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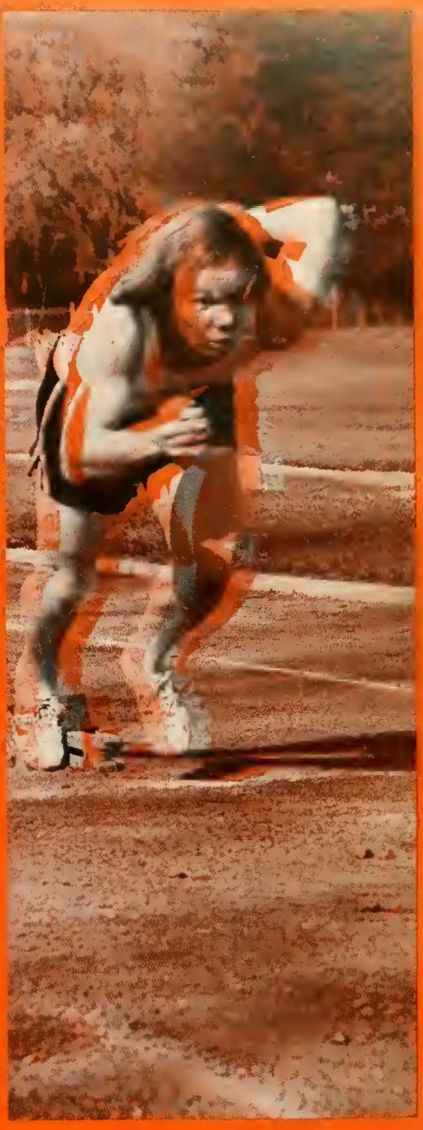

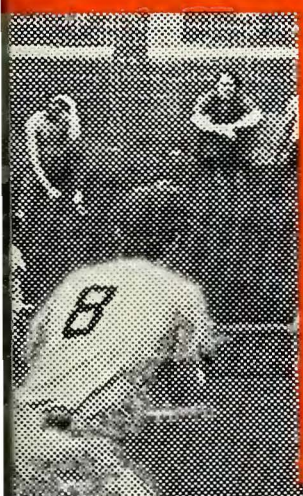

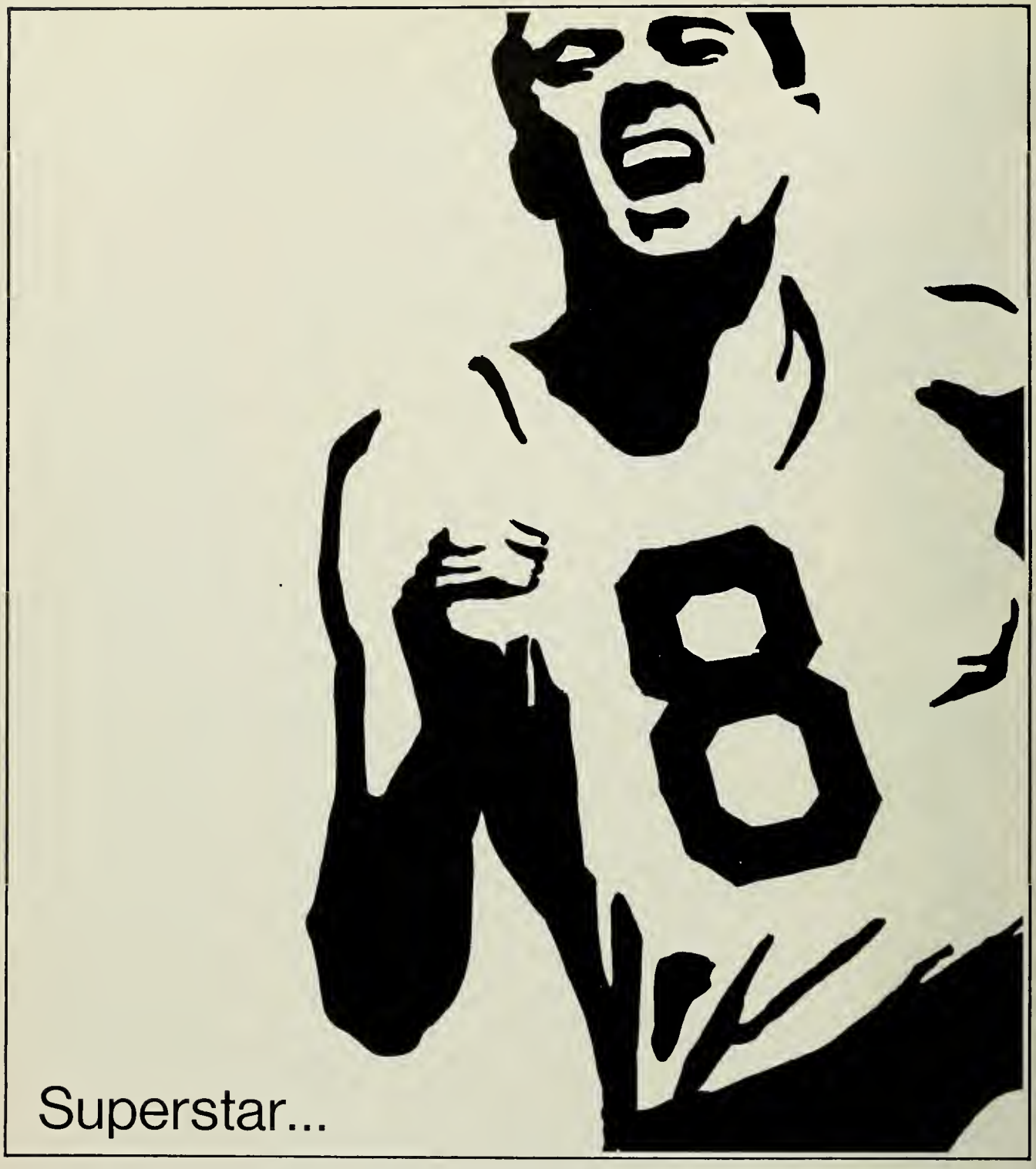

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WPI

journal

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H. Russell Kay
Editor

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Athletics at WPI

by Roger N. Perry, Jr., '45

It's quite probable that under your chair is attached a white tag bearing the threatening message, "Do not remove this tag under penalty of law." In line with trends in government warnings, they might add to that message, "Caution: Too much sitting in this chair may be hazardous to your health."

No less an authority than the noted heart specialist Dr. Paul Dudley White has been quoted as saying, "Don't sit on your fatty acids." Dr. White advocates regular exercise and moderation in eating as the key to a long, productive life.

Because the sedentary life is taking such a toll in human lives each year, the athletic and physical education program at WPI must be considered not a frill of higher education but rather a universally needed preparation for life, whatever the graduate chooses as a professional career.

When the late Percy R. Carpenter was appointed WPI's first director of physical education and athletics in 1916, he established the guidelines which are still followed by the department. He firmly believed that a man needed both a good mind and a healthy body. While the rest of the faculty developed the minds, he practically singlehandedly developed the physical education program. His recommendation that physical education be required of all students for four terms was approved and this is still the case today. During the frequently lean years when the administration looked toward the gymnasium as an opportunity for further budget paring, he was successfully able to defend his beliefs.

Under "Doc" Carpenter and his only successor, Prof. Robert W. Pritchard, WPI has developed an athletic and physical education program which is equaled by few colleges of WPI's size — or even much larger institutions.

Emphasis in the program has changed over the years. In "Doc" Carpenter's time, physical education frequently involved calisthenics, bar bells and gymnastics. Under Coach Pritchard and his staff, the emphasis is on teaching the basic skills in athletics and developing in the student an interest in sports he can enjoy throughout life. WPI today fields teams in ten varsity sports and six club sports. But its real claim to fame is the breadth of the department's activities which offer something for the entire student body.

Athletics at WPI are almost as old as the college itself. In the late Herbert Taylor's book *Seventy Years of the Worcester Polytechnic Institute* he mentions that in 1870 the students organized a baseball and a football team. He also mentions that the administration gave no support to athletic activities. In the 1880's, students built their own gym in a grove of trees behind the Washburn Shops. With the official attitude one of toleration rather than encouragement, it fell to the students and the young alumni organization to develop an athletic program. The first permanent Athletic Association was formed in 1894. Track was the sport in which WPI teams did best in those early days. An annual field day on a student-built field now the site of a parking lot on Boynton Street was one of the highlights of the year.

Among the athletes of that period were Charles Harrington, '95, and his brother Frank, '98. Both were track men and Charles also played football. In later years, they often recalled to the athletic staff the times they cleared rocks from the student-created field so the game could begin. Their interest in the WPI athletic program never flagged and in 1968, their desire to do something for WPI athletics took the form of the gift to the college of the Harrington Auditorium.

Another alumnus of the same period, George C. Gordon, '96, had two favorite recollections of his undergraduate days: one was the kindness of Prof. Leonard P. Kinnicutt to him on several occasions, and the other was his experience as manager of the baseball team. He took over a deficit ridden team and finished the year in the black. His undergraduate business experience was a fine preparation for his future career in the forging industry, for at his death in 1964, he left his alma mater $5 million. The baseball team is still solvent so the funds were used, in part, to build

Roger Perry is Director of Public Relations at WPI. A self-described non-athlete, he says, "The fact that I was able to be part of the WPI swimming team for two years as an undergraduate is a true indication that the WPI athletic program has something to offer every student."

the library which bears his name and to endow the Kinnicutt professorship.

It was through the efforts of students and alumni that Alumni Field was built in 1914 and Alumni Gymnasium begun the following year. President Ira Hollis, who took office in 1913, was the first to lend official support to WPI athletics and in hiring Doc Carpenter as the first director of physical education he started a new era in WPI athletics.

President Ralph Earle, quoted in Mildred Tymeson's *Two Towers,* said "Your physical health is a precious thing – guard it well. The athletic team, varsity or class, is well worth all the time you can give it. We emphasize sports here and urge you to take your full measure of it."

The turnabout in official support has paid off by giving WPI one of the finest physical education programs anywhere.

During the planning which resulted in the development of the WPI Plan, each campus department was carefully scrutinized to determine how it measured up to its objectives, and what changes might be required to shift over to the operation of WPI under the Plan. The one which was found to have its program for the Plan already in operation was the Physical Education and Athletics Department.

It's worth noting that although courses under the WPI Plan are all considered to be elective, one program is still required of all students for four terms. . . physical education.

Coach Pritchard always has a few minutes to discuss the WPI physical education program with athletic directors from other colleges for he believes that although colleges may compete on the playing fields, the coaches are all working toward the same goals for their students.

Andy Laska, Athletic Director at Assumption College, expressed an off-campus professional view of the WPI program. "I grew up in Tech's neighborhood and was even one of those obnoxious little kids who sneak into the football games and slide down the grassy slopes. But from those early days and later in my 21 years of involvement in athletics at Holy Cross and Assumption, I've developed a great respect for the WPI athletic program. It is geared to the entire student body, for the real athletes and for the kids who just want to have the fun of playing. Although at Assumption we don't enjoy the scope of athletic facilities which WPI has, I'm trying to pattern our physical education program after Tech's, with its emphasis on serving the entire college through physical education, intramural sports and intercollegiate athletics. As Assumption grows, we'll have the athletic plan to grow with it, thanks to the fine counsel and cooperation I've always enjoyed when working with Bob Pritchard and his staff."

With the completion of the Harrington Auditorium, the department has had the facilities to implement a long-desired extension of the skills taught into the so-called lifetime sports. Students now learn the fundmentals of golf, bowling, handball, squash, tennis, badminton and other sports they can play the rest of their lives. In a 25th reunion survey of the Class of 1945, over 40% reported that golf was their major spare time activity with skiing a close second. About 20% played tennis regularly. Instruction in these sports was something they all had to acquire outside of the college physical education curriculum. Not so today.

A typical student reaction came from Harvey Neilson, '74, who said that he had never played squash before learning the game in a gym class. "Now I play as often as I can and I'm sure it's something I'll do long after I've graduated." Harvey's real body building passion is his ten-speed bicycle which takes him everywhere. During the summer, he rode over 2000 miles. Since school opened, he's added a few hundred more miles, mostly on weekends. He's taken part in a 13 mile road race, finishing seventh against some old pros on the circuit. How fast does he travel? Harvey travels home to Leominster frequently by bike covering the 22 miles in about 55 minutes.

Bicycles are making a comeback on campus and it's not uncommon to see several chained to a railing outside a WPI building. Perhaps today's students have been inspired by the feat of Edward R. Delano, '30, who rode 3200 miles in 35 days from his home in California to his 40th reunion in 1970. Perhaps it's a concern for air pollution which has made bicycles fashionable again. It's a fact that cycle shops are unable to meet demand in many areas.

It was Doc Carpenter who insisted on faculty status for his professional staff. Their primary function was and still is the instruction of classes in physical education. Each member of the staff has expertise in coaching a particular varsity sport but unlike college coaches who work under contract, they aren't faced with relocation nightmares during a losing season. Winning is always sweet but without the pressure of having to win to survive, they are never tempted to put their own professional reputations ahead of the interest of any player on the squad.

WPI coaches all suffer from one handicap which is not shared by most of their counterparts in the intercollegiate coaching fraternity. That is the limited amount of daily practice time. With classes and laboratories scheduled until 4:05, it's at least 4:30 before practice sessions really get underway. All WPI athletes carry the same demanding course loads of their fellow students. They must maintain their grades to remain on the teams.

"Our athletes learn one important skill, whatever their sport," says Coach Pritchard. "They learn to budget their time. Participation in athletics doesn't seem to affect grades adversely. In fact, over the years we've compared the grades of all students with those on our various teams and we find that as a group, athletes are usually a few percentage points higher than the school average."

WPI has had its share of great athletes. Harry L. Dadmun, '91, established WPI records in every running event up to two miles, many of which stood unchallenged for more than 40 years. He achieved national prominence in 1890 when he won the national half-mile championship in Washington. The following summer, he toured Europe with a group of U.S. college athletes, winning the French National 800-meter run.

Richard L. Keith, '14, set WPI record in winning the New England mile title in 1911 which lasted 55 years before being broken by Cary Palulis, '68. In more recent times, Sid Stayman, '44, set a college record of 9.9 seconds in the 100-yard dash which was unchallenged for 30 years until tied by Tom Fieldsend, '74. Some other long standing school records still stand. For example, the 22′ 2½″ long jump of Al DeLoid, '49, and the 220-yard record of 21.6 seconds set by Edwin Hatch, '37, have not been equalled.

WPI has had two undefeated football seasons, 1938 and 1954. They also played one entire season without scoring a point. . . 1941. Soccer enjoyed undefeated seasons in 1938, and 1965. Three WPI soccer players have made All-American — Swang Lee-Aphon in 1960, Ed Cannon (now coach at Worcester Academy) in 1966-67 and Lionel St. Victor in 1970.

There have been several undefeated golf and track seasons.

Although a college's success in athletics is all too often measured by "How did the football team do?", it's only fair to look at the entire spectrum. In 1970-71, WPI varsity teams won 63% of all their contests.

WPI teams may never make nationwide headlines for their success in post-season bowl games, but how many colleges can boast that one student in five is a member of a varsity team?

The athletic program at WPI is not limited to students. Faculty and staff are also encouraged to use the gymnasium facilities. For several years, the department has reserved time during the week when the gyms are available for faculty to work out. The program is sometimes referred to as the "Faculty Fat Boys Club" by those who are trying to stay in shape. During the winter, Saturday mornings at the

swimming pool are reserved for faculty family swimming. The bowling alleys schedule league play not only for students but for teams from the faculty and staff. The Buildings and Grounds department league is one of the most active. There's even a sauna bath.

A few of the faculty and staff are engaged in the particularly active life in their spare time.

Dr. Alan Hoffman, '63, who was captain of the undefeated 1963 track team, hasn't hung up his track shoes yet. Last spring, WPI's speedy mechanical engineering professor competed in the gruelling 26 mile Boston Marathon and finished the course.

Professor Philip Stevenson, chemistry, climbs mountains. His wife shares the interest in the sport but watched from the base camp while he climbed the Grand Teton in 1969 on the last day of their honeymoon. Phil is the faculty advisor of the recently formed WPI Outing Club.

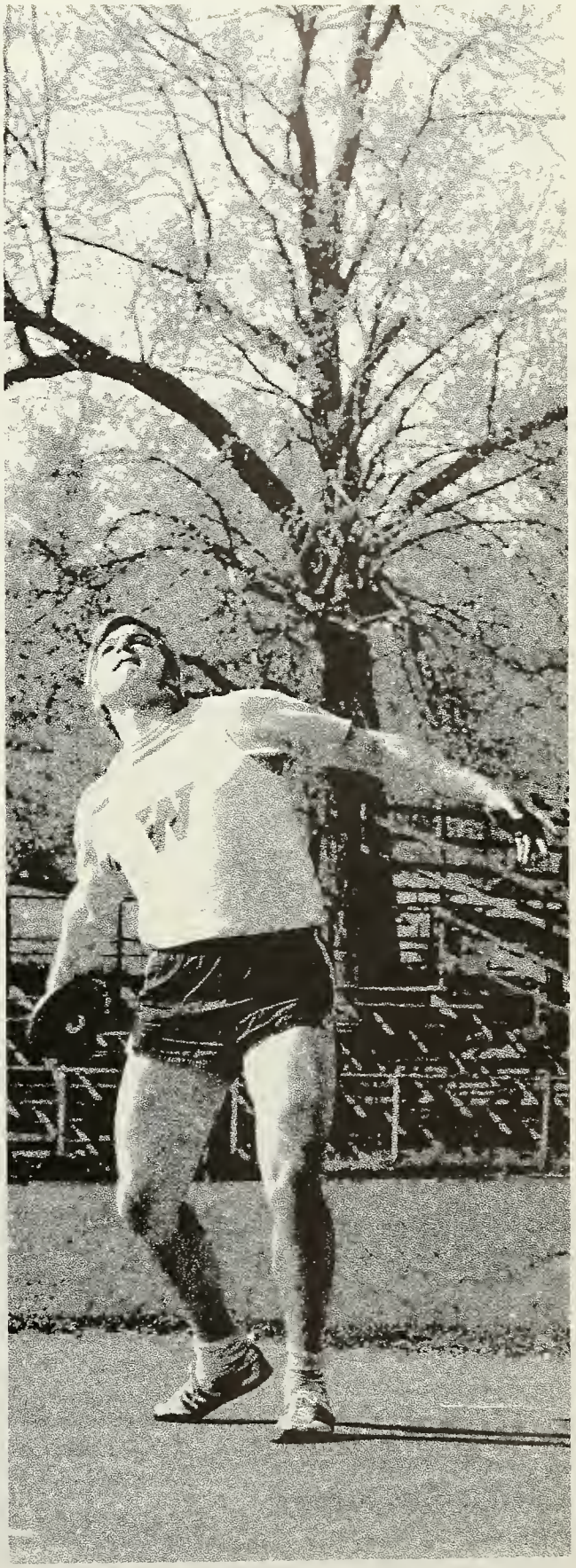
E. Penn Estabrook, assistant director of admissions, is a devotee of white water kayaking. Wearing a warm wet suit, he pursues his sport even in February. "A lot of brandy helps," says Penn about kayaking in winter. He placed first in his class in two major events last summer and took third in another.

Professor Frank DeFalco, civil engineering, won the Baghdad doubles tennis championship in 1969 while studying in Iraq under a Fulbright Scholarship.

Dr. Edward N. Clark, director of research, is a long distance swimmer. He started in 1963 as part of a Red Cross sponsored 50 mile swim program. He surpassed that mark a long time ago and now has logged 250 miles. His interest in swimming goes back to his days as a varsity swimmer at Brown University.

New York Times columnist Arthur Daley last Spring headed his column with "A Plea for Students" and said, "It's probably a half a century since any college authorities even thought of returning to the simplifications and the niceties of our earliest traditions. Once upon a time, the members of all athletic teams were students attending college primarily for an education."

That was too much for WPI President George Hazzard to let pass unchallenged. In his letter to Mr. Daley, he said, in part, "At Worcester Polytechnic Institute, we have never left those traditions. WPI is not a minor league preparation for professional sports, it is major league preparation for life itself. . . About 400 students (out of 1800 undergraduates) participate in intercollegiate sports and all but a few take part in some phase of our physical education program. The program is guided by seven full time and eight part time coaches with an operating budget (exclusive of salaries and maintenance) of under $100,000 a year. We do not seek support for this program through TV receipts or bowl games, for it is an integral part of our educational program. We find that the playing fields do contribute to more than just a sound body, important as it may be. They teach dedication, teamwork and sacrifice."



AND NOW–A WORD FROM OUR DIRECTOR

ROBERT W. PRITCHARD

The WPI faculty, in its considered judgment of the goals of WPI, voted in December 1969, "It is the fundamental purpose of WPI to impart to the student an understanding of a sector of science and technology and a mature understanding of himself and the needs of the people around him." Further, the goal states: "A WPI education should develop in the student a strong degree of self-confidence, an awareness of the community beyond himself."

How does the Physical Education Department and Athletics contribute to these worthy goals? Is all education academic? Is all learning confined to a classroom? Let's take a look and see just what the Department of Physical Education and Athletics does in achieving these goals.

Basically, our staff are college educated and trained individuals whose interests lie in working closely with young people in a controlled atmosphere of teaching skills, of developing talents, of appreciating competition, of demanding discipline and of working constantly in a team atmosphere — an atmosphere which is a must for the WPI Plan to succeed.

There are three areas or levels of activity that we sponsor — each important at its level to the participant. And in all these three — Physical Education, Intramurals and Intercollegiate Program — the following opportunities and values are inherent with increasing degree from physical education up through intercollegiate athletics.

1. To have fun — enjoyment.
2. To improve health and physical tones.
3. To escape from everyday tensions — which no one can avoid.
4. To become more alert both physically and mentally — hence a better student and campus citizen.
5. To experience close interpersonal relationships.
6. To test and develop leadership qualities.
7. To derive the zeal and satisfaction from striving for a goal.
8. To experience and learn about the inevitable stresses of life's situations.
9. To learn discipline and learn to sublimate selfish desires — team work.
10. To test character in a game, for one can act honestly or dishonestly, fair or unfair, courageously or cowardly to constantly occurring instances.
11. To learn self-reliance and to gain confidence.
12. To share and feel the emotions of defeats and victories.

The WPI Plan is a challenge to the faculty and the students and no department has reason for existence if it does not contribute to attaining the common goals of the Plan.

WPI's physical education program teaches skills in interesting lifetime sports and gives the decision maker — the middle and upper management man of the future — healthful, active, life-extending activities that he can pursue with his family and fellow workers. If he pursues physical activity in his maturing years, statistics show his productive life will be extended and enriched.

WPI's intramural program is geared to the slightly more advanced and talented individual who likes the invigorating fun of competing in situations where there is a winner and a loser. The participant is a member of a team. He develops a loyalty and he knows and learns about team work.

The third area of the department's responsibility is the intercollegiate program. We realize that whether we like it or not, the athletic program is often a window on the college and it is through this window that outsiders look and make judgments. Therefore, it is essential that an athletic program be kept in proper balance and perspective. The place of the athletic program reveals the college's priorities. It can also reveal the acquiescence to pressures. The test of WPI's athletic program lies in answer to the question "What does the program do for the person?" If the participant is not the reason for the existence of the program, then it becomes nearly a professional program. If the purpose of the program is to make money, to publicize the school, to satisfy the alumni ego or assuage a state legislature, then much of the educational value of an intercollegiate program is lost.

Physical education, recreation and intramurals do not fulfill the needs of all students. The physically more

talented one, the one who loves competition, the one who likes a challenge cannot be satisfied with recreational and intramural competition. Just as in academics some are spurred on to a higher level of achievement and take an overload or go on to advanced degrees, so also is the need of the physically talented for greater challenges. We do need more recreational opportunities for more students and staff, but recreational opportunities alone do not satisfy the athlete or potential athlete.

There is great need in society today for those attributes that can be best taught and learned in a balanced athletic program. Discipline and loyalty were once successfully taught in the home and church. In these times of changing values, the athletic field is one of the few remaining places where these qualities are being taught.

Some of the most effective teachers and counselors are the coaches. They were the first to begin team teaching — to break things into smaller components and then to bring skills and understanding together in a successful route to learning. Coaches are excellent teachers because they do not teach the easy way. There is no easy way — there are no short cuts in coaching — you can't cut corners. They demand and get hard work and dedicated interest. For, you see, a coach and a team are at a disadvantage when compared to a classroom situation. In a game, you don't pass the course with a 60 or 70 percent effort; if you rate a 60 or 70, you don't pass — you don't win. There are no "Readers Digest" versions in athletics. The underachiever belongs on the sidelines, not in intercollegiate athletics. Coaches have excellent opportunities to counsel students. Many students feel freer in talking to a coach; there is less restraint involved. Coaches are constantly in situations where emotions are rubbed raw. They work with people in real-life situations — in stress, joy, defeat, frustration. They develop an empathy which makes them excellent counselors.

The Physical Education and Athletic Department complements the WPI Plan. To reiterate one of the goals, "A WPI education should develop in the student a strong degree of self confidence." We know of no better laboratory of human relationships than that which occurs on athletic fields and areas. If the coach mixes the wrong ingredient here, it can be just as damaging as mixing the wrong ingredients in a chemistry laboratory. He's teaching fair play, honesty, teamwork, and we don't expect him to teach how to cheat, how to beat the game, or how to sluff off or just get by.

