autonomy, and a serious threat to diversity, creativity, and reform."

Had his tour of duty at H.E.W. altered his perspective and changed his mind about federal regulation? The editors of this report put that question to President Mathews at the University of Alabama. "Not in any way," he replied quickly, "the problem has not diminished at all."

The problem, of course, has many dimensions and many aspects, and nearly all of them, as educators see it, are negative. Excessive government regulation:

▶is produced by bureaucracy, and it gives rise to more bureaucracy — not only in Washington, but on the campuses as well;

▶diverts scarce dollars and valuable time of administrators and faculty from important institutional missions to non-productive activity;

▶intrudes upon internal decision-making, erodes institutional autonomy, and leads to complicating and costly side effects (such as increased litigation);

▶contributes significantly to the deterioration of a long and mutually productive partnership between the federal government and higher education.

"Bureaucracies thrust past the balance point to produce results that are disastrous to institutions and processes that depend on a balance of principles."

BUREAUCRACY IS "the mechanism of control," says economist Earl Cheit, "and its intrusion into college and university life has been disruptive and expensive."

The government bureaucrats are the target of much of the anger and frustration felt by college and university officials. And that is at least partly understandable, since bureaucrats, in a very real sense, make more laws than Congress does. "It is government by the non-elected," complains one college professor.

Economist Cheit points out that, typical of bureaucrats, "they require the gathering of useless data; they cause long, inexplicable delays; they play 'cat and mouse' games over enforcement; they conduct endless reviews. Sometimes, after periods of indecision, the decisions they do make are uninformed about the educational process. It has apparently come as news to some GS-12's that a library is needed for research."

Examples of the bureaucracy at its business are many, and they range from the trivial and ridiculous to the alarming:

H.E.W.'s battle against sexual discrimination has produced what must now be 'classics': the prohibition of father-son banquets and boys' choirs.

Dallin Oaks, president of Brigham Young University, finds himself fighting a sexual discrimination charge which he feels is equally absurd. The Justice Department has threatened suit against the university because it refused to rent a room in an all-male wing of an off-campus building to a female who is not a student. "We cannot believe," Oaks says, "that our proscription against students living with or next to persons of the opposite sex is a sufficient injury to justify interference with the fundamental rights of religious freedom at this church-sponsored university."

One university's very moderate report of a self-study of the impacts of federal regulation contains this statement:

"Demands by government agencies for excessive, irrelevant, and duplicative data are objectionable.... Our disquiet stems from investigative offices that make demands for mountains of data without considering the burdens imposed on the institution. And sometimes those data are not even used by the investigators." The report goes on to describe an investigation in which the records of all students over the past six years were demanded. Negotiation reduced the number demanded from 3,000 to 1,400, and the school went to great lengths to make the individual records anonymous. The investigating team did not even take the stack of records with them after their visit. Another agency asked for the same data at least four times for four different investigators.

Last year, the I.R.S. audited the Johns Hopkins University. President Steven Muller says: "We spent literally thousands of hours of staff time answering the same questions for them that we had answered for the General Accounting Office; then they wanted to look at our affirmative action program — information we had already given to the Office of Civil Rights."

Roger Freeman, former White House aide, conducted a random sample of colleges and universities in 1978 and found that more than half had been contacted by a federal agency within the past three years "with a demand to adopt, change, or abolish an operating policy or practice." About three-fourths of all contacts concerned affirmative action.

One costly result of increasing government regulation of colleges and universities is the growth of bureaucracy on the campuses. "Internal bureaucracy," one university official points out, "has grown in order to confront and be complicit with other bureaucracies; procedures have been elaborated; grievances have grown to glut the procedural mechanisms designed to deal with them; and

in various ways the management of conflict has become as important inside the univesity as it has long been elsewhere."

It is this kind of situation which figured largely in the decision of an Ivy League vice president to leave the university. He explained that "being on a campus isn't much fun anymore; it seemed like we were spending most of our time on affirmative action plans, personnel classification systems, grievance procedures, contract negotiations, legal matters, and mountains of forms and reports from Washington's bureaucracy and, worse, our own."

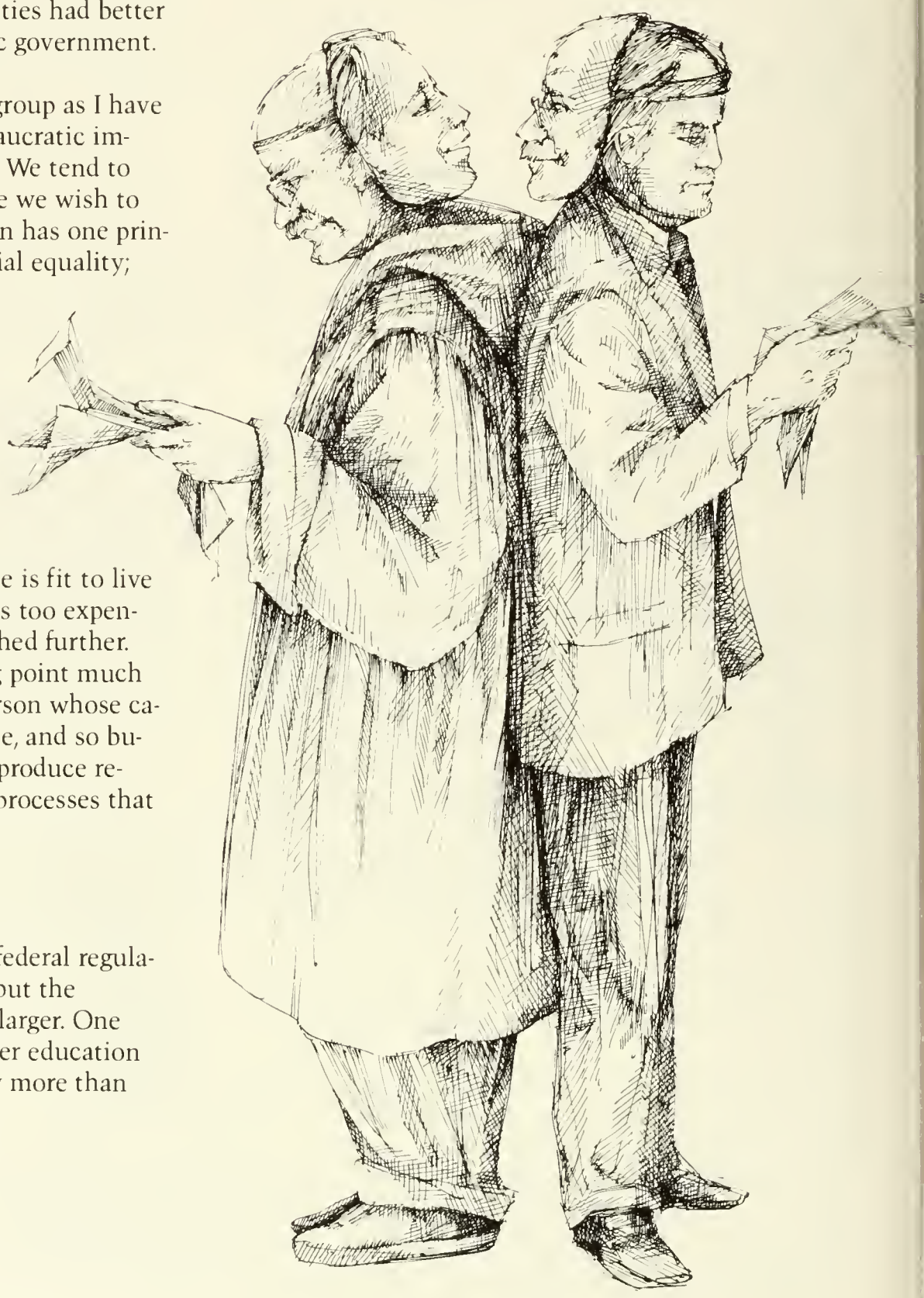
The University of Georgia recently hired a librarian and, in the process, discovered that affirmative action required 60 separate steps.

Because government agencies do not understand the universities or how they work, Robert H. Bork, former Solicitor General of the U.S., suggests universities had better try to understand the nature of bureaucratic government. He offers this insight:

"Bureaucrats are as well-intentioned a group as I have ever seen, but they move according to bureaucratic imperatives of which they are not even aware. We tend to create a new bureaucracy for every principle we wish to enforce. That means every such organization has one principle: health; safety; clean environment; racial equality; sexual equality; whatever. No single principle is fit to live with. At some point, every principle becomes too expensive — in terms of other values — to be pushed further. But most of us would recognize the stopping point much sooner than would an equally intelligent person whose career is defined entirely by the single principle, and so bureaucracies thrust past the balance point to produce results that are disastrous to institutions and processes that depend on a balance of principles."

THE DOLLAR COST of complying with federal regulations is difficult to measure with precision, but the amount is unquestionably large and getting larger. One study estimates that the annual cost to higher education of complying with federal regulations is now more than $2 billion.

The American Council on Education (A.C.E.) has done the most reliable study. It examined the costs incurred from 1970 to 1975 by six institutions complying with 12 federally mandated social programs which were universal in nature (like social security) rather than aimed specifically at higher education (like the Buckley Amendment). The cost for these six institutions in 1974-75 was between $9 million and $10 million, and ranged from 1 to 4 percent of operating budgets, and from 5 to 8 percent of tuition revenues. Costs doubled over the five-year period. And, not surprisingly, more than half of the cost went for social security.



Individual cases indicate how serious the financial problem is:

▶The University of Maryland estimates it spent more than $1 million on a single affirmative action case, including litigation.

▶Columbia University estimates it spends $1 million annually just to meet its various federal reporting requirements.

▶To develop affirmative action plans at the University of California and the University of Michigan cost $400,000 and $350,000, respectively.

▶Ohio State University estimates it spends $50,000 annually hauling waste to a landfill site in accordance with environmental regulations, $250,000 annually to comply with the Buckley Amendment, and $885,000 over the past two years to meet Occupational Safety and Health Act requirements.

▶Duke University's cost-per-student of implementing federally mandated social programs rose from $58 in 1968 to $451 in 1975. At Georgetown University, the cost-per-student rose from $16 in 1965 to $356 in 1975.

▶A study by the Southern Association of Colleges and Schools found the cost of compliance with federal regulations required some institutions to spend as much as 50 cents to administer each federal dollar received. An official at Tufts University claims the school is spending more on compliance than it is getting in federal aid to students.

▶Compliance with the new handicapped regulations could cost higher education as much as $2 billion in capital outlays to modify physical plant. Trinity College in Hartford, Conn., has a 10-member committee surveying what must be done to its 45 buildings. Trinity has already seen $75,000 added to the cost of a new dormitory as a result of changes to make it accessible to handicapped. Trinity has four handicapped students. George Washington University estimates it will have to spend nearly $5 million to alter about 8 percent of its plant to meet the program's requirements.

▶Physical plant modifications needed at the nation's colleges and universities to meet energy efficiency standards and to comply with O.S.H.A. requirements could cost more than $11 billion in capital expenditures.

As new regulations are written or existing ones expanded, costs are likely to rise. The Office of Civil Rights, late in November, was about to issue guidelines requiring institutions to spend about the same amount per capita on female athletes as they do on male athletes for scholarships and other services. One education association officer estimated this could cost individual institutions from $62,000 to $300,000.

There are additional costs which are less visible but no less real. Federally mandated social programs such as retirement benefits or unemployment compensation are increasingly funded from taxes on employment (such as social security taxes) rather than from taxes on income. Over the past 15 years, revenues from employment taxes doubled from 15 to 30 percent of the federal budget, while corporate income taxes declined from 23 to 15 percent.

"Bureaucrats make more laws than Congress does. It is government by the non-elected."

This has two important consequences for colleges and universities:

First, since educational institutions are labor-intensive, they feel the brunt of the employment taxes more heavily, and they pay a disproportionate share of the costs of these social benefits.

Second, the value of an institution's tax exemption is lessened, since it exempts the college and university from income, property, and sales taxes, but not employment taxes.

Recurring proposals for tax reform make educators very nervous, for they realize how disastrous the consequences would be if gifts of appreciated securities were subject to capital gains tax or if the tax deduction for the appreciated value of gifts of property were eliminated; both suggestions are regularly made.

Even without such radical changes, there have been hidden costs for colleges and universities in tax law changes. John Gardner, former Secretary of H.E.W., notes that five increases in the standard deduction in the last eight years decreased the number of taxpayers itemizing deductions from almost 50 percent in 1970 to less than 25 percent today. Charitable organizations, including educational institutions, have lost about $5 billion in contributions because of the increases in the use of the standard deduction.

"Higher education's capital outlays to meet the requirements of the handicapped legislation, OSHA, and environmental efficiency standards, could exceed $13 billion."

Many leaders in higher education have proposed that their burden would be eased if the federal government made funds available to them to defray the costs of compliance. More skeptical and cautious observers, however, point out that such a move would probably increase regulation by making the agencies feel that, since they defrayed the costs, they had license to regulate even more.

FAR MORE IMPORTANT than the financial costs of excessive government regulation is the price that is paid in institutional freedom and autonomy. The chorus of concern from educational leaders grows louder with each new incursion by government into internal institutional affairs.

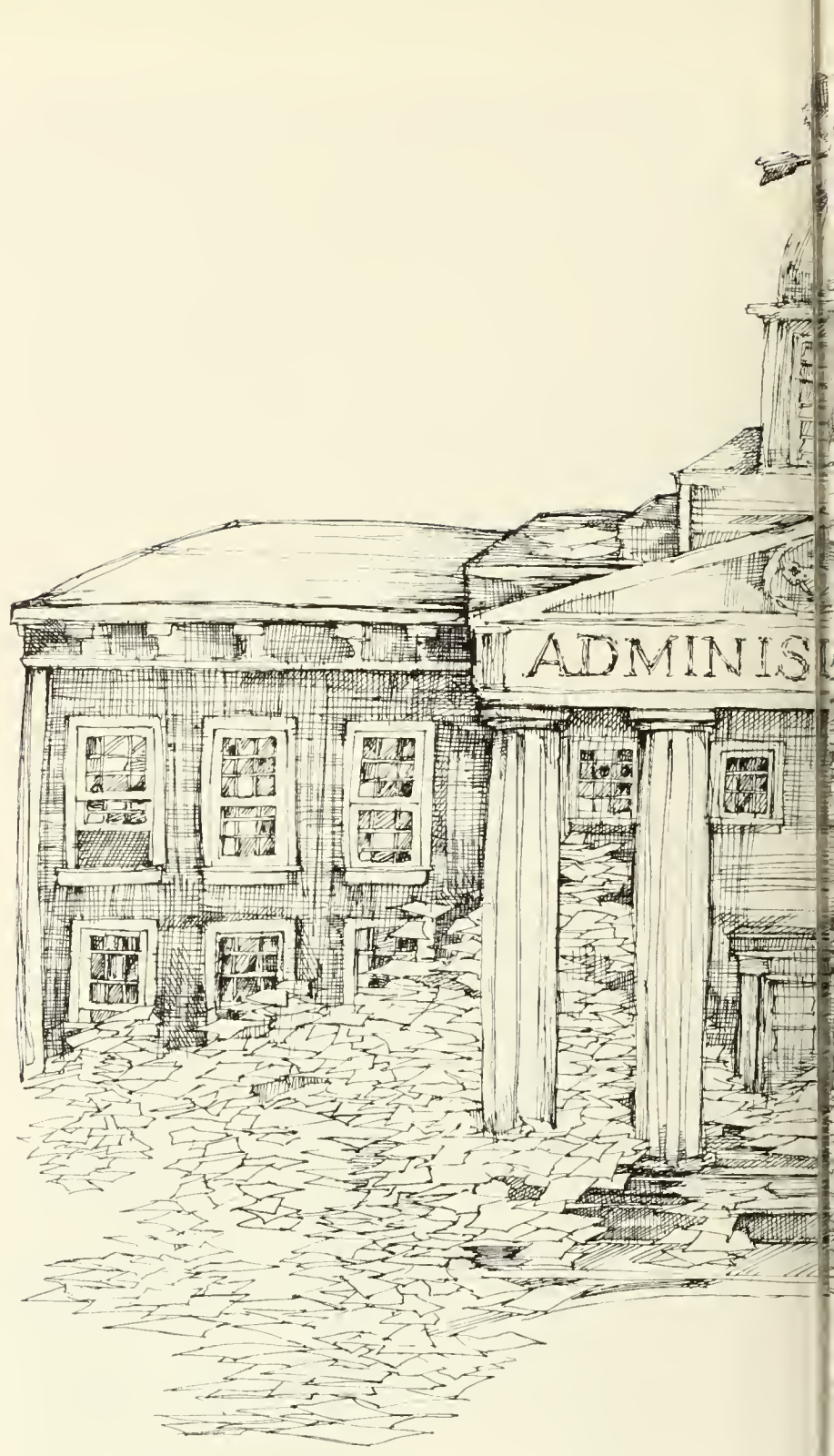
In testimony prepared for the Senate Subcommittee on Education, the Ivy League institutions and Stanford declared: "We object to the increasing propensity of the federal government to intrude randomly into the day-to-day operations of our colleges and universities and to descend to progressively more trivial levels of the educational process."

Most educators are convinced that academic freedom and institutional autonomy are not generally understood by those who write and enforce regulations. Bureaucrats, it is widely agreed, don't see much difference between a college and a business. A study conducted for the Exxon Education Foundation concluded that bureaucrats write regulations for "hierarchical management systems and not for horizontal collegial systems where authority is shared."

Estelle Fishbein, general counsel at Johns Hopkins, emphasizes the difference by arguing that universities have a special relationship to the First Amendment as custodians of free speech and free thought. "Manufacturers and retail establishments may be regulated and constricted," she says, "yet the business of production and buying and selling can still go on. But if regulation of the university inhibits intellectual inquiry, if it suppresses the free exercise of intellectual judgment and the responsible exercise of discretion, then the business of the university is concluded."

Government regulation has opened the way for another form of restriction of institutional autonomy — intrusion by the courts. The case of Nelda Barnes versus Converse College which began this report is one example of hundreds, perhaps thousands, of suits brought against colleges and universities for alleged violations of federal regulations.

A set of briefing papers for postsecondary institutions, published by the American Association of Junior Colleges, concludes that "the range and complexity of federal laws is now such that infractions are not easy to avoid." And to compound matters, as the president of Columbia University points out, the burden of proof, contrary to normal judicial procedures, is on the defendant institution to prove that it is not guilty.

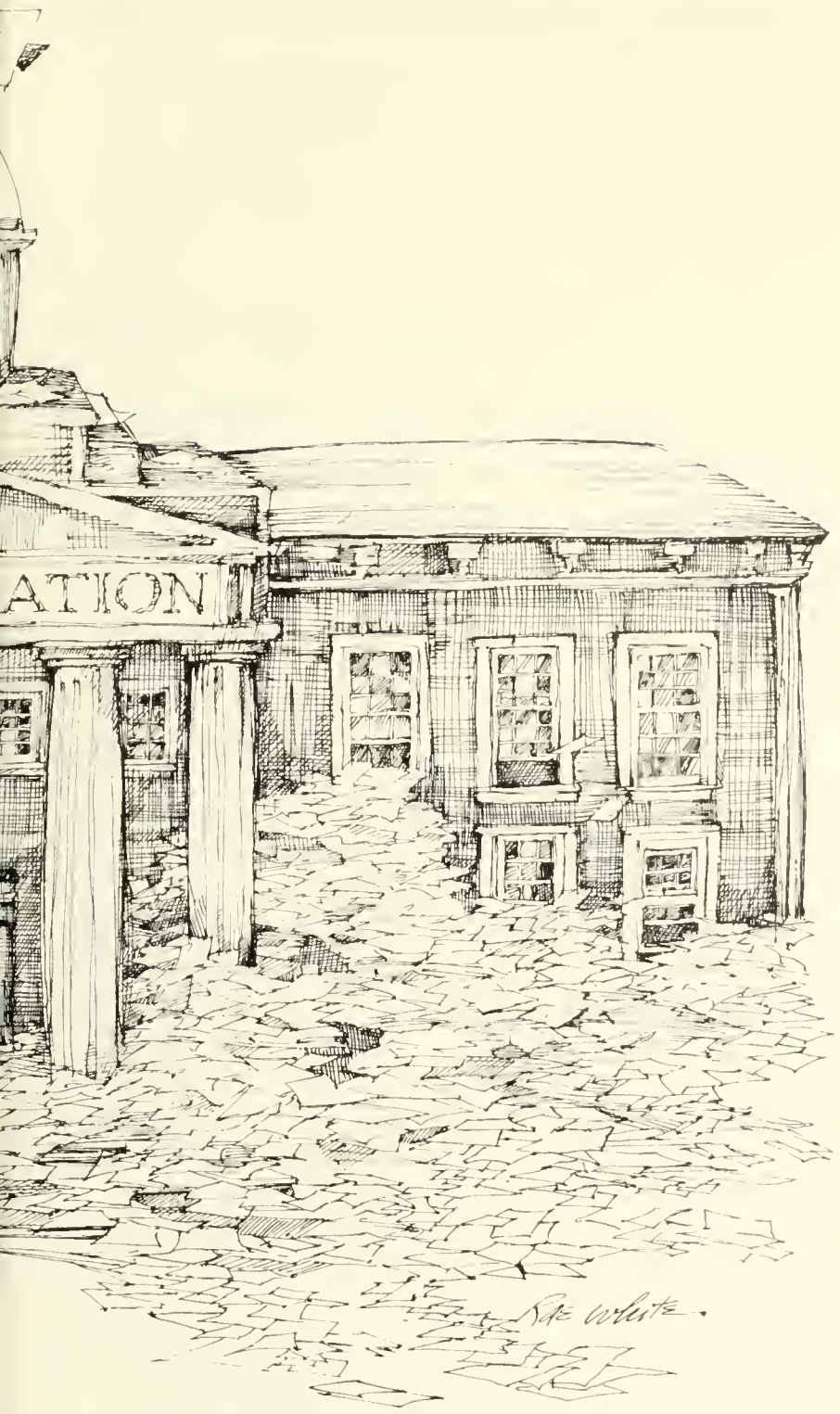


In the absence of clear rules and precedents, the question of compliance is a matter of interpretation. And, ever more frequently, the courts are being called upon to make that interpretation. Many areas (tenure, for example) that have always been decided within the institution are now being decided in the courtroom. The growth of regulation has contributed significantly to the fact that litigation in the Supreme Court more than doubled in just ten years.

As a consequence, legal costs at many institutions have skyrocketed. In-house counsel at universities are a growing breed, and higher education law is one of the fastest growing fields in the profession.

The briefing papers sum it up well:

"The present burden is just too much for most colleges and universities. They do not have the requisite batteries of attorneys and other officials. They do not have reserves of reallocable funds. Compliance for them comes slowly and adds considerable cost to their academic programs. They do not have the resources to challenge agencies whose actions are subject to question."



TO UNDERSTAND FULLY the fears and worries of higher education's leaders, one should consider the nature of the federal regulations they must comply with and the impacts that these regulations have on their institutions.

Here are some of the characteristics common to many federal regulations:

▶Regulations are usually written to accomplish a worthy objective, such as preventing racial or sexual discrimination or assuring proper accounting of expenditures of government funds.

▶They are invariably longer and more detailed than the laws they seek to implement. Thus, Title IX of the Education Amendments of 1972 takes just 37 words to forbid discrimination on the basis of sex, but H.E.W.'s regulations elaborating on that law require 18 triple-column pages of fine print. This gives rise to legitimate concern that the regulators often go further than the Congress originally intended. H.E.W., for example, wrote more than 10,000 words of regulations amplifying on the 45 words in Section 504 of the handicapped legislation. In so doing, H.E.W. transferred to the handicapped almost the entire substance of previously established equal opportunity and affirmative action regulations. It took nondiscrimination principles previously focusing on employment and extended them to such other aspects of the school as admission, housing, academic programs, financial aid, and athletics. And the agency included in its definition of 'handicapped' such dissimilar groups as amputees, blind, deaf, mentally retarded, alcoholics, and drug addicts.

▶Regulations are often written with other segments of society in mind and simply catch higher education in their broad net. This can be very costly and disruptive. The Employment Retirement Income and Security Act (E.R.I.S.A.) was designed to deal with the abuses of private pension funds. Colleges, universities, and most other nonprofit organizations, innocent bystanders for the most part, found themselves included under the regulations and were forced to review and revise their pension plans at great expense of time and money. A year or so ago, the Office of Management and Budget proposed regulations to prevent the use of bribes to obtain federal contracts and subcontracts. The regulations would have prohibited contractors from soliciting or accepting gifts from subcontractors, and, in the process, could well have restricted corporate giving to higher education.

▶Regulations are too often hastily passed, without sufficient prior consultation with those to be regulated, and even sometimes in secrecy. The Buckley Amendment passed without findings, consultation, hearings, or committee report. Charles B. Saunders, vice president for government regulations of the American Council on Education, notes that proposed regulations may "appear without warning in the Federal Register, forcing harrassed educators to drop other duties in the scramble to submit comments before the 30-day period ends." As if to prove that point, the U.S. Office of Education issued this past August, just prior to the start of the academic year, proposed regulations governing the way colleges and universities administer the massive federal student aid programs. The response, reported in that week's *Chronicle of Higher Education*, was swift and vociferous. "The whole thing smacks of a C.I.A. operation," growled one college official. Dallas Martin, executive secretary of the National Association of Student Financial Aid Administrators, complained that the rules "have been kept under wraps," and "because the higher education community has not been involved as it might have been, there are more problems than there ought to be."

▶Regulations often overlap (and even conflict), and jurisdiction may be shared by several agencies. John Kemeny, president of Dartmouth, says: "The Department of Health, Education, and Welfare pushed us to do more to attract minority students, while the Internal Revenue Service was questioning us and trying to prove that we were practicing reverse discrimination — leaning over too far to admit minority students." Federal patent policy for inventions is another good example: There is none. Or, more accurately, there are many.

Although the federal government supports two-thirds of the scientific research in this nation, there is no uniform policy on patents for invention. Over the past three decades, separate government agencies have developed some 22 different patent agreements, ranging from exclusive agreements that give inventors and research institutions first option on all future inventions, to policies that almost automatically turn over inventions to anyone who wants to develop them.

In the current controversy, over equal pension payments for men and women, institutions are caught between two differing agencies. Women employees have filed grievances with the Equal Employment Opportunity Commission (E.E.O.C.) over the fact that colleges make smaller monthly retirement payments for them than are made for men, because insurance actuaries indicate that the women will live longer. Whatever the merits of the case, a major problem for many institutions is that they do not administer pension programs but subscribe to a national plan which is acceptable to the Department of Labor but not to E.E.O.C.

The enforcement of regulations affecting higher education is generally an all-or-nothing proposition. The rules are formulated at the maximum level of enforcement — that is: **comply or lose all federal funding.** This has been called 'the atomic bomb' theory of enforcement. College officials complain that an infraction in one part of an institution can jeopardize the whole enterprise, and that the punishment does not fit the 'crime' in many cases.

"THE FEDERAL GOVERNMENT'S treatment of higher education is shocking," says Edward Levi, former president of the University of Chicago and former Attorney General of the U.S. He adds: "They have made demands on institutions that are unfair, unrealistic, and coercive. Their use of leverage to try to correct wrongs of the past is questionable."

Mr. Levi might have had in mind the current struggle between the government and the University of California at Berkeley.

Early last year, investigators from the Office of Civil Rights of H.E.W. began an affirmative action 'compliance check' of the institution's 75 departments. They selected nine which they felt should have hired more women based on "availability pools of qualified persons for faculty positions." The investigation narrowed finally to two departments: history and art history. And then the present conflict erupted.

In somewhat oversimplified terms, the dispute involves the confidentiality of records, particularly of letters of recommendation solicited in support of job candidates who were not hired. The H.E.W. investigators insist on their right to duplicate the records and take them back to Washington for further study. The university officials insist that the material in the files was gathered on the promise of confidentiality and that, once copied, the material will become part of the government's files and will be publicly available under the Freedom of Information Act.

This past summer the dispute reached an impasse. Administrators at Berkeley tried a compromise: They would *lend* the files to the investigators to take where they wished for as long as they wished, so long as they were kept confidential. The investigators refused, and requested an administrative law judge in the Labor Department to order the university to surrender its files and to order "the immediate cancellation, termination, and suspension" of all federal contracts held by the university until it complies. Berkeley countered with a request for a hearing in an effort to avoid the loss of the federal contracts, which amount to about $17 million annually. As of the end of this past calendar year, negotiations were continuing, and university officials had not yet given up hope of reaching a compromise settlement.

It must be remembered that nothing so far uncovered in the investigation at Berkeley has demonstrated sexual discrimination — which all university officials heatedly deny. The issue is essentially procedural; it has to do with authority, and territorial imperatives, and, most importantly, who is going to decide who shall teach and what they shall teach. One Berkeley administrator observed: "It does make you wonder whether a University of California can continue to exist in this day and age."

"If regulation . . . inhibits intellectual inquiry, if it suppresses the free exercise of intellectual judgment and the responsible exercise of discretion, then the business of the university is concluded."

FOR MORE THAN THIRTY YEARS, the federal government and higher education have collaborated to achieve important national goals. Their productive partnership has produced unparalleled scientific and technological accomplishments; it has educated and trained the manpower necessary to manage a complex post-industrial society; it has built the finest and most elaborate system of education in the world and provided universal access to it.

That partnership is now in grave jeopardy. In a hard-hitting speech in Washington this fall, M.I.T. president and former White House science advisor Jerome Wiesner declared: "The basic relationship between the federal government and the research community, after nearly three decades of the most fruitful partnership, is floundering. Indeed, it has begun to deteriorate and come apart so badly that we have reached a point of crisis that could see the effectiveness of the nation's major research universities seriously curtailed at a time when it sorely needs to be enhanced."

Some observers think that the deteriorating relationship is directly related to higher education's 'fall from grace.' They point out that the general public has become somewhat disenchanted with colleges and universities because of higher education's own internal problems, its failure to come up with solutions to society's pressing social problems, and the apparent decline in the value of a college degree as highly trained graduates are unable to find jobs commensurate with their education.

It is interesting and perhaps significant that the timing of this loss of confidence in higher education coincided with the dramatic increase in the regulation of colleges and universities by the federal government.

Whatever the cause, the spirit of collaboration has rapidly been degenerating into an adversary relationship at best and open hostility at worst. A number of recent acts by both Congress and the agencies have widened the rift and created genuine alarm on the campuses. Here are three examples:

▶Perhaps the most controversial case was the blatant attempt by the Congress to force medical schools to admit students who had attended foreign medical schools — mainly because they had failed to gain admission to U.S. medical schools. Under pressure from these students and their families, the legislators amended the Health Professions Educational Assistance Act of 1965 to provide that the Secretary of H.E.W. would assign each medical school a quota of such students. No student could be denied admission for failing to meet the school's admission requirements. And failure to comply would mean the loss of all capitation funds.