In closing, a balanced, in-proper-perspective athletic program can provide so many opportunities for a student and a college and its atmosphere. Another plus is that the athletic teams provide the only contact WPI has with many outstanding colleges in New England. Further, athletics are a challenge (a constant challenge to one's self-discipline and determination), it tests one's emotions, it teaches and demands self-reliance, confidence, and teamwork. How many other courses in the college catalog could have a course description like this?

Yes, one of the best bargains at WPI is its physical education and athletic programs. Perhaps Frederick L. Houde, president of Purdue University, wrapped it all up best when he said recently: "It seems to be that in the management of the affairs of men in this society and all societies, the strain is always on the character and never on the intellect — for our knowledge is great about man and nature and society and all the things we need to know, but our ability to manage our affairs puts a strain on the character — and where is this more true than in the field of the management of intercollegiate athletics."

WHO?

The WPI Coaching Staff

All full time members of the coaching staff are accorded full WPI faculty status. Their profession is teaching and they work at it throughout the college year. Each member of the staff teaches physical education classes in addition to coaching varsity and J.V. teams in their respective sports. In addition four classroom courses for credit will be offered under the WPI Plan.

With the rest of the faculty, they share important committee responsibilities and privileges, including tenure.

Although their role as faculty members is not unique, it is not widespread in college circles. Their status does reflect the WPI attitude that the physical education and athletics program is part of the overall educational program of the college.

These brief biographical sketches give the highlights of the careers of the men who guide the athletic program throughout the year.

Bob Pritchard first appeared on the WPI campus in 1941 as an instructor and assistant football coach. He had previously been a coach at Susquehanna University from which he graduated in 1936. He also earned his master's degree at Penn State during that period.

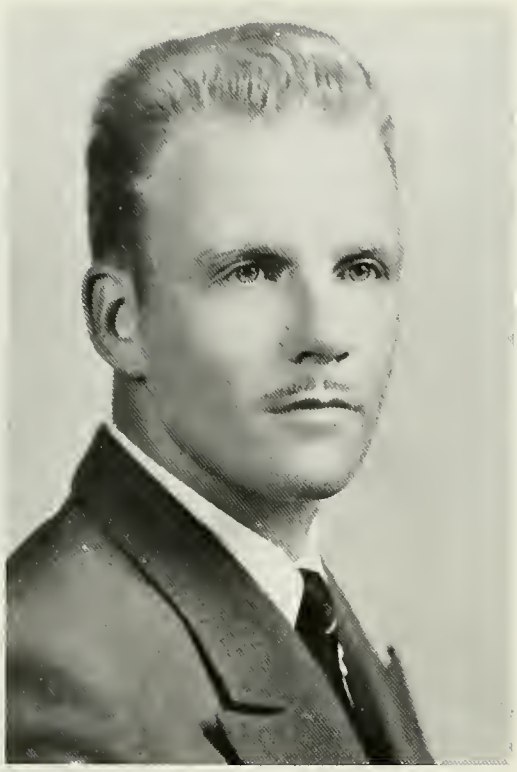
Hardly had his WPI career begun when he was called to active service in the Air Force as a physical education officer. When the war ended, he was appointed athletic director and football coach at his old high school in Kingston, Penn. However, in 1947, he accepted the invitation to return to WPI. In 1952, he succeeded the retiring Percy Carpenter as head of the department.

Bob also served as head football coach at WPI until 1966 when he reluctantly made the decision to give up the post because of the increasing administrative responsibilities in his growing department. He coached football longer than any WPI coach and won more games than any previous coach, including an undefeated team in 1954.

Any WPI athlete of the past 25 years remembers the Pritchard humor which reaches its peak at the sports banquets each year. His jokes rival the best of the professional comedians but few in his audience realize how carefully he saves those jokes from all sources throughout the year for those one-night stands.

Coach Pritchard is an athletic director who believes in sharing his experiences with his colleagues. This spirit of cooperation has brought him many honors. He is a past president of the New England Intercollegiate Athletic Association, a past executive committee member of the Eastern College Athletic Conference, past president of the Quinsigamond Regatta Association and for many years he has been chairman of the Worcester Red Cross Water Safety Committee. He is past president of the New England College Athletic Conference and was for four years member of NCAA College Committee.

He is now serving as vice president of the National College Athletic Association and serves on its policy making council. He is chairman of the NCAA's Drug Education Committee and he has written a foreword to a drug information booklet distributed this fall to 250,000 coaches throughout the country. This publication was prepared by his committee in cooperation with the U.S. Bureau of Narcotics and Dangerous Drugs. At the last annual NCAA Convention he chaired a round table discussion for all member colleges.



Alan King was born in Newcastle, England, where soccer s the national sport. After a tour in the British Army, he worked as a commercial assistant in Singapore. In 1953, he came to the United States to enter Springfield College. Although soccer was his great love, he was ineligible to play in college, having played professionally in England.

It was this experience however that brought him to WPI n 1957 and which has brought winning soccer seasons almost as a habit since. His 1965 team was undefeated, and his teams have gone on to post-season tournament play in many seasons.

He retains a slight and pleasing British accent which somehow seems a bit out of place in the New Hampshire mountains when he's coaching the WPI Ski Club team. However, his teams do as well on the slopes as they do on the soccer fields. In the spring he coaches the tennis team, which has also enjoyed some fine seasons in recent years.

Alan stills plays soccer himself as a member of the Hartford Ukranians which at press time was enjoying an undefeated season although, he added with a wry smile, 'that means two wins and five ties."

His knowledge of soccer has made him in great demand as a lecturer at soccer clinics for both high school and college teams as well as at summer soccer camps. It has also brought him a rare honor in his selection as a member of the NCAA Soccer Rules Committee where he is one of only six coaches in the country selected. Due recognition for a man whose WPI teams have won the New England college division championship four out of the past seven seasons, including the 1965 undefeated season.

The 1971 season was Associate Professor Melvin Massucco's fifth year as Head Coach at WPI. His playing days started at Arlington High School as a starter for 3 years in football, hockey and baseball. He captained the football and baseball teams his senior year. Picked on the Greater Boston All-Scholastic Teams in all three sports, and played in the Manning Bowl All-Star Game in 1943. Selected for the Eastern Mass. Interscholastic Sports Writers Association Most Valuable Player Award.

Entering the Army, he played 2 years of football and baseball in Italy; playing for the M.T.O. All-Stars in a post-season game in Nice, France.

Later entering Holy Cross, he played 3 years as starting halfback and team punter. Captained his senior year with the team finishing 8-2. For many years he held the season and career rushing record for Holy Cross.

Mel was picked by coaches to play in the North-South Shrine Game December of 1951. He was also selected to many All-New England and All-East teams and was voted as All-Catholic All-American by a board of coaches.

The Holy Cross Varsity Club elected him to the Holy Cross Athletic Hall of Fame in 1969.

He was drafted by the Chicago Cardinals of the National Football League in the Spring of 1952 but after working out with the Cardinals most of July and August, passed up pro-football and joined Charles O'Rourke at the University of Massachusetts as Freshman Coach. He is now in his 20th year of coaching – 2 years at U. Mass., 11 as an assistant at Holy Cross, and 2 as Head Coach at Holy Cross.

Merl Norcross is in his 18th season as WPI head track coach. He earned his bachelor's and master's degrees at the University of North Carolina. While in college, he served as assistant coach of football at Edenton and Chapel Hill, N.C. high schools. After graduation, he spent a year at Morresville, N.C. high school as a teacher and basketball coach.

Like Bob Pritchard, he is an alumnus of Kingston, Penn., High School and it was this connection which brought him to Pritchard's attention in 1952.

His 1963 team was undefeated. Co-captain Jack McGrath's records for the high jump and the high hurdles still stand as college records. Under his coaching, Cary Palulis, '68, won the New England 880 yard title three years straight as well as setting several other unbroken records.

Merl is a popular after-dinner speaker on the Alumni and luncheon club circuit.

While in college, Merl played halfback in both the Cotton Bowl and the Sugar Bowl in post-season games. Although track is his major interest at WPI, he also serves as assistant football coach. In his spare time, he heads the department's low-key recruiting effort to convince high school scholar-athletes that WPI can offer just what they seek in a college.

Merl was recently selected as a member of the NCAA Track and Field Rules Committee.

Charles NcNulty made his debut on the WPI campus in the uniform of a Navy Chief Petty Officer when the Navy established a V-12 unit on campus in 1943. His mellow voice exhorted the sleepy-eyed cadets to "put a little more muscle in those pushups" during crack-of-dawn calisthenics.

He had joined the Navy as a physical education instructor after graduation from Manhattan College where he had played varsity baseball and football three years. When he left the service in 1945, he took his first coaching job at LaSalle Institute in Troy, N.Y. but a year later accepted the invitation to join the WPI staff, this time as a civilian.

Charlie is the baseball coach as well as assistant football coach. He was pledged and initiated by the WPI chapter of Phi Kappa Theta fraternity and he is an active member of the Alumni Corporation which owns the local chapter house.

Although he pushed the students-turned-sailors hard during those war years, the alumni who were on campus during those hectic years remember him fondly. At its 25th reunion last June, he was the guest of honor of the Class of 1946. They all remembered the steps and Charlie called out the commands while the troops of '46 marched close order drill in the moonlight on the lawn of the Higgins estate, an area off limits during their student days.

When co-eds became part of the WPI scene, the standard physical education program did not quite meet their needs. Mrs. Paula Lantz joined the staff on a part time basis in 1969 with a free hand to develop a girls' program in keeping with the spirit of the program for men.

It was a cooperative venture from the beginning as she and the girls decided what to cover in the weekly classes. In her first class, she found only two or three girls out of 24 who could really play tennis. This became the first sport to master. Later, the girls asked to have football coach Mel Massucco give a lecture on how to watch a football game intelligently.

"Girls need an understanding of sports as much as men," says Mrs. Lantz. "Many of the lifetime sports are enjoyed equally by men and women."

The girls learn the fundamentals of tennis, soccer, field hockey, bowling, volley ball, swimming, badminton, table tennis and tumbling. There's been some resistance to modern dancing but she hasn't given up yet.

She's a graduate of Bridgewater State College and is married to Clifford Lantz, a former member of the WPI faculty now working for a consulting engineering firm.

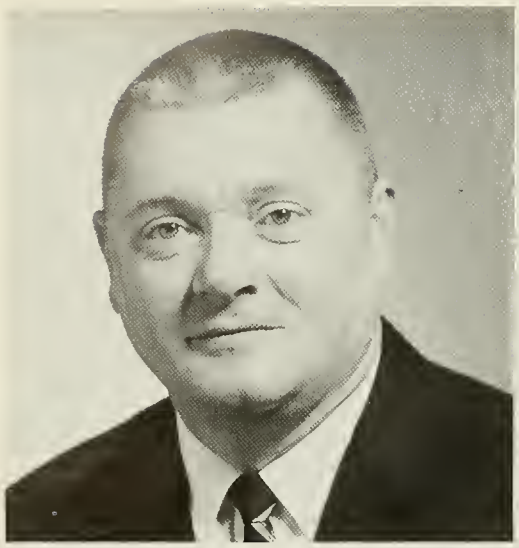
WPI isn't ready yet to field intercollegiate girls' teams but she looks forward to the day when there will be enough women athletes in a given sport to make this possible.

Swimming Coach Carl Peterson joined the WPI staff in 1968 after two years as a teacher and coach at Lewiston, Maine, High School. He received his degree at Bowdoin in 1966. He began swimming in competition in high school and was a varsity swimmer at Bowdoin.

Although developing one of the finest WPI swimming teams in recent years is his major interest professionally, he has also encouraged general recreational swimming by keeping the pool open as many hours a day as possible. With his corps of trained lifeguards, he also conducts Red Cross Water Safety courses as a certified instructor.

His 1971 team tied the best season of any swimming team in the college's history with a total of 6 wins against 2 losses.

Carl is vice president of the New England Swimming Coaches Association.



Jim Herrion added a new spirit to the basketball team when he took over as head coach in 1969. During that first year, he was still a teacher at Tantasqua Regional High School in Sturbridge. The following summer he joined the WPI faculty and assumed full time duties in the department.

He graduated from Iona College in 1950 and has earned his master's degree in graduate study at New York University and Fordham. His first position after graduation was that of teacher, coach and athletic director at Sacred Heart High School in Yonkers, N.Y. where he served 14 years. From there, he went to Pearl River, N.Y., High School to spend a year as a teacher of biology. In 1965, he was named assistant basketball coach at Holy Cross, remaining there until he resumed high school teaching at Tantasqua in 1968.

His first two seasons at WPI have produced teams with overall winning records.

The newest member of the WPI physical education faculty is Richard A. Heikkinen who was appointed an instructor July 1, 1971. He brings to the post of wrestling instructor five years of secondary school coaching experience. His first post was at Fryeburg Academy, where he served three years as physical education instructor, football and wrestling coach and for the past two years as head of the physical education department, football and wrestling coach at Kennebunk High School in Maine. He did his undergraduate work at Springfield College and also studied at the University of New Hampshire and the University of Maine.

He faces his first season as a college wrestling coach with the prospects of another good year of WPI wrestling. The team last year had its best season ever under the coaching of graduate student Lennie Polizzotto, '70, who was himself a member of several standout WPI wrestling teams as an undergraduate.

At WPI, he is also an assistant football coach and in the spring will help with the track team.

Part Time Coaches

With over 400 students participating in varsity sports, WPI relies on the services of many part time coaching assistants to help with each sport in season. These people also share in the credit for the fine showing of WPI teams:

FOOTBALL: Tom Heinold, '70, of the Heald Machine Division; Charles Murphy, a teacher in Auburn.

BASKETBALL: Kenneth Kaufman, a physical education teacher in the Worcester Public School system.

SOCCER: James MacKechnie of Norton Company; James Kaufman, a WPI post doctoral student.

WRESTLING: Leonard Polizzotto, '70, now a graduate student.

GOLF: Prof. Herbert Yankee of the Mechanical Engineering Department.

J. V. GOLF: John Gale, '70, WPI graduate student.

CROSS COUNTRY: Frank Sannella, retired supt. of schools, Oxford, Mass.

Club Sport Coaches

Some WPI intercollegiate sports are sponsored by student clubs and receive financial support from the student activities fund rather than from the Athletic Department budget. The following have active programs at this time.

FENCING: Coach, Mrs. Henrietta Beyer of Norton Co.; Faculty Advisor, Donald Kievet, assistant director of admissions

CREW: Coach, Kenneth Burns, retired Shrewsbury police chief; Faculty Advisor, Richard Olson, Mathematics Department instructor.

HOCKEY: Coach, Leonard Bowen

SKIING: Coach and Faculty Advisor, Alan King

RIFLE: Faculty Advisor, Walter Kistler, associate professor, Mechanical Engineering

THE VIEW FROM DOWN HERE

BY ALAN DION, '72

A chronicler attempting to recount the story of athletics at an engineering college might believe it germane to stick to statistics and scores. Yet to me the significance of the WPI sports program has not been the won-lost records or performances but a series of impressions left over from watching events and people. As a competitor, spectator, manager, and reporter of various Tech sports over the past few years, I've been exposed to many views of an overall picture which has been by turns both confusing and interesting.

Take, for example, the fact that WPI has an athletic program at all, let alone one which I've heard boasted of as "larger than Notre Dame's," with seventeen varsity and club team sports. As an institution devoted to disciplining minds to function in rather sedentary jobs as engineers, scientists, and businessmen, it would seem that physical advancement lies outside Tech's main objectives. Whether it was the inscrutable intentions of past administrators or the proximity of the Ivy League student-athlete ideal which is responsible for the present situation, it does remain that about a third of all WPI students compete in a sports program which is greater in scope (if not in size) than that of the Fighting Irish and many other colleges.

Consider that the WPI campus has no social center, it houses only a fraction of its students, and yet we nonetheless fill our football stands on alternate Autumn Saturdays – more often than not to see the WPI engineers lose to other undistinguished teams.

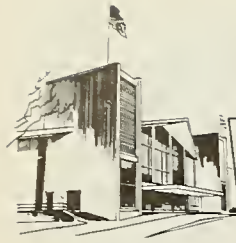
Or ponder the fact that students who may never before have seen amateur wrestling now crowd what was once an atrocious basketball court (and remains an acoustical horror) to lend their verbal mayhem to the conflicts on the mat. One can marvel at the fact that, of all those seventeen teams, one of the most successful and prestigious is the club sport of crew, which is entirely dependent upon student support. One can try to explain the case of a progressive engineering school which drops all course requirements except for a two-year physical education program, and this has sparked some student resentment.

It doesn't require very astute observation to realize that the distinctive athletic program of WPI gives rise to some interesting sports stories. Much of the uniqueness of the situation is due to the fact that the program is intended *for the students* rather than for the college. At no other institution I've seen is there so much opportunity to compete. Guys who didn't have the interest in high school (or maybe their school lacked a team) try out for sports that are new to them: crew and soccer, skiing and swimming, wrestling and fencing and perhaps even football. And because the level of competition may not be high, novices have a chance to compete at a time they may need a physical outlet.

The gym at WPI belongs not only to the jocks but to all students. Like it or not, everyone gets introduced to the place through required P.E. classes. Some get turned off by being compelled like children to exercise for their own good. Others find it a chance to try and hold on to the physical vigor they maintained in high school for a little while longer.

On a campus which lacks any real social center, the gym serves a significant purpose in providing a place to hang out in interims between classwork and homework, particularly for commuting students. This idea of providing a social focus for a decentralized campus is an important aspect of the entire athletic program at WPI. One of the rare times fraternity and non-fraternity students associate to any large degree outside the classroom is when they compete with each other in intramural sports, or when they support a WPI team against another school.

Herein lies the *raison d'etre* of the athletic program at Tech as I see it. Its purpose isn't to compel freshmen and sophomores to learn a "lifetime sport," or serve as a criterion for selecting people to fraternities or honor societies. Even the notion of providing a competitive outlet isn't that important; God knows there's enough competition in the classroom. What athletics really provides at Worcester Tech is a starting point on which to build a campus community. Sports might not be the best or only way of accomplishing this, but at WPI it's a good start.



VARSITY REVIEW

FOOTBALL (2-6)

The WPI football season ended on a disappointing note with a 22-18 loss to Norwich. The really bright spot of the season was the 26-0 upset win over Wesleyan on Homecoming Day. That day everything seemed to work.

Scores don't tell the whole story. Over eight games, the Engineers' total offense covered an average of 322 yards compared with 302 for the opponents. In the scoring column, the one that counts, WPI averaged a field goal less than the opposition. 14 interceptions and 10 of 15 fumbles lost also hurt.

Quarterback Steve Joseph and halfback Charlie Deschenes played

Football Leaders

Passing	Att.	Comp.	Int.	Net Yds.	TD's
Steve Joseph	176	75	13	955	9
Rushing	**Car.**	**Gain**	**Loss**	**Net Yds.**	**TD's**
Charlie Deschenes	115	525	12	513	1
Wayne Pitts	93	405	20	385	3
Steve Slavick	90	377	0	377	6
Receiving	**Rec.**	**Yds.**	**TD's**		
Jim Buell	42	550	4		
Wayne Pitts	23	227	5		
Punting	**Kick**	**Yds.**	**Ave.**		
Ralph Noblin	22	766	34.8		
Scoring	**TD**	**Con**	**PAT**	**FG**	**Points**
Wayne Pitts	8	1	0	0	50
Steve Slavick	6	0	0	0	36
Jim Buell	4	0	0	0	24
Bob Aubrey	0	0	16	2	22

their last season. Joseph led the offense with a total of 971 yards this season. Steve's improved passing accounted for 9 touchdowns. Deschenes was a key to the WPI running game, averaging 4.5 yards a carry. Tight end Tom Staehr and tackle co-captain Vin Colonero are the other seniors on the offensive team. The defense will lose tackle John Cuth and line backers co-captain Jeff Petry and John O'Donnell.

However, hopes springs eternal in the breast of a football coach and Mel Massucco is already looking to 1972 when a host of talent from this year's JV team (with an impressive 3-0 record) will be scrambling for the vacated spots. This year's varsity veterans will be back with a lot more experience and a little pre-season polishing should turn the 1972 team into one which may surprise a great many of the experts.

Season's Record

Opponent		*WPI Score*
UNION	28	20
BOWDOIN	35	14
MIDDLEBURY	35	17
BATES	15	31
WESLEYAN	0	26
COAST GUARD	31	23
RPI	28	21
NORWICH	22	18

HELP!

In order to complete the WPI Archives, the Gordon Library needs to find copies of the following WPI *Aftermaths and Peddlers:*

1883	1887	1905
1884	1889	1906
1885	1898	1907
1886	1904	1911

In addition, the Library would like one additional copy of those books from the following years:

1882	1896	1908
1890	1897	1943

Any alumnus or friend who can help out by supplying one of these 18 volumes will be performing an invaluable service to WPI. Contributions should be sent (carefully protected against the ravages of the mails) to:

Albert G. Anderson, Jr., Librarian
George C. Gordon Library
Worcester Polytechnic Institute
Worcester, Massachusetts 01609

SOCCER (5-5-1)

Leading Point Scorers

Player	*Goals*	*Assists*
Jack Blaisdell	12	3
Bill Gemmer	7	2
Bruce Kern	1	6
Gus Boucher	3	1

Opponent		*WPI Score*
U HARTFORD	4	1
HOLY CROSS	3	4
TUFTS	6	1
MIT	4	3
BU	6	2
LOWELL TECH	0	6
CLARK	2	5
ASSUMPTION	0	4
COAST GUARD	1	0
U MASS	2	2
AIC	0	1

The WPI booters finished the 1971 season with a 5-5-1 record. The season was a slight letdown from last year's New England College Champs, but the experience gained by this year's young team should be of valuable help when Coach King leads them on the '72 campaign.

The offensive punch will lack the goal scoring of senior standout, Jack Blaisdell, but sophomore Bill Gemmer seems to be Jack's likely successor at this role. Returning scorers will also see Gus Boucher and Bucky Kashiwa around for another year's service.

The defense will ably back up the team with standouts Steve Williams and Bill Johnson returning to aid promising goal tender Marc Frodyma. A year wiser, Tech's young squad will look forward to improving their .500 performance of this season.

CROSS COUNTRY (8-4)

Frank Sannella's Cross Country team completed this last season with a fine 8 and 4 record, one of Tech's best records in many years. And as seen with other fall sports, the promise of next year is with young, up-and-comers on the varsity squad.

Senior co-captain Mike Malone led Tech runners most of the year. The big surprises were frosh Chris Keenan and Fran O'Connell who did yeomen service behind Mike. Returning to back these frosh are juniors Dick Filippetti, Dick Stockdale and Andy Murch.

Season's Record

WPI	15	WORCESTER STATE	40	ASSUMPTION	65
MIT	23	RPI	49	WPI	54
WPI	24	WESLEYAN	35		
WPI	23	BATES	36		
TUFTS	21	WPI	37		
WPI	23	BRANDEIS	32		
WPI	30	AMHERST	40	BENTLEY	72
WILLIAMS	18½	WPI	37½		
WPI	15	TRINITY	45		

CAMPUS NOTES

WPI students were involved in a campus-wide demonstration November 12 and 13. It was a demonstration of concern for others which took the form of a marathon basketball for charity. The final score of the 24 hour game was 905 to 735 but the real winner was the Worcester Area United Appeal Fund which received the $1600 raised in the project.

The event was the brainchild of Steve Baum, '73, Bill Delphos, '74, co-chairmen of the game committee and Anthony "Tim" Longo, '72, president of the Interfraternity Council.

It was not a marathon in the sense that the same players shuffled around the court to exhaustion. The 12 WPI fraternities fielded teams which played in rotation against a variety of challengers. The opening round set the stage when the game committee wearing football jerseys and shoulder pads put up a valiant effort against a team of junior co-eds. They were followed by a team of deans from Worcester colleges who appeared in caps and gowns but quickly dispensed with the encumbering costumes.

The extra attractions really made the game memorable for the crowds in attendance. Door prizes, generously donated by local business firms, were awarded every half hour. Baked goods contributed by campus secretaries and faculty wives were sold in the refreshment stand or auctioned off. There were slave auctions in which volunteers agreed to work for the highest bidder for a few hours.

These were some of the memorable highlights: Miss Worcester County judged the Hot Pants Contest (for men only). Winner was popular math instructor Dick Olson who hadn't planned to enter until M. C. Bill Trask got the crowd to bid $21 to the fund if Ollie would allow his pants to be cut off at the knees so he would be eligible. Father Peter Scanlon, Catholic campus chaplain, later made the high bid when Ollie's shredded pants were auctioned off.

Sig Ep bought the services of Phi Kappa Theta and Delta Sigma Tau in the slave auction and ended up with the cleanest house on campus. Prof. Alvin Weiss was bought at auction by ATO and later was high bidder for the ATO "slaves". "I had to protect my interests," he said.

The most improbable door prize winner was the girl from Rio de Janeiro, Brazil, who won a Flexible Flyer sled.

For a bid of $5, Prof. Harit Majmudar did a one minute Indian Headstand in the middle of Harrington Auditorium to the delight of the crowd.