Eighteen medical schools refused to comply and were faced with a loss of federal dollars averaging more than $500,000 each. After considerable debate, a compromise measure was adopted, requiring medical schools to "make a good faith effort" to increase their enrollment of such students by 5 percent.

▶Last spring, the Office of Management and Budget published proposed regulations and accounting procedures for recovery of indirect costs of federally sponsored research at universities. If finally approved, these new rules would result in a loss to research universities of more than $120 million. In the hope of delaying approval, a number of education associations are establishing a national commission to study the indirect cost question and make recommendations.

▶New guidelines issued by H.E.W. last fall pose another threat. The regulations treat the professional fees of salaried faculty physicians as restricted funds which must be deducted from Medicare claims. This would cost Stanford's medical school alone about $2.3 million.

"It is harrowing," says one university administrator; "these sudden, unexplained, and confusing shifts in policy are wearing us down."

"In brief," says Dr. Wiesner, "universities have been beset in recent years by a barrage of independent and unrelated government actions that, often individually and certainly in the aggregate, have an adverse impact on the health of the university. What we need, and what the country now needs, is regulation of regulation."

"The basic relationship between the federal government and the research community . . . has begun to deteriorate and come apart so badly that we have reached a point of crisis."

NOBODY IS QUITE SURE how to go about regulating the regulators or unraveling the web that has entangled our institutions of higher learning (and most of the rest of our society).

Thoughtful people make specific suggestions to improve the situation. They urge higher education to document with more precision the consequences of federal regulation, its costs and impacts on institutions, individually and collectively. They plead for consultation between the federal agencies and the institutions and the associations which represent higher education. They ask for a policy of enforcement which includes a range of sanctions graded according to the alleged violation, so that a minor infraction does not "bring down a whole institution." One of the more imaginative suggestions is for an "education impact statement" — comparable to environmental impact statements — to be submitted by agencies along with their proposed regulations. All of these suggestions have as their goal to reduce regulation to a bare minimum and to make that which is absolutely necessary both workable and effective.

Some progress has been made. Secretary Califano has succeeded in making the regulatory process at H.E.W. more open, if not less active. And an Interagency Task Force on Higher Education Burden Reduction studied the problem and issued a number of constructive recommendations. Unfortunately, the task force went out of business with its creator, President Ford. Nonetheless, its recommendations have been passed on to the Commission on Federal Paperwork, and there is still some possibility that they will be acted upon. The paperwork commission's recommendations have already led to significant reductions in the number of rules and reporting requirements for O.S.H.A. and E.R.I.S.A. President Carter announced this fall the creation of a "regulatory council" with the mandate to slash away at contradictions and redundancies in all federal regulation.

The more pessimistic observers hold out little hope for any significant reduction in government regulation of higher education. Charles Saunders of the A.C.E. is not a pessimist, and he continually calls for less rhetoric and more understanding and cooperation from both sides.

Some major legislative acts affecting higher education

There are a number of federally mandated social programs which are not directed specifically toward higher education, but which nonetheless have a significant impact:

▶*Social Security Act of 1935:* provides benefits for employees based on institutional and employee payroll contributions.

▶*National Labor Relations Act of 1935:* governs collective bargaining of college and university staffs and faculties.

▶*Equal Pay Act of 1963:* provides for equal pay and other conditions of compensation for equal work.

▶*Employment Retirement Income Security Act of 1974:* governs pension plans, their management, and investment.

Civil rights legislation and executive orders have had a profound effect on the nation and higher education over the past 15 years.

▶*Civil Rights Act of 1964; Executive Order 11246;* and *Executive Order 11375:* prohibit discrimination on the basis of race, color, religion, national origin, age, and sex, and require organizations receiving government funds to maintain an affirmative action effort.

Several acts affect higher education even though they convey no financial assistance to colleges and universities.

▶*Title IX of the Higher Education Amendments of 1972:* provides for equal treatment of women students.

▶*Section 504 of the Rehabilitation Act of 1973:* prohibits discrimination against the handicapped and requires institutions to take necessary steps to accommodate the handicapped.

▶*Family Education Rights and Privacy Act of 1974:* sometimes known as the Buckley Amendment, affords to students rights of access to records.

▶*Occupational Safety and Health Act of 1970:* sets standards to assure that working conditions are safe and healthy.

▶*Education Amendments of 1976:* especially the Student Consumer Education Act of Senator Javits, which makes the government the consumer advocate for students and parents and requires institutions to publish policies and practices and be held accountable for them according to "truth in advertising" standards.

Various laws provide financial assistance to higher education directly or through student grants.

▶*The Higher Education Act of 1965:* particularly Title IV, which provides federal student financial assistance and work-study programs.

▶*Health Professions Educational Assistance Act of 1976:* provides assistance to students.

Also: the *National Science Foundation Act of 1950*, the *National Foundation on the Arts and Humanities Act of 1965*, *Public Health Service Act*, and *International Education Act of 1966*, all of which support academic programs.

Also: *Circular A-21 of the Office of Management and Budget*, which determines how indirect costs associated with research grants will be calculated and reimbursed to institutions.

Nonetheless he says: "Don't believe any politician who promises deregulation. We cannot go back to the glorious days of yesteryear.... Regulation is here to stay in a growing variety of forms."

Some feel that the only hope for a reduction in regulation lies in a "people's revolt," which they think may be possible soon because of a change in public opinion about the omniscience and omnicompetence of government, perhaps because regulation is now touching millions and millions of individuals in matters of immediate import to them.

John Howard, president of Rockford College, would like to precipitate such a revolt. He urges colleges to "engage in an intensive campaign to bestir their alumni, their students, their students' parents, their faculties, and their local communities to send urgent messages to their representatives in Washington ... requesting a moratorium on any further tampering with the educational system."

BUT THE ISSUE is greater than "tampering with the educational system." The issue is how a democratic society like ours accomplishes such profoundly important goals as equality for everyone, enough energy, a sound economy, peace, prosperity, and progress.

Revolutions in transportation and communications have transformed the United States into a true "national society." Because of that and because of the largeness and complexity of our problems and expectations, we have turned more and more to government to meet our needs. Not surprisingly, there has been a corresponding shift of power to government and, in the main, to national government.

This has inevitably led to an enormous growth in government, in bureaucracy, in the number of federal laws and regulations — all necessary to cope with the growing demands that we place upon the federal government. In the last major speech he made as Secretary of H.E.W., Caspar Weinberger declared: "In the process of pouring out all of these compassionate and humanitarian blessings, and institutionalizing our social obligations, we have built an edifice of law and regulation that is clumsy, inefficient, and inequitable. Worse, the unplanned, uncoordinated, and spasmodic nature of responses to these needs — some very real, some only perceived — is quite literally threatening to bring us to national insolvency."

The purpose of this report has been to increase the awareness of the alumni and alumnae of the nation's colleges and universities of the proliferation of government regulations and their impact on higher education. It is proper and natural for institutions of higher learning and their graduates to be concerned with the impact of of government regulations on higher education, to worry about how to cope with regulations without losing institutional autonomy. But perhaps the paramount question to be pondered by educators, by government officials, by alumni and alumnae, is how much a free people can expect its government to accomplish in its name and still remain free.

WPI

CHARLIE KEISLING

It is very warm for March. The morning sun floods the cheerful living room at 463 Linden Street in Boylston, Mass. A neighbor who has dropped by while walking his dachshund decides it's time to leave when the dog tugs at the leash. He gets up from his chair and heads for the door. "See you tomorrow, Charlie," he says.

Charles Keisling, senior technical designer and instructional associate at WPI for the last forty years, waves his friend away with a smile. "Sure. See you," he calls.

Stella Keisling, Charlie's wife, adds: "He'll be back. He's been over here almost every day since Charlie's come home from the hospital." Charlie has been at home recuperating from surgery since December. "I've worked at WPI since 1939," he says, "and I think I've only had about ten days of sick leave until now. But, I'm coming along."

There is an attractive charcoal portrait of a handsome boy hanging near the front window. "Our grandson," Stella explains. "Charlie did it," she says proudly. "He also takes photographs."

"Mostly nature studies," her husband replies. "I like to photograph flowers and birds. One of our sons is a horticulturist. He used to give lectures on wild orchids, which I would illustrate with slides." Again that warm smile. "Just a hobby."

Does he have any other pastimes? Stella, who collects antiques as a hobby, disappears into the den and returns with two pieces of intricate dollhouse furniture. "He made these for our granddaughter," she says. "They are exact reproductions of our dining room furniture, and they fit the dollhouse he made for her."

And who upholstered the little chairs? "Charlie," she answers. "He can do just about anything," she laughs. "Even knit. I tried to learn to knit myself one time, but couldn't get the hang of it. Charlie, who'd never knit before, decided he'd teach me how. Before you knew it, he had knit himself a pair of argyle socks." She grins. "I never did learn how."

Any other hobbies? "Well, he used to make violins. He also builds clocks. See that grandfather clock in the corner?" "Oh, I made that from a kit," Charlie protests. "Well," Stella answers him, "you made the one in the den from scratch." The shelf clock in the den is unusual and beautiful. It has an elegant hand-rubbed wood case. "Charlie made that case out of old mahogany boxes discarded by WPI," she says.

Back in the living room, conversation turns to the Keisling's Cape Cod home with its warm wood paneling and built-in kitchen. Did Charlie have a hand in building that? "He built it from the ground up," Stella replies. "And he helped build most of the neighbors' houses, too, including the wiring, plumbing, and heating."

"This is a very close neighborhood," Charlie goes on. "Years ago we all moved out here together and helped each other build our houses. We were young and didn't have much in the bank. We saved money by sharing our labor."

Charlie has a well-equipped workshop in his basement, where he pursues his various hobbies: carpentry, furniture building, miniaturizing. He has table saws, planes, lathes, a band saw, and a jig saw. Some are normal size, others are miniature. Much of this equipment came in handy when he designed and built the brick Cape next door and his son's modern house in back of his property. "When

it comes right down to it," says Charlie, "my hobbies have been a real help to me in my work at WPI. They have been my training school."

Charlie Keisling's formal education ended when he graduated from Worcester Boys Trade High School. He also received training as an electronics technician in the U.S. Navy, where he was a petty officer, and at the Capitol Radio and Engineering School in Washington, D.C. He traces his natural abilities to a "mechanical" family background.

As WPI's visualizer-fabricator in the chemical engineering and chemistry departments, Charlie's many creative abilities are constantly being put into play. Former chem eng department head (now dean of graduate studies) Wilmer Kranich says, "It is part of Charlie's job to keep the major laboratory in operation. He is marvelously adept at mechanical design and fabrication and at electronics repair. A tremendous troubleshooter. He creates, designs, and builds equipment at great savings to WPI."

Undergraduates ("I see more of them now because of the Plan and the projects," Charlie reports), graduate students, and professors often don't know exactly what they want, so Keisling chats with them until they have put into words the jobs they need the equipment to perform. Developing the concept of what he's going to build takes the most time, but the actual fabrication is relatively easy, he says. He believes, "if you find you can't do it one way, then you look for another way."

This facility to envision and then produce what others can hardly put into words has led Leonard Sand, professor of chemical engineering, to call Keisling a man of "exceptional talents, particularly in his ability to visualize in three dimensions." Prof. Sand also praises Keisling as a special person because he is respected by the WPI community for his professional expertise and is regarded as a person in whom others feel comfortable confiding.

"I like to think I'm a close-mouthed individual," says Keisling. His wife, agreeing, reveals that he once had a gag sign on his office door that read "Chaplain's Office." Of the students who bring him their problems, Charlies says, "they are good kids. They have the same problems we had — they just seem bigger. They're all pretty serious and conscientious, and some are pretty uptight."

Keisling has been cited in scientific papers and has coauthored several. He has worked on a book with Prof. Sand, and he holds U.S. and Canadian patents on pneumatic tank drains (Keisling-Stanley valves) and other inventions.

Among pieces of equipment that Charlie has designed are an instrument that measures rates of adsorption of gases by minerals (Prof. Sand calls this the Keisling balance; Keisling calls it an adsorption balance); a field kit for mineral exploration; chemical reactor vessels ("cans" that operate at very high pressures); and a press that makes zeolite pellets with uniform density and dimensions.

Because of Keisling's ingenuity, WPI has been able to avoid buying very expensive equipment and supplies. Also, he has supplied the school with many devices that are not available on the market at any price.

Charlie's precision in the lab carries over full circle to yet another free-time hobby, mountain climbing. The family and a number of friends are enthusiastic climbers. "We've climbed the Presidential Range dozens of times," Stella says. "We use the hut system. We make sure we have a roof over our heads at night. No tents!" Charlie adds, "anything over fifteen feet high, we'll climb."

Charlie is a past chairman of the Worcester chapter of the Appalachian Mountain Club. Prof. Robert Wagner of chemical engineering recalls that it was Charlie who sponsored him for membership in the club. "He's a wonderful person," Prof. Wagner comments. "Not only do we share an interest in mountain climbing, but he's helped me in many other ways. He's had a tremendous effect on my life. Technically speaking, he's outstanding. Nobody can compare with him." Wagner pauses. "We've grown very close. We've had lunch together at WPI nearly every day for thirty years."

Charles Keisling echoes the friendship theme in his Boylston living room. "I am fortunate to have made so many good friends at WPI. But, then, I was fortunate in having good friends at Surprenant, too." Surprenant? "Yes, at Surprenant in Clinton. It's a part of ITT now. I worked there for 25 years, right along while I was working at WPI. I designed extruders, takeups, and wire product machinery." "He designed the golf course buildings there, too," Stella goes on. "It's called the ITT International Golf Course now."

The Keislings have deep roots in the Boylston-Clinton-Lancaster area. Charlie has served as a past chairman of the Boylston Finance Committee and as a past trustee of the Congregational Church. His mother was a descendant of the Ball family, which was given a large land grant in the 1600s that extended right into what is now Shrewsbury. "We still have 29 acres of the original grant left," reports Stella.

Heritage and family mean something to the Keislings. Their son Richard has an ancestral Revolutionary War rifle over his mantel. He lives down the street with his wife and two children. Their son Paul lives in back of them with his wife and three children. And there are lots of life-long friends living within a stone's throw of their cozy red Cape.

Such a nice, close-knit neighborhood. "We like it," Stella Keisling says. "This is our home. We wouldn't want to live anywhere else."

As we go to press, a celebration is being planned in honor of Charlie Keisling's 40 years of service at WPI. Cocktails and a steak dinner are slated to be served at Higgins House on Saturday, May 5, starting at 6:30 p.m. Arrangements are being made by the Chemical Engineering Department.

1911

Mrs. Mary M. (Polly) Carpenter passed away in January and **David Carpenter** is now living with his son in Agawam, Mass.

1916

Secretary:
C. Leroy Storms
135 West 6th Ave.
Roselle, NJ
07203

Arthur Ingraham attended the winter annual meeting of the American Society of Mechanical Engineers. At the meeting, he showed the ASME president-elect, Prof. Donald Zwiep, head of the WPI ME Department, a small brass, highly polished anvil that he had made as a student at WPI.

1930

Secretary:
Carl W. Backstrom
113 Winifred Ave.
Worcester, MA
01602

Representative
Carl W. Backstrom

Arthur Barnes continues as president of Barnes and Jarnis, Inc., in Boston. . . . Still department head at Welch & Forbes, Boston, **Sherman Dane** writes, "Don't expect to retire until my kids get through college."