Services of WPI security officers, custodians and electricians were all donated for the game. So too were the services of professional basketball referees and guest announcers.

Among the players were teams from other Worcester colleges plus church and high schools teams. Togo Palazzi, former Holy Cross All-American basketball star and later a professional in the National Basketball Association, sparked a team of student nurses from Memorial Hospital against Sig Ep. The Officers of the ROTC unit, including a full colonel and three majors, played valiantly but were no match for the more experienced team from Phi Gam.

Almost 300 people played on the court during the game and hundreds more were on hand, even into the small hours of the morning to cheer their favorites. "In my 14 years on the campus, I've never seen a project that so many students became so deeply involved in at one time," said Dean Trask. "They are already starting to plan for next year's game." Maybe by then, Dean Trask will have his voice back after his 24 hour stint as master of ceremonies, auctioneer, and super star on the dean's team.

Reunion Roundup

Our 40th reunion was held at the Yankee Drummer in Auburn, Mass. on Friday evening, June 4, 1971. President and Mrs. Hazzard shared dinner with us. We felt honored to have our college president for at least a portion of our reunion.

The principal business of the meeting was a report by Robert Barrett, Chairman of our 50th Reunion Gift Committee. His report indicates that our class now has cash contributions in the amount of $5,105 toward this gift with $3,418 in outstanding pledges. This amount has been contributed by 25 of our 120 class members, 14 of whom have paid their pledges in full. We have reached 20 per cent of our goal in the past five years since this program was initiated at our 35th Reunion.

Most of the Class members participated in Alumni Day on the Hill on Saturday.

Those who were able to come were:

Frank H. Andrews
Robert and Noriene Barrett
Edward and Ruth Bayon
Robert and Gertrude Bumstead
Benjamin and Marion Chadwick
Edward S. and Mrs. Coe
Russell and Elizabeth Corsini
Harold and Anne Marie Cutler
Albert and Doris Demont
William and Anne Dennison
Theodore and Martha Fish
Paul and Dorothy Fittz
Henry and Lucine Friel

CLASS OF 1931

M. Dexter Gleason
Wallace and Mary Gove
Allan and Virginia Hall
Edwin and Barbara Haskell
John and Mary Hinckcliffe
Ralph Hodgkinson
Everett E. Johnson
Trescott and Natalie Larchar
Otis and Mrs. Mace
John and Ruth Maloney
Richard and June Marden
Oliver and Margaret Merrill
Edward and Hazel Rouse
Trueman L. Sanderson
George and Evelyn Smith
Herbert and Henrietta Stewart
Hurant and Anahid Tashjian
Robert and Marion Taylor
Francis and Nancy Townsend
Harry and Rita Tyler
Theodore L. Wanstall
Robert and Ormell Williamson
Charles and Elizabeth Woodward
Gustav E. Mangsen
Ben Rice
Russell and Mrs. Libby
Raymond Guenther
Frederick A. Farrar

Edward J. Bayon
Secretary

COMPLETED CAREERS

Note: Through a typographical error, Julian B. Gouse whose obituary was published in the October 1971 issue of the Journal was identified as a member of the Class of 1914. He was a member of the Class of 1944.

JAMES W. FREEMAN, '01

James W. Freeman, '01, died on June 8, 1971 in W. Hartford, Conn. He was 94.

Mr. Freeman was born in Bangor, Maine, March 7, 1877 and attended Moses Brown and Warren High Schools. He entered WPI in 1897 and was graduated in 1901 with a degree in chemistry.

Mr. Freeman was a high school teacher for seven years and in 1908 he became principal of the Noah Webster School in Hartford and was principal of the West Middle School from 1914 until his retirement in 1944.

He leaves a daughter, Miss Sarah Freeman, and a brother, Arthur W. Freeman of Chathamport, Mass.

LEWIS E. DICKINSON, '03

Lewis E. Dickinson, 88, died February 12, 1971, in Boonton, New Jersey.

Born in Whitinsville, Mass., on November 19, 1882, he attended Northbridge High School and entered WPI in 1899. An electrical engineering major, he was graduated from WPI in 1903.

He was employed for three years by the General Electric Co. Test Dept., and later by General Storage Battery Co., and Westinghouse Storage Battery Co. He retired in 1948 from Bell Laboratories, New York, after 38 years of service.

Mr. Dickinson was a member of the Telephone Pioneers of America and was on the Board of Adjusters and the Board of Assessors for Boonton, N.J.

He leaves a daughter, Mrs. Edward Baldwin of Boonton, three grandchildren and four great-grandchildren.

P. ALDEN BEAMAN, '07

P. Alden Beaman died October 7, 1971 in Worcester, Mass., at the age of 85.

Mr. Beaman was born at Princeton, Mass., on May 4, 1886. After attending Worcester Academy he entered WPI in 1903 and graduated with a BS in Mechanical Engineering in 1907.

He served as an engineer with the Odell Manufacturing Company from 1907 to 1909. He was with F. P. Sheldon & Co., for a short time and then found employment with the Willett Sears organization from 1909 to 1916. George W. Prentiss & Co. named him superintendent in 1916. In 1928 he joined the Morgan Construction Co., retiring from that company in 1958 as department manager.

Mr. Beaman was a member of the American Society of Mechanical Engineers. While in retirement in Princeton, Mass., he served as electric light commissioner and library trustee. He was also a member of the Masonic Order.

He is survived by his widow, Charlotte M. Beaman and daughter, Mrs. W. B. Flanders of Babylon, L.I., N.Y.

CLIFTON C. QUIMBY, '07

Clifton C. Quimby passed away on October 5, 1971 at the Blueberry Lane Nursing Home in Laconia, N.H.

Mr. Quimby was born in Sandwich, N.H., on February 17, 1884. He attended Worcester English High and entered WPI in 1903. After graduating from WPI in 1907 with a degree in Electrical Engineering, he accepted a position with the American Telephone & Telegraph Company, Long Lines Dept., in New York City. He remained with A. T. & T., throughout his working lifetime, until his retirement in 1950. At retirement he was general superintendent of motor vehicles and supplies.

Mr. Quimby was a member of Theta Chi Fraternity. From 1940 to 1947 he was secretary of the Selective Service Board No. 5 for Essex County, N.J. He was a member of the Sons of the American Revolution.

He is survived by his widow, Mrs. Beatrice A. Quimby.

AVERY SMITH, '08

Avery Smith died September 30, 1970, in Kenmore, New York. He was 84 at the time of his death.

Mr. Smith was born in Grafton, Mass., September 14, 1886 and attended Grafton High School. In 1904 he entered WPI and graduated in 1908 with a degree in chemistry.

He was employed as a chemist by Acheson Graphite Co., Niagara Falls, N.Y. In December, 1908, he went to work for E. I. du Pont de Nemours & Co., a career which spanned 43 years.

Mr. Smith was a member of the F. & A.M., the R.A.M. and the American Chemical Society.

JOHN WOODCOCK, '09

John Woodcock, a man who worked 39 years for American Telephone & Telegraph Co., has passed away at the age of 87. He died October 31, 1970 in Andover, N.J.

A native of Leicester, Mass., he attended Worcester South High School before entering WPI in 1904, where he majored in electrical engineering. He was a 32nd degree Mason.

PHILIP C. KNEIL, '11

Philip C. Kneil died Sept. 13, 1971 in Napa, California. He was 83.

Mr. Kneil was born in Ticonderoga, N.Y., on April 24, 1888. After graduating from Saratoga Springs High School, he entered WPI in 1907. In 1911 he received his BS degree in civil engineering.

During his lifetime he served as a draftsman for B. S. Brown; an engineer for Smith & Lovett and later for SMI Engineering. From 1918 to 1919 he was a sergeant for the U.S. Army in France. He held the positions of inspector, fire protection representative, and special agent for the Factory Insurance Association from 1919 until his retirement in 1956.

Mr. Kneil was a member of Tau Beta Pi Scholastic Honorary and the Masonic Order.

He is survived by his daughters, Mrs. Mary Sward of Napa, California and Mrs. Jacob Hotchkiss of Loudonville, N.Y.; a son, Thomas Kneil of Wichita, Kan.; a sister, Miss Caroline Kneil of Dobbs Ferry, N.Y.; and seven grandchildren.

CHARLES L. NEVENS, '12

Charles L. Nevens died May 7, 1971, in Remsen, New York at the age of 81.

Born on December 31, 1889, in Lewiston, Maine, he was graduated from Lewiston High School. He entered WPI in 1908 and received a degree in civil engineering in 1912.

He worked for three years as an inspector for Factory Insurance Association in Hartford, Connecticut. He also worked for 17 years for the Hartford Fire Insurance Co., first as an assistant superintendent-special risk department; and later as a superintendent-special risk department in the Chicago office. At the time of his retirement in 1956, Mr. Nevens was president of the General Underwriters Insurance Agency where he had worked for twenty-four years.

Mr. Nevens belonged to the National Fire Protection Association, the Unitarian Church and the Masons.

NED F. NUTTER, '13

Ned F. Nutter died February 6, 1971 in Truro, Nova Scotia, at the age of 83.

A native of Farmington, N.H., he was born on June 13, 1887 and attended Portland (Maine) High School. He received his degree from WPI in 1913 in civil engineering.

He worked as a draftsman for Chicago & Joliet Electric Co. and as an inspector for Western Union Telegraph Co.

He was a member of Alpha Tau Omega fraternity and was a registered professional engineer in Nova Scotia.

CARL F. FRITCH, '14

Carl F. Fritch, a former construction engineering executive, passed away on June 6, 1971.

He was born June 30, 1892 in Wollaston, Mass. After graduating from Attleboro High School he entered WPI in 1910. Upon receiving his BS in civil engineering in 1914 he accepted a position with the National Fireproofing Company, New York City.

His next employment was with Westinghouse, Church, & Kerr. From 1918 until 1923 he served in the U.S. Navy at the Bureau of Yards & Docks, Navy Dept., Washington, D.C. The Turner Construction Company, New York City, named him purchasing agent and project manager in 1923, positions which he held until 1946. Later he was made president of Federal Constructors, Incorporated, Chicago, Illinois. In 1950 he accepted the presidency of the E. W. Sproul Construction Company, also in Chicago. Prior to his death he was with Pepper Construction Co.

Mr. Fritch was a member of Skull and Tau Beta Pi Scholastic Honorary. He also belonged to Alpha Tau Omega Fraternity.

Among his survivors are his widow, Mrs. Ida Marble Fritch, and two sons, Robert F. Fritch of Palatine, Illinois, and CARL F. FRITCH of the Class of 1940.

EARL VAN VLIET HIGBEE, '15

Earl V. Higbee, 78, retired assistant to the general manager of Stanley Tools, division of the Stanley Works, died August 7, 1971 in Westerley, R.I. after a short illness.

A native of Northampton, Mass., he attended Northampton High School and entered WPI in 1911. He was graduated from Sheffield Scientific School of Yale University in 1915. He worked 40 years for Stanley Tools Co., beginning work on production, engineering and special management assignments for the Stanley Works Hardware division in 1920. In 1925 he was transferred to the engineering department of Stanley Tools, and later that year to a special research department, where he was supervisor for several years. He was later appointed as head of the engineering department and supervisor of maintenance and the tool room. In 1927, he became supervisor of several other factory departments and was named superintendent in 1929 and general superintendent in 1943.

During World War I, he was a second lieutenant in the Signal Corps and Motor Transport Corps, and during World War II was coordinator of Civil Defense for New Britain factories.

A member and one-time president of the Rotary Club, he was also an incorporator of New Britain General Hospital and a member of the YMCA. He had been a member and past director of the Yale Club.

He leaves his wife, Gertrude Kadue Higbee.

CARLTON R. SMITH, '15

Carlton R. Smith died June 5, 1971 in Enfield, Conn.

Born in South Hadley Falls, Mass., on Sept. 23, 1893, he was educated at Technical High, Springfield, and later attended WPI.

During his lifetime he saw service with Adams and Royton, Inc.; D. O'Connell & Sons; and the State Department in Springfield, Mass., where he was a foreman. Later he was with Charles D. Farnsworth, Inc.; Converse Carlisle Coal Co., and the Springfield Coal Co.

Mr. Smith was a member of Phi Sigma Kappa and the Masonic Order.

He is survived by his widow, Mrs. Mildred Lay Smith, and two daughters.

RALPH S. FARNUM, '16

Ralph S. Farnum died April 13, 1971 at the age of 77. Born October 4, 1893 in North Andover, he attended Johnson High School there.

He worked 30 years for U. S. Rubber Co., first in Hartford, Conn. and later in Detroit, Mich. Prior to that he worked for three years as an engineer for John and Stevens Co. in Lowell, Mass., for the Fuller Brush Co. in Hartford, and Reed and Prince Co. in Worcester. He was a sergeant in the U.S. Army and a World War I veteran.

A member of Sigma Phi Epsilon fraternity, he also belonged to the Society of Technical Safety Engineers, the National Safety Council, the American Legion, and the Masons.

THOMAS W. FARNSWORTH, '16

Thomas W. Farnsworth died in October of 1971.

He was born in Brookline, Mass., on August 23, 1891 and later attended the Tilton School, Tilton, N.H. In 1912 he entered WPI and graduated with a BS in Mechanical Engineering in 1916.

During his working life he was associated with Nordyke and Marmon Co., Indianapolis, Ind.; served from 1918 to 1920 in the U.S. Army with Near East Relief in Turkey; and was also employed by the Hartford Machine Screw Co.; Fuller Brush Co.; Sea Sled Corporation; and Bendix Aviation Corp. After retiring from Bendix in 1961 he was with M. G. Steele Co., Rome, N.Y.

Mr. Farnsworth was a member of Alpha Tau Omega, the Hartford Engineers Club, and the Society of Naval Architects and Marine Engineers.

He is survived by his wife, Mrs. Margaret Mowbray Farnsworth and two sons, Thomas Webster and Alpheus Mowbray.

WALFRED A. WALLSTEN, '16

Walfred A. Wallsten, 77, died September 10 in Worcester, Mass.

Born in Worcester on March 1, 1894, he was educated at South High School and graduated from WPI in 1916 with a degree in Civil Engineering. Early in life he was employed by the New York, New Haven & Hartford Railroad and the F. T. Ley Co.

Retiring 12 years ago, he worked 39 years as division engineer for the American Steel and Wire Division, U.S. Steel Corporation, Worcester. He was a World War I Army veteran, having served as a lieutenant in France and Germany in the Engineering Corps.

Mr. Wallsten was a member of the Worcester Tech Old Timers Club; Shrewsbury Finance Committee; and the Morning Star Lodge of Masons from which he received his 50-year medal this year. He was also a member of the Greendale Retired Men's Club of St. Petersburg, Fla., and the Connecticut Valley Shell Club.

He leaves his widow, Mrs. Hildur Park Wallsten; a son, Richard P. Wallsten of Sudbury, Mass.; two daughters, Mrs. Harry Drake of Franklin, Ohio; and Mrs. Wilbert T. Moore, Jr., Shrewsbury, Mass.; a brother, George B. Wallsten and a sister, Mrs. C. R. Lindgren, both of Holden, Mass.; and six grandchildren.

EDWARD L. KRANZ, '18

Edward L. Kranz, 75, died February 10, 1971 in Worcester, where he had lived for 45 years.

Born in Fall River, Mass., he attended B.M.C. Durfee High School there. He graduated in 1914, at which time he entered WPI. He was graduated from the school in 1918 with a degree in civil engineering.

He was a registered professional engineer in Massachusetts. For 42 years he was employed by Eastern Bridge Structural Steel Co., and for the last three years by United Structural Steel Co.

He was a member of First Baptist Church and the Kiwanis Club. He also belonged to Tau Beta Pi and Sigma Xi.

His wife, Mrs. Agnes (Janson) Kranz, died in 1956.

He leaves a son, Donald J. of Wayland, and a brother, Harold P. of Squantum.

ALDEN G. CARLSON, '19

Alden G. Carlson passed away Sept. 28, 1971 in Worcester, Mass., at the age of 73.

He was born in Worcester on July 2, 1898, attended South High School, and graduated from WPI in 1919.

Mr. Carlson was a licensed electrical engineer and had served in various capacities throughout the years with John A. Stevens; Springfield Ornamental Iron Works; Eastern Bridge; and Richard French Iron Works. In 1933 he joined Riley Stoker Corp., Worcester, and remained there as a structural engineer until his retirement. He was a second infantry lieutenant in World War I.

He was a member of Alpha Tau Omega, Tau Beta Pi, Skull, the Masonic Order, the Worcester Engineers Society, and the American Institute of Steel Construction.

ALLEN D. HAMMOND, '19

Allen D. Hammond, 74, died April 29, 1971 after a year's illness.

He was born February 23, 1897 in Brockton, Mass. In 1915 he was graduated from Fairhaven (Mass.) High School, and later that year began his studies at WPI, majoring in electrical engineering.

He served in the U.S. Army in the States and in England during World War I. During his business career he was a cotton salesman for C.O. Foster & Co., New Bedford, Mass. and later as a supervisor for John Hancock Mutual Life Insurance Co. of Boston, retiring from that company in 1957.

He was a member of Lambda Chi Alpha fraternity.

JOHN S. NASON, '21

John S. Nason passed away January 4, 1971 in Otis, Mass. He would have been 73 last February.

Born Feb. 3, 1898 in Westboro, Mass., he attended the Pawling School in N.H. before entering WPI in 1917.

He was associated with the J.S. Nason Co., of Westboro.

Mr. Nason was a member of Phi Sigma Kappa fraternity and was a Mason.

His wife, Alice Broadbent Nason, died in 1952.

EDWARD L. CAMPBELL, '22

Edward L. Campbell, executive, died July 21, 1971 in Guelph, Ontario, Canada at the age of 70.

He was born in Yonkers, N.Y., on March 24, 1901 and attended Westfield, Mass., High School. In 1922 he graduated from WPI with a BS degree in civil engineering.

From 1922 to 1926 he worked as an engineer for the Illinois Division of Highways. In 1966 he retired as President and General Manager of Armco Drainage and Metal Products of Canada, Ltd., after 40 years of service.

Mr. Campbell was a member of Lambda Chi Alpha, the Association of Professional Engineers of Ontario, and the Engineers Club of Toronto. He was past-president of the Guelph Chamber of Commerce, Guelph Rotary Club, Guelph Country Club, Junction Railway Co., and the Corrugated Metal Pipe Institute.

He is survived by his widow, Mrs. Goldie Brierton Campbell; a son, Robert E. Campbell of Toronto; a son, William L. Campbell of New York; daughter, Mrs. Malcolm MacKinnon of Short Hills, N.J.; sisters, Mrs. L. D. Carter of Charlestown, N.H. and Mrs. B. T. Richardson, Goshen, N.H.; and six grandchildren.

GEORGE S. LIEBECK, '23

George S. Liebeck died in DuPage, Ill. on August 23, 1970 at the age of 69. Born in Holyoke, Mass. on April 23, 1901, he attended High School in Springfield, Mass. and Chester (Pa.) High School. He entered WPI in 1919, graduating four years later with a degree in electrical engineering.

For thirty-seven years, Mr. Liebeck worked as an engineer with the American Telephone and Telegraph Co.

Earlier he had taught electrical engineering at the University of Missouri, the University of Minnesota and the University of Nebraska.

He was a member of Sigma Xi.

RUSSELL S. DAVENPORT, '24

It was recently reported that Russell D. Davenport passed away May 27, 1969 in Lexington, Mass., at the age of 67 years.

Born on February 18, 1902, he attended Staunton Military Academy and WPI in later years. He was self-employed as proprietor of Davenport's Garden Center & Flower Shop in Lexington.

Mr. Davenport was a member of Phi Gamma Delta.

ARTHUR G. RAND, '26

Arthur G. Rand, self-employed investment broker, died March 26, 1971 at his home in Wellesley, Mass. He was 68.

A native of Brooklyn, N.Y., he lived in Portsmouth, N.H. 34 years. Graduating from Portsmouth (New Hampshire) High School in 1922, he entered WPI that year.

In addition to ownership of the Arthur Rand Co., he had worked for the Boston Safe Deposit and Trust Co. as a teller, and for Blyth & Co., Inc. and John Calhoun Co. as a salesman.

While at WPI he was a member of Sigma Phi Epsilon fraternity.

Mr. Rand leaves a son, Dr. Arthur G., Jr. of Kingston, R.I.; two daughters, Mrs. Martha Nacke of Holyoke and Mrs. Mary C. Streb of Dobbs Ferry, N.Y.; and nine grandchildren.

HOWARD B. SMITH, '26

Howard B. Smith, once president of The Middletown Savings Bank in Conn. and a man active in civic affairs, died February 4, 1971 in Old Saybrook, Conn. after a long illness. He was 67.

Born in Boston, January 3, 1904, he attended South High School in Worcester. In 1922 he entered WPI, majoring in civil engineering.

He worked with the bank for 22 years and under his guidance the bank's assets grew from $23 million to assets exceeding $112 million at the time of his retirement in 1969. Mr. Smith began as treasurer and chief executive officer of the institution and after four years was elected president and chief executive officer, remaining in that position until his retirement in April, 1969.

He was a leader in the savings bank industry for many years, working as a member of the faculty of the graduate school of banking at Rutgers University for twelve years and later on the faculty of the graduate school of savings banking at Brown University for two years. He belonged to the Savings Banks Association of Connecticut and the National Association of Mutual Savings Banks, serving on several committees.

He lived in Middletown for 22 years, during which time he was active in numerous civic activities. He was president and director of the Northern Middlesex YMCA, general campaign chairman and president of The United Fund, and was a director of Middlesex Memorial Hospital, Middletown Industrial Development Corp. and the Rockfall Corp. He also was a vice president and secretary of the Midstate Regional Planning Agency, serving as one of the original agency officers, and was the first secretary of the Middletown Parking Authority. In 1968 he was named Outstanding Citizen by the Chamber of Commerce for his business leadership, community contributions and humanitarian efforts. He served several terms on the Republican Town Committee and was party candidate for the State Legislature in 1962.

He leaves his widow, Florence B. Smith; a son, H. Morton of Worcester; two brothers, J. Frederick of Arlington, Texas, and Leslie of Tallahassee, Fla., and three grandchildren.

VERNE K. PITFIELD, '27

Verne K. Pitfield, manager of the Newark branch of the Great Western Life Assurance Co. for 24 years, passed away this summer. He was 64.

Born July 9, 1906 in Millis, Mass., he attended Classical High School in Worcester before entering WPI in 1923. He was graduated with the class of 1927 with a degree in civil engineering.

He was a member of Theta Chi fraternity and Sigma Xi.

He leaves his wife, Rose Gallaher Pitfield; two daughters, Mrs. Peter Bayer of Berwyn, Pa. and Miss Marjorie Pitfield of Maplewood, N.J.; two sons, David of Westfield, Mass. and Philip of New York City, and five grandchildren.

EDWARD S. COURVILLE, '29

Edward S. Courville, 65, passed away September 1, 1971 in Torrington, Conn.

He was born October 27, 1905 in Cambridge, Mass., and attended North High School, Worcester. After graduating from WPI in 1929 with a degree in mechanical engineering, he went with the Hendey Machine Company for two years.

In 1931 he joined Torrington Company, retiring as plant manager of the Excelsior plant in 1970 after 40 years of service.

Mr. Courville was a member of the B. P.O.E., City Club, and Litchfield County Engineers Club.

He leaves his widow, Mrs. Irene Lemire Courville; two brothers, Charles and William Courville; a sister, Mrs. Charles Casey, all of Worcester, Mass., and several nieces and nephews.

J. HOWARD GERMAIN, '29

J. Howard Germain, vice president of Johnson & Higgins, New York City, died October 7, 1971.

He was born on August 13, 1906 in Worcester, Mass. He attended South High School and graduated from WPI in 1929 with a degree in Mechanical Engineering.

After serving as assistant manager of the Factory Insurance Association, he became associated with Johnson & Higgins in 1955, a firm for which he was an executive at the time of his death.

Mr. Germain was a member of Sigma Alpha Epsilon. He was the brother of JOHN E. GERMAIN, '38.

OLIVER B. MERRILL, '31

Oliver B. Merrill, manufacturer, passed away on September 3, 1971 at South Hampton, N.H. He was 61.

He was born Nov. 27, 1909 in Amesbury, Mass., and attended Amesbury High School. After receiving his Mechanical Engineering Degree from WPI in 1931, he was employed by the Bailey Co., where by 1946 he was advanced to the position of assistant chief engineer. At the time of his death he was president and treasurer of Warren Manufacturing Corporation, Newfields, N.H. He was also a founder of Warren Corp. which manufactures parts for automobiles.

Mr. Merrill was a member of Warren Lodge, A. F. & A. M., the South Hampton Planning Board, and Sigma Phi Epsilon. He was an antique car enthusiast, past president of the Profile Automobile League of New Hampshire, and a member of the Rolls Royce Owners Club.

Besides his wife, Margaret O'Neil Merrill, he leaves a son, John W. Merrill, South Hampton; a daughter, Miss Amanda A. Merrill, South Hampton; two sisters, Mrs. David C. Bailey, Amesbury and Mrs. William B. Walker, Northboro, Mass.; two grandsons and several nieces and nephews.