1931

Secretary:
Edward J. Bayon
45 Pleasant St.
Holyoke, MA
01040

Representative:
A. Francis Townsend
P.O. Box 267
150 Shell Lane
Cotuit, MA
02635

Edward Bayon, a principal of Tighe & Bond, an Easthampton (Mass.) firm of consulting engineers, has been elected president of the New England Water Pollution Control Association. He has been active with the association since 1956 and has served on its executive committee for several years. Prior to joining Tighe & Bond in 1956, Bayon was superintendent of the Department of Public Works in Holyoke. He started to work for the city in 1938 as superintendent of public buildings, and in 1946 he became outdoor superintendent. Because of his work with the association and his professional affiliation with major water pollution control projects in the area, Bayon is regarded as an expert in the field. The association consists of nearly 2,000 consulting engineers, scientists, state and municipal officials and educators, as well as those connected with the water pollution control business. It has long championed preservation of New England's waterways, and is affiliated with the Water Pollution Control Federation which is involved with national and international pollution problems.

Warren Doubleday of New Salem, Mass. spoke on the subject, "The Why and How of Quabbin" at a luncheon meeting of the Ramapogue Historical Society in January. The talk was illustrated by movies taken 40 years ago when several towns in the area of North Dana were flooded to make way for the reservoir. Mr. Doubleday worked on the project and his own family lost their home during the flooding. . . . **Oliver Underhill** is a retired tree farmer in the vicinity of Franconia, N.H.

1932

Representative
Howard P. Lekberg
RFD 115 Main St.
East Douglas, MA
01516

Formerly an associate professor at Worcester Junior College, **Howard Lekberg** is now retired.

1933

Secretary
Sumner B. Sweetser
100 Pine Grove Ave.
Summit, NJ
07901

Representative:
Robert E. Ferguson
36 Lake Ave.
Leicester, MA
01524

Harry Jensen, the retired vice president of technology at Sikorsky Aircraft, is presently residing in Riviera Beach, Fla. . . . **Albert Laliberte** has retired from Omnitech, Inc. in Dudley, Mass. He founded the firm and will continue to serve it as a consultant.

1934

Secretary:
Dwight J. Dwinell
Box 265
Brownington, VT
05860

Representative.
Dwight J. Dwinell

Chester Dahlstrom retired recently from du Pont after 37 years of service.

1935

Secretary:
Raymond F. Starrett
Continental Country Club
Box 104
Wildwood, FL
32785

Representative:
Plummer Wiley
2906 Silver Hill Ave.
Baltimore, MD
21207

Joseph Glasser, a Raytheon Company vice president and division manufacturing manager, has been named to the new position of manager of the Andover-Lowell manufacturing operation of the company's Missile Systems Division. Joe, who plans to retire on July 1st, began work at Raytheon in 1945. Since then he has served in a series of increasingly responsible positions in manufacturing management with three divisions of the company. He has been the Andover plant manager since 1968, and a company vice president since 1971. He has an honorary doctor of science degree from Lowell University. Last year he received the Robert H. Goddard Award for "outstanding professional achievement" from WPI. He is a trustee of Bon Secours Hospital, a corporator of the Lawrence General Hospital, a trustee and corporator of the Lawrence Savings Bank, and a board member of the Greater Lawrence Boys' Club. He is chairman of the electronics section of the Manufacturing Technology Division of the American Defense Preparedness Association. In June he will become a WPI trustee.

Although **"Rollie" Nims** has been retired for several years, he continues to do consulting work for the National Electric Manufacturing Association.

1936

Secretary:
Harold F. Henrickson
1406 Fox Hill Dr.
Sun City Center, FL
33570

Representative:
Walter G. Dahlstrom
9 Jewett Terr.
Worcester, MA
01605

Jim Lane spent 1972, 1973, and 1974 (on leave from the Oak Ridge National Laboratory) with the International Atomic Energy Agency in Vienna, where he was concerned with the possibilities of nuclear power in developing countries. He spent 1975 at Oak Ridge, from which he retired in 1976. He then rejoined the IAEA until his contract ran out last year. In July he became

a full time consultant at the Institute for Energy Analysis. He spent six weeks in July and August in Brazil doing a study of alternative energy options for the country (solar, etc.). He went back to the IEA at Oak Ridge until the end of 1978. In January he went to the Argonne Center for Educational Affairs to assist with a training program on electric power system expansion planning. He writes, "We have 25 participants from 14 developing countries taking the nine-week course. When it is over, I'll go back to the IEA again as a full-time staff member." During the past few years, Jim has traveled to more than 50 countries including Canada, Mexico, Pakistan, England, Portugal, Germany, the Netherlands, Argentina, Puerto Rico, Venezuela, and the Virgin Islands. . . . **David Morley** retired from General Electric in January after 41 years of service. He was laboratory manager in the Salem (Va.) plant.

1937

Secretary:
Richard J. Lyman
10 Hillcrest Rd
Medfield, MA
02052

Representative:
Richard J. Lyman

Currently **C. Chapin Cutler** is a professor at Stanford (Calif.) University.

1938

Secretary:
Emory K. Rogers
141 Lanyon Dr
Cheshire, CT
06410

Representative:
Albert L. Delude, Jr
261 Garden City Dr
Cranston, RI
02910

Malcolm Safford, formerly a senior application engineer for Hamilton Standard of Windsor Locks, Conn., is now retired in East Longmeadow, Mass.

1942

Representative:
Norman A. Wilson
17 Cranbrook Dr
Holden, MA
01520

Alexander Mikulich of Wellesley, Mass. is president of M.J. Alexander, Inc.

1943

Representative:
Behrends Messer, Jr
Mobil Research &
Development
P.O. Box 1026
Princeton, NJ
08540

Art Grazulis is rounding out two and a half years in Houston, Texas as principal process control engineer for Diamond Shamrock. He has been involved in building a vinyl chloride plant and a plant for a fungicide intermediate. He is slated to move back to Cleveland, where he will again be in corporate engineering working on a variety of instrument engineering assignments. Last year he celebrated 30 years with Diamond. He and his wife recently visited Ireland and Mexico. They have three children "who have flown the coop."

Raymond Matthews has been appointed assistant general manager of Robertshaw Controls Company's Tempstat Division in Hinsdale, N.H. He joined Tempstat in 1974, and has served as chief engineer and plant manager. . . . Presently, **Pete Messer** is manager of wholesale plant and civil engineering for Mobil, and has previously done considerable globe-trotting involving the construction of marine terminals and refineries. He is also chairman of the American Petroleum Institute's General Committee on Measurement. Pete has four children and two grandchildren. He is located in Princeton, N.J.

Bailey Norton writes that he is currently a trustee of the Community Savings Bank and a director of Daniel O'Connel's Sons, Inc., a heavy construction company in Holyoke (Mass.) which celebrates its 100th anniversary this year. He is with Acme Chain-Incom International, Inc., and has made many recent business trips to Southeast Asia where he has been partly responsible for the building of another company facility in Singapore. Bailey and his wife, Phoebe, who have three grown children, have "acquired some real estate of our own in Edgartown."

Leon Rice, treasurer and general manager of Leighton Machine Co., Manchester, N.H., serves as president of the local YMCA. He is especially interested in the "Y's" physical fitness program. He is also clerk of the state YMCA; a past president of the Kiwanis Club; a member of the Manchester Industrial Council and of the Daniel Webster (BSA) Council; a past chairman of the advisory committee of the Manchester Voc Tech College; an elder of the Bedford (N.H.) Presbyterian Church; and a charter member of the Merrimack Valley Chapter Society of Manufacturing Engineers. Involved in land development in Bedford, he presently owns 100 acres of "beautiful wood lots," as well as property on a nearby lake, and in Clearwater, Fla. The Rices have six children and two grandchildren.

Al Voedisch retired after 32 years with the USAF Aeronautical Systems Division as chief engineer for propulsion systems development. He remarried in 1977, and is enjoying travel and hobbies. . . . **Pierre Volkmar** has been with the Garrett Corp. for 25 years. The aerospace firm is located in Los Angeles and Phoenix and builds turbine engines, life support systems, and controls. For the past ten years he has been on the staff of the vice president of advanced marketing. Garrett is currently applying its aerospace technology to a gas turbine for trucks and electric cars for DOE, Volkmar being heavily concerned with the former. He has five children and three grandchildren.

1944

Secretary
John G. Underhill
6706 Barkworth Dr
Dallas, TX
75248

Representative:
John A. Bjork
11 Tylee Ave.
Worcester, MA
01605

Phil Brown, who has long been the Navy's soil mechanics and foundation engineering expert, retired in August and has moved to Amherst, Mass. He is doing consulting work. . . . **Irving James Donahue, Jr.,** president of Donahue Industries, Inc., Shrewsbury, Mass., has been elected president of the Memorial Hospital board of trustees. Jim serves as a trustee at WPI and is the corporate clerk of Consumers Savings Bank. He is past director of the Central Massachusetts Employers Association, Worcester Area Chamber of Commerce, and the Massachusetts League of Cities and Towns. Also, he is a former chairman of Shrewsbury selectmen and the Shrewsbury Finance Committee.

Donald Gilrein recently retired as sales manager of the West Springfield (Mass.) District Office of the Metropolitan Life Insurance Company. His 30-year career was devoted to various levels of management throughout the New England states and at the company's home office in New York City. Presently, he is residing at 140 Clover Rd., Ludlow, Mass. Some time in the future he may move to the Dennis area of Cape Cod. He writes: "I am the proud father of five children (the youngest, Steve, is a junior at WPI), and seven grandchildren." . . . **Everett Johnson,** a manager at Texaco's Beacon Research Laboratories, has been elected to the board of directors of the Council of Industry of Southeastern New York. Since 1946, Johnson has been associated with Texaco in supervisory positions. He is active in government and community affairs in the town of Fishkill, N.Y.

Currently **Russell Pentecost** holds the post of senior project engineer at Boise Cascade in Rumford, Me.

1945

Representative:
Robert E. Scott
Allendale Mutual Insurance Co
P O Box 7500
Johnstown, R I
02919

Richard Fitts was recently appointed as a coordinator for the newly-established marketing information systems in the marketing division of Eastman Kodak Company. He started at Kodak in 1944. His most recent position was that of manager of marketing systems, corporate systems development and services, administrative services, finance and administration. He has an MBA from the University of Rochester, is vice chairman of the YMCA of Rochester, past chairman and a member of the Industrial Engineering Society, and a member of the Administrative Management Society. . . . **Bill Howard,** former vice president of Abrasives Marketing in the Grinding Wheel Division of Norton Co., has retired. . . . **Daniel Katz** now serves as a design engineer at PEDCO in Cincinnati, Ohio.

1946

Secretaries:
M Daniel Lacedonia
106 Ridge Rd.
East Longmeadow, MA
01028

George H Conley, Jr.
213 Stevens Dr.
Pittsburgh, PA
15236

Representative:
George R Morin, Jr
81 Park Ave
Keene, NH
03431

Richard Anschutz, executive assistant to the president of Pratt and Whitney Aircraft, Government Products Division, Palm Beach, Fla., has been appointed to the board of trustees at Florida Institute of Technology in Melbourne. From 1976 to 1978 Anschutz served as vice president for United Technologies Advanced Systems and Programs in the Pratt and Whitney Division, the largest supplier of advanced military aircraft engines in the free world. From 1960 through 1973 Anschutz was program manager for P&W's RL10 engine, the world's first liquid hydrogen-liquid oxygen rocket engine. A former officer in the U.S. Navy, he is also a former town commissioner and vice-mayor of Jupiter Inlet Colony, Fla., and remains active in civic affairs in that area.

George Button II, with Shipman Ward in New Jersey having been sold, is now located in Boca Raton, Fla., where he plans to go into the building business. . . . Dean **William Grogan** received the 1979 Worcester Engineering Society's Scientific Achievement Award in February. He was honored at the Society's Engineer Week banquet for his help in implementing the WPI Plan, a new approach to engineering education which he helped develop. He has directed the plan since 1970. Dean Grogan, who did graduate work at WPI, joined the faculty in 1946 and became a full professor in 1962.

Robert Hamilton was recently elected vice president of the abrasives marketing group at Norton Co., Worcester. He had been general sales manager of the group. After spending two years as an instructor of mechanical engineering at WPI, Hamilton joined Norton in 1948. A Navy veteran, he is also a graduate of the Advanced Management Program at Harvard Business School. His previous experience at Norton included his posts as sales manager of Mexican operations and managing director for the United Kingdom subsidiary. . . . **Allan Johnson** was elected to the board of directors of Kemper International Insurance Company at a recent board meeting. He was also elected vice president of Kemper S.A. in Europe and Kemper Limited in Australia. Currently manager of the highly protected risk department at the insurance group's Long Grove (Ill.) headquarters, he joined Kemper in 1964.

1948

Secretary:
Paul E. Evans
69 Clairmont St.
Longmeadow, MA
01106

Representative:
John J. Concordia
36 Summer St
Shrewsbury, MA
01545

F.A. (Mike) Curtis has been named a vice president of the F-16 Program plans, controls, and contracts at General Dynamics' Fort Worth (TX) Division. Earlier he was F-16 deputy program director. Since starting with GD in 1949, as an aerodynamicist, he has held a number of increasingly responsible positions including director of the F-111 Engineering Project Office and director of product engineering. He holds a master's degree in aeronautical engineering from California Institute of Technology in Pasadena. . . . A collection of **Thomas Grove's** color photographs were recently on view at the Artiste Showcase in Penfield, N.Y. A machine design engineer for Kodak, Grove is also a photographer whose work has won several awards in national and international competitions. His entries in the Kodak International Salon of Photography earned him medals in 1969, 1973, and 1975. He considers photography as a hobby, is essentially self taught, and reads avidly on the subject.

1949

Secretary:
Howard J. Green
1 Kenilworth Rd
Worcester, MA
01602

Representative:
James F. O'Regan
17 Hundreds Rd.
Westboro, MA
01581

Francis Holden, a research and materials engineer with the Massachusetts Department of Public Works, has taken a part-time post at Central New England College, Worcester where he is assistant chairman of the engineering and technology department. The position was designed to be a link between local industry and part-time students. . . . **Elzear Lemieux** has been elected a fellow of the American Institute of Chemical Engineers in recognition of his outstanding contributions in the areas of "professional attainment and significant accomplishment in engineering." He was cited for his contributions to research in distillation design and practical application. Only 10 percent of the association's membership attains the rank of fellow. Lemieux was promoted to manager of equipment design at Pullman Kellogg world headquarters in Houston last year. He joined the Pullman Kellogg division of Pullman Incorporated in 1950. He has since served in a number of capacities including that of supervisor of pilot plants, supervisor of research, and manager of vessel analytical engineering. He has an MS in chemical engineering from WPI and belongs to Sigma Xi, the Scientific Research Society, and is a professional engineer in Texas and New York.

Robert Quattrochi, president of Pete's Chrysler-Plymouth Auto Agency, Pittsfield, Mass., has been named chairman of the Central Berkshire Chamber of Commerce. He has been associated with the family-owned business for 28 years. During World War II he served in the Navy. Before joining his father in the auto agency, he worked as a design engineer in GE's ordnance department. He is past treasurer of the Massachusetts State Auto Dealers' Association and is the National Dealer Advisory Council representative for the New England Chrysler-Plymouth Dealers Association. He is on the board of the Berkshire County Historical Society and is a member of the board of corporators for City Savings Bank. He and his wife Kathryn have four daughters.