ESTUS B. HOWARD, '32

Estus B. Howard died on April 18, 1971. He was 60 years old.

Born on December 8, 1910 in Worcester, Mass., he attended Grafton, Mass., High School and WPI. After holding several jobs as a foreman in the Worcester area, he moved to Florida in the 1940's and became secretary-treasurer of the Waverly Growers Co-operative, one of the largest individual co-operatives in the United States.

FREDERICK F. WHITE, JR., '40

Frederick F. White, a research chemist with the electrochemicals department of the E. I. du Pont de Nemours Co., died March 28, 1971 in Niagara Falls, N.Y. He was 52.

A native of Aberdeen, Mississippi, he attended Aberdeen High School. He was graduated from high school in 1937 and from WPI in 1940 with a degree in electrical engineering. He later did graduate work at the University of Buffalo and Pennsylvania.

He began work for du Pont in 1945 after serving in the Army Air Corps in which he had been a pilot from 1940. Before the war he worked for Virginia Electric & Power Co. in Richmond, Va. as a distribution engineer.

He was a member of the American Institute of Electrical Engineers, the Research Society of America and the Delaware Astronomical Society. He was a brother of Alpha Tau Omega fraternity.

Surviving are his widow, Mrs. Marion White; a son, Hudson of Toronto; a daughter, Bowden Lou; a brother, Arthur H. of New Mexico; and his mother, Mrs. Judson Chastain of Grenada, Miss.

JOHN N. WHOLEAN, '44

Word has been received of the death of John N. Wholean who died at the age of 49 in Wisc. on October 17, 1970.

Born June 7, 1921, he was a native of Springfield, Mass. and graduated from Monson (Mass.) Academy before entering WPI. He was graduated from WPI in 1947 with a degree in mechanical engineering. While here, his activities included participation in intramural swimming and in the Nautical Association.

He served with the United States Naval Reserve from 1942 to 1946 and rose to the rank of Quartermaster 2/c. He was later employed by The Torrington Co., Bearing Divisions, Milwaukee, Wis.

He was a member of Phi Sigma Kappa fraternity and Skull.

RICHARD E. CAVANAUGH, '52

Richard E. Cavanaugh, vice-president in charge of contracts for San-Vel Concrete Corp. in Littleton, Mass., died Feb. 15, 1971 in Concord, Mass. after a brief illness. He was 40 years old at the time of his death.

A native of Ware, Mass., he was president of his senior class at Palmer High School in Palmer, Mass. before entering WPI in 1948. A graduate of the class of 1952, he majored in civil engineering and was a member of Phi Kappa Theta fraternity and Pi Delta Epsilon. While at WPI he joined the Tech News, the Newman Club, and the Orchestra and Band and was also a student member of the American Society of Civil Engineers.

He was a registered professional engineer in Massachusetts and Iowa and was a member of the American Society of Civil Engineers. He was a director of the American Concrete Institute, chairman of the Fire Rating Committee of the American Concrete Institute, a member of the Fire Rating Committee of the Pre-Stressed Concrete Institute, and treasurer of the Pre-Stressed Concrete Association of New England. Active in civic affairs, he was a charter member of the Littleton Rotary Club, a member of the Littleton Permanent School Building Committee and member and past chairman of the Littleton School Planning Committee.

He leaves his widow, Madeline Guenther Cavanaugh of Palmer, Mass.; two sons, Garrett T. P. who entered WPI in the fall of 1971, and Richard E. Cavanaugh, Jr., both of Littleton.

YOUR CLASS AND OTHERS

These class notes are based on information received in the Alumni Office up to November 10, 1971.

1896

CLIFFORD RAYMOND HARRIS of the Class of 1896 has reached a goal that most of us can only dream about. On October 12, 1971, "Hink" as he is known by his friends celebrated his 100th birthday.

In order to reach this goal he admits that he had a number of factors in his favor. First he was fortunate to have "chosen" long-lived grandparents. He also decided early in life not to tempt fate — he neither smokes nor drinks.

"Hink", who has been a resident of Walnut Creek, Calif., since 1950, was born in 1871 in York, Nebraska. A few years prior to his birth his father had gone to Nebraska to survey and help lay out that state and had subsequently decided to settle there.

The family moved to New Hampshire when Harris was still a youngster. Later he graduated from high school in Clinton, Mass. Following graduation he worked as a clerk for a time. He then entered Worcester Polytechnic Institute where he was awarded a degree in Mechanical Engineering in 1896.

Soon after graduation he helped to build locomotives in Philadelphia, Pa. Later he taught at WPI for several years. Worcester was then truly his home. In the following years he held a series of jobs in the Worcester area.

After his teaching stint he took a job as chief draftsman for the Standard Plunger Elevator Co. and then served as an inspector for American Car and Foundry. His next Worcester position was with Ralph Morgan, the first manufacturer of three-ton trucks. While at the latter post he suffered an injury that led to his moving to a 150-acre farm in Millbury, Mass. There for 41 years he raised peach crops and Holstein cattle.

During his Millbury residence, "Hink" served as town moderator for five years. Finally, in 1950, he sold his Millbury farm and moved to California to be nearer his family. His wife of 59 years, the former Anna Brown, died at the age of 87 in 1959.

Today he lives in his own quarters at the home of his daughter, Mrs. Bess MacKamey of Walnut Creek. His son, JOSEPH P. HARRIS, '27, lives in Los Angeles.

Harris still leads an active life. A member of his local senior citizens' club, he participated in trips to Alaska, Hawaii, and Mexico while in his 90's. Although a recent fall has left him with limited walking ability, he continues to participate in the club's meetings and card games. His fellow members often mention the many favors that their good friend "Hink" has done for them through the years.

CLIFFORD RAYMOND HARRIS at the age of 100 years has a motto that others might do well to follow. After the many changes that he has seen during his lifetime he says, "I don't worry much about things now."

1907

DONALD H. MACE is currently residing in Sarasota, Florida.

1912

HARRISON G. BROWN writes that classmate HARLAND STUART (and Mrs. Stuart) became great grandparents in July. Harl is now a deacon and member of the building committee of his church. He also keeps in good physical condition repairing concrete walks for his neighbors. . . F. HOLMAN WARING was named as honorary member of the Water Pollution Control Federation in October. The honor came in recognition of his notable career as a sanitary engineer for the State of Ohio for 35 years. A life member of the Water Pollution Control Federation, in 1960 he received the Federation's Charles Alvin Emerson Medal for outstanding service to the field.

1927

ELLSWORTH B. CARPENTER reports that he is retired but does see part-time duty as Vice President and Director of Utility Service & Maintenance, Inc. in Clayton, Mo. . . DONALD DODKIN is retired and living in Eastham, Maine.

1928

JOSEPH F. EMONDS has been ill for several months and would greatly appreciate hearing from his classmates. His address is: Laurec Manor Rest Home, Chestnut Street, Manchester, Conn. 06040. . . FREDERICK H. KNIGHT, vice president, secretary and corporate counsel of Corning Glass Works, retired on October 6th. He will continue to serve as corporation consultant. Prior to accepting his position with Corning he was a test engineer for General Electric Company and also a patent examiner with the U.S. Patent Office in Washington, D.C. A graduate of George Washington University Law School, he has been admitted to practice before the United States Courts for the District of Columbia, the Supreme Court of the United States, the U.S. Court of Customs and Patent Appeals, and the U.S. Patent Office. . . Laconia, N.H., is the address of WALTON P. LEWIS, who is now a real estate agent for Eagles Mere Realty in Gilford, N.H.

1929

Congratulations to the WAYNE S. BERRYS who have been awarded the Teddy Roosevelt award for 1971 for their long and devoted volunteer service at the Nassau County Medical Center in East Meadow, N.Y. They received the award prior to their moving to Spring Hill, Florida . . . HALBERT E. PIERCE, JR., Director of Planning for New England Power Planning, West Springfield, Mass., now lives on Bayberry Lane, in West Millbury, Mass.

1930

Having retired from his position with the Atlantic-Richfield Co., NORMAN A. BUTTERFIELD now resides in Mexico, N.Y. . . After retiring from the General Electric Co., in Bloomington, Ind., JOHN E. LAMPRON has moved to West Springfield, Mass.

1931

TRUEMAN L. SANDERSON has retired after serving 37 years with the New England Telephone and Telegraph Co.

1932

Living in Cromwell, Conn., is HENRY E. CARLSON, who is a sales associate with Kimball Associates of Hartford.

1933

FRANK F. DODGE reports that he is consulting actuary and vice president of Nelson & Warren, Inc., of Chicago. . . We have learned from J. ROY DRISCOLL that he has retired from the U.S. Steel Corp., following 37 years of service. . . Recently named manager of the Metropolitan District Commission is GILBERT U. GUSTAFSON of West Hartford, Conn. A past president of the Connecticut Society of Civil Engineers, he received the organization's H. Jackson Tippet Award in 1969 for extraordinary service to the engineering profession. He is a fellow of the American Society of Civil Engineers and author of numerous papers presented before engineering groups and service clubs. . . In September ARTHUR E. SMITH was named executive committee chairman of United Aircraft Corp.

1936

The vice president and general manager of Armour-Porter Co., Inc., JOHN A. PORTER, now makes his home in Shrewsbury, Mass. . . GEORGE P. WOOD writes that he is staff manufacturing engineer for Homelite Division-Textron, Inc., Gastonia, N.C.

1937

It was recently announced that FRANCIS S. HARVEY was one of seven persons appointed to membership on the new advisory committee for the Newman Division of the Department of Education of the Roman Catholic Diocese of Worcester. The committee will assist in developing channels of communication and cooperation in educational matters between the colleges and universities in Worcester County and the diocese. . . TALBOT F. WENTWORTH is senior vice president of the Federal Compress & Warehouse Co., in Memphis, Tenn.

1938

The newly elected chairman of the WPI Alumni Fund is RICHARD F. BURKE, JR., of Worcester. He will direct the solicitation of alumni contributions to the college during the academic year.

1939

RICHARD B. WILSON reports that he is principal at the Bill Reaser Co. in Newport Beach, Calif.

1940

The University of Connecticut at Storrs employs DR. RONALD S. BRAND as a professor of mechanical engineering and head of the department. He resides in Eastford. . . MARCUS A. RHODES, JR., won his sixth term on the Taunton, Mass., School Committee in the November election. He is assistant manager and treasurer of M. M. Rhodes & Sons, Inc., serves as a director of the United Fund, and as vice president of the Old Colony Historical Society. Mr. Rhodes is also completing his second two-year term on the Bristol-Plymouth Regional Vocational Technical School Committee.

1941

After years of service as chief engineer with the American Forces Network-Berlin, MARVIN HANDLEMAN has retired and is living in Berlin, Germany. . . The Port Authority of Allegheny County, Pittsburgh, Pa., employs LESLIE B. HARDING as assistant project engineer. Leslie currently resides in Mt. Lebanon, Pa. . . JOSEPH W. WHITAKER, JR., regional product manager for the Heald Division, Cincinnati Milacron Co., has moved to Troy, Mich.

1942

In residence at Long Beach, Calif., is PAUL C. YANKAUSKAS, who is now self-employed as a consultant.

1943

We have learned from COLIN H. HANDFORTH that he is now Director of Practice Development for Stevens, Thompson & Runyon, Portland, Oregon. . . VICTOR E. KOHMAN has been named a member of the programming staff at American Telephone and Telegraph, New York City. His home is in Verona, N.J. . . Torngren Co., Billerica, Mass., employs RAYMOND H. MATTHEWS, manager of engineers. He lives in Beverly.

1944

CHESTER W. AMBLER, JR., who resides in Doylestown, Pa., is serving as Director of Sales Engineering with the Pennsylvania-Pacific Corp. . . LEE G. CORDIER, JR., has three students in his family. His daughter, Barbara, is a junior at the University of California; son, Lee, a freshman at Arizona State University; and daughter, Carol, a junior high student in Sacramento, Calif. Lee is Manager of Engineering for Campbell Soup's West Coast plants.

1945

Dorr-Oliver, Inc., of Stamford, Conn., has a new vice president of marketing in HAROLD FLEIT who recently moved from Wisconsin to Fairfield, Conn. . . PAUL N. KOKULIS is a partner in the law firm of Cushman, Darby & Cushman, which now has its offices at 1801 K Street, N. W., Washington, D.C. . . The senior development specialist for E. I. du Pont, Heat Transfer Products, Newport, Del. is HARRY W. SANDBERG. . . It has been reported that ALBERT P. TALBOYS is again in the United States after having spent some time in Peru. He is with the Office of International Health, OS, DHEW, Washington, D.C.

1946

DR. JOHN LOTT BROWN, professor of psychology and visual science at the University of Rochester, has been appointed Director of the Center for Visual Science. The new director is a leading authority on problems in visual perception during space flights and on color vision and is the author of over 70 papers on physical, physiological, and psychological aspects of color and light. The Center which he now heads is one of the few in the world dedicated primarily to basic research and graduate and post-graduate training in the visual sciences. . . Vice president of AATO Inc., Manchester, N.H., is DONALD A. FERGUSON, who makes his home in Bedford, N.H. . . DR. ROBERT B. HAYWARD is a registered representative for DeHaven & Townsend, Crouter & Bodine, Philadelphia, Pa. He resides in Ardmore, Pa. . . HAROLD L. SCHIMMACK has moved to Alexandria, Va. He is director of the Regional Operations Division at the Health, Education and Welfare Office in Washington, D.C.

1947

VINCENT A. ZIKE has a position as product line engineer with The Stanley Works, strapping systems division, New Britain, Conn. Plainville is his home.

1948

ALFRED D. RIGGS, JR., accounts representative for Wyman Gordon Co., has moved to Auburn, Mass. . . STURGIS A. SOBIN won his first full term as Mayor of Ansonia, Conn., in November. Prior to his election the candidate said, "I know that much has been accomplished under this Republican administration, much is in progress and there is still more to do in the coming two years." Sobin was a member of the Board of Selectmen before he was elected to the Board of Aldermen in 1969. He served as chairman of the aldermanic education committee. He is a self-employed antiques dealer and restorer, is married and has five children. . . DR. ALBERT H. SOLOWAY, professor of medicinal chemistry at Northeastern University, has been awarded three separate research grants totaling $91,948. "Boron Protein for Chemo-Radiotherapy of Tumors" is his most recent grant. It was awarded by the Department of Health, Education, and Welfare, National Cancer Institute. Dr. Soloway said that he and his colleagues "are trying to make certain boron compounds that will localize in brain tumor cells without destroying normal brain tissue." The second grant, also from HEW, is entitled "Chemical Inhibitors of Plaque and Calculus". The major objective of this research is to find chemicals that could be attached to the tooth surface and would prevent accumulation of plaque and tartar. The third research project, now in its fourth year, is "Metabolic Implications in Hyperbaric Systems", the object of which is to determine how oxygen is metabolized normally. . . ELIOT Z. BLOCK serves as a technical systems engineer for Computer Sciences Canada, Ltd., Montreal, Que.

1949

Now located in San Francisco, Cal., WILLSON C. APPLEGATE is manager of Ground Safety for United Air Lines. . . Adar Associates, Inc., of Cambridge, Mass., has named FRANCIS J. BIGDA as marketing manager. Lynnfield is his home. . . LEONARD W. FISH was made vice presi-

dent at the American Gas Association, Inc., in August. He also retains his title of Director, Planning... Holden resident ROBERT N. GOWING was recently appointed director of commercial sales for the New England Electric System, Westboro, Mass. Prior to his promotion he was division sales manager in Worcester, a post he held since 1968... Employed as a supervisory aerospace engineer by the Electronic Systems Division of the U.S. Air Force, Hanscom Field, Bedford, Mass., WILLIAM A. JACQUES makes his home in Newcastle, Maine... ELZEAR J. LEMIEUX is currently manager of the vessel analytical division of M. W. Kellogg Co., Houston, Tex... DONALD R. SANDERS is associated with Scientific Components, Inc., of Linden, N.J... Vice president of Rotron, Inc., Woodstock, N.Y., is WILLIAM G. SLOANE.

1950

Serving as vice president of marketing for Southern States, Inc. (Division of Gulton Industries, Inc.), is ROBERT I. CARLSON of Decatur, Ga... GEORGE E. ENGMAN is director of engineering for Dynarad, Inc., Norwood, Mass... Vice president of Litton Industries, Inc., ROBERT F. STEWART, has moved to Simsbury, Ct.

1951

MIT employs BRUCE M. BAILEY as chief mechanical engineer in the Lab. for Nuclear Science, Cambridge, Mass... H. STUART DODGE is currently manager-product assurance division, Analog Technology Corp., Pasadena, Calif. His residence is in La Canada... Project engineer for H. H. Scott, Inc., Maynard, Mass., is AXEL W. LINDER, JR.

1952

Norton Co., Worcester, recently announced that STANLEY I. BERMAN has been elected to the new position of vice president, manufacturing, abrasive operations. The new vice president will also remain vice president, manufacturing, for Norton International Inc., a company subsidiary. His latest responsibility will be to coordinate engineering and manufacturing at more than 30 Norton abrasive facilities in the U.S. and in 16 foreign countries... JOHN EDWARD FELDSINE, JR., is an assistant professor of chemistry at Broome Community College, Binghamton, N.Y... FRANK L. FLOOD has been named chief estimator for Dravo Corporation's Eastern Construction Division. The Division which he now helps head engages in a variety of heavy construction and excavation projects including dams, bridges, dock and port facilities, and shafts and tunnels throughout the eastern portion of North America and overseas... Production manager for American Cyanamid, Linden, N.J., is STUART R. HATHAWAY... In June ALLAN J. ROWE received his master of science degree (EE) from Northeastern University's Graduate School of Engineering. Allan, a nine-year employee of Raytheon Co., Bedford, where he is principal engineer, lives in Burlington with his wife, Anna, and their SIX children... CHARLES W. THROWER is sales engineer for Ingersoll-Rand Co., Wellesley, Mass... Martin Marietta Corp., San Francisco, Cal., employs ROBERT A. MEYER, operations chief for sprint flight test.

1953

Purer New England waterways may yet become a reality if plans set in motion by VYTO L. ANDRELIUNAS prove successful. As assistant chief of operations for the New England Division U.S. Army Corps of Engineers, he has been charged with issuing permits for the discharge of industrial waste into rivers. The Corps has estimated that there are approximately 4,000 industries in the six-state region with about 2,300 being expected to file for permits under the Rivers and Harbors Act of 1899... Eckel Industries, Inc., of Cambridge, has announced the promotion of JOHN W. FLOOD to the position of Manager, Eckoustic Division. The new division manager will be responsible for coordinating the research, engineering and development, and sales of the company's line of noise control products and systems, and acoustic research and testing enclosures... KENDALL F. FORSBERG, systems engineer for the Connecticut Bank & Trust Co., has the following business address — 1 Constitution Plaza, Hartford, Ct... Residing in Sacramento, Calif., is BUD E. FRANDEN, who is a member of the technical staff of TRW Systems... JOHN E. FLYNN reports that he is General Manufacturing Superintendent for Monsanto Co., Kenilworth, N.J... The past president of the Worcester Chapter of the WPI Alumni Association, FRANCIS W. MADIGAN, JR., has been elected president of the Associated General Contractors of Massachusetts. He also serves as president of the Worcester General Building Contractors Association.

1954

CARL A. HAMMAR is Field Engineer for Pratt & Whitney Aircraft, East Hartford, Ct., and lives in Yardley, Pa... One of the executives graduated from the Motorola Executive Institute, Oracle, Arizona, was THEODORE J. JAROS, who is manager of international operations support with Motorola in Phoenix. The purpose of the one-month development course is to provide the top quality managers needed to assure long term growth for the widely diversified electronics firm... Raytheon Co., Missile Systems Division, of Bedford, Mass., employs GARY A. KUNKEL as staff engineer... WESLEY D. WHEELER is a naval architect and marine engineer as well as coordinator of technical studies employed by Plaza De La Victoria of Cadiz, Spain... WILLIAM H. HILLS of Satellite Beach, Fla., is the president of Hills Research & Development, Inc., of Melbourne.

1955

The president of Donald Grenier Associates, Inc., New York City, is DONALD J. GRENIER who resides in Carmel... RICHARD L. GOLDMAN is an engineering specialist with Philco-Ford Corp., Sierra Electronics Operation, Menlo Park, Calif... Professor ROBERT W. HOLDEN, who teaches at Grossmont College, El Cajon, Calif., makes his home in San Diego... JOHN K. HANKS works as program manager for Dynamics Research Corp., Wilmington, Mass., and makes his home in Hudson, N.H... Massachusetts Electric Company has appointed FRANCIS J. HORAN, JR., division sales manager-commercial at its Worcester operations center. The new sales manager lives in Shrewsbury, Mass... Not only is ARTHUR W. RUDMAN a mathematics teacher in the Rockland, Maine, District High School, he also serves as head football and track coach.

Born: To PROF. and MRS. ROBERT J. SCHULTZ, a son, John Joseph, on October 30, 1971. Dr. Schultz is a professor in the C. E. Department at Oregon State University, Corvallis, Oregon.

1956

Now living in Houston, Texas, JOHN F. BURNS is national accounts manager for Shell Chemical Co... ARNOLD M. HALL, vice president, engineering for Transportation Technology, Inc., Pawcatuck, Ct., has moved from Irving, Texas, to Bristol, R.I... Employed as sales manager for Homewood High & Dry Marina, Homewood, Calif., JOHN L. HYDE now lives in Tahoe City... The manager of the Memory Systems Dept. for INTEL Corp., Mountain View, Calif., is WILLIAM F. JORDAN, JR... It was recently announced that WILLIAM P. PETERSON has been elected president of Case and Company, Inc., Chicago, Illinois. Prior to becoming president of the management consulting firm he saw twelve years of experience in management information systems, financial planning, and control systems, organizational analysis, and research and engineering management systems... DR. JOHN A. TAYLOR, assistant professor of physics, Otterbein College, Westerville, Ohio, is spending a sabbatical quarter at the University of Washington. While on sabbatical he is class-testing parts three and four of his physics problems book which will be published by Addison-Wesley.

1957

CROSBY L. ADAMS has the position of traffic engineer with Wilbur Smith & Associates, Columbia, S.C. . . RICHARD G. BEDARD is now director of instructional media for the City of Worcester Public School System. . . The director of marketing for Bergman Mfg. Co., JOHN W. BRALEY, has moved from San Rafael, Calif., to Richardson, Texas. His company headquarters are currently located ir Garland. . . JOHN M. HOBAN is with Honeywell, Inc., Bala Cynwyd, Pa. . . It has been reported that ALEX C. PAPAIOANNOU has been appointed marketing manager, Food Industry, for Masoneilan International, Inc., Norwood, Mass. The new manager will be responsible for the company's marketing efforts to the food processing industries. He is an active member of the Food Industries Division, Instrument Society of America, and is currently serving as Program Chairman for the Division's national meeting in Chicago. . . COLLINS M. POMEROY is a systems planning engineer for New England Telephone in Boston.

Married: MICHAEL SPIEGEL to Miss Sara Valborg Swanberg of Sandy Hook, Conn., on August 8, 1971. Michael is self-employed and raises quarter horses and Appaloosas which he breeds, trains and shows.

1958

Microsystems International Ltd. of Ottawa, Canada, employs JOSEPH L. CHENAIL as product manager. . . DAVID S. CRIMMINS, Sc.D., has joined the Smith Kline Surgical Specialties Department of Smith Kline & French Laboratories as manager of manufacturing and product development. Prior to accepting his present position he was manager of advanced manufacturing engineering for Colt Industries and research manager for the Emhart Corporation. He also served as a faculty member at the University of Denver and Northwestern University Dental School. Among the societies to which he belongs are the American Society for Metals, American Chemical Society, American Institute for Metallurgical Engineers and American Society for Testing Materials. . . Director of Countermeasures and Electronics for Tracor Inc., Austin, Texas, is EDWARD C. FRASER, PhD. . . LCDR EDWARD L. GALAVOTTI is now stationed at Fort George G. Meade, Md. . . WILLIAM F. GESS has been promoted to manager, sonar signal processing, heavy military electronics systems at General Electric Co., Syracuse, N.Y. He resides in Liverpool. . . In August JOSEPH B. GILL was elected to the position of executive vice president by the board of directors at C.E.M. Co., Inc., Danielson, Conn. Previously he served as vice president of the sales division for Kaydon Division Keene Corp., Mich., and had held various sales and engineering positions at the Fafnir Bearing Co., New Britain, Conn. His residence is in East Greenwich, R.I. . . JACK L. GORR is presently employed as a senior systems analyst at Pratt & Whitney, East Hartford, Conn. He received his MS degree in business management from Rensselaer Polytechnic Institute, Troy, N.Y., in June of 1971. . . . Sylvania Electric Products, Needham, Mass., employs ROBERT LAPLUME as an engineering specialist. . . Serving as senior field engineer for the General Electric Co., Cordova, Ill., is ROBERT H. MACGILLIVRAY who makes his home in Bettendorf, Iowa.

JOAQUIM S. S. RIBEIRO has been elected vice president and treasurer of Jamesbury Corp., Worcester, Mass. He will be responsible for all finance and administration functions of the corporation. In Worcester he is president of the Society for the Advancement of Management, a member of the Board of Managers of the Visiting Nurse Association, and a member of the Young Businessmen's Association. He also is president of the Princeton, Mass., Taxpayers' Association and chairman of the Wachusett Regional School Planning Board. . . Ross Europa, a Division of the Ross Operating Valve Company of Detroit, Mich., has appointed WALTER VEITH to the position of Technical Director in charge of research and development, production, engineering, drafting and patent surveillance, with headquarters in the Frankfurt, Germany area.

1959

Now living in Moreland Hills, Ohio, is BURNHAM H. BAKER, who is director of planning for the Addressograph-Multigraph Corp. of Cleveland. . . CHARLES N. CONIARIS, JR., has the position of civil engineer with Saelectric Transmission Corp., New York City. He lives in Jackson Heights . . . CLIFFORD H. DAW, JR., assistant bridge engineer with the State of California Division of Highways — Bridge Department, resides in Dublin, Calif.

Married: DONALD R. FERRARI to Miss Lorraine Marie Marmonti, of Waltham, Mass., on July 17, 1971. Donald is head coach of football and baseball at Athol, Mass., High School. . . Assistant trust officer at the Broward National Bank, Fort Lauderdale, Fla., is MARSHALL P. KRUPNICK, who makes his home in Hollywood. . . ROBERT B. PALMER is a self-employed programmer-360 who works from his residence in Chatham, Mass. . . Now residing in Seekonk, Mass., ALEXANDER L. PRATT serves as project engineer for the Grinnell Corp. of Providence, R.I.

Born: To Mr. and Mrs. DOUGLAS R. WILLOUGHBY, their third child and first daughter, Janine Lynn, on July 14, 1970. Doug is a development engineer at the IBM Systems Development Laboratory, Poughkeepsie, N.Y.

1960

PAUL W. BAYLISS of Omaha, Nebraska is assistant manager, industrial engineering for Western Electric Co. . . DAVID R. GEOFFROY, senior design engineer for Coppus Engineering Co., Worcester, Mass., has recently moved from Auburn to Princeton. . . Teaching science and mathematics at Weymouth, Mass., High School is JOHN R. HAAVISTO. . . Residing in Williamsville, N.Y., CARL H. KARLSSON serves as process project engineer at the Union Carbide Corp., Tonawanda. . . SANG KI LEE is with the Patent Dept., Xerox Corp., Rochester, N.Y. . . On sabbatical until September 1972, EDWARD E. LINDBERG, director of the computer center at Western New England College, will be completing his requirements for a PhD degree in applied mechanics at the University of Connecticut. He is a member of the American Society of Mechanical Engineers, the American Society for Engineering Education, and the Analog/Hybrid Computer Educational Users Group. His residence is in Springfield, Mass., home of Western New England College.

WALTER S. LUND, owner of Lutronix, a consulting organization specializing in electronics, is also senior engineer and supervisor of engineering research in support of high-energy physics at Yale University, New Haven, Conn. . . Now located in Cockeysville, Md., ANDREW R. MILLS serves in a marketing capacity for AA1 Corp., of Baltimore. . . CHRIS F. NILSEN is associate professor of mechanical engineering at Rochester Institute of Technology, Rochester, N.Y. He lives in E. Lansing, Mich., and is on leave from RIT for two years, during which time he will work toward his PhD. . . WILLIAM R. NIMEE of Framingham, Mass., was recently promoted to the rank of Commander, USNR. He received the commission via the NROTC program at Holy Cross College, Worcester, Mass. Bill is regional sales manager for Cambridge Memories, Inc., of Newtonville. . . DR. ROBERT K. ROSENBERG is a self-employed dentist practicing in McLean, Va. . . Employed by the U.S. Army as a test engineer, THOMAS R. SOKOLOWSKI serves at Ft. Belvoir, Va. . . JOHN E. VANDERSEA is development engineer for IBM Corp., East Fishkill Facility, Hopewell Jct., N.Y. He lives in Poughkeepsie. . . Working as a product support specialist for Information Instruments, Inc., Ann Arbor, Mich., is PETER S. ZILKO who also makes his home in Ann Arbor.

1961

Born: To Mr. and Mrs. ALLAN P. SHERMAN, a second son, David M. Sher-

man, on October 6, 1970. Allan is still with Hewlett-Packard Co., Waltham, Mass. . . The 1970 recipient of the Jesse H. Neal Editorial Achievement Award was RICHARD T. DAVIS, Associate Editor of *Microwaves Magazine*. He was presented the award, given annually by the American Business Press, in recognition of his report: *ECM: Electronic Countermeasures*. . . LARRY ISRAEL and his associates have formed a new company, Visualtek, which is concerned with the manufacture and selling of closed-circuit TV systems designed to be placed on a table to help the visually handicapped to read and write. Larry is president of the firm which is located in Santa Monica, California. . . Employed by the American Tel. & Tel. Co., New York City, as assistant engineering manager is JOSEPH J. JANIK, a resident of Morristown, N.J. . . ALLEN L. JOHNSON holds the position of project engineer with the National Cash Register Co., Ithaca, N.Y. . . Sales engineer for the General Electric Co., Bloomfield, N.J., is GERALD E. KUKLEWICZ. His home is in Point Pleasant. . . The Conographic Corp., Woburn, Mass., employs FRANK MARRA as sales manager. Frank lives in Stoneham. . . THOMAS E. POSTMA is with Delco Electronics, Division of General Motors Corp., Milwaukee, Wisc. He, his wife, and their year-and-a-half old son, Michael Thomas, make Oak Creek their home. . . DAVID W. PROSSER writes that he is senior engineer for the New York State Department of Environmental Conservation, Syracuse, N.Y. . . PAUL S. SLEDZIK has been named manufacturing manager in the voltage regulator business section of General Electric's commercial distribution transformer department in Pittsfield, Mass. Prior to his appointment he was manager of shop operations in GE's speed variator department in Erie, Pa. . . Triangle Conduit & Cable Co. of New Brunswick, N.J. employs KENNETH J. VIRKUS, chief chemist. . . ROBERT R. HALE has been made engineering manager of the Hanovia Lamp Division of Compact Arc., Princeton Jct., New Jersey.

1962

LAURENT A. BEAUREGARD resides in Santa Monica, California, and is an assistant professor in the philosophy department at the University of California in Los Angeles. . . Serving as a pediatrician at Fort Benning, Ga., is DR. CHARLES F. BELANGER, JR., who lives in Columbus. . . DR. KEYREN H. COTTER, JR., has the position of chairman of the board and president of Western Financial Center, Ltd., Long Beach, California. Granada Hills is his home. . . The regional sales manager of Torin Corp., Torrington, Conn., is JERALD NORTON HAMERNICK. . . RALPH G. JOHANSON is project manager and sanitary engineer for G. Reynold Watkins (Consulting Engineers), Lexington, Ky. . . RICHARD P. LAJEUNESSE, who is employed by General Radio Co., Chicago, Ill., serves as a regional product specialist. . . KENNETH J. LaLIBERTE has moved from Pittsford, N.Y., to Medina, Ohio. . . Since receiving his MSCE at Stanford in June 1971, LCDR BRIAN J. O'CONNELL has been assigned to the Seabees at Port Hueneme, California. . . Recently transferred to Hartford, Conn., was THOMAS S. STARON, JR., who is chemical engineering supervisor for the Factory Insurance Association. His residence is in Glastonbury. . . CAPT. JOHN R. TUFANO, who received his MA degree in government and international relations from the University of Notre Dame in May of 1971, has currently been assigned to the faculty of that university's ROTC detachment. . . The Long Island Lighting Co., Hicksville, N.Y., employs WILLIAM J. TUNNEY in the capacity of nuclear physicist. Bellport is home. . . ROBERT H. YORK of Concord, California, is a soil engineer with Gribaldo Jones & Assoc. . . JOSEPH W. FITZPATRICK, JR., who resides in Wilton, Conn., is the vice president and treasurer of Wiltek Corp., which is also located in Wilton.

1963

Married: RICHARD M. ROBBINS to Miss Mary Virginia Salce of Shelton, Conn., on May 23, 1971.

CAPTAIN RICHARD B. ALLEN accepted the command of Headquarters Company, U.S. Army Garrison, Ft. Detrick, Md., on May 26, 1971. Prior to coming to Ft. Detrick he was assigned to Headquarters, 6th U.S. Army at the Presidio of San Francisco, California. . . Now residing in Liverpool, N.Y., ROBERT K. ASANOMA is employed as assistant civil engineer at the New York State Department of Transportation in Syracuse. . . STUART D. BATSTONE, director of admissions at Barrington College, Barrington, R.I., recently received the Master of Divinity degree from Trinity Evangelical Divinity School, Deerfield, Illinois. Besides his college responsibilities, he is active in community activities and has served on the Board of the New England Young People's Conference, was a founding member and general chairman of the Midwest Young Adult Conference and the Northside Chicago Young People's Council. At one time he was also youth director of the Arlington Countryside Chapel, Arlington Heights, Illinois. . . Officials of Crescent Insulated Wire & Cable Co., Inc., have announced the appointment of MARCEL H. CLAVIEN to the position of Manager of Marketing for the company's rubber and plastic product lines. The new manager's duties will include the administration of sales representatives, as well as new product planning and market development for expanded activity in his department. For the past two years Clavien was sales manager for Taft Electrosystems, Inc. . . STEPHEN D. DONAHUE, JR., is acting Council representative of the Cincinnati, Ohio, chapter of the WPI Alumni Association. . . Project manager for The Badger Co., Inc., Cambridge, Mass., is ROGER D. FLOOD of Medfield. LEE JAY GLOBERSON, who resides in South Natick, Mass., is Switching Systems Supervisor for the New England Telephone Co., Waltham. . . Wang Laboratories, New York City, has employed JOHN B. LOJKO as a salesman. John lives in Rego Park, New York. . . JOSEPH R. MANCUSO is assistant professor of management engineering at WPI. He also serves as president of Applied Marketing, Framingham, Mass. . . DAVID G. NEVERS is a Captain in the U.S. Army Corps of Engineers and is stationed in Metairie, La. . . The U.S. Army Nuclear Effects Lab., Edgewood Arsenal, Md., employs ANDRUS NILLER as a research physicist. His home is in Bel Air. . . EDWARD J. POLEWARCZYK is now engineering services manager for Dynamic Controls Corp., Windsor, Conn. . . DENNIS E. SNAY, local sales manager-commercial, at the Massachusetts Electric Co., Marlboro, resides in South Berlin. . . The city engineer of Peabody, Mass., ALAN F. TAUBERT, recently won the praise of Peabody's mayor for the preliminary work performed by his staff which resulted in a great saving of money to the city on the $6.9 million sewerage project that soon will be started with federal funds. Before coming to Peabody, Taubert was senior sanitary engineer for the Division of Water Pollution Control in the Rhode Island Health Department; engineer for the Water Resource Planning Conservation Department for the State of New York and engineer for the California Department of Water Resources.

ROBERT J. CRAIG, operations research analyst for Operations Research, Inc., Silver Spring, Md., resides in Rockville. . . Now a patent attorney with Brumbaugh, Graves, Donohue & Raymond, New York City, LESLIE J. HART received his law degree from Suffolk University Law School last June in Boston. . . JOSEPH V. BUCCIAGLIA was on assignment in Europe last summer for the U.S. Rubber Company of Naugatuck, Conn. (UniRoyal, Inc.).

1964

Married: CARLETON F. KILMER, JR., to Miss Faith Alison Crampton of Natick, Mass., on May 22, 1971. Carleton is a management consultant for Arthur Anderson Co. of Boston. . . JOHN T. O'KEEFE to Miss Margaret Jane Lynch of East Weymouth, Mass., on June 13, 1971. John is a manager-accounting for the General Electric Co., in West Lynn.

Born: to Captain and Mrs. FREDERICK H. SIFF, a daughter, on July 14, 1971. Capt. Siff is now an assistant professor of computer analysis at the U.S. Military Academy, West Point, N.Y.

DR. PAUL G. AMAZEEN, who received his doctorate in philosophy of electrical engineering at WPI in June, is now an associate of Vita Co., a company which has developed a prototype of a heart-monitoring machine currently in use at Peter Bent Brigham Hospital, Boston. Previously Dr. Amazeen was an instructor at WPI. . . Serving in Saigon as a market analyst for Pacific Architects & Engineers, Inc., of San Francisco, Calif., is PETER BAKER. . . JOHN D. CAMERA is a general contractor with the Camera Construction Co., West Hartford, Conn. . . RICHARD C. CARLE writes that he is computer analyst for the Space Division of General Electric Co., Riverdale, Md., and is working on his Master of Engineering degee at Penn. State. . . One of the principal speakers at the 10th annual Abrasives Conference held in Boston in June was RICHARD C. DELONG, senior product engineer, AVCO Bay State Abrasives Division, Westboro, Mass. The speaker's topic was "Conditioning Capabilities — Billet and Slab Grinding". He specializes in abrasive grinding wheels for foundry and steel mill applications at AVCO Bay State. . . MIT's Lincoln Laboratory, Lexington, Mass., employs DR. VICTOR S. DOLAT, physicist. . . Coast Guard LT. RICHARD F. HEALING recently participated in the rescue of three survivors from a plane crash in New Haven, Conn. He and other members of his reserve unit served as guards at the site of the crash which took place 4,000 feet short of the runway near New Haven. . . MAJOR DAVID Y. HEALY is an instructor pilot in the U.S.M.C., Meridian, Miss. . . Stanford Law School, Calif., awarded a degree of Doctor of Jurisprudence to ALFRED H. HEMINGWAY, JR., in June. He has accepted a position with a law firm in New York City. . . GEORGE L. KLANDER is personnel director at North Charles General Hospital, Baltimore, Md. . . CAPTAIN CLIFFORD M. MacDONALD is employed by Drexel University, Philadelphia, Pa., as an assistant professor of military science. . . Teaching science at Dighton-Rehoboth Regional High School, North Dighton, Mass., is DAVID D. McCAFFREY of Swansea. . . CAPTAIN STEPHEN C. NOBLE, who serves at NASA-Ames Research Ctr., Calif., resides in Sunnyvale. . . ALFRED R. POTVIN is employed by the University of Texas, Arlington, Texas, as an associate professor of bioengineering. Currently finishing his PhD requirements in bioengineering, he recently received his MS in bioengineering as well as his MS in Psychology. . . The position of staff engineer at MIT Lincoln Laboratory is held by STEVEN B. SACCO, Norwell, Mass. . . Having completed the requirements for a master of science degree in nuclear engineering, FREDERIC C. SCOFIELD now holds the position of staff engineer with the Omaha, Neb., Public Power District. Presently he is working on the technical supervision staff for the Fort Calhoun Nuclear Power Station which is under construction by the Power District. . . DR. DAVID T. SIGNORI, JR., serves as a research staff member at the Institute for Defense Analysis in Arlington, Va. . . MASON H. SOMERVILLE writes that he holds the post of senior engineer for Westinghouse-Bettis Atomic Power Lab., West Mifflin, Pa. . . Residing in Mountain View, Calif., GERALD ERNEST TAMMI is manager of product development, for the Digital Integrated Circuits Division of Fairchild Semiconductor, Palo Alto. . . ROBERT F. WHITE reports that he is a digital systems engineer for BD-Spear Medical Systems which is located in Waltham, Mass.

1965

Married: ROBERT A. JUCKINS to Miss Helen A. O'Byrne of Worcester, Mass., on June 19, 1971. Robert is a mechanical engineer at Wyman-Gordon Co., North Grafton.

Born: to Dr. and Mrs. JOHN T. WILSON, a daughter, Paige Anne, May 12, 1971. Dr. Wilson is a structural engineer with Paul J. Ford, Columbus, Ohio.

ALEXANDER B. CAMPBELL II is manager central region, special systems support, for Digital Equipment Corp., Northbrook, Ill. . . LEE A. CHOUINARD reports that he has been transferred from American Oil Company's Texas City Refinery to the research and development department of Amoco Chemicals Corp., Whiting, Indiana. . . Systems engineer for Singer-General Precision-Link Division, Houston, Texas, is DAVID B. COOLEY. . . GARRETT H. DeVLIEG, employed as an engineer by Boeing Company, Renton, Washington, resides in Bellevue. . . Living in Palo Alto, Calif., is JAMES F. FEE who serves as an application engineer for Teradyne. . . RICHARD C. FORTIER is a full time doctoral student in applied mechanics at Northeastern University, Boston, Mass. . . JAMES E. FRAPPIER is with The Badger Co., Inc., Worcester, Mass. . . It was recently announced that JOHN P. IANNOTTI has been promoted to systems analyst in Division Operations Administration at the Pennsylvania Power & Light Co., Allentown, Pa. John, an industrial sales engineer, started with PP & L in Scranton, in 1965. He is a member of the Industrial Management Club, the Hazleton Jaycees and is a commissioner for the Boy Scouts of America Council, Hazleton. . . Assistant manager for the Tibon Hard Chrome Co., Batavia, N.Y., is ROBERT H. JACOBY. . . IBM Corp., Hamden, Conn., employs SIDNEY S. KLEIN, marketing representative. Sidney resides in Orange, Conn. . . CLINTON F. KUCERA, JR., serves as industrial engineer in the Large Steam Turbine Dept. of the General Electric Co., Schenectady, N.Y. . . PATRICK T. MORAN is a marketing representative for IBM, Chicago, Illinois. . . The president of Phase-R Corporation, S. EDWARD NEISTER, resides in Center Barnstead, N.H. His company is located in Durham. . . THOMAS E. PEASE is employed by Con. Edison of New York City as an oceanographer. Project coordination for hydraulic modeling at Alden Research Laboratories (for Con. Edison) is his major responsibility . . . CAPTAIN JOHN M. PORTER serves as staff chemical officer for the Theater Army Support Command for the U.S. Army in Europe. . . In June DAVID M. SCHWABER received his PhD from the University of Akron's department of Polymer Science in Ohio. Dr. Schwaber is employed at the Monarch Rubber Company, Inc., in Baltimore, Md. . . Studying as a graduate student in computer science at the University of Connecticut, is RONALD R. SCHULTZ who lives in New Britain. . . HOWARD SHERRY serves on the technical staff of Mitre Corp., McLean, Va. His home is in Fairfax. . . The Factory Insurance Association of Houston, Texas, employs OJARS M. SILARAJS, chemical engineer. . . Field service representative, ALFRED G. SYMONDS, has been transferred by General Electric Co., Ordnance Systems from Pittsfield, Mass., to Newport News, Va. . . DEAN K. WHITE is an engineer for Alden Research Laboratories, WPI.

1966

Married: GARY M. ANDERSON to Miss Barbara Ruth Brinkmann of Allston, Mass., on August 14, 1971. Gary is mechanical engineer at Metcalf & Eddy, Inc., Boston. . . STEPHEN E. ANDERSON to Miss Frances Ellen Opalach of Hartford, Conn., on August 7, 1971. Stephen is employed as project engineer with Lee Co. in Westbrook. . . LT. JOHN B. TATA to Miss Iris A. Villa of Seattle, Washington, on August 8, 1971. Lt. Tata is currently serving as an instructor of navigation at the U.S. Naval Academy, Annapolis, Md. . . ROBERT D. WILSON to Miss Kathleen Rogers of Millbury, Mass., on August 8, 1971. Robert is a graduate student in the mechanical engineering department at WPI.

Born: To Mr. and Mrs. JOHN H. CAROSELLA, a son, David Burton, on August 2, 1970. John is employed by Delco Electronics Division, General Motors Corporation, Milwaukee, Wisconsin, as senior project engineer. . . To Mr. and Mrs. RONALD C. HAYDEN, a daughter, Margaret Elizabeth, on September 16, 1971. Ronald is

employed as a sales engineer with Foxboro Co. in Baltimore, Md. . . To Dr. and Mrs. ROBERT P. KOKERNAK, a daughter, Christine, in May of 1971. Dr. Kokernak is assistant professor of engineering at Mount Wachusett Community College, Gardner, Mass.

JAY J. BOTOP is studying for a BS in business administration as well as his MBA at the University of Alabama, Birmingham. . . Self-employed as a management consultant is J. WILLIAM BOWEN who received his MBA from Harvard recently. He resides in Rockville Center, New York. . . CAPTAIN HOWARD J. BRALEY is stationed at the USAF Eastern Test Range, Cape Kennedy Air Force Station, Fla. . . The Diesel Construction Co., New York City, has employed SIGMUND S. DICKER, project manager. Sig. resides in Ronkonkoma. . . LT. EUGENE R. DIONNE serves as chief subsystem engineer at Wright-Patterson AFB in Ohio. . . WILLIAM F. ELLIOTT has been named director of admissions at Carnegie-Mellon University, Pittsburgh, Pa. Prior to his becoming associate director in September of 1970, Bill was assistant director of admissions at WPI for four years. He has an MA in guidance and counseling from Clark University, Worcester, and is a member of the National Association of College Admissions Counselors. . . Serving as a member of the technical staff for Bell Telephone Laboratories, Whippany, N.J., is STEPHEN J. FORMICA who lives in Stanhope. . . CAPTAIN CAMERON W. HYDE was recently awarded the U.S. Air Force Commendation Medal at Kirtland AFB, New Mexico. Captain Hyde distinguished himself by meritorious service as a project officer in the nuclear safety division, Air Force weapons laboratory at Kirtland. According to the citation, his outstanding professional skill, knowledge and leadership aided immeasurably in identifying and solving problems in the field of nuclear safety. . . The Public Service Electric & Gas Co. of Newark, N.J., has employed PETER J. KUDLESS as an engineer in the gas engineering department. . . RONALD I. LONGWELL is a maintenance and renewal engineer in the generator department of the General Electric Co., Schenectady, N.Y. . . JAMES A. MARONEY holds the dual positions of president and treasurer of Francis H. Maroney, Inc., which is located in Haverhill, Mass. . . Studying for his PhD in behavorial science at Nova University, Ft. Lauderdale, Fla., is DENNIS D. MURPHY. . . RONALD F. NAVENTI is with Stone & Webster Engineering in Boston, Mass. . . GERALD J. PARKER is employed as a chemical engineer by the Environmental Protection Agency, Office of Air Programs, Bureau of Stationary Source Control, Division of Compliance in Durham, N.C. . . American International College, Springfield, Mass., has employed FRANK K. PFEIFFER, JR., as a visiting lecturer in finance. Frank, who was an instructor at Bentley College last year, expects to receive his doctorate in business administration from the University of Massachusetts in January of 1972. . . RICHARD J. PIASECKI is now project manager for Karl Koch Erecting Co., Carteret, N.J. . . Employed by Remington Rand OMD Division of Sperry Rand Corp., RONALD F. PICHIERRI works as project engineer for company headquarters in Blue Bell, Pa., and resides in Lansdale. . . MICHAEL T. PORTANOVA is a graduate student in the economics department of the University of Massachusetts, Amherst, Mass. . . Office engineer for EBASCO Services, Inc., Sioux City, Iowa, is JOHN M. SMITH, a resident of Sergeant Bluff. . . Hooker Chemical Corp., Niagara Falls, N.Y., employs EARL C. SPARKS III, chemical engineer. . . CAPTAIN JOHN A. STOCKHAUS is with the U.S. Army Engineers Corps, Ft. Belvoir, Va. . . DR. DOUGLAS L. VIZARD has the position of Postdoctoral Fellow in the physics department of the M.D. Anderson Hospital and Tumor Institute located in Houston, Texas. . . Computer systems engineer for RCA, Honolulu, Hawaii, is DAVID ERNEST WILSON. . . EUGENE H. WILUSZ teaches chemistry at New Bedford High School, New Bedford, Mass. He is also PhD candidate in polymer science and engineering at the University of Massachusetts, Amherst.

1967

Married: EDWARD J. BOTWICK to Miss Bonnie Lee Miller of Woodbridge, Conn., on July 11, 1971. Edward, who is a process development engineer for Loctite Corp., Newington, also attends the University of Connecticut Law School, Night Division. . . DEAN W. SCHOENFELD to Miss Elizabeth Orene Vaughan of Bartow, Fla., on July 3, 1971. Dean is a graduate assistant in the department of electrical engineering at WPI where he is a candidate for his master's degree in electrical engineering.

DR. STEPHEN R. ALPERT, who recently earned his PhD in mathematics from Lehigh University in Pennsylvania, has been employed as an assistant professor in the computer science department at WPI. . . Optical engineer for Raytheon Co., Bedford, Mass., is WARREN L. CLARK, who resides in Billerica. . . MICHAEL F. FLOOD is a postgraduate student at Kent State University, Kent, Ohio. . . Employed as an assistant professor of electrical engineering at Southeastern Massachusetts University, North Dartmouth, is DR. LEE EDWARD ESTES, a resident of Mattapoisett. . . JOHN E. HITCHCOCK is an estimator with Dunlop & Johnston, Inc., Cleveland, Ohio . . . 1st LT. FRANK T. JODAITIS has been installed as commanding officer of Company 8, 181st Engineer Batallion, Webster, Mass., National Guard unit according to information released in July of 1971. He is also employed as a civil engineer with Metcalf & Eddy, Engineers, of Boston. . . Project engineer for Monsanto Co., Indian Orchard, Mass., is DONALD G. LUTZ of West Springfield. . . FRANK D. MANTER is with the Jackson & Moreland Division, United Engineers & Constructors, Inc., Boston, Mass. . . Betz Labs, Inc., Trevose, Pa., employs WILLIAM O. MESSER, technical specialist. . . JAMES P. O'ROURKE teaches in the engineering department at Worcester Junior College. He received his MS from WPI in 1971. . . MUKUNDRAY N. PATEL is with Combustion Engineering, Overseas, Inc., located in Andhra Pradesh, India. . . Employed by the General Motors Tech. Center, Warren, Mich., as a research chemist, NOEL M. POTTER makes his home in Sterling Heights. . . ALAN H. SUYDAM tests and evaluates helicopter propulsion and weapons systems for the Navy and Marine Corps at the Air Test Center in Patuxent River, Md. . . Texas Instruments, Inc., employs ROBERT CARLTON YOUNG as a field sales engineer in Chicago, Ill. . . WAYNE T. WIRTANEN is an engineering assistant with Metcalf & Eddy, Inc., Boston, Mass. He lives in Natick. . . PETER M. HERRON is with Hughes Aircraft Co., Denver, Colo.