The former project manager for the Worcester Development Consortium, **Russell Larson,** has joined J.L. Marshall & Son, Inc. of Pawtucket, R.I. as executive vice president. Earlier Larson had served as vice president of Granger Contracting Co., Inc., with which he had been associated for 29 years. While with the Consortium, he was involved with the planning of Worcester's new civic center. Larson is a registered professional engineer and belongs to many professional and civic organizations.

1950

Secretary:
Lester J. Reynolds, Jr
15 Cherry Lane
Basking Ridge, NJ
07920

Representative:
Henry S. Coe, Jr
3 Harwick Rd
Wakefield, MA
01880

Stanley Friedman is the new group general manager of ITT's Industrial Products-North America, New York City. ITT companies reporting to him include ITT General Controls, ITT Barton Instruments, J.C. Carter Co., Reznor-U.S., ITT Thermotech, ITT Phillips Drill Division, ITT Harper Division, and ITT Abrasive Products Company. Previously, Friedman was with Monogram Industries, Inc., where he was president of the Spaulding Fibre Company in Tonawanda, N.Y., and a vice president of Monogram. Earlier he had held general management and executive positions with the Lockheed Electronics Company and RCA. He graduated from the Sloan Program in Executive Management Training in the Graduate School of Business of Stanford University and holds an MSEE from Purdue.

1951

Secretary:
Stanley L. Miller
11 Ashwood Rd
Paxton, MA
01612

Representative
John L. Reid
31 Spring Garden Dr
Madison, NJ
07940

Halsey Griswold is now assistant general manager of the Supply & Logistics Division of Texaco, Inc. in White Plains, N.Y. He holds an MS from Cornell University. . . . **George Messenger** is a self-employed engineering consultant in Las Vegas, Nevada. He was named an IEEE fellow in 1976 and is listed in *Who's Who in the West.* This year he will attend an international conference in Tbilisi, USSR. . . . **C. Condit Peirce** has been promoted to manager of engineering of standard products at Sippican Corporation's Ocean Systems Division in Marion, Mass. He and his family reside in Rochester.

1952

Secretary:
Edward G. Samolis
580 Roberts Ave
Syracuse, NY
13207

Representative
Philip B. Crommelin, Jr
P.O. Box 38
Stanton, NJ
08885

William Boraski and his partner have moved their law firm from its long-time headquarters at 28 North St. to their newly purchased building at 36 Maplewood Ave. in Pittsfield, Mass. The firm now occupies four rooms on the first floor of the building and provides general law services, including criminal and civil cases, estates and divorces. Boraski has practiced law in Pittsfield since graduating from Northeastern University School of Law in 1953. He is a member of the Massachusetts and federal district court bars as well as the Massachusetts, American, and Berkshire bar associations.

1954

Secretary
Roger R. Osell
18 Eliot Rd
Lexington, MA
02173

Representative:
Roger R. Osell

▶*Married:* **Marvin V. McCoy** and Lorraine H. Godsoe on February 3, 1979 in Merrimack, New Hampshire. The groom is the east coast regional manager of Blackburn International Telephone & Telegraph Co.

1955

Secretary
Kenneth L. Wakeen
344 Waterville Rd
Avon, CT
06001

Representative:
Ralph K. Mongeon, Jr
Riley Stoker Corp.
P.O. Box 547
Worcester, MA
01613

Edouard Bouvier continues with SNET Co., New Haven, Conn., where he is staff manager of buildings equipment. . . . **Paul Brown, Jr.** holds the post of president at P.W. Brown, Inc. in Westboro, Mass.

1957

Secretary
Dr. Robert A. Yates
11 Oak Ridge Dr
Bethany, CT
06525

Representative
Alfred E. Barry
1 Algonquin Rd
Worcester, MA
01609

Boakfar Ketunuti continues as managing director at Universal Engineering Consultants Co., Ltd. in Bangkok, Thailand.

1958

Secretary:
Harry R. Rydstrom
132 Sugartown Rd
Devon, PA
19333

William E. Griffiths, Jr. has been elected a vice president of Hedstrom Company in Bedford, Pa. He will be responsible for the company's manufacturing and engineering functions. Previously, he had been general manager of the Bedford plant. The firm, a member of Brown Group, Inc., has five manufacturing locations. . . . **Philip Lenz** is still with Armco, Inc., where he is a sales engineer. He is located in Wallingford, Conn. . . . **Joaquim S. S. Ribeiro** has been elected treasurer of the board of trustees of Memorial Hospital, Worcester. He is vice president of finance and international affairs at Jamesbury Corp., a director at Mechanics Bank, a trustee of United Way, and a member of the Worcester Committee on Foreign Relations and the Financial Executives Institution.

1959

Secretary
Dr. Frederick H. Lutze, Jr
110 Camelot Court NW
Blacksburg, VA
24060

Representative
Dr. Joseph D. Bronzino
Trinity College
Summit St
Hartford, CT
06106

▶*Born:* to Mr. and Mrs. **Stanley M. Wallner** a son Harlan David on August 20, 1978. Recently, Stan was promoted to branch manager at Fisher Scientific Co., Livonia, Michigan.

Richard Ronskavitz is manager of the design section at Broward County Traffic Engineering in Ft. Lauderdale, Fla. . . . **Geza Ziegler,** who is dean of college extension at the Bridgeport (Conn.) Engineering Institute, has assumed new duties. He will now supervise the administration of the Danbury and Stamford branches. Associated with the evening college since 1963, Ziegler is also chief engineer at the A.N. Apanel Company in Stamford. He is a former dean of the BEI-Stamford branch.

1960

Secretary:
Paul W. Bayliss
170 Wyngate Dr
Barrington, IL
60010

Representative.
John W. Biddle
78 Highland St
Holden, MA
01520

At the present time, **Murray Elowitz** is a project engineer for TRW Defense & Space Systems Group in Redondo Beach, Calif. . . . Continuing with GE, **Paul Kendra** is now a software systems engineer for the firm in Binghamton, N.Y. . . . **Phil Pastore, Jr.** holds the post of contract manager at Turner Construction Co. in New York City. He, his wife, Marilou, and three children reside in Guilford, Conn. . . . **Thomas Poole** of Setauket, N.Y. is president at Hy-tec Industries.

The RED BARON strikes again!

Robert Kelley, '60 MNS, will go to almost any lengths to catch his students' attention. It has been rumored that he wears a "Red Baron" World War I flying helmet to one of his classes at Worcester State College. In this particular instance, however, a flying helmet is especially appropriate.

Three years ago, Kelley, who is with the department of natural science and physics at WSC, came up with a new idea. Why not create a summer course to instruct teachers how to teach subjects in aviation? As an untitled, do-everything member of the Massachusetts Association of Science Teachers, he had learned that aerospace education was in trouble. What to do? He and a number of other aviation buffs formed the New England Aerospace Umbrella, which spawned the idea of the WSC summer course.

According to Kelley, the thrust of the course is "to give teachers a way of introducing (aviation) subjects in a way that can reach their students." He believes in on-the-job training. This past summer, for example, he and his teacher-students learned about the physiology of flight at Pease Air Force Base in New Hampshire.

"We went into the chamber and removed our oxygen masks," he says. "It was really something. We even took physicals from a flight surgeon."

The course showed the future teachers the effects that flight can have on the human body, such as disorientation and spatial problems. Kelly says that it is hard to tell whether you're right side up or upside down in a plane. "The instruments will tell you, but often the body can't," he explains.

The students also held the stick during a short flight in a small plane, and learned about the structure and integrity of the aircraft.

Near the end of the course, twenty-four members of the class boarded an Air Force plane and headed for Washington, D.C., a trip which conceivably might have convinced some that the fear of lying was no laughing matter. The military aircraft was wide open inside, with canvas seats for parachutists. It was nowhere near as well insulated as a commercial one, and the take-offs and landings were almost deafening.

"In spite of the noise the majority of the students found the trip informative," Kelly reports. "The plane was very informal. People could go up front and look at the instruments, which were similar to those found on a small plane."

From the air, the group was able to recognize forest destruction, pollution in the rivers and lakes, and open mine pits. The difference between algae and chemical pollution was also noted.

Since they had recently finished training in navigation, some charted the course of the flight. Others picked out landmarks.

Back in Worcester, the class studied rocketry during the final week of the course. No one was shot into space, but students were inducted into the Order of the Red Baron (Bier Über Alles Luftwaffe), an international association of aerospace education buffs.

Bob Kelley hopes that his course, which will be offered next spring in WSC's evening school, will become a certificate program in the natural science and physics department. The eventual goal is to make it part of the regular curriculum, and a minor for undergraduate students.

"Everyone seems to have a lot of fun taking the course," Bob says. "But more important, they learn something."

The Civil Air Patrol (CAP-USAF) has honored Kelley's New England Aerospace Umbrella by presenting it with the Frank Brewer Award "For furthering the aims of aviation education." The award, which was announced this fall, is regional in scope and includes the New Jersey, Pennsylvania, New York, and New England area.

WPI

1961

Secretary
John J Gabarro
8 Monadnock Rd
Arlington, MA
02174

Bradley Hosmer was recently appointed staff vice president of planning at AMF Incorporated, a world-wide producer of industrial and leisure time products. Brad joined the White Plains (N.Y.) firm last year as director of marketing and industrial products. Previously, while with Branson Sonic Power Company, he rose from general manager to vice president of marketing. He had also been with Booz Allen Hamilton, the international consulting firm. Brad, who has an MBA from Harvard, lives with his wife, Juanita and three children in West Redding, Conn.

Mo Noradoukian has been named supervisor of product management at T-Bar Incorporated in Wilton, Conn. He is responsible for formulating plans for enhancements or additions to existing product lines, recommendations for new product areas, and providing the company's sales department with technical assistance and promotional material. He will manage the supervision of product managers for T-Bar's four areas of components, communication switching, computer switching and instrumentation and control equipment. Also, he will supervise the Application Engineering Department. Previously, Mo had operated his own manufacturer's representative firm and represented a number of data communication and terminal manufacturers. Still, earlier, he was with Timeplex, Inc. and GTE Information Systems. He is the author of a published paper: "The Benefits of Frequency Division Multiplexors vs. Time Division Multiplexors."

T-Bar products are used worldwide by airlines, hotel and auto rental reservation systems, stock exchanges, and by industry for the management of inventory manufacturing and process control.

Dr. **Robert Seamon** sponsored a free public concert by Organist Peter Planyavsky at Worcester's Trinity Lutheran Church in February. Dr. Seamon, a former Worcester resident, is a nuclear physicist and organist in Los Alamos, New Mexico. Peter Planyavsky is the organist at Vienna's St. Stephan's Cathedral.

1962

Secretary
Harry T Rapelje
1313 Parma Hilton Rd
Hilton, NY
14468

Representative:
Richard J DiBuono
44 Lambert Circle
Marlboro, MA
01752

Still with Revere Supply Co., Inc., New York City, **Michael Kaufmann** currently holds the post of director of engineering. . . . Although he works full time as a traffic engineer for the Lexington-Fayette Urban County government in Kentucky, the Rev. **Andrew Terwilleger** also does church work on a "part-time, as needed basis."

1963

Secretary
Robert E Maynard, Jr
8 Institute Rd
North Grafton, MA
01536

Representative.
Joseph J Mielinksi, Jr
34 Pioneer Rd
Holden, MA
01520

Dr. **Anthony Allegrezza** is a senior research scientist at ABCOR, Inc., in Wilmington, Mass. . . . **Bob Behn,** a professor at Duke University, has been credited by Frank Hatch (the defeated candidate for governor of Massachusetts) as having helped him over some rough spots during the recent gubernatorial campaign. According to the Feb. 25th issue of the *Boston Sunday Globe,* Hatch has said, "I was rescued by a brilliant, young political expert, Bob Behn, who flew back from Duke University to spend two days readying me for the big night (Faneuil Hall debate). His presence was crucial. How much you know isn't as important as feeling confident and loose enough to get across what you do know. Thanks to his preparations, I wasn't quite quoting Muhammad Ali couplets before the fray, but I was certainly psyched and ready. . . ."

Continuing with Standard Brands, Inc., **James Davis** is now a process development engineer in Peekskill, N.Y. . . . **Thomas Donegan** serves as vice president of Overseas International Distributors of Geneva, Switzerland. A resident of Devon, Conn., he is also the organizer and director of the Bank of New Haven, and a professional engineer. . . . **Dick Wagner** is employed as a salesman for Wagner Hydraulics in Smithtown, N.Y.

Ted Zoli, Jr. has a solid grip on the reins of the family business, Torrington Construction Co., in Glens Falls, N.Y., and believes that hard work, diversification, honesty, and one-stop service have been the basis of the company's success.

Take the hard work part. Ted thinks nothing of putting in ten-hour days. He started helping out his dad at the firm when he was only 12 years old. Today he knows the business inside and out. (His father, still president, is retired.) In the early days, Torrington was strictly a highway and heavy construction firm.

Currently, Torrington has three permanent Ready Mix concrete plants, one mobile Ready Mix plant, and three sand and gravel quarries. It generates millions of dollars in sales annually and employs up to 1000 persons.

Zoli's company is involved with preparations for the 1980 Winter Olympics in Lake Placid. It supplied the majority of cement, sand and gravel used in the construction of the 70 and 90-meter ski jumps.

Besides his association with Torrington and its affiliated companies, Zoli holds the post of president of Courtesy Air Service, Inc., which will start a Glens Falls to New York City flight in April. The corporation, started by Zoli in 1967, employs 24 people, and is probably the largest Beech 18 sales and service organization east of the Mississippi. Courtesy Air is the only firm in the world which puts cargo doors in Aztecs.

Zoli is "an old car nut." He has a 1938 "type 57, Bugatti" and a 1951 Jaguar XK-120 coupe. At home, he and his sons (he has five children) have installed a wood-fired steam boiler by themselves. In the community, he is an opera devotee and serves as president of the Lake George Opera Festival board of directors. He is president-elect of the Glens Falls Rotary Club.

1964

Secretary.
Dr David T Signori, Jr
6613 Denny Pl
McLean, VA
22101

Representative.
Barry J Kadets
7 Bellwood St
Framingham, MA
10701

Daniel Gorman holds the post of vice president at Fox Companies. He resides in Wyncote, Pa., and is an instructor in property management at Temple University Real Estate Institute. . . . Dr. **Joseph LaCava** writes: "It's great to be back on the East Coast, nearer WPI." After four years in Ohio, Joe is now with Bell Labs in Holmdel, N.J.

1965

Representative:
Patrick T Moran
100 Chester Rd
Boxboro, MA
01719

▶*Married:* **Robert W. Asplund** and Virginia K. Racey in Williamsport, Pennsylvania on January 6, 1979. Mrs. Asplund graduated from Williamsport School of Commerce and is a senior data-entry operator at Circuit Module Operation of GTE Sylvania, Inc., Halls Station, Pa. Her husband is a senior research and development engineer for the same firm.

Nils Ericksen formed Ericksen Associates, Inc. last August and currently has 41 jobs in 12 states that are completed or in progress. His firm specializes in ski area engineering, such as uphill transportation (lifts), snowmaking, trail layout, and drainage. . . . **Robert St. Pierre** has been named engineering manager at the Excelsior plant of the Torrington Co. in Connecticut. He started at the plant as an engineering trainee following graduation. Since then he has served in various engineering capacities involving product and machine design and development, as well as a two-year stint as a general foreman in production work.