1968

Married: DONALD C. ALDRICH to Miss Lois Ann Toothaker of Winchendon, Mass., on June 12, 1971. Donald is studying for his doctorate in chemical engineering at Massachusetts Institute of Technology, Cambridge. . . COBB S. GOFF to Miss Elizabeth Anne Hubbard of East Brunswick, N.J., on July 17, 1971. ROBERT TEMPLIN and DOUGLAS FERRY ushered at the wedding. Cobb has been recently assigned by the Eastman Kodak Company to the photographic technology division, Kodak Park, Rochester, N.Y. He is a photographic engineer and resides in Spencerport. . . PAUL D. MATUKAITIS to Miss Patricia E. Cournoyer of Worcester, Mass., on July 24, 1971. Operating supervisor at Monsanto Co., Springfield, Paul attends the evening division of Western New England College, where his major is law. . . DR. MICHAEL R. PAIGE to Miss Paula Winsor Davis of Danville, Illinois, on June 27, 1971. Dr. Paige is presently employed on the technical staff of General Research Corporation, Santa Barbara, California. . . FREDERICK W. WHITE to Miss Karen Jean Nichols of Framingham, Mass., on August 22, 1971. Frederick is employed by the U.S. Navy at the U.S. Navy Underwater Systems Center in New London, Conn.

Born: To Mr. and Mrs. ROBERT A. FALCIANI, a daughter, Lisa Ann, on June 2, 1971. Robert serves as assistant manager-industrial systems for Babcock & Wilcox Co., Barberton, Ohio. He resides in Canton . . . To Mr. and Mrs. ROBERT C. GOSLING a daughter, Jennifa Ann, on September 1, 1971. Bob is with the Public Service of New Hampshire in Manchester. . . To Mr. and Mrs. EDWARD M. HARPER, a daughter, Melissa, on June 6, 1971. Edward is employed as a design engineer for the Harper Buffing Machine Co., East Hartford, Conn. . . To Mr. and Mrs. RAYMOND F. RACINE, a son, Darren Michael, on January 15, 1971. Raymond has been assigned to the rotor design section of G. E.'s mechanical drive turbine department, Fitchburg, Mass. . . DAVID E. ANDERSEN is a technical representative at E. I. du Pont de Nemours & Co., Inc., Philadelphia and makes his home in West Chester. . . Universal Engineering Corp., Boston, Mass., has employed ARNOLD J. ANTAK as a community planner. Arnie lives in Waltham. . . ROBERT E. BALMAT has been named a financial analyst for North American Rockwell Corp., Autonetics Division, located in Anaheim, California. . . CAPTAIN IVAN V. BEGGS has been transferred from Vietnam and expects to be stationed in Germany soon. . . Design engineer at Garrett Corp. — AiResearch Mfg. Co., is WILLIAM R. BELISLE of Long Beach, Calif. . . A. LEONARD BERGQUIST is employed as a field service representative for Beckman Instruments, Inc., Wakefield, Mass. . . A resident of Framingham, Mass., EDWARD H. BORGESON, serves as an engineer-group leader at Raytheon Co. of Wayland. . . VICTOR V. CALABRETTA, JR., is presently a graduate assistant at WPI. . . State Mutual of America recently announced that RICHARD L. COLLINS has been appointed actuarial associate, actuarial planning. Richard makes his home in Shrewsbury. In 1971 he received his master's degree in actuarial science from Northeastern University, Boston. . . NORMAN W. COOK is a partner in Cook Builders' Supply Co., West Springfield, Mass. . . The Naval Ordnance Station, Indian Head, Md., employs GREGORY C. COX, chemical engineer. . . DAVID P. CROCKETT serves as a sales engineering trainee for Buffalo Forge Company, Buffalo, N.Y. . . Babson College, Babson Park, Mass., has among its MBA students, JEFFREY A. DECKER, who resides in Auburndale. . . ROBERT R. DEMERS is an anesthesia research assistant at Rhode Island Hospital, Providence, R.I. . . Serving as research engineer at Monsanto Co., Indian Orchard, Mass., is ROBERT N. GARLICK who makes his home in East Longmeadow. . . GEOFFREY L. HARTUNG is an engineer with UniRoyal Chemical, Baton Rouge, La. . . The U.S. Naval Underwater Systems Center, New London, Conn., employs WILLIAM A. HAWKINS, electronics engineer. . . JOSEPH J. KASABULA writes that he is currently a chemist (supervisor of special analysis systems) for Uniroyal Chemical, Division of Uniroyal Inc., Naugatuck, Conn. . . Holingsworth & Vose Co., West Groton, Mass., has given DOUGLAS W. KLAUBER the position of research chemist. . . JOHN J. KOKOSZKA, a lieutenant in the U.S. Army, is employed by DCSLOG-Ammo, HQ.-USARV, APO, San Francisco, Calif. . . A physicist for Ion Physics Corp., S. Bedford St., Burlington, Mass., is ROBERT A. LOWELL, who makes his home in Lynn. . . JOHN E. LUNNEY serves as a field service representative for General Electric Co., Ordnance Systems, Pittsfield, Mass. His residence is in Newport News, Va. . . Currently an instructor at the U.S. Army Engineer School, Fort Belvoir, Va., is WALTER C. LYNICK of Uncasville, Conn.

Born: To 1/Lt. and Mrs. ISRAEL MAC, a daughter, Mellissa Rebecca, on October 9, 1970. Lt. Mac is an instructor at the U.S. Army Engineer School, Ft. Belvoir, Va. . . JOHN D. MacDOUGALL, JR., serves as a mechanical engineer at Lipe-Rollway Corp., Research Division, Syracuse, N.Y. . . WILLIAM J. McCANN, JR., who was promoted to Captain, USA, in June, is presently in Vietnam with the office of the assistant chief of staff for maintenance, Danang Support Command. He and Mrs. McCann have a son, William J. McCann III, who was born on March 25, 1971. . . The U.S. Naval Underwater Systems Center, Newport, R.I., employs STEVEN MEDOFF, electronics engineer. . . JOHN J. ORCIUCH works as a process engineer at Uniroyal, Inc., Naugatuck, Conn. . . Research & development engineer for General Dynamics Electric Boat Division, Groton, Conn., is ALLEN PALMER. . . JAMES M. PALMER has been employed as team manager for Procter & Gamble, Foods Division, Jackson, Tenn. . . Serving as an Aircraft Maintenance Officer at Whiteman AFB, Missouri, is 1st/Lt. THOMAS J. PERARO whose home address is in Enfield, Conn. . . RICHARD G. PERREAULT, who has been stationed in Germany for over two years, was promoted to Captain in April 1971. He writes that he would appreciate hearing from his former classmates. His address is: HHC 10th Engineer Battalion, Kitzinger, Germany, APO New York, N.Y., 09701. (Capt. R. G. Perreault 045361824). . . The U.S. Army Natick Labs. has employed RONALD A. PORTER, physicist. . . ROGER W. PRYOR recently received his MS degree at The Pennsylvania State University, University Park, Pa. . . STEPHEN M. PYTKA has employment as a development engineer with Western Electric Co., Kwajalein Atoll, in the Marshall Islands. . . Stationed in England and working as a weather forecaster is LT. RONALD D. REHKAMP who has been assigned to Bentwaters RAF Station. Lt. Rehkamp is in the USAF. . . It was recently announced that BERNARD J. ROMANIK was promoted to Army Captain near Butzbach, Germany. Capt. Romanik is the supply officer for the 16th signal battalion's headquarters located in the Butzbach area . . . RICHARD S. SADOWSKI works as a mechanical engineer at Riley Stoker Corp., Worcester, Mass. . . Stone & Webster Engineering Corp. has transferred DAVID R. SPEIRS from Boston to St. Gabriel, La. He resides in Baton Rouge. . . J. KEVIN SULLIVAN is a MBA student at the University of California at Berkeley. . . TELCOM, Inc., of McLean, Va., employs GEOFFREY P. TAMULONIS, engineer. Geoffrey received his MSEE from New York University in 1971. . . MICHAEL J. TRUE is a process and product development engineer at Uniroyal Chemical, Naugatuck, Conn. . . Quality control engineer for General Electric Co., Fitchburg, Mass., is RICHARD B. VAUGHN, who resides in Leominister.

The following names were inadvertently left off the 1970-71 Alumni Fund Report in the last issue

ADDITIONAL PRESIDENT'S CLUB CONTRIBUTORS:

Charles C. Bonin, '38
William A. Schuermann, '21

ADDITIONAL JOHN BOYNTON CLUB CONTRIBUTOR:

Alan F. Swenson, '49

ADDITIONAL CONTRIBUTORS

Clifford Broker, '29
Arthur E. Nichols, Jr., '54
Harvey L. Pastan, '49
Wilford A. Sutthill, '29

THE ALUMNI BELOW SHOULD HAVE BEEN LISTED AS CONTINUOUS CONTRIBUTORS TO THE ALUMNI FUND:

*Gordon H. Raymond, '42
*Harvey L. Pastan, '49
*William A. Schuermann, '21
*Allen R. Deschene, '38

1969

Married: CAMERON P. BOYD to Miss Judith Ann Michael of Manchester, N.H., on September 5, 1971. Cameron teaches in the Haverhill, Mass., school system... JAMES W. HAURY to Miss Kathleen Alane Wood of Ayer, Mass., on July 17, 1971. James is employed by Farrel Co., Ansonia, Conn... STEVEN A. HUNTER to Miss Martha J. Fuller of Worcester, Mass. on August 14, 1971. Steven is a candidate for his master's degree in mechanical engineering at WPI... MARK H. LePAIN to Miss Cheryl Pamela Turturro of Danvers, Mass., on August 29, 1971. Mark, a former employee of the Westinghouse Corp. in Washington, D.C., is stationed with the Army on Long Island... RICHARD H. McCUE, JR., to Miss Susan M. Roling of Dubuque, Iowa, on May 30, 1971. Richard serves as a process engineer at Stone & Webster Engineering Corp., Boston, Mass... RICHARD S. SMITH to Miss Patricia Ann Cusson of Worcester, Mass., on August 7, 1971. Richard is a mechanical engineer at Xerox Corp., in Webster, N.Y... DAVID A. ZLOTEK to Miss Nancy Carol Dipersia of Worcester on June 26, 1971. David is a graduate teaching assistant at Purdue University, Lafayette, Ind., where he is enrolled in the PhD program in electrical engineering.

Born: To Mr. and Mrs. RONALD GERALD ROBERTS, a son, Jason Michael, on April 3, 1971. The new father is a planning engineer with Western Electric Co., North Andover, Mass.

Little Falls Central School, Little Falls, N.Y., employs RICHARD D. ALPERT as an instructor in mathematics and computer science... 2/LT. WARREN L. ANDERSON has been transferred from USAF, Reese AFB, Texas, to Mather Air Force Base, Sacramento, Calif., where he serves as a pilot... JEFFREY C. BERNARD is a graduate student at the University of Massachusetts, Amherst... The U.S. Army Corps of Engineers employs RICHARD C. CARLSON, civil engineer, Waltham, Mass... Down in Venezuela, South America is RODNEY A. DAHLSTROM who is a process engineer for the Orinoco Mining Co... RALPH J. ESCHBORN II has an engineering position in the pigments department of E. I. du Pont de Nemours & Co., Edge Moor, Del... The Naval Civil Engineering Laboratory, Port Hueneme, Calif., employs RICHARD H. GURSKE as a sanitary engineer... DONALD G. JOHNSON is director of camping for the New England Synod Lutheran Church in America, Camp Calumet Lutheran in West Ossipee, N.H... Serving as assistant bridge engineer for the State of California — Division of Highways, Sacramento, is CHRISTOPHER J. MASKLEE who resides in Panorama City... Safeguards Engineer for G. E.'s Knolls Atomic Power Lab., Schenectady, N.Y. is ANDREW T. PERREAULT... E. I. du Pont-Eichem Vinyls employs ROBERT J. ROSE, task force engineer of Houston, Texas... JAMES V. ROSSI holds the position of marine engineer with General Dynamics, Quincy, Mass... An East Providence, R.I., resident, JOHN J. SZOSTEK, is an associate production engineer for New England Power Co., Somerset, Mass... JOHN S. THOMPSON, JR., was awarded his MBA from Harvard University in June 1971. He is now a Lieutenant in the U.S. Army... B. LEE TUTTLE is a Fellow at Penn. State University, University Park, Pa.

1970

Married: CHARLES E. BASNER and Miss Dawn Lucille Oakes of Lockport, N.Y., on Sept. 4, 1971. The couple will be living in Sunnyvale, Calif., where the groom is completing his training program with the Department of Transportation with the Federal Government... HARRIS C. HOWLAND to Miss Elizabeth Herrick Shea of Beverly Farms, Mass., on September 11, 1971. Harris is field engineer for the General Electric Co., Baltimore, Md... LT. JEFFREY C. MANTY to Miss Christine Marie

STATEMENT OF OWNERSHIP, MANAGEMENT AND CIRCULATION

(Act of October 23, 1962: Section 4369, Title 39, United States Code)

1. Date of filing. September 28, 1971. 2. Title of publication. THE JOURNAL. 3. Frequency of issue. Four times per year. 4. Location of known office of publication (Street, city, county, state, zip code). Institute Road, Worcester, Worcester, Massachusetts 01609. 5. Location of the headquarters or general business offices of the publishers (Not printers). Institute Road, Worcester, Massachusetts 01609. 6. Names and addresses of publisher, editor, and managing editor. Publisher (Name and address). Worcester Polytechnic Institute, Worcester, Massachusetts 01609. Editor (Name and address). H. Russell Kay, Worcester Polytechnic Institute, Worcester, Mass. 01609. Managing Editor (Name and address). None. 7. Owner (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding 1 percent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a partnership or other unincorporated firm, its name and address, as well as that of each individual must he given.) Worcester Polytechnic Institute, Worcester, Massachuestts 01609. 8. Known bondholders, mortgagees, and other security holders owning or holding 1 percent or more of total amount of bonds, mortgages or other securities (If there are none, so state). None. 9. For completion by nonprofit organizations authorized to mail at special rates (Section 132.122, Postal Manual). The purpose, function, and nonprofit status of this organization and the exempt status for Federal income tax purposes have not changed during preceding 12 months. (If changed, publisher must submit explanation of change with this statement.) 10. Extent and nature of circulation.

	Average No. Copies Each Issue during Preceding 12 Months	Actual Num of Copies o Single Issu Published Nea to Filing Da
A. Total no. copies printed (Net press run).	12,000	13,500
B. Paid circulation. 1. Sales through dealers and carriers, street vendors and counter sales.		
2. Mail subscriptions.	1	1
C. Total paid circulation.	1	1
D. Free distribution (including samples) by mail, carrier or other means.	11,151	11,608
E. Total distribution (Sum of C and D).	11,152	11,609
F. Office use, left-over, unaccounted, spoiled after printing.	848	1,891
G. Total (Sum of E & F — should equal net press run shown in A).	12,000	13,500

I certify that the statements made by me above are correct and complete.

H. Russell Kay, Editor

Nelson of Templeton, Mass., on August 20, 1971. Lt. Manty serves with the U.S. Army Ordnance Corps in Bamberg, Germany... GEORGE P. MOORE to Miss Karen Marie Brown of Grafton, Mass., on August 7, 1971. George is a law student at Suffolk University, Boston, Mass., his residence being in Waltham... BARRY W. SODEN to Miss Madeline Jean LaValley of Feeding Hills, Mass., on August 28, 1971. The couple will reside in Marlborough. Barry is with Boston Edison Co., Framingham.

Married: FRANCIS A. VERNILE to Miss Sally Ann Kalentkowski of New Britain, Conn., on August 21, 1971. The groom is a graduate student at the University of Connecticut in Storrs.

DAVID D. ANDRE has a position as actuarial trainee at Mass. Mutual Life Insurance Co., which is located in Springfield, Mass... Sales coordinator for Coppus Engineering Corp., Worcester, Mass., is DANIEL K. BREEN of Hopedale... 2/LT. ROBERT C. COURNOYER serves as watch officer for the U.S. Army at Vint Hill Farm Station, Warrenton, Va... DINKAR V. DESAI works as senior research associate at Polytechnic Institute of Brooklyn, N.Y... The biomedical engineering dept. at WPI employs DR. ROBERT J. HARVEY, affiliate associate professor... Teaching in the Lebanon, N.H., High School mathematics department is PHILIP H. JOHNSON who makes his home in Lyme... ROGER L. JOHNSON works for the Medical Systems Department of General Electric Co., Milwaukee, Wisc. He is in the management training program... Now working in pollution control research at Riley-Stoker Co., Worcester, is STEPHEN A. JOHNSON of Holden... Western Electric, North Andover, Mass., employs ROBERT C. KEENAN, who resides in Salem, N.H... JONATHAN W. LEAVITT works at Alden Research Lab., WPI. He lives in Holden, Mass... New England Electric System, Systems Planning Dept., employs JOHN F. MALLEY as an engineer in training... Form Roll Die Corp., West Boylston, Mass., has named ROLAND A. MASON as assistant general manager. He makes his home in Sterling Jct... LT. WILLIAM R. NAAS is stationed with the U.S. Army at Ft. Meade, Md. He lives in Laurel ... JOHN P. OBER serves in the 62nd Engineer Co., U.S. Army, overseas in Italy ... A traffic control installer for C. I. R. Electrical Contractors, Hampden, Mass., is RAYMOND C. PAULK, one of the founders of the firm... F. DAVID PLOSS is with Trane Co., Detroit, Michigan... Studying at WPI as a graduate student is RICHARD J. SCHWARTZ who resides in Worcester... Marine Lance Corporal WILLIAM D. SMITH has reported for duty with the Headquarters & Service Co. of the Third Marine Division on Okinawa.

Now a resident of State College, Pa., ROBERT T. STULA studies as a graduate student at Penn. State University, University Park... P & L Biochemicals, Milwaukee, Wisc., employs JOSEPH A. TOCE, chemist ... American Telephone and Telegraph — Long Lines, White Plains, N.Y., has named STEVEN A. UDELL as accounting operations supervisor... ROSS E. WEAVER works in the capacity of field engineer for the Factory Insurance Association, Boston, Mass. Derry, N.H., is his home... ROBERT PAUL WHITFORD serves as design engineer for the General Electric Co. in Fitchburg, Mass.

1971

Married: MARK A. AGLIO to Miss Michelle Ann Boulette of Whitinsville, Mass., on August 28, 1971. Mark teaches at Our Lady of Providence Preparatory Seminary in Providence, R.I... J. LEE CRISTY and Mary Ann Therese Melos of Rochester, N.Y., on September 11. The groom is a consulting systems analyst at the Fallon Clinic, Inc., Worcester, Mass... LOREN L. COMPSON to Miss Joyce Shepherd of Weedsport, N.Y., on July 31, 1971. Loren serves as a cost engineer for Torrington

Construction Co., Glens Falls, N.Y... JAMES F. CRITTENDEN and Miss Penelope A. Fuller of West Hartford, Conn., on Sept. 5, 1970. Jim is a partner in the Residential Asphalt Protection Co., West Hartford. He lives in New Britain... EDWARD F. CUNNINGHAM to Miss Mary Ellen Miller of Waterbury, Conn., on October 2, 1971... KEVIN J. DONAHUE and Miss Maria Lee Glennon of Worcester, Mass., on August 1, 1971. Kevin works as a junior engineer for the City of Worcester, Municipal Airport... RICHARD E. DYNIA to Miss Patricia Anne Lucibello of Meriden, Conn., on September 24, 1971. Serving the bridegroom were his WPI classmates PHILIP JOHNSON, best man; and JOSEPH AUSANKA and THOMAS COPP, ushers. The groom is a design-manufacturing engineer for IONA Mfg. Corp., Manchester, Conn.

Married: DWIGHT P. EDDY to Miss Linda Anne Trombley of Haverhill, Mass., on July 25, 1970. Dwight is a data processing design manager at Norden Division, UAC, Norwalk, Conn... ERNEST R. JOYAL and Miss Christina Argo of Greenville, R.I., on May 28, 1971. The groom is employed at the U.S. Naval Ship Engineering Center, Hyattsville, Md... PETER A. SALIS to Miss Susan Marion Harrington of Nashua, N.H., on June 19, 1971. The couple is residing in Speedway, Ind. Peter has been employed by the National Starch & Chemical Corp., Indianapolis... DONALD J. USHER and Miss Lyn Anne Hudson of Malvern, Pa., on June 12, 1971. Don is a construction engineer with Babcock & Wilcox Co., Barberton, Ohio... ANDREW J. GRIFFIN and Miss Victoria A. Goucher of Milford, Mass., on May 27, 1971. The couple resides in Millington, Tenn... WILLIAM A. PHILBROOK to Miss Dianne M. Beaudoin of Millbury, Mass., on August 21, 1971. The groom is a test technician for Incoterm, Marlboro.

CARL E. GILMORE is currently a graduate student studying at the University of Florida which is located in Gainesville... JAMES K. ABRAHAM is the manager of the environmental testing division of Commercial Testing & Engineering Co., Chicago, Illinois. His residence is in Evanston... Public Service Electric & Gas Co., New Brunswick, N.J., employs JOHN EDWARD ANDERSON as a cadet engineer... PAUL B. ASH is a graduate student at the Univeristy of Massachusetts, Amherst, Mass... Now living in Biddeford, Me., is ROLAND R. BATSON... TODD A. BENJAMIN has accepted a field engineering position with General Electric's Installation and Service Engineering Department, Schenectady, N.Y... The New Haven, Conn., Water Company employs GEORGE E. BLOCK, JR., civil engineer... GLENN E. BRIER is with General Data Conn. Industries, Inc., in Norwalk, Conn... PROFESSOR JOHN N. BRUSSEAU of the engineering department of Western New England College, Springfield, Mass., was a busy man in October. During that month he spoke at the meeting of the Connecticut Chapter of the Institute of Electrical and Electronics Engineers in New Haven, the title of his talk being "Spectrum Analysis of EEG Waves". He also spoke at the Yale faculty club and was preparing an address to be given at the national conference of the Institute of Electrical and Electronics Engineers Professional Group for Engineering in Medicine and Biology in Las Vegas, Nev... General Staff Reporter for the *Worcester Telegram & Gazette,* Clinton, Mass., office is PAUL J. CLEARY... Westinghouse Electric Corp., Philadelphia, Pa., has named DANIEL E. DEMERS an associate engineer... His brother, DAVID J. DEMERS, is also with Westinghouse, but is located with the surface division in Baltimore, Md... GREGORY S. DICKSON has employment as a production development engineer at Dow Chemical, Gales Ferry, Conn... DANIEL T. DONAHUE is serving with the Peace Corps... Dravo Corp., Pittsburgh, has named STEPHEN B. DOUGLAS an associate engineer. He lives in Emsworth, Pa... DONALD G. FOGG, JR., is with Procter & Gamble Co., Cincinnati, Ohio, and resides in Chester... Navy Airman Apprentice ANDREW J. GRIFFIN recently completed the 28-day recruit phase of the Navy's "Four-to-Ten-Month" active duty program at the Naval Air Station, Millington, Tenn... JOHN M. GRIFFIN has been employed by the New England Telephone and Telegraph Company of Boston, Mass. His home is in Braintree... Working as a design engineer at Hamilton Standard, Windsor Locks, Conn., is ROBERT P. HART... WILLIAM E. HELLIWELL, JR., has accepted a position as field engineer with Riley Stoker Corp. of Worcester, Mass. He is presently located in Columbia, S.C... Studying as a graduate student at the University of Connecticut at Storrs, is DOUGLAS E. HOLMES... LOUIS R. HOWAYECK serves in the supply inventory management division of the Air National Guard... Uniroyal, Inc., of Naugatuck, Conn., has named NORMAN E. JOHNSON as a junior engineer... Omnitech, Inc., Dudley, Mass., employs PHILIP M. JOHNSON, chemist... GERALD J. KERSUS is an electronics engineer with U.S. Naval Electronics System and Evaluation Facility, St. Inigoes, Md... DANIEL F. KING is with the New England Nuclear Corporation, Boston, Mass... Serving as a Peace Corps Trainee in Jamaica, W.I., is MYLES H. KLEPER of Hamden, Conn... Chemical engineer CLAUDE P. MANCEL's business address is 8 rue Etienne Jodelle, Paris 18, France... SCOTT T. McCANDLESS works as a highway engineer for Howard, Needles, Tammen & Bergendoff, Boston, Mass... Agricultural engineer for Duncan Schillinger Farm, Scottsville, N.Y., is WILLIAM R. MELVILLE III... RAVINDRA M. NENE serves as a field engineer for Burroughs Corp., Boston, his residence being in Somerville, Mass... DR. SANDER E. NYDICK has accepted a position as senior development engineer with Thermo Electron Corp., Waltham, Mass. He makes his home in Stow... The Electric Boat Division, General Dynamics Corp., has named ROBERT A. PACE associate engineer... VINCENT T. PACE is an electrical construction field engineer for Philadelphia Electric Co., Philadelphia, Pa... Residing in Gloversville, N.Y., JOHN G. PLONSKY works for the General Telephone Co. of Upstate N.Y., in Johnstown... ANTHONY SCHEPIS has accepted the position of industrial engineer with the Sealy Mattress Co., of Randolph, Mass... STEPHEN T. SERGIO is a 2/Lt. in the U.S. Army at Fort Benning, Ga... BRUCE SODERMAN writes that he is a Private serving with the Army and is stationed at Ft. Dix, N.J... Peace Corps volunteer JOHN F. SPERANDIO is stationed in Uganda, Africa, where he expects to spend the next two years... RONALD C. STRAND has been employed by Camp, Dresser & McKee, Inc., Boston, Mass... Granger Construction Co., Inc., has named PAUL R. SWENSON as field engineer in Worcester, Mass. He lives in Jefferson... RICHARD V. TINO, JR., holds the position of quality control engineer for Polaroid Corp., Waltham, Mass... BRUCE R. TOMPKINS is with the Torrington Construction Co., Glens Falls, N.Y. His home is in Lake George... Among the graduate students at Duke University, Durham, N.C., is NOEL TOTTI III of Puerto Rico. Noel comes from quite a line of WPI graduates, including his grandfather, Noel Totti of the class of 1911; his father, Noel Totti, Jr., '42; his granduncle, Etienne Totti, '11 and his cousin, Etienne Totti, Jr., '42... The Philadelphia Electric Co., Philadelphia, Pa., employs THOMAS O. VANDEVENTER of Narberth ... RAVINDRA K. VORA is associate engineer for Otis Elevator Co., in Yonkers, N.Y... Serving as a supervisory assistant for New England Tel. & Tel. Co., Pittsfield, Mass., is STEVEN C. WATSON... Recently commissioned as an Army Second Lieutenant at Indiantown Gap Military Reservation, Annville, Pa., was THOMAS J. WERB... GLENN H. WHITE is serving as a Peace Corps trainee in Washington, D.C... Curtis 1000, Inc., West Hartford, Conn., employs ROBERT A. WOOLLACOTT, JR., management trainee... RONALD L. ZARRELLA has a position as production supervisor at Clairol, Inc., Stamford, Conn. He lives in Waterbury... MICHAEL P. ZARRILLI reports that he is a graduate student at the Wharton School of Finance & Commerce (University of Pennsylvania), in Philadelphia.

Feedback

To the Editor:

First I wish to offer my compliments on a fine article by Ken Maymon in the October *Journal.* Perhaps recognizing the failure of the federal government to cope with the pollution problem is the first step toward developing more effective programs.

The conclusions, though, are very disturbing. Mr. Maymon concludes that we need reorganization of federal bureaucracy and a "new way of thinking" for our politicians. Our country has, however, needed these changes for many years, and it appears that nothing short of widespread social revolution will ever change the way politicians think.

As individual engineers and scientists we have at our command the most powerful of all weapons against pollution – our professional integrity. It is machines that pollute; engineers and scientists design machines, and politicians and businessmen tell engineers and scientists what to do. Since businessmen and politicians are motivated primarily by money and the power to control people, and since machines have no morals, it seems that the only way to break this chain is for the engineers and scientists to exercise their moral judgment and refuse to work on projects which are detrimental to our environment.

The A.M.A. with its congressional lobbying power exercises a great deal of control over drug legislation and other medical matters. But where are the engineering and scientific societies, the alumni associations, and the technical colleges when environmentally destructive legislation is being debated? While our politicians are passing legislation to pay scientists and engineers to destroy the environment, our professional societies seem interested only in how it will affect the unemployment rate.

In the first part of the twentieth century, WPI alumni were leaders in developing the technology that gave us the highest standard of living in the world. I hope that the last part of the century shows WPI graduates as the leaders in the fight to save our environment so that this world can be a safe and healthy place in which to live.

Peace.

Steven A. Clarke, '71
Amherst, Massachusetts

Stoneblast

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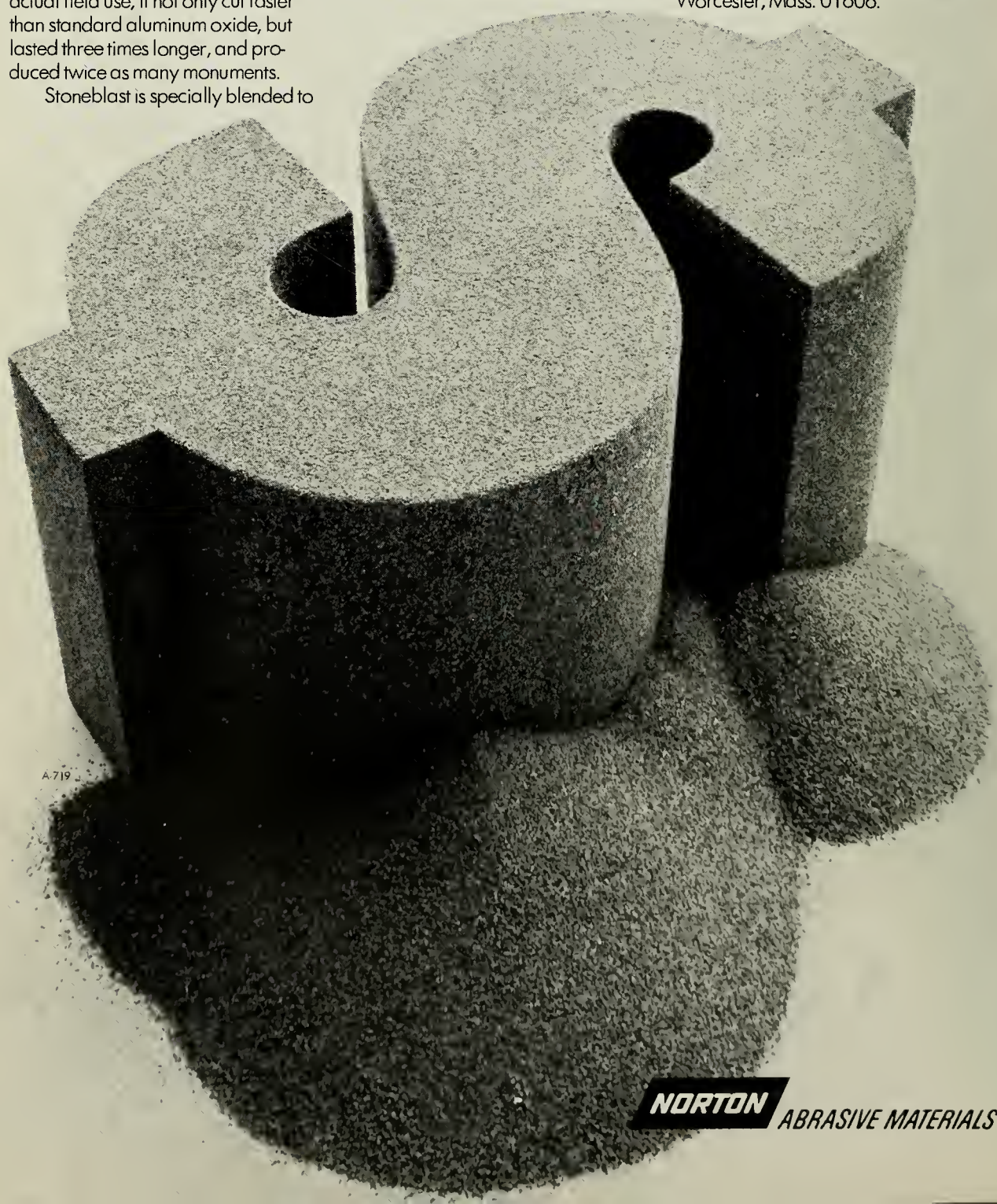

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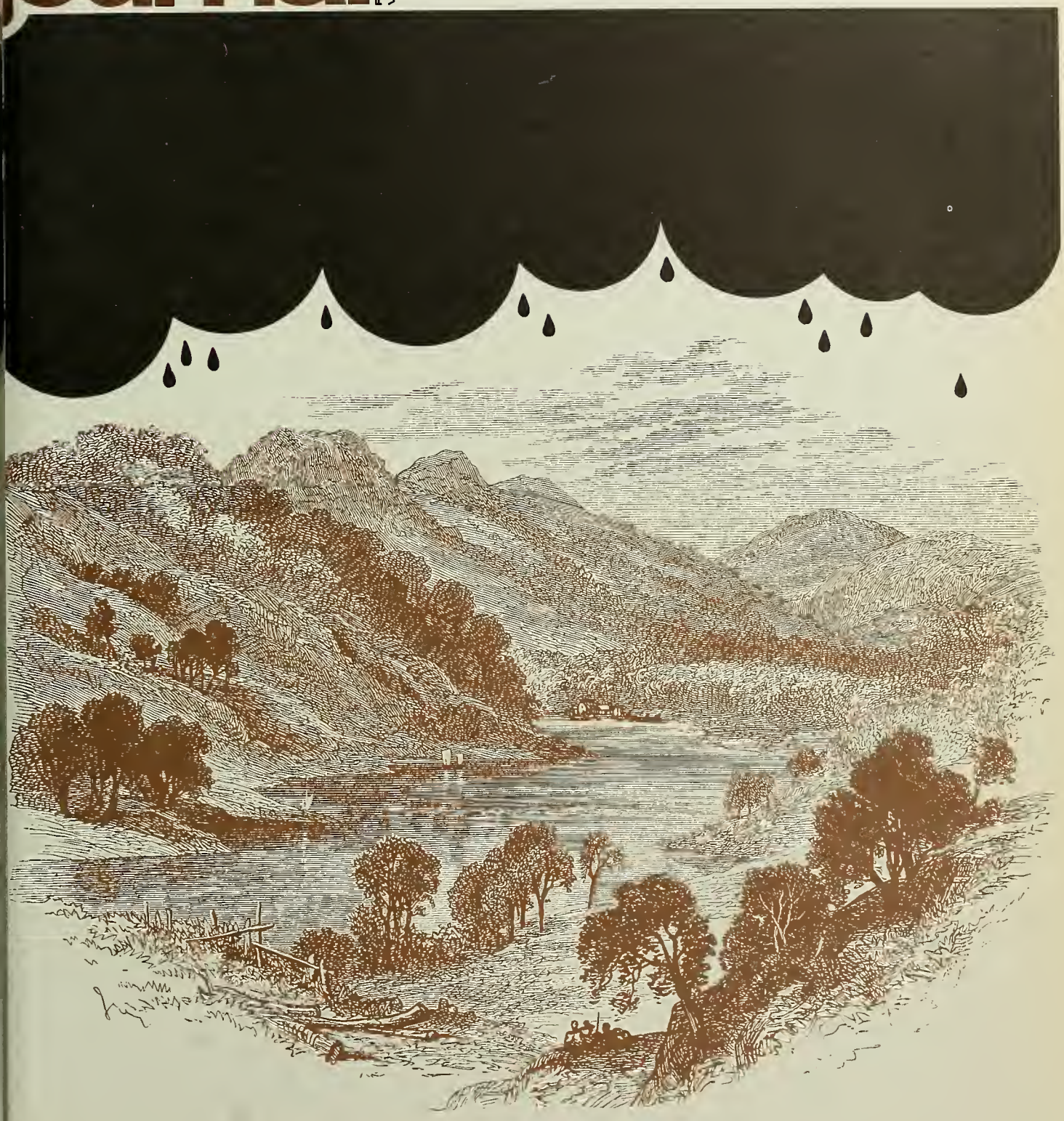

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A Note on the Cover: The cover for this issue has been printed on 100% recycled paper. It costs approximately 44% more than our usual paper, which is itself a fine and expensive paper.

The Prospects for our Environment

by Russell E. Train

Chairman, Council on Environmental Quality

THE CAUSE of the environment is one which the citizens have made. No political leader, no government official can take sole credit for putting the environment on the national agenda. Citizens identified problems, organized to influence governmental actions, made themselves heard at public hearings, brought actions before administrative agencies in the courts, and helped the press to interpret their concerns.

They did all this in the face of the massive lethargy of business-as-usual bureaucracy. Some citizen leaders were ridiculed for their efforts, mocked as the "birds and bunnies people," the butterfly chasers, the old ladies in tennis shoes. In many subtle and not so subtle ways they were made to feel that they were not in the American mainstream of bread and butter progress, that theirs was the voice of reaction, that they were callous to the people's need for jobs, that they were soft.

The first hurdle citizens had to overcome was organization. Contrast the situation just ten years ago when three or four national environmental organizations divided up a faithful but small constituency of members, with the situation today which sees innumerable national, State and local groups with large and growing memberships organized with general, specific and *ad hoc* objectives of every kind.

The second hurdle citizens had to overcome was the refusal of people to take them seriously. This refusal manifested itself in the ridicule of environmental leaders, the inability to attract press attention. Most significantly, there was a barrier between the concerned citizen and the processes of law. Although the contractor hired to bulldoze a woodland or level a hillside could go to court to keep people from standing in his way or delaying his work, the lifelong resident distressed by the impending destruction of a valued part of his community could not even be heard in a court of law because of constricted legal concepts known as "standing" or "government immunity." The law, truly reflecting the older values of the society at large, put greater stock by the immediate economics of a situation than it did by the longer-term aesthetic and cultural implications. Everywhere it seemed as though the part was afforded greater rights than the whole, and while there was no lack of advocates for specific dams, airports, highways and power plants, the fellow who dared to speak out for the environment could scarcely be heard above the roar of the "engine of progress."

By and large the citizens have won their battle to be taken seriously, and few courts turn them away today. The number of speeches and articles exhorting environmentalists to be responsible, and claiming environmental requirements are delaying needed projects and putting people out of jobs, suggests that citizen environmentalists are now being taken very seriously indeed.

Russell E. Train is a graduate of Princeton with a law degree from Columbia. In 1970 WPI awarded him an honorary Doctor of Engineering degree in recognition of his concern for the environment and his leadership in making the technical man compatible with the natural world. In 1969 President Nixon appointed him Under Secretary of the Interior. He was appointed to his present position in 1970. Russell Train is our country's environmental ombudsman.

The measure of citizens' strength today is the government's respect for them.

Finally, citizens have had to learn how things really work, how divergent views are heard and reconciled in administrative tribunals and courts and in the political forum. Shut out for so long, it has been difficult to adjust to a role where citizen opinions are solicited and considered, where recommendations are invited. But this obstacle has also been largely overcome, and there is less shrillness among environmentalists today, and more sensitivity to the complexity of government, the economy, and the needs of the environment.

The measure of citizens' strength today is the government's respect for them. It is simply inconceivable that any agency of government or elected official could turn back the clock and ignore the environmental concerns of citizens for very long — the courts, the press, and the people simply would not allow it.

Now that some of the great battles have been won by citizens, the time has come to ask "What does it all mean?" and "Where do we go from here?" Let me offer some tentative answers.

It is almost a third of a century since the beginning of World War II, and over 40 years since the start of the Depression. Many, if not most, of those years were characterized by deep insecurity. The insecurities of the post-War period were of both foreign and domestic origin, for the instability of the world outside was mirrored by social divisions here at home. Since then much has changed, and the themes that people once marched to no longer stir them. Where once we were confident, aggressive, unified and outward bound, now we can only look back and wonder at those days. We have passed through several revolutions — of rising expectations, civil rights, consumer rights — and we have witnessed the coming of the new politics, the new technology, the new consciousness, the new everything.

Now we are in the midst of yet another revolution, a turning inward. How much the war has been the cause, or whether we are just entering another cycle of history is debatable. We are, however, internalizing our ambitions, and questioning our purposes. One can measure our current mood in any number of ways, and the conclusion is unmistakable. We are showing by our visits to parks and museums, our purchases of books and sporting goods, our responses to polls and elections that we are more and more concerned with personal fulfillment, with productive uses of leisure, with the life of the mind and spirit and with the outdoors.

At a time in our national life when we are questioning traditional goals and redefining our purposes, we have come to a new concern with the quality of life. I do not believe that this concern is a temporary development. In the words of Jean Revel:

> There is a good deal more to the ecological movement than the effect of a practical determinism. After all, for thousands of years mankind has lived (and for the most part still lives) by drinking contaminated water, and he has survived the resulting dysentery and typhoid epidemics. Suffering apparently is not enough to move one to fight for a better environment. Malaria has never caused a revolution. In order to fight, one must be able to see a clear relationship among nature, technology, economic power, and political power.
>
> One must also be able to rise to the belief that nature belongs to every man, and to the realization that an oil slick on the ocean affects one's own good or better, one's own happiness. The development of such a belief therefore implies the existence of a political awareness that calls for the reshaping of intra-social relations, for co-proprietorship, for co-dependence, for co-responsibility.

We are in the midst of a fundamental reordering of our values, and the citizens who have worked to stimulate the debate are now being invited to contribute to it. They must display a maturity, a responsibility, and a staying power in the face of the inevitable testing of the depth of the nation's new commitment by those whose business is pollution or whose values are early American.

The public will ultimately pay these costs, and the public is entitled to know the relationship of the costs it is paying to the benefits it will receive.

There are two arguments that will increasingly be made in one form or another against moves to improve the environment. One I shall call the argument from economics and the other I shall call the argument from equity. It is essential that citizens concerned about improving the environment learn to deal with these arguments, and master the complex language in which they are presented and considered.

There is no question of the continuing need to do a careful and thorough job of economic analysis of environmental problems and programs. This is particularly true as environmental standards rise. Attaining low levels of control is relatively inexpensive but the cost rises rapidly as higher levels of abatement are attained. For example, in one particular industry it costs less than $1 a pound to reduce BOD — the measure of oxygen required to decompose organic wastes — by 30 percent. But to reduce it by over 65 percent can cost over $20 for each pound, and to reduce it beyond the 95 percent level it costs over $60 per pound. Marginal costs of controlling such air pollutants as sulfur oxides and particulates also escalate rapidly at high levels of control. It is important for many reasons that we have a clear understanding of these costs before making far-reaching decisions. The public will ultimately pay these costs, and the public is entitled to know the relationship of the costs it is paying to the benefits it will receive. Second, accurate information on costs is important because there may be more economical and more efficient ways of achieving the same environmental objective. Indeed, there may even be other environmental objectives which should receive a higher priority. Finally, the nation's resources are finite, and an intelligent allocation of those resources among an almost infinite set of desirable goals demands careful cost analysis. This is not to say that cost must be the determining factor in setting environmental standards. But it is a factor that must receive careful analysis if environmental improvement is going to continue to have the broad support of the American public which I believe essential.

It is perfectly fair to ask an environmentalist to deal directly with these questions, and to indicate what the trade-offs will be for a quality environment. But it is also fair for the environmentalist to insist on a rigorous acknowledgment that a poor environment is, in the crudest terms, costing us money. Part of what we give up by improving the environment is a baggage of unnecessary expenses to which dollar values can be broadly assigned. Let me briefly outline some of these costs we now bear for environmental problems.

To be able to deal comprehensively with the question we really need a better environmental balance sheet than we now have. But we already know that air pollution, for example, is costing us money. There is a growing body of evidence which indicates that the long-term effects of exposure to low concentrations of pollutants can adversely affect health and result in chronic diseases and premature death. Major illnesses linked to air pollution include emphysema, bronchitis, asthma, lung cancer, and even the common cold. One evaluation of epidemiological studies suggested that a 50 percent reduction in air pollution would eliminate damages to health by more than $2 billion in a single year. The Environmental Protection Agency has estimated the total economic costs of mortality and morbidity due to air pollution is around $6 billion annually.

One evaluation suggested that a 50 percent reduction in air pollution would eliminate damages to health by more than $2 billion in a single year. . . . The total estimate in 1968 of the direct *costs of air pollution in the United States alone — not taking into account discomfort, anxiety, or aesthetic degradation — was put at $16 billion annually.*

Air pollution also affects property values. Studies of the willingness of people to pay more for residences in areas having cleaner air are persuasive. Data showing that income levels correlate inversely with air pollution levels in large cities — the poorer you are the more you are affected by air pollution — suggest that heavy air pollution may result in lowered property values, and lower housing costs. One study of property values, based on data from three cities, shows that increases of 10 percent in air pollution levels can result in decreases of $500 per residential property tract.

The effect of air pollution on vegetation and materials was estimated at just under $5 billion in 1968. The total estimate in 1968 of the *direct* costs of air pollution in the United States alone — not taking into account discomfort, anxiety or aesthetic degradation — was put at $16 billion annually. This total is far in excess of abatement costs.

Economists have also attempted to put dollar costs on water pollution, taking into account reduced fishery harvests, diminished recreation opportunities and the like, but my point is that those concerned about what environmental reforms are costing us should look *beyond* the jobs provided by the marginal industry which is allegedly squeezed out by strict environmental standards to the broader economic interests of the communities who share their air and water with those enterprises. I am personally confident that we would find a net economic gain; indeed, that we would also find that many more will gain than will lose as a result of pollution abatement.

It is important that people understand that protecting the environment is going to entail costs and that it is they who will pay those costs — not someone else. At the same time, I think it equally important that the public not be scared away by inflated descriptions of the sacrifices involved. It has been my strong impression that those who talk the loudest about the heavy costs the public must bear for environmental quality are often those who are providing the public with products most closely associated with environmental problems. Could it be that they are trying to discourage the public from exercising consumer preferences that might adversely affect their own market? A Harris poll reveals that the people of New York are willing to pay to improve the environment, that 60 percent would pay an additional $200 for a car with a pollution-free engine even if such an engine were not required by law; that 85 percent would be willing to purchase only returnable bottles and pay a five cent per bottle deposit.

In a broader sense, however, while the balance sheet approach to environmental gains and losses may be suggestive, I think it is inadequate. Environmentalists were among the first early to sense the hidden costs of technology, to see that better automobiles and highways and dams and power facilities do not necessarily add up to a better life — that the sum of the parts was worth less than the individual values of each one of them would suggest. Economics has not yet become subtle and refined enough to allow us to account adequately for this phenomenon, but we know it is true. We know that the plight of the modern middle-class American compares to the dilemma of the fellow who always gets what he wants — for a while he goes on asking for more — more appliances, more power, more comfort — until some dark night alone with himself he is moved to ask Why? What it is all worth if the animals have been decimated, the forests reduced, the air befouled, and the broad oceans themselves debased?

More. More power. More comfort. Until some dark night, alone with himself man is moved to ask Why? What is it all worth if the animals have been decimated, the forests reduced, the air befouled, and the broad oceans themselves debased?

Intuitively, we have always understood this to a degree. While we have historically worked hard to increase goods and services, we have at the same time chosen to take a portion of the rewards of economic productivity in the form of reductions in the work week. In the span of several decades, the average U.S. work week has declined from 60 hours with virtually no vacations to less than 40 hours. No one has been moved to complain about what we have given up since 1900 in productivity foregone because they agree so readily about the value of what we have gained — 20 or so hours more of leisure.

The movement to a shorter work week challenged our economy to increase hourly productivity, to mechanize and become more capital intensive. The economic challenges posed by environmental quality objectives are similar in nature but far less in scale than such earlier demands as shorter working hours, paid vacations, pensions and health care. Yet it is true that environmental reforms pose challenges to technology. For example, we have designed our proposed tax on sulfur emissions so that the tax will become more burdensome with time, rewarding enterprises which develop new techniques for eliminating sulfur, and penalizing those which resist change.

The reason perhaps why we are slower to perceive that our continued progress as a people now demands that we improve environmental quality just as a quarter century ago social justice demanded a better deal for the working man, is that the benefits we are now striving for are public, not private. Environmental quality generally has no interest group, no lobby to whom the cause means dollars and cents, days off, or sick pay. Americans have been slow to differentiate between individual goods and communal goods. Many of this country's problems have been aggravated by our historical misunderstanding of the communal nature of air and water. Now that there is some consensus in those areas, the task of the environmentalist is to persuade Americans of the communal nature of much private land use, of distinguished historic buildings and architectural masterpieces and valuable ecosystems.

What about the poor — what's in it for them? What about social justice and equal opportunity?

Our system has always functioned well where adversary interests have had specific objectives and a strong constituency. Where the cause is the public estate, and we all stand to gain, some of our institutions do less well. But we are adapting them. Reduction of bond requirements and abandonment of the rule that litigants must have a direct economic stake to contest public agency actions are instances where the courts have made room for what Edward Banfield has called "the public regarding citizen." The citizen is more and more being invited to scrutinize the quality of service he is receiving from agencies of government and to challenge it directly, by commenting on its proposals through its public participatory processes, or by challenging it directly in the courts when he finds it wanting.