1966

Secretary:
Gary Dyckman
29 Skilton Lane
Burlington, MA
01803

Representative
Dr Donald H Foley
Indianfield Rd.
Clinton, NY
13323

Still with Heublein, Inc., **Raymond Hopkins** is now operations manager in Allen Park, Mich. . . . **Peter Kudless** has been promoted to principal construction engineer with the Public Service Electric and Gas Company of New Jersey. He started with the company as an engineer in the Gas Engineering Department in 1971, after completing five years of active duty in the Navy Civil Engineer Corps. While with the Newark office, he worked on the Burlington (N.J.) LNG plant and Harrison (N.J.) SNG plant. In 1973 he was assigned as site engineer to be the senior company representative at the Linden SNG plant construction site. In 1975 he transferred to the Project Construction Division of the Engineering and Construction Department and worked on the Hope Creek Generating Station Project. In 1976 he was promoted to senior construction engineer, and has been responsible for supervising the PSE&G Construction Department personnel who surveil construction of the reactor and auxiliary areas. Now he will be responsible for supervising a staff of construction engineers who monitor all field construction activities at Hope Creek. Kudless is a registered professional engineer in New Jersey. He belongs to the Society of American Military Engineers, American Nuclear Society Delaware Valley Section, and the American Gas Association. He is also a lieutenant commander in the Naval Reserve. Mr. and Mrs. Kudless, the parents of five children, are active in the marriage encounter movement. They are CCD teachers, Pre-Cana instructors and lectors at St. Peter and Paul Church in Turnersville, N.J.

Charles Slama is supervisor of technical services at Sikorsky Aircraft in Stratford, Conn. . . . **Beverly Zivan,** who has an MS from WPI, is vice president of development at Education for Management, Inc. in Watertown, Mass. . . . Dr. **Lionel Carreira,** an assistant professor at the University of Georgia, received the Coblentz Award for his work in coherent anti-Stokes Raman spectroscopy at the Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy held in Cleveland in March.

1967

Secretary
John L. Kilguss
5 Summershade Circle
Piscataway, NJ
08854

Representative
Raymond C. Rogers
92 North Common Rd
Westminster, MA
01473

Richard DeGennaro is manager of strategic planning at Conrail in Philadelphia. . . . **Joseph Goulart** has been promoted to manager of customer liaison engineering for Simpson Industries, Inc. of Litchfield, Mich. Simpson is a leading manufacturer of precision machined components for the original equipment automotive and truck market with annual sales in excess of $125 million. Joe and his wife, Pat, an industrial engineer with General Motors, reside in Hillsdale, Mich. . . . **Eduardo Mendez** holds the position of project superintendent at Pavarini Construction Co. in Puerto Rico.

Ronald Mucci is with Bolt Beranek Newman in Cambridge, Mass. . . . **James O'Rourke,** a project advisor in WPI's electrical engineering department, is currently a part-time faculty member at Central New England College, Worcester, where he is an assistant chairman of the electrical engineering department. . . . **John Soulliere** was recently appointed manager of industry and application sales at the Foxboro (Mass.) Company. Formerly, he served as regional sales manager in the firm's Boston office. Soulliere, a member of the Instrument Society of America and ASME, has an MBA from Bryant College.

1968

Secretary
Charles A. Griffin
2901 Municipal Pier Rd
Shreveport, LA
71119

Representative:
William J Rasku
33 Mark Bradford Dr
Holden, MA
01520

C. David Larson has been promoted to technical manager of Bondmaster Automotive Products at National Adhesives, a division of National Starch and Chemical Corporation in Birmingham, Mich. Larson joined National in 1971 as a development chemist in the adhesives division, and most recently was marketing specialist for the Bondmaster Adhesives group. He has an MS in chemical engineering from the New Jersey Institute of Technology and an MBA from Rutgers University. . . . **Ronald Rehkamp** has been advanced to senior actuarial associate within the actuarial organization at State Mutual Life Assurance Company of America in Worcester. He joined State Mutual's actuarial organization as an actuarial assistant in 1968, was promoted to actuarial associate in 1976, and was named an associate in the Society of Actuaries that same year. He has a master's degree in business management from the University of Arkansas.

1969

Secretary:
James P Atkinson
41 Naples Rd.
Brookline, MA
02146

Representative
Michael W Noga
West Bare Hill Rd
Harvard, MA
01451

▶*Born:* to Mr. and Mrs. **B. Lee Tuttle** a son Robert Bruce on February 7, 1979.

Donald McCarthy is a student at Temple University in Philadelphia.

1970

Secretary:
F. David Ploss III
208 St Nicholas Ave.
Worcester, MA
01606

Representative:
Domenic J Forcella, Jr.
25 Hough St
Plainville, CT
06062

Paul Dresser, who has been promoted to co-pilot for Delta Airlines, is now located in Carriere, Miss. He flys DC-9's out of New Orleans. . . . **Dom Forcella, Jr.** is currently teaching business math and economics at Briarwood School in Southington, Conn. This spring Briarwood will become a junior college. . . . **William Hillner** continues as a senior sales representative for Solar Thermal Systems-Exxon in Burlington, Mass. He and his wife, Paula, reside in Reading.

Philip Johnson has joined Computac, Inc., West Lebanon, N.H., where he serves as a systems analyst engineer. Formerly, he had been director of minicomputer development for the Savings Management Research Corp., Hanover, a statistician in the State of New Hampshire's division of public health, and a mathematics teacher at Bancroft School in Worcester. Married and the father of two children, Johnson and his family reside in Lyme, N.H. Computac provides computer services for businesses, state governments and institutions in the U.S. and Canada. Its computers are in instantaneous contact with about 100 affiliates in locations such as Oakland, Calif., Fairbanks, Alaska, and White River Junction, Vermont.

Dr. **Robert Markot** is a senior software engineer at Boeing Computer Services in Seattle. He has a PhD from Ohio State. . . . **Richard Schwartz** has joined Data General as a senior negotiator for major accounts. He is responsible for contract negotiation of major contracts; competitive analysis for company policy resolution and sales support in the area of management policy. Formerly in general practice of law in Worcester, he has his MS in computer science from WPI, and a Juris Doctor from Suffolk University.

1971

Secretary:
Vincent T Pace
4707 Apple Lane
West Deptford, NJ
08066

▶*Born:* to Mr. and Mrs. **Edward C. Lowe III** a daughter, Elizabeth Webster, on October 10, 1978. Ed is manager of area sales in the steam turbine-generator marketing department at GE in Schenectady, N.Y. . . . to Mr. and Mrs. **Martin I. Rose** their second son, Ryan Scott, on July 16, 1978. Ryan has an older brother, Byron. The Roses are moving to their new home in Meriden, Conn. in May.

"Ned" Cunningham is currently a sales engineer with Nash Engineering in New Jersey. . . . **Reginald Dunlap** holds the post of division operations control manager at Mead in Fairfax, Ohio. He and his wife Shirley reside in Cincinnati. . . . **Philip Johnson,** who has been with Omnitech, Inc., Dudley, Mass. since 1971, was recently named general manager of the firm. He has a master's degree in management science and engineering from WPI. Omnitech is a subsidiary of GenTex Corp. . . . **Gerald Kersus** is a senior member on the technical staff at ITT-Defense Communications in Nutley, N.J. He holds an MSEE from New Jersey Institute of Technology.

Donald Nadow has been promoted to assistant vice president at Freedom Federal Savings in Worcester. He started working part time at the savings and loan association while a student at WPI. From 1973 to 1975 he was with the mortgage servicing department. For the past three years, he has been programmer and analyst for the company's computer.

1972

Secretary:
John A Woodward
101 Putnam St
Orange, MA
01364

Representative
Lesley E. Small Zorabedian
16 Parkview Rd
Reading, MA
01867

▶*Married:* **Shawn Sullivan** to Miss Debra Beha on October 14, 1978 in Worcester. Mrs. Sullivan graduated from DeSales High School, Utica, N.Y. Her husband is with Amstar in Charlestown, Mass.

▶*Born:* to Mr. and Mrs. **James D. Hall, Jr.** a daughter, Leslie Ann, on February 8, 1979. Jim holds the post of group product manager at Norton Co. in Cranston, R.I.

Dr. **James Ciskowski** is employed as a research chemist at du Pont, Photo Products Division, in Parlin, N.J. He has a PhD from Duke University. . . . Dr. **Raymond Fish** is currently a visiting assistant professor of electrical engineering and bioengineering at the University of Illinois in Urbana. His research includes development of a computerized tomography scanner using ultrasound. Ray is also practicing medicine and is a clinical instructor in the School of Clinical Medicine at the University of Illinois.

Tom Longo owns and operates Able Music Service in Orange, Conn., and, in addition, is a test technician for Corometrics Medical Systems in Wallingford. . . . Continuing with Stone & Webster, **Robert Parry** is now lead test engineer for the Boston firm. . . . **Loren Smith** recently received an MS degree in applied ocean science from Scripps Institution of Oceanography. Previously, he had served as a physicist at Westinghouse-Bettis Atomic Power Labs.

1973

Secretary
Jay J Schnitzer
322 St. Paul St
Apt. #3
Brookline, MA
02146

Representative
Robert R. Wood
14 Stone Brook Rd
Sudbury, MA
01776

▶*Born:* to **Bruce** and **Allison (Huse) Nunn** their second child, a daughter, Heather Laura, on March 7, 1979. The Nunns also have a son, 1½. Bruce works for the Jones Division of the Beloit Corp. in Pittsfield, Mass.

Ben Allen is a graduate research assistant at the University of Rhode Island, Kingston, where he is concerned with DOE. . . . Presently, **Jason Burbank** is with Cleverdon, Varney & Pike in Boston. . . . **William Cloutier** holds the post of general engineer at Consumers Power Co. in Jackson, Mich. . . . **Charles Henrickson** is now employed by Digital Equipment Corp., Salem, N.H., as a manufacturing engineering supervisor. Formerly with GE, Charlie and Pam currently reside in Derry, N.H. In his present post, Charlie is responsible for manufacturing process development for the final assembly and test facility in Salem.

Frederick Kulas writes that he is continuing as a marketing representative for IBM's General Systems Division in Waltham, Mass. In 1978 he achieved over 200 percent of his computer sales and installation quota objectives. In March he traveled to San Francisco to attend IBM's Hundred Percent Club conference. His wife, Sue, is completing her studies for a master's degree in counseling and consulting psychology at Harvard University. . . . **David Kulczyk,** who has been with Torrington (Conn.) Co. since 1973 when he was hired as a project engineer at the Excelsior Plant, was recently promoted to supervisor of sewing machine needle process engineering at that plant. Last year he was named supervisor of manufacturing engineering. . . **Thomas Radican** is a process engineer for Savage Industries, Inc., Warrington, Pa. He is also chief engineer at Legal Chemical Disposal, Inc. in Philadelphia. . . . **Stephen Schneider** is a graduate student in the Department of Anatomy at Emory University in Atlanta, Ga. . . . **Richard Sliwoski** serves as a captain in the U.S. Army Corps of Engineers. . . . **James Viveiros** now works for the Oscilloscope Marketing Department of the Hewlett-Packard Co. in Colorado Springs, Colorado.

1974

Secretary
James F Rubino
18 Landings Way
Avon Lake, OH
44012

Representative:
David Lapre
P.O Box 384
Tunkhannock, PA
18657

Duane Arsenault is a staff engineer at MIT's Lincoln Laboratory in Lexington, Mass. . . . **Todd Cormier** serves as a technical associate for the Cape Cod Planning and Economic Development Commission in Barnstable, Mass. He is helping to develop a model on-site sewage disposal management program to implement the Cape Cod 208 Plan. . . . **Ronald LaFreniere** was recently named city engineer in Marlboro, Mass. Earlier he had been acting assistant engineer. He will be concerned with subdivision control including formulating recommendations for new home construction and inspecting finished work. He will continue to work on the Bolton St. landfill. A licensed professional engineer, LaFreniere joined the city engineering department as a grade three provisional engineer four years ago.

Gerard Petit presently serves as an administrative assistant at Union Carbide Corp. in New York City. . . . **John Stopa,** who has a Juris Doctor from the Boston University School of Law, is an attorney located in Newton Highlands, Mass. . . . **Anthony Tomasiello, Jr.** graduated from Suffolk University Law School with a Juris Doctor degree last June, and was admitted to the Massachusetts Bar in December. He has become an associate of the law firm of Healy, DeSimone & Rocheleau, which is located at 390 Main St. in Worcester.

1975

Secretary
James D. Aceto, Jr
70 Sunnyview Dr
Vernon, CT
06066

Representative:
Frederick J. Cordella
24 Imperial Road
Worcester, MA
01604

Robert Andren is with Northeast Utilities Service, Berlin, Conn. Also, he is working for his MSME at UConn. . . . **Karen Arbige** serves as a senior programmer-analyst at Digital Equipment Corp., Maynard, Mass.

. . . 1/Lt. **Kent Berwick** recently graduated from pilot training at Vance AFB, Oklahoma. He has been assigned to Westover AFB, Mass. for flying duty on the C-130 Hercules. . . . **John Gabranski** works as an auditor at Coopers-Lybrand in Springfield, Mass. He received his MBA from Columbia last year.

Glenn Guaraldi is a project engineer at Harris Corp., Westerly, R.I. . . . Presently, **Karl Hansen** holds the post of manager of the Alaska Division of Williams Brother Engineering Co. in Anchorage. . . . **Abdul Khan** works in the division of engineering for the Lexington-Fayette Urban County government in Kentucky. . . . **Jim Lane** is currently employed as a systems software designer at Microsoft, and is located in Redmond, Washington, a suburb of Seattle. He is a member of the "Seattle in '81" World Science Fiction Convention bid team.

Ronnie Materniak has accepted a position as a design engineer with the du Pont Engineering Department in Wilmington, Delaware. For three and a half years he had been working in one of du Pont's subcontractor's offices. . . . **James Regan** works as a field service engineer at ITT Grinnell Corp. in Providence, R.I. . . . **Peter Schwartz** is a sales manager for Gould Inc.-Instruments Division. His territory includes New York state and northern New Jersey. . . . Currently, **Ronald Simmons** is with Westinghouse-Bettis Atomic Power Lab., Bremerton, Washington.

1976

Secretary:
Paula E Stratouly
318 Thornberry Ct
Pittsburgh, PA
15237

Representative
Lynne M Buckley
648 Commercial St
Braintree, MA
02184

▶*Married:* **Craig W. Arcari** and Laura M. Goward on February 10, 1979 in Holliston, Massachusetts. The bride, a graduate of Becker, is manager of the Gatepost in Framingham. The bridegroom is with Riley Stoker. . . . **Conrad J. Orcheski** and Leslie A. Bryant in Winchendon, Massachusetts on December 23, 1978. Mrs. Orcheski received her BS from Worcester State College and her MA from SUNY at Buffalo. She serves as a speech pathologist at Franklin County Hospital in Greenfield, Mass. The groom, who has a BS from SUNY, Buffalo, is an analytical chemical engineer at C-E Air Preheater Combustion Engineering, Inc. in Wellsville, N.Y. . . . **Joseph Rodier** and Miss Patricia C. Chuplis on September 8, 1978 in North Oxford, Massachusetts. The bride graduated from Becker and is a fashion coordinator at Cherry & Webb in Auburn and Shrewsbury. Her husband is with Paul Flury, Inc., Auburn.

Jeremy Brown, an associate of the Society of Actuaries, has been promoted to senior actuarial associate, within the actuarial organization at State Mutual in Worcester. He joined State Mutual's pension actuarial organization in 1976 and was promoted to actuarial associate within the pension actuarial organization last year. . . . **William Clark** serves as a project engineer at Codman & Shurtleff, Inc., Randolph, Mass. . . . **David McCormick** is a student at Cornell University.

Kathleen Morse holds the post of software engineer at DEC in Tewksbury, Mass. . . . **Robert Pharmer** is employed by CH2M Hill in Boise, Idaho. . . . **John Smith,** a graduate student at Roswell Park Memorial Institute Division of Graduate School, is head resident at State University of New York at Buffalo.

1977

Secretary:
Kathleen Molony
Apt #1
29 Seaview Ave.
Norwalk, CT
06855

Representative
Christopher D Baker
P O Box 35
Page, AZ
86040

▶*Married:* **Lawrence N. Coel** to Miss Valerie A. Cohen in New Britain, Connecticut on December 30, 1978. Mrs. Coel graduated from Vassar College and is a graduate student at MIT, where she has a research assistantship in the Department of Electrical Engineering and Computer Science. Her husband, a marketing consultant, holds an MBA from the University of Hartford. . . . **James T. Mickol** and Miss Judith M. Patton in Wellesley Hills, Massachusetts on November 18, 1978. The bride attended Simmons College. She is an associate programmer-analyst at Digital Equipment Corp. The groom is a systems programmer at Digital.

Keith Harrison works as a highway engineer trainee for the Federal Highway Administration in Jackson, Mississippi. . . . **Paul McLoughlin,** a physics teacher at Gilford (N.H.) High School, is studying for his MA at Assumption College. . . . **Robert Medeiros** is with Industrial Risk Insurers in Towson, Md. . . . **Chris Morosas** is employed as a product development engineer at CIT-Cryogenics, Helix Technology Corp., in Waltham, Mass. . . . **Reed Mosher,** who is with the Army Corps of Engineers at the Waterways Experiment Station, Vicksburg, is working on his MS at Mississippi State University.

Theodore Parker works as a production engineer at Polaroid Corp. in Norwood, Mass. . . . **Konstantin Terentjev** is with the Boeing Company in Seattle. . . . **Peter Wiberg** is a manufacturing engineer at Unimation, Inc. in Danbury, Conn. The firm manufactures industrial robots.

1978

Secretary
Cynthia Grynick
303 Wolcott St
Waterbury, CT
06705

▶*Married:* **William L. Collins** to Miss Ann M. Gaffney of Rochdale, Massachusetts last June. The groom is with Stone & Webster in Boston. . . . **Jeffrey A. Wakefield** and Eileen M. Pickett in Worcester recently. The bride graduated from Fanning School of Health Occupations and is employed as a dental assistant. Her husband has joined Gino's in Shrewsbury (Mass.) as assistant manager. . . . **John J. Wallace** to Miss Cheryl L. Pierce in Worcester on December 30, 1978. Mrs. Wallace attended Fitchburg State College, graduated from Burbank Hospital School of Nursing, and is a registered nurse. The bridegroom, a student at Carnegie-Mellon University, Pittsburgh, is a member of the technical staff at Bell Laboratories in Chicago, Illinois. . . . **Stephen B. Wilmot** to Lori Vanderman on January 6, 1979. The groom is a systems analyst at Hamilton Standard in Windsor, Conn.

William Alexander is a design engineer at Heald Machine Co. in Worcester. . . . **Zita Babickas** is a graduate student in biochemistry at the University of Rochester (N.Y.). . . . **Daniel Baublis** serves as a field engineer for Babcock & Wilcox in San Francisco. . . . **Michael Beaudoin** continues in the post of junior engineer at Golder Associates, Inc. in Atlanta, Ga. . . . **Richard Bielen** has joined Hamilton Standard, Windsor Locks, Conn. . . . **Richard Bissonnette** is a maintenance supervisor at Jos. E. Seagram's & Sons in Lawrenceburg, Indiana. . . . **Antonio Borgonovo** is a partner in Borgonovo Hnos., S.A., in San Salvador, El Salvador, C.A. . . . 2/Lt. **Richard Bourgault,** U.S. Army, was recently stationed at Fort Knox, Kentucky.

Robert Brosnahan, a graduate research assistant at Clemson (S.C.) University, is working for his master's in bioengineering. . . . **Robert Brown III** is employed as a mechanical design engineer at the Harris Corp. (Web Press Division) in Westerly, R.I. . . . Currently, **Gary Bujaucius** works as an actuary at Hanover Insurance in Worcester. . . . **Robin Paisner Chapell** has joined Peterson International, Chicago, Ill., as an operations coordinator. . . . **Ralph Chapman** works as a systems programmer at National CSS in Wilton, Conn. . . . Factory Mutual Research, Norwood, Mass., employs **David Chin** as an associate engineer. . . . Currently, **William Christian** serves as a Peace Corps volunteer in Nairobi, Kenya, Africa. . . . **Steven Ciavarini** is an analytical engineer at United Technologies Power Systems Division in South Windsor, Conn.

Jack Condlin, who has his MS in urban planning from WPI, has been named executive director of the Community Development Agency in Willimantic, Conn. He had served the agency for 19 months as rehabilitation director. Earlier, he had worked for the Natick (Mass.) Redevelopment Authority for four years. . . . **Robert Cook** is a product designer at Hewlett-Packard Co., General Systems Division, Cupertino, Calif. . . . **George Cooper** is employed as a junior engineer at Seelye, Stevenson, Valve & Knecht in Stratford, Conn. . . . **John Cozzens, Jr.** has joined GE in Hudson Falls, N.Y., where he is a design engineer. . . . **Barry Cronin** works as a project engineer at GE in Syracuse, N.Y. . . . **Kathryn Dearden** serves as a development engineer at Mobil Chemical Company's Plastics Division in Macedon, N.Y. . . . **Rick Diamond** has been employed by Fafnir Bearing-Textron, where he is an industrial engineer in the New Britain (Conn.) plant.

David Dickey holds the position of director of biomedical engineering at Hurley Medical Center in Flint, Mich. He has an MS from WPI. . . . 2/Lt. **William Diederich,** USAF, has graduated from the Strategic Air Command's missile combat crew operational readiness training course at Vandenberg AFB, Calif. He is now at Francis E. Warren AFB, Wyo. for training and duty as a missile combat crew member. . . . **Elizabeth McCauley Donahue** is a social worker at Lynndale School and Training Center for the Retarded in Augusta, Ga. . . . **Judy Donaldson,** who has her MS from WPI, is a junior programmer at IBM in Suffern, N.Y. . . . **Craig Dowley** is a product engineer at Parker Hannifin Corp., Otsego, Mich. . . . **Thomas Edwards** holds the position of analyst at Pattern Analysis and Recognition Corp., Rome, N.Y. His January note states, "Five feet of snow to date!"

Anthony Fernandes has joined Malcolm Pirnie, Inc., Philadelphia, Pa. . . . **Jeffrey Firestone,** a senior manufacturing engineer at Rocketdyne in Canoga Park, Calif., is also working for his master's in materials engineering at California State University in Northridge. . . . **James Fisher** is a software engineer for Hamilton Test Systems in Windsor Locks, Conn. . . . **Robert Flynn,** who has his MBA from Babson College, now works as a sales representative for Braun North America in Cambridge, Mass. . . . **John Frazer** is a design engineer at Hauni Richmond, Inc., Richmond, Va. He has his MSEE from WPI. . . . Presently, **George Fredette,** is employed as a field engineer at Halliburton Services, Bradford, Pa. . . . **Paul Gardner,** with an MS in management science from WPI, holds the post of business manager at Norton Co., Worcester. He is a registered professional engineer in Massachusetts.

2/Lt. **Alan Geishecker,** a platoon leader with the U.S. Army, is located in Wiesbaden, Germany. . . . **Dean Giacopassi** serves as an associate engineer at Boeing Aerospace Co. in Seattle. . . . **Richard Gottlieb** has joined Morrison-Knudsen Co. in Boise, Idaho. . . . **Bryce Granger** works as a manufacturing engineer at Parker Hannifin Corp. in Ravenna, Ohio. . . . **John Hannon** is with du Pont-Remington Arms in Ilion, N.Y. . . . **Mark Harley,** a computer software engineer at GenRad, Inc., West Concord, Mass., also serves as organist at the United Church of Shirley (Mass.). . . . **Annie Harris** is employed as an associate engineer at Westinghouse in Monroeville, Pa. . . . **David Hawley** holds the post of vice president of Howard Products, Inc., Worcester. . . . **Lawrence Hindle** is a project engineer at Electric Boat-General Dynamics in Groton, Conn. . . . **Michael Huba** works as an associate engineer at Westinghouse-Bettis Atomic Power Lab., West Mifflin, Pa. . . . **Daniel Jackson** serves as a graduate assistant at the University of Illinois. . . . **Austin Kalb** is a teaching assistant in the physics department at U.C.L.A. in Los Angeles. . . . **Philip Katz** works for Riley Stoker, Worcester.

Osamu Kimura, a junior engineer at Gilbane Building Co. in Baltimore, is also working for his master's degree in engineering administration at George Washington University. . . . **Kenneth King** has been employed as an assistant engineer in the distribution department at Public Service Co. of New Hampshire in Manchester. . . . Although he expects to be transferred in June, currently **Carlton Klein** is a quality control engineer for GE Ordnance Systems in Pittsfield, Mass. . . . **Stephen Kuczarski** serves as an aerospace engineer on the shuttle spacelab payloads project at NASA-Goddard Space Flight Center in Greenbelt, Md. . . . **Stephen LaPlante** has joined La-Man Constructors in Houston, Texas. . . . **Donald Lundstrom** is superintendent of planning and control at Norton Co., Worcester. He has his MGS from WPI. . . . **Kathryn Lyga** is with Northrop Corp. in Norwood, Mass.

Kenneth MacDonald is presently with the Department of Physics at Johns Hopkins University, Baltimore, Md. . . . **Neil Manus** is a grad student at the University of Connecticut in Storrs. . . . **Charles Marden, Jr.** serves as an ensign with the U.S. Navy aboard the U.S.S. Indianapolis. . . . **David Markey** is a materials engineer at Sikorsky Aircraft in Stratford, Conn. . . . **Charles Martin** is an aerospace ground equipment engineer at GE in Lynn, Mass. . . . **John McGee** works as a product development engineer at Hewlett-Packard in Andover, Mass. . . . **Steven McLafferty,** a field test engineer for GE Ordnance Systems of Pittsfield, Mass., is currently located in Maine. . . . **Kevin McNamara** has joined Riley Stoker, Worcester. . . . **Richard McNamara** has been employed as a field engineer at Turner Construction in Boston. . . . **Edward Menard** serves as a consultant for Hias, Inc., South Grafton, Mass. . . . **Babu Metgud** holds the post of chief engineer at Omni Fabricators, Inc. in Vincentown, N.J. . . . **Stephan Mezak** is a grad student at the University of California at Berkeley. . . . **Bradford Mills** is employed as a junior engineer at Fay, Spoffard & Thorndike, Inc. in Boston.

Robert Naugler is with Raytheon Co., of Wayland, Mass. . . . Sanders Associates, Nashua, N.H., has employed **Ted Neiman** as an electrical engineer. . . . **Michael O'Hara** serves as a consulting engineer for Rolf Jensen & Associates, Inc., San Francisco, Calif. . . . **Stephen Pace** is a sales trainee at Combustion Engineering in Windsor, Conn. . . . **Charles Pallett** has joined Exxon Research & Engineering Co., Florham Park, N.J. . . . **Lawrence Parretti, Jr.,** who is with the Perini Corporation, Framingham, Mass., recently returned from a six-month assignment in Kuwait. . . . **Prakash Patel** is a project engineer at Harrison Radiator in Lockport, N.Y. . . . **Louis Pelletier** works as an estimator at V. Pelletier & Sons, Fitchburg, Mass. . . . **Jennifer Pollard** is a junior engineer for the New York State Department of Transportation in Poughkeepsie. . . . **Wiebe Postema** is a member of Technical Services I at Rockwell International in Canoga Park, Calif. . . . **Frank Pulaski** has been employed as a sales engineer by Westinghouse in Houston, Texas.

Kenneth Rass is an assistant nuclear engineer at Westinghouse in Idaho Falls, Idaho. . . . **John Richie, Jr.** is studying for his PhD in biochemistry at the University of Louisville in Kentucky. . . . **John Ronna** has joined the Bose Corporation in Framingham, Mass., where he is a quality assurance engineer. . . . **Dick Russell** is a product market support supervisor at DEC in Maynard, Mass. . . . Navy Ensign **Robert Sachuk** was recently graduated from the Basic Civil Engineer Corps Officer Course. He joined the Navy in September. . . . **David Sartorelli** is a research engineer at Goodyear Tire & Rubber in Akron, Ohio.

. . . **Philip Scarrell** works as a production area engineer at du Pont in South San Francisco, Calif. . . . **Clifford Schulze** is with Grinnell Fire Protection Systems Co. in Macedonia, Ohio. He, his wife, Sharon, and son, Patrick, reside in Broadview Heights. . . . **Krishna Shah** has joined Mid-West Steel Bldg. Co., Inc., Houston, Texas. . . . **Wayne Shiatte** is employed by Baxter & Woodman, Inc., Crystal Lake, Ill. . . . **James Shuris** serves as a structural-geotechnical engineer at Fay, Spofford & Thorndike, Inc., Boston.

Gregory Smith is now with Johns-Manville Co., where he is an industrial engineer. He is located in Nashua, N.H. . . . **Gary Sowyrda** works as an associate engineer at Exxon in Houston. . . . **William Spacciapoli,** who is a mechanical engineer working with his father, the owner of Custom Molding Products, Leominster, Mass., went across the country alone on his bicycle last summer. During the entire 3,000-mile trip, he suffered only one physical ailment, sunburn, and averaged about 110 miles a day. His most rewarding experience was riding 30 miles up to the summit of the Bighorn Mountains in the Rockies, and then riding down — a distance of about 9,600 feet. . . . **Newell Stamm, Jr.** is a project manager for the Department of the Navy in Norfolk, Va. . . . **Paula Jane Stoll** is a graduate student and teaching assistant in the chemical engineering department at WPI. . . . Procter & Gamble in Cincinnati employs **Jeffrey Sun** as a project engineer. . . . **Stephen Superson** is a field engineer with Thames Valley Steel Corp., New London, Conn.

2/Lt. **Andrew Tabak,** USA, is stationed at Ft. Riley, Kansas. . . . **Tracy Taylor** works for Prime Computer in Wellesley, Mass. . . . **William Taylor** is a sales representative for the Timken Company in Memphis, Tenn. . . . **David Thibodeau, Jr.** has joined Sanders Associates, Inc., Nashua, N.H. . . . **Brian Timura** is a bacteriology technologist at St. Elizabeth's Hospital in Brighton, Mass. . . . **Jeffrey Toran** serves as a research assistant at WPI. . . . Norton Co., Worcester, has hired **Stephen Tourigny** as a process engineer. . . . **Joseph Tsao** holds the post of design engineer at Damon Corp., Needham Heights, Mass. He has an MS from WPI. He, his wife, Lily, and two children reside in Framingham. . . . **Eduardo Valcarce** is with Monsanto in Indian Orchard, Mass. . . . **John Vestri, Jr.** is now with Parker Hannifin Corp. as a product line planner. He is headquartered in Ravenna, Ohio.

Michael Walker currently serves as a field engineer for Turner Construction Co. in Beaver, Pa. . . . **Russell Warnock** is a platoon leader for the Army's 84th Engineer Company. He is stationed in Furth, Germany. . . . **Dean Wilcox** is employed as a supervisor at General Dynamics-Electric Boat in Groton, Conn. . . . **Dave Wilson** has joined Polaroid Corp. in Norwood, Mass. . . . **Jeff Wilson** works for Honeywell Commercial Controls in Wellesley, Mass. . .

Presently, **Randall Wyatt** is enrolled in the power systems engineering course (in-house GE) and will be in training for about two years. Wyatt, an applications engineer for GE in Schenectady, is also studying for his master's degree of engineering in electric power at RPI. . . . **Sandra Wyman** serves as a manufacturing technology engineer at Monsanto in Springfield, Mass. . . . **Greg Yeo** is a graduate student in the department of chemical engineering at WPI.

School of Industrial Management

Edward Keith, '57, was recently elected a vice president of New England Power Co., a subsidiary of New England Electric in Westboro, Mass. He also continues as director of thermal production for the power company. In 1947 Keith joined the utility as a draftsman, and he has worked since as a field engineer, technical assistant, and superintendent of production. He attended the School of Business Administration at the University of Michigan.

George Lynch, '57, has been named executive secretary of the board of selectmen in Sturbridge, Mass. He served as a selectman from 1952 to 1955 and was active in civic and governmental organizations. He was chosen for his new post from a group of seven applicants. He was employed at American Optical Corp., Southbridge until 1971, and held the post of personnel director at Rathbone Corp., Palmer, until his retirement in 1977.

Ralph Miller, Jr., '64, of Southbridge, Mass. has formed TASCO Sales Company, Inc., as the exclusive marketing and sales agent for TASCO Corp. of East Providence, R.I., manufacturer of hearing protectors for the safety and sporting good fields. With the David Clark Company, Worcester for 21 years, he had recently been associated with the company's safety, sporting goods, and medical divisions. Earlier, he was with the Safety Products Division of American Optical Corp.

Jack Shields, '69, is the newly appointed vice president of customer services at Digital Equipment Corp. He is in charge of three corporate groups, including software services and field service, and is now a member of the operations committee and its marketing subcommittee. Formerly, Shields was vice president of field service and software service. He joined Digital in 1961 as a senior technician. The next year he became one of the company's first three field service engineers. In 1964, he was named manager of field service, and in 1968 he was promoted to corporate manager of customer service. Appointed vice president of field service and training in 1974, he was responsible for Digital's customer service organizations, including field service, educational services, user services, and technical documentation groups.

Edward Buck, '70, is now the management information system manager at Coppus Engineering Corp., Worcester. He joined Coppus last June after having served in a similar capacity at Digital Equipment Corp. and Crompton & Knowles. He has a bachelor's and a master's degree in business administration from Clark University.

John DelPrete, '76, chairman of the board of selectmen in Framingham, Mass., has finished the requirements for a BA degree in liberal arts at Framingham State College following six years of night classes. "It's something I've always wanted to do," he says. He serves as a public affairs representative for Commonwealth Gas Company in Southboro, where he had been foreman of construction for 20 years. Four of his six children have gone to college, and he now has a son at Suffolk Law School.

Robert Galvin, '78, is an assistant plant manager at Allen-Sherman-Hoff in Malvern, Pa.

John Hickey, Jr., '78, holds the post of assistant controller at N.E. High Carbon Wire Corp., Millbury, Mass.

Bateman Lawrence III, '78, serves as product support manager at Digital Equipment Corp. in Merrimack, N.H.

Aram Sohigian, '78, is employed as manager of project engineering at Bay State Abrasives, Westboro, Mass.

George Vachon, Jr., '78, works as a senior manufacturing engineer at Fenwal Inc., in Ashland, Mass.

Natural Science Program

Alwin Hopfmann, '72, a science teacher at Bromfield in Harvard, Mass., has been granted a one-year unpaid leave of absence by the School Committee so that he may run for Congress from the Second Congressional District. He will run as a Democrat against Democratic incumbent Edward Boland of Springfield. Hopfmann has been active as secretary-treasurer of the Central Massachusetts chapter of TRIM (Tax Reform Immediately).

John Despres, '78, presently teaches science at Worcester Academy. . . . **Steven Foehr, '78,** is a teacher at the Wickford Middle School in North Kingstown, R.I. . . . **Judith Doherty Hanson, '78,** teaches in the town of Norwell, Mass. . . . Presently, **Donovan Lewis, '78,** serves as a research assistant II at Brown University in Providence. . . . **Richard Mongeon, '78,** is with the Stoneham (Mass.) Public School System.

Frank F. Hutchings, '08, of Concord, Massachusetts, died at the Rivercrest Nursing Home on January 7, 1979.

He was born on Nov. 16, 1883 in Amherst, Mass. After studying at WPI, he received his BS from Massachusetts Agricultural College and his MS from Massachusetts State College. He was commissioned a second lieutenant in the U.S. Army in 1917 and saw duty overseas in Bordeaux, France. In 1943 he retired with the rank of Lt. Colonel.

Mr. Hutchings was a former science teacher in the Saybrook and Manchester (Conn.) school systems. Later, he taught in New Bedford (Mass.), where he was appointed director of Civil Defense. He served for a time as a placement officer with the Veterans Administration, and worked at GE in Lynn, Mass.

Among the organizations to which he belonged were the Massachusetts Board of Civil Service Registrars, the National Association of Retired Civil Engineers, the Retired Officers Association of the U.S. Army, the Society of American Military Engineers, and the Retired Teachers Association of Massachusetts. He was a Mason. He was also a Methodist and a life member of the Scottish Rite Valley of Boston.

Henry J. Schaefer, '13, former treasurer of Central Machine Works, Worcester, died on November 24, 1978 in Overland Park, Kansas.

A native of Clinton, Mass., he was born on August 6, 1889. In 1913 he graduated as a chemist from WPI. In 1915 he joined the Gun Cotton organization (Sayles) of Pawtucket, R.I. In 1916 he was named chief chemist for Gun Cotton plants in Woonsocket, Central Falls, and Phillipsdale, R.I., as well as in Bristol, Pa., Charlotte, N.C., and Atlanta, Ga.

He returned to Worcester in 1918 as president of Worcester Garneting Co., and treasurer of the Central Machine Works, a family-owned business. He went into semi-retirement as treasurer in 1960.

Mr. Schaefer belonged to the Masons, the Commercial Travelers, and All Saints Church, Worcester, For the past four years he had been living with his daughter and son-in-law in Kansas.

Everett C. Bryant, '19, died unexpectedly at his home in Arlington, Massachusetts on January 18, 1979 at the age of 83.

For a number of years he served as vice president and manager of Mystic Valley Gas Company, Malden, Mass., from which he retired in 1960. He was a member of Sigma Alpha Epsilon. In 1919 he graduated with a degree in chemistry.

Mr. Bryant was a member of the Masons, the Arlington Rotary Club, the American Gas Association, the New England Gas Association, and the Guild of Gas Managers. He was born on Dec. 18, 1895 in Worcester, and was a World War I veteran.

William H. Cooney, '22, director of Civil Defense in Pittsfield (Mass.) for 27 years, passed away on December 21, 1978. He was 78 years old.

He was born in Pittsfield on June 1, 1900. After graduating from WPI as an electrical engineer, he joined General Electric, Pittsfield, from which he retired 42 years later as manager of the IBM 705 computer operation in the power transformer department.

Prior to entering WPI, Mr. Cooney had worked briefly at GE and had served a short time in the Army during World War I. In 1925, he became a Reserve Officer. During World War II he was a captain on the staff of the Eastern Signal Corps School at Fort Monmouth, N.J. In 1944 he was promoted to lieutenant colonel and became director of personnel for the entire training center. Later, he served with the American Military Government in Germany.

In 1950, he was named Pittsfield's first Civil Defense director. He served in that capacity without pay until his retirement two years ago. He was honored in 1974 for his long-time service in a tribute by U.S. Representative Silvio Conte at a testimonial dinner at which he stated, ". . . . We salute (Bill Cooney) as a man of boundless energy and dedicated public service to his home community."

Mr. Cooney, a professional engineer, was a former business manager of Berkshire Community College. He belonged to the BCC New Campus Committee, the Fire Department Building Commission (22 yrs.), as well as various professional groups. He had served as past chairman of the local section of AIEE, and was a member of Theta Chi, Tau Beta Pi, and Sigma Xi. He was a fellow of IEEE.

Winthrop S. Marston, '26, of Walnut Creek, California died of a heart attack on September 3, 1978.

In 1926 he received his BSEE from WPI. During his career he was with Utica (N.Y.) Gas & Electric Co., New York State Electric & Gas Corp., J.G. White Engineering Corp., du Pont, the U.S. Army Corps of Engineers, and the National Park Service in San Francisco, from which he was retired.

Mr. Marston, who was born in North Hampton, N.H. on June 16, 1904, was a professional engineer in New York state. He belonged to ATO, the Masons, the Scottish Rite Bodies, and the Shrine.

William J. Williamson, '26, of Buffalo, New York passed away recently.

He was born on March 13, 1903 in Niagara Falls, N.Y. After studying mechanical engineering at WPI, he became president of the Cataract Ice Company, Niagara Falls, and was associated with the firm for many years. He was with GE, Carrier, and Westinghouse, as a distributor. He served as general manager of Cold Storage Company and worked on special assignments for *The Wall Street Journal.*

Mr. Williamson belonged to Phi Gamma Delta. He held a BS in economics from the University of Pennsylvania.

Kevork K. Nahigyan, '27, a former resident of Clearwater, Florida, passed away recently.

A member of the Institute of Aerospace Scientists, Mr. Nahigyan was with NASA at the Lewis Research Center from 1941 to 1970. He had been assistant chief of the Engineering Design Division. Previously, he was a development engineer for Riley Stoker Corp.

He belonged to Sigma Xi, Tau Beta Pi, and AIAA. In 1927 he graduated with a BSME from WPI. He was born in Harpoot, Turkey on Sept. 8, 1900.

A. Harold Rustigian, '29, died in the Memorial Hospital in Worcester.

He was born in Worcester on November 7, 1906 and was a member of the class of 1929 at WPI. For many years he was with Norton Co., from which he was retired.

Edward T. Fox, '30, a former investigator for the Social Security Administration, died in Hahnemann Hospital, Worcester, on November 18, 1978.

Mr. Fox was born on June 3, 1906 in Clinton, Mass. In 1930, he graduated with his BS in mechanical engineering. He joined the State Employment Service and Chance Vought in Stratford, Conn. In 1971 he retired from the Social Security Administration.

He belonged to the Retired State County and Municipal Employees Association of Massachusetts.

Eben H. Rice, '31, a retired Codman & Shurtleff executive, died on January 26, 1979 of a heart attack in Exeter, New Hampshire. He was 68 years old.

After receiving his civil engineering degree from WPI, he taught at Gardner High School. He then worked in the Civilian Employee Corps of Engineers from 1935 until 1948 at the Cape Cod Canal, the Franklin Falls (N.H.) Flood Control Dam, the Kindley Airfield in Bermuda, and the office of the district engineer in Boston. He served as executive vice president and treasurer of the surgical instrument firm of Codman & Shurtleff, Inc., Boston, from 1948 until his retirement in 1970.

Mr. Rice was a president and former member of the Boston Lions Club, the Wellesley Country Club, the Brae Burn Country Club, and the Union Church of Waban. In 1975 he became president of the New Hampshire Farm Museum, Inc., and was actively involved with it until his death. He belonged to Theta Chi and Skull. He was born in Gardner on February 6, 1910.

Edward D. Perkins, '32, former chairman of the Danvers (Mass.) School Committee, died on January 19, 1979 in Lowell General Hospital.

He was born in Somerville, Mass. on June 16, 1909. During his career, he was with New England Medical Center, Sylvania, Newton Engineering, and Malden City Hospital, where he retired as an electrician in 1974. He was a town meeting member in Danvers in 1956. For several years he served on the school committee of which he was chairman.

Long identified with Masonic affairs, Mr. Perkins was the founder and Past Master of the Pulpit Rock Lodge of Pelham, N.H. He was also a Shriner and a member of the Grand Lodge of Masons of New Hampshire.

Wallace R. Powell, '34, who spent over 30 years with General Electric, died recently.

A native of Willimantic, Conn. he was born on October 26, 1911. He graduated with a BSEE in 1934, then joined GE. From 1934 to 1945 he served as a special GE representative. He was also vice president of Casco Products Corp. and president of his own firm, Fairfield Associates. For many years he was sales manager for GE's Lamp Division.

Mr. Powell belonged to ATO, the Black Rock Yacht Club, the Congregational Church, and the Republican Town Committee. He was a member of the Illuminating Engineering Society and the National Association of Electrical Distributors.

Frederick A. Gammans, '48, of Fairhaven, Massachusetts died suddenly of a heart attack on September 5, 1978.

Mr. Gammans, the chief engineer of the New Bedford (Mass.) Department of Public Works, had previously been with the U.S. Army Corps of Engineers. Other employers had been Fay, Spofford and Thorndike of Boston, Franchi Construction Co., Inc., and M. A. Gammino Construction Co. During his career, he had supervised work on the Connecticut Turnpike and had worked on the breakwater at the U.S. Naval Base in Newport.

He was born on May 10, 1925 in Fairhaven, Mass. He belonged to Lambda Chi Alpha, served as a class agent, and graduated from WPI as a civil engineer.

John J. Connolly, '57, died on January 5, 1979 in the University of Massachusetts Hospital, Worcester, after a long illness.

For many years he was a clerk in the Shrewsbury (Mass.) Post Office. From 1949 to 1952 he served as a corporal in Air Force security. He belonged to the Knights of Columbus and the American Legion.

Arakel R. Naroian, '61, an executive and mechanical engineer with the design department at Riley Stoker Corp., died in Worcester on February 1, 1979. He was 47 years old.

At Riley Stoker he made many contributions, especially in the development of an optimized-design industrial boiler. In 1968 he was promoted to sales engineer in the utility-boiler-proposal engineering department, where he developed conceptual design of boilers for the utilities industry. He was appointed manager in the newly formed plant improvement division in 1970, and was a leader in its growth. Earlier, he had been with Bethlehem Steel-Shipbuilding Division in Quincy.

Prior to entering WPI, he graduated from Massachusetts Maritime Academy in 1952, where he had played football. Later, he served in the Army at the Aberdeen Proving Grounds in Maryland. He graduated from WPI with a BSME in 1961.

He was a past president of the Worcester chapter of the ASME, and was also in charge of membership development in New England for the society. He was vice president-elect of the Rotary Club of the Boylstons.

Mr. Naroian belonged to the Armenian Church of Our Saviour, Worcester. He was born on May 17, 1931 in Whitinsville, Mass.

Alfred M. Sowa, '64, MNS, died at his home in Chicopee, Massachusetts on January 6, 1979.

A lifelong resident of Chicopee, he was born on March 5, 1936. He taught physics at Chicopee High School and at Holyoke Community College, where he had been chairman of the math and science departments for the past six years.

Mr. Sowa had a BS degree in zoology and education from the University of Massachusetts and a master's in education from Westfield State Teachers College.

Richard S. Neff, '67, of Tolland, Connecticut died unexpectedly last May.

He was born on April 5, 1945 in Hartford, Conn. In 1967 he received his BSME from WPI. He had a master's degree in theoretical and applied mechanics from Cornell University, and was employed as an analytical engineer at Pratt & Whitney in East Hartford, Conn. He belonged to Theta Chi and Pi Tau Sigma.

Remember

Reunion

June 7-10