All very well, some may say, but the public regarding citizens who stand to gain from environmental gains are the affluent middle classes. What about the poor — what's in it for them? What about social justice and equal opportunity? We have heard talk recently of "environmental escapism," and suggestions that as a people we are abandoning social objectives and priorities — a decent home for every American family, the elimination of poverty — in the name of less exacting goals such as cleaner air and water and more parks. This I refer to as the argument from equity, and since it questions the very legitimacy of environmental reforms it is essential that environmentalists confront and deal with it.

I believe that the view that we are now escaping into a world of middle class concerns which benefit only the affluent makes three false assumptions:

1. That alleged neglect of social priorities is in some way a consequence of increased support for environmental programs. We are simply not playing a zero sum game where my gain is your loss or vice versa. Economically and politically, it is simplistic to argue that better air for all of us has meant less money for the poor.
2. That although the poor may not define environmental improvements as their primary objectives, they do not stand to gain by them. On the contrary, we have data that indicate that the poor suffer most from air pollution, poor waste management, and inadequate recreational opportunities. For example, in our annual report on the quality of the nation's environment last year we cited data from Chicago showing that the lowest income neighborhoods are in the areas of highest air pollution concentrations. Studies in several other cities show a similar close correlation between low income and high air pollution levels.
3. Third, I believe it is specious and perhaps a trifle guilt-ridden to argue that the interests of the great majority of Americans who are showing in polls and in other ways that they care very deeply about the quality of their natural surroundings are to some extent illegitimate. Galbraith could rationally argue in the *Affluent Society* that the amount of money Americans lavish on chromium auto fixtures and cosmetics was a misallocation of resources in view of the needs of the public estate. But the environmental movement is precisely directed at benefiting the society at large.

Citizens organized in the public interest have been so successful that they now are virtually a fourth branch of government when they care about an issue. If this new status calls for a new sophistication and maturity in the face of subtle and sometimes persuasive skepticism, it also calls for a spirit of conciliation and cooperation with others in the society who see some things differently. And it calls for a realistic appraisal of what is involved.

It is important for us to understand that many of the problems we have — poverty, pollution, inflation, the urban crisis — we share with all the world. Often because we face them first, our solutions and our performance become the measure, mould the expectations, of what is possible. As Revel has pointed out the fundamental changes that are occurring in our society amount to "the first revolution in history in which disagreement on values and goals is more pronounced than disagreement on the means of existence."

While so much proceeds at geometric rates of increase these days, time is still linear, and people are still people. Although our mood may have changed and our needs have become more subtle, our older institutions are moving along with years of momemtum behind them. Institutions are less flexible than people, their turning arcs are wider, and it is more difficult to move them through periods of maximum transition. The regular scrutiny by citizens of

It is important for us to understand that many of the problems we have — poverty, pollution, inflation, the urban crisis — we share with all the world. Often because we face them first, our solutions and our performance become the measure, mould the expectations, of what is possible.

governmental agencies is serving to energize the agencies themselves, and to discourage their becoming overly preoccupied with themselves and the world of government. In the midst of uncertainties over which areas to emphasize or which priorities to favor in an era of information overload, strong citizen concerns have the effect of focusing attention and clarifying alternative options.

It is the task of the national administration to chart an orderly course through a disorderly time, to accommodate the need for institutional change as quickly as possible without wrecking what is essential and useful in our processes of government. We in this administration are fully committed to the revolution in values now underway, and to the reappraisal of the goals of technology and its consequences. At a time when there is so much that divides people, the cause of the environment is vibrant, youthful and full of hope for young and old, rich and poor.

Moving forward together in this very complex time will require not only sophistication but also conciliation, moderation, and respect for each other's deeply felt wishes and desires. A posture of disciplined application to the business at hand is difficult to maintain in an atmosphere charged with passion, but it is the only approach capable in the long run of achieving the broad goals and the better quality of life we seek.

Last February, when President Nixon sent to the Congress his Environmental Message proposing a comprehensive and wide-ranging set of environmental initiatives, he declared:

". . . Far beyond any legislative or administrative programs that may be suggested, the direct involvement of our citizens will be the critical test of whether we can indeed have the kind of environment we want for ourselves and for our children."

There is no question in my mind but that an informed, concerned, and responsible citizenry is the crucial factor upon which ultimately all environmental progress must depend.

WPI: A Center for Environmental Studies

by Dr. Edward N. Clarke
Director of Research

UNTIL RECENTLY *ecology* was a professional word used and understood only by biologists. *Environment* was a word connected with the study of human behavior to describe the influences which, along with heredity, make people behave as they do.

Today, these terms are household words even though the full comprehension of their meaning is often little understood.

Is the current concern for our environment a fad which will be replaced next year by something else? Or is there a real problem which has finally been recognized by the masses to the extent that they are now willing to support the programs necessary to improve the environment in which we live? The broad-scale involvement of WPI faculty and students in environmental studies and projects described in this issue of the *WPI Journal* provides evidence that these problems are both real and critical.

First of all, what do we mean by the environment? Prof. B. Allen Benjamin of civil engineering answers that. "The term 'environment' means different things to different people, even here on campus. Some equate it with 'pollution' (which is, rather, an environmental *problem),* others with 'air and water resources' in general; still others with *all* natural resources, of which land (with what is under and on it) is a major component. But in the broadest view, and the one I favor, is that the 'environment' includes the physical works of man as well as the elements of nature. Stated another way, our environment is composed of interdependent systems, both natural and man-made. The abuse of one system jeopardizes the quality of the others and ultimately the survival of all."

It is easy for the public to point a finger at technology, saying "you are to blame for the mess in the environment." While there is an element of truth in this accusation, it is no more applicable to technology than to every other segment of society. All of us businessmen, politicians, farmers, educators, and the rest of the citizenry have been looking at the world around us through blinders which prevented us from seeing beyond our own special interests.

The municipalities which dumped raw sewage into rivers without passing it through treatment plants should not blame technology when new government regulations demanded treatment to improve water quality for those living downstream. Although technology was available to correct the problems years ago, elected officials with few exceptions could see no advantage to their own community in undertaking such an expensive public works project. Even if they had, they would have been faced with the difficult job of convincing the citizens to increase their taxes to pay for the project.

The businessman who found it economically desirable to dump his wastes and by-products into streams or through stacks into the air was suffering from the same limited vision. If approached by local officials about stopping the practice, his answer was often a threat to leave town, eliminating jobs for local citizens. His claim was that he was faced with the necessity of making a profit or going out of business. For the marginal business, this might have been the only alternative. However, prosperous businesses often took this same attitude.

It's easy to point to the city sewage plant or the smoking stacks of industry as sources of pollution, but until each of us recognizes his own contribution to the overall problem we cannot hope to solve it. Fortunately, the public is being made aware of the individual's responsibilities.

The nation's college students picked up the torch to crusade for a better environment sometime between their crusades for civil rights and the end of the war in Vietnam. Then the politicians began to speak on the perils of pollution with the result that new laws were enacted to protect the environment. The remaining wetlands received a reprieve from the real estate developers as people finally

realized that they are a part of the natural ecosystem in which man lives. Federal standards on automotive exhaust emissions were applauded by the people, if not by the auto makers. They couldn't be met, said Detroit, but teams of college students from all over the country including five WPI teams proved the standards could be met in the 1970 Clean Air Car Race.

WPI faculty have provided national leadership in environmental research. Worcester Polytechnic Institute is, in fact, a center for environmental studies. It does not have a separate "environmental" discipline under a department head. Rather, these studies permeate the entire program and curriculum. Because the problems of correcting the misuse of the environment cut across the lines of the traditional academic disciplines, this represents a logical approach.

Environmental problems and WPI's response to those problems have had a major impact upon education and research at WPI. There has been a nearly ten-fold increase in sponsored research since 1965 at WPI, with much of the growth in fields related to the environment. A major portion of the sponsored research at Alden Research Laboratories is concerned with the thermal pollution of rivers and other water systems. Nearly half of all the sponsored research on campus is related to air, water, and solid waste problems.

WPI's faculty and facilities were in the right place at the right time to work on environmental problems when WPI made the decision to expand its research program. Instead of following the more traditional engineering college path of becoming heavily involved with defense and space research, WPI was alert to the then (1965) growing awareness of environmental problems and proceeded to grow in this particular socially-oriented direction.

The present concern for the pollution of our environment was first brought to the attention of most people by the late Rachel Carson in her book, *The Silent Spring.* However, the problem has been of concern to others for much longer. For example, research into the problems of thermal pollution of streams was begun in 1952 at WPI's Alden Research Laboratories. This first model study of the Schuylkill River was the forerunner of twenty-five studies on the problems created by returning heated water to streams from power plants, both conventional and nuclear powered.

The faculty at WPI recognized the dangers of continued pollution before it became a national concern. In 1967, the theme for a day-long, "Scientific Briefing for Tomorrow" seminar for business leaders was entitled "Pollution: Danger in Our Time." This program featured a number of eminent authorities describing the problem of pollution and steps already being taken to correct the problems.

Perhaps that Scientific Briefing program was before its time for the topic was not then of popular concern. However, for the businessman who attended, it was a practical forewarning of the public clamor which was about to descend on business everywhere.

WPI's early response to the need for solutions to environmental problems created such an impression on the Sloan Foundation that it provided a three-year grant of $200,000 to establish an Environmental Systems Study Program for undergraduate students. This is the first grant of this type ever given by the Sloan Foundation. The ESSP program seeks to develop the methods for teaching students to approach the solution of environmental problems as an interdisciplinary effort. The program, co-directed by Drs. Zwiebel and Keshavan, deliberately seeks a cross-section of participating students and faculty from many departments.

Students in ESSP are first exposed to the theoretical aspects of environmental problems to help them recognize, understand and integrate environmental and social considerations into a project. A key element is the actual project which brings students and faculty into a close working relationship with those people in industry and government who are trying to solve a real problem.

Working in small groups, ESSP students study every aspect of their selected project . . . technological, economic, and social. Only by recognizing the interrelationship of all these areas in an acceptable solution can they effectively act on the problem.

A typical project now in progress involves the discharge of sewage treatment sludge into Boston Harbor. Another concerns air pollution in Worcester.

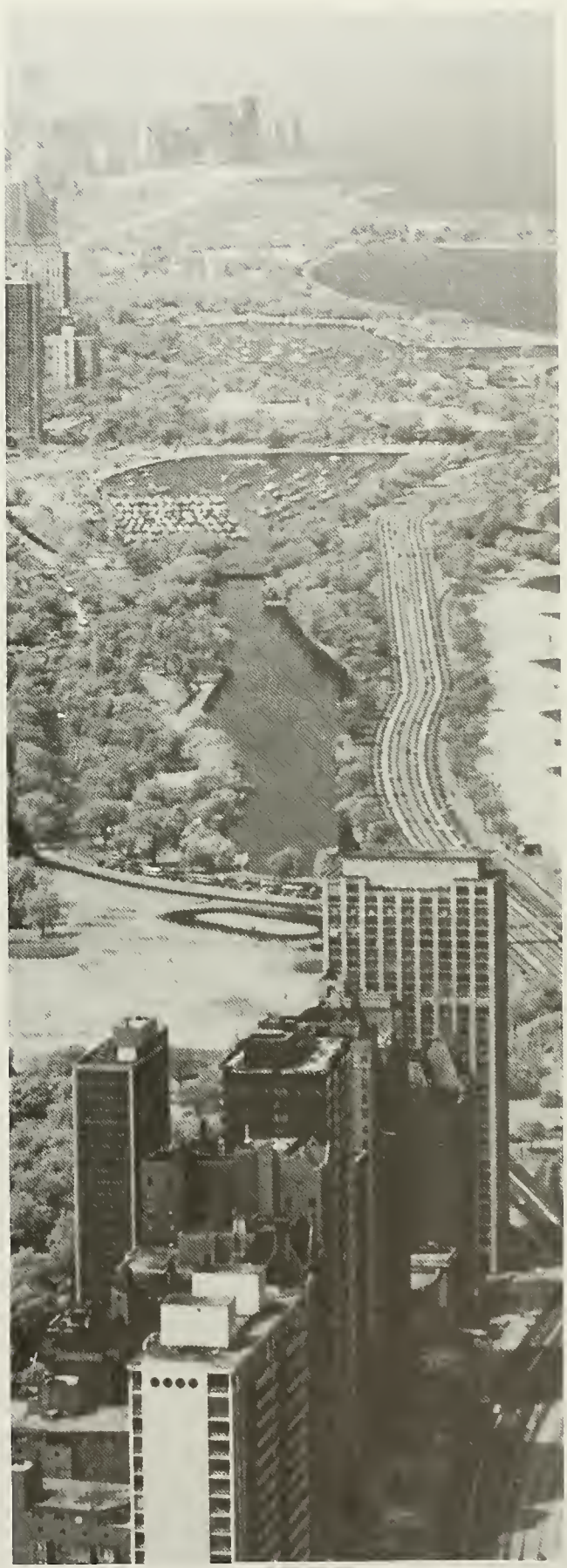
Initially, the environmental programs on campus were primarily in the hands of chemical, civil, and mechanical engineers, and chemists, often with a single-discipline orientation. The electrical engineer, however, has come roaring into the picture recently, primarily because of an ability to work on problems involving large systems.

Professor James Demetry has a new sponsored program to educate selected health boards, planning and conservation commissions, and other town and city decision-makers on the environmental issue. Professor Clements has submitted a new proposal to NSF to use dynamic state estimation techniques (originally applied to aerospace and defense problems) on electric power systems in order to minimize fuel consumption (and hence pollution) and to avoid system instabilities, brown-outs and black-outs. Professor Harit Majmudar is serving as program manager of a newly developing proposed program concerned with power-plant siting, a subject of considerable environmental concern. In the latter program, Professor Majmudar will manage the program and the use of research results obtained from the coordinated efforts of political scientists, sociologists, and economists, as well as engineers.

The civil engineers have generally viewed the environmental issue in its broadest sense, i.e., the aggregate of all external conditions and influences on society. Housing, transportation, and conditions of poverty are part of the broadly conceived environmental problem. Professor Carl Koontz is planning a major study of the community impact of interstate highways I-91 and I-291 in the Springfield, Massachusetts, area. In the past, new highway location has largely been determined by cost-benefit analysis. Currently, and more so in the future, social effects will play a dominant role in highway planning. Professor Koontz's research will provide knowledge for better highway planning in the future.

Today, it's impossible to watch television or listen to radio without hearing advertising claims for washday products which proclaim the low pollution virtues of the sponsor's product.

The claims, the speechmaking, the advertising, and the recently enacted laws have all served to arouse the public to the need to protect the environment while there's still time. At the same time, the claims and counterclaims have confused people to the extent that it's often difficult to determine what is truth. It is at this point that the spokesmen for technology must speak out. For too long, this group has been silent. To engage in public controversy was "unprofessional" according to the ethics of a generation ago. Not so today. Perhaps college students of the past decade have helped to change this attitude and for good. In the change from the apathetic students of the fifties to the concerned students of the sixties, students have raised the searching questions which demand that professional people take a stand.



Whither the Automobile?

by Roger R. Borden '61

THE AUTOMOBILE, of all the technological innovations of the twentieth century, has most profoundly affected our pattern of living. The family car, once a luxury, is now taken for granted as a necessity of life. The urban sprawl of most North American metropolitan areas is the inevitable result of an economy based upon motor vehicles (cars and trucks) as the principal form of available transportation.

Even though the passenger car and a host of recreational vehicles have made it convenient to pack up the family and travel for several hundred miles on vacations for relaxation and enlightenment, the automotive vehicle as the dominant form of transportation has created many environmental problems:

1. Before the automobile the city was planned along the trolley line and the rich and the poor often lived within walking distance of one another. It would be naive to think that there was once a "golden-age" when the rich and poor socialized with one another, but at least there was no geographical separation.

Today the suburban youth is reared with others of a similar socioeconomic and racial background. Many youngsters going through the typical suburban high school have almost no contact with a poor person, especially a poor black person. This geographical separation is one of the by-products of the automobile. But we have to decide whether it is the best way to raise our children. On the broader plane, can such economic and racial isolation really foster a democratic society?

2. Many suburban communities are so situated that a second car is a necessity, not a luxury. The man needs a car to get to work, and the woman needs a car to chauffeur the children and run errands. As one cynic has said: "If you don't buy your wife the second car, you'll pay the same money to the psychiatrist, because she will go stir crazy confined to her suburban house."

3. In addition to the more than 50,000 Americans killed each year in automobile accidents, there are several groups that are victims of the automobile explosion — the poor,

N. E. Patriots Stadium/Worcester Telegram

Roger R. Borden is associate professor of mechanical engineering. He was faculty advisor to two of WPI's entries in the 1970 Clean Air Car Race — the two entries which took first place in their respective classes.

the young, and the aged. The poor are affected in several ways. First, many do not have cars, and when they do the vehicles are unreliable and break down frequently. In addition, many of the urban poor have been forced to leave their homes as their communities are disrupted to build new highways that will bring more cars into the already congested cities. The young, particularly in the suburbs, become overly dependent on their mothers, who function as chauffeurs. These youths do not have an opportunity to express their independence until they reach driving age, and for the suburban teenager the automobile has thus become a symbol of liberation. It can also mean a third or fourth car for the family. The elderly who cannot or do not want to drive are unable to live in the burgeoning suburban areas, where life necessitates constant access to the automobile.

4. One of the chief contributors to air pollution in urban centers is the automobile. Yet rather than designing convenient forms of mass transportation, we encourage further pollution and congestion by building new superhighways leading into our cities. In addition, the automobile is a key contributor to space pollution, since much urban land is used for streets and parking.

We should stop treating the automobile as a god. It is one mode of transportation, not the only one. There are ethical implications to the secondary consequences of the automobile, and a host of questions should be dealt with: Is it just that the federal government gives huge subsidies to states to build highways but pittances to develop mass (public) transit? Cannot the highway fund be diverted to mass transit? What about the effects on health from air pollution?

5. In his 1965 book *Unsafe at Any Speed*, Ralph Nader, the consumer advocate, claims that most of our family automobiles have inadequate mechanical and/or structural designs for safe operation. Although there is much controversy centered on the details of Nader's charges, we must admit that many of today's cars leave much to be desired from the standpoint of safe operation at our current pace of living. It would appear that Detroit has sacrificed mechanical and structural integrity for the sake of styling and pseudo-luxury.

The Dilemma of the Automobile

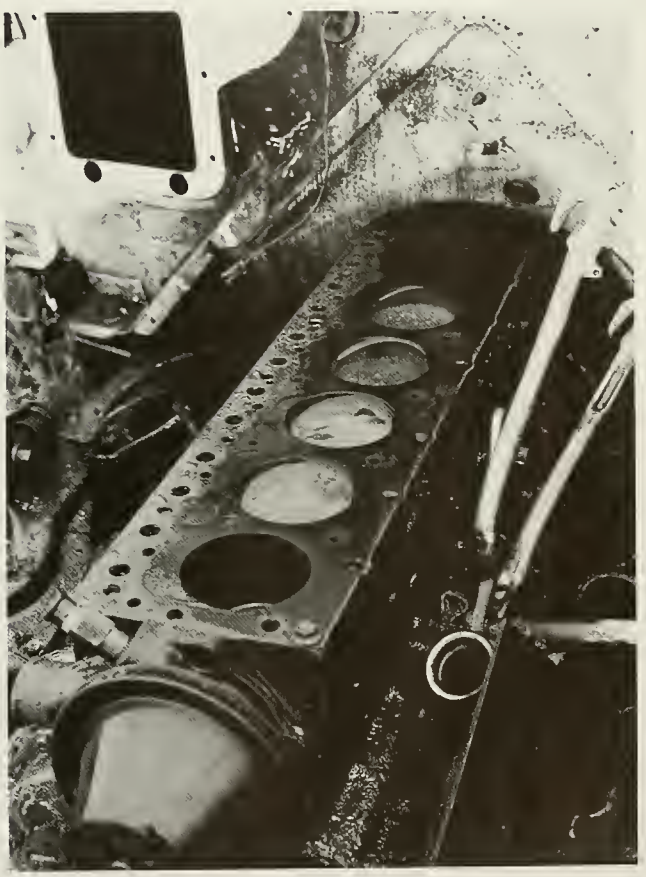
The U.S. Environmental Protection Agency specifies the emission requirements for all passenger cars and eight trucks under 6000 lb. gross vehicle weight. In 1970 there were 85 million motor vehicles in this category in the United States. The projection for 1984 is 144 million. Each year we have a net gain in the U.S. population of 2 million people, but we add 4 million passenger automobiles.

The installed horsepower, in 1971, for all motor vehicles under EPA regulation is 16 billion hp. For comparison, the installed capacity of all the electric utilities and industrial power plants in the U.S. in 1971 is 400 million hp. This is a ratio of 40 to 1. Thus, the U.S. with 6 percent of the world's population uses 30 percent of the world's energy.

The air pollution from this energy generation and use is costly. Dirty air costs the average American family $309 per year: health, $117; residential property, $100; materials, $90; vegetation, $2.

Deaths from air pollution are rising: about 100 deaths per 100,000 of the population.

Our climate is changing. Winter temperatures are up 2 to 3 degrees. Cloudiness is up 5 to 10 percent. Winter fog is up 100 percent. Average wind speeds are down 20 to 30 percent.



Clean fuel is scarce. We have left a 13-year supply of natural gas, a 35-year supply of oil, and a 35-year supply of uranium.

Our known mineral reserves (at present consumption) are being rapidly depleted. We have left:

Zinc for 20 years
Lead for 25 years
Tin for 30 years
Copper for 35 years
Iron ore for 350 years
Coal for 450 years

The Contribution from Automobiles to Air Pollution

The 1969 statistical mean values for automotive engine air pollutants are as follows:

	Emissions in pounds of pollutant per pound of fuel consumed				
Spark-ignition internal combustion engines	*Carbon Monoxide* *CO*	*Unburned Hydrocarbons* *HC*	*Oxides of Nitrogen* NO_x	*Solid Particulate Matter*	*Oxides of Sulphur* SO_x
Los Angeles	0.500	0.093	0.024	0.00022	0.00014
New York	0.972	0.104	0.018	0.00018	0.00014
EPA average for all U.S. cities	0.560	0.072	0.031		
Diesel Engines					
Los Angeles	0.0045	0.018	0.018	0.0045	0.0045
New York	0.0067	0.020	0.025	0.0125	0.0045
Proposed Clean Air Power Plants					
Rover Gas Turbine	0.020	—	0.0003	—	0.002
Thermo-Electron RCE	0.0002	—	0.0030	—	0.00045

When using volatile fuels such as gasoline, 7 to 10 percent of the total fuel input is vaporized and lost before reaching the engine.

Environmental Protection Agency Emission Requirements as of July 1971

	Pre-1966 Base Line	*1971*	*1973*	*1975*	*1976*
CO gm/m	86	23	39*	3.4	3.4
	0.44	0.1176	0.20		
HC gm/m	15	2.2	3.4*	0.41	0.41
	0.007	0.0113	0.0174		
NO gm/m	5	4.0	3.2	3.0	0.4
	0.0256	0.0205	0.0164		

The underscored values in the table give the number of pounds of pollutant per pounds of fuel consumed at an average of 15 miles per gallon.

*A change in the testing procedure allows a higher numerical value indicating lower emissions.

Resource References:

The National Wildlife Federation: *National Wildlife Magazine*, Oct.-Nov. 1971 and Dec.-Jan. 1971-72.
The U.S. Environmental Protection Agency
Moody's Industrials

Textual Concepts:

Tech-nethics by Norman J. Faramelli, Friendship Press.

These are some of the problems. Now we must turn and search diligently for the answers.

This Is Where the Action Is!

These brief descriptions of some of the work being done on the WPI campus in the area of environmental studies describe typical studies and are by no means a complete listing. They are included here to indicate the scope of interest at WPI in using the real problems of environmental pollution as a means to provide a sound learning experience.

thermal pollution

According to Prof. Lawrence C. Neale, director, the Alden Research Laboratories have been involved in studies concerned with environmental problems since the Schuylkill River study of 1952. A large percentage of these studies have involved the thermal effect of steam power plants with "once through" cooling systems. From this single study the laboratory activity in this area has expanded to include a total of over twenty-five studies, of which nine are active at the present time. The scope of these studies has ranged from a simple scale model with a single heated discharge to automatic tidal models including several individual plant installations. The Indian Point III model, as an example, reproduces a 14-mile stretch of the Hudson River estuary and includes plant sites for four different installations with modeled warm water discharges. Instrumentation has advanced from mercury thermometers read infrequently by the model operator to data retrieval systems which digitalize data from as many as 300 sensors every 15 seconds of model time and record all data on magnetic tape for remote data processing.

In all of the thermal studies Alden Research Laboratories is working with the power industry to develop combinations of operating procedures and structural design in order to meet various government standards for water quality. In the final analysis the studies provide environmentalists with predictions in three demensions of the temperature distribution in the receiving body due the plant operation. In the same category of thermal problems a presently active study involves a combination of pumped-storage (hydroelectric) with nuclear power to utilize the upper reservoir as a heat sink and thus protecting the lower reservoir and the associated river from heavy heat loads. Other studies are involving straightforward river situations, natural and artificial reservoirs, and in some cases open seacoast.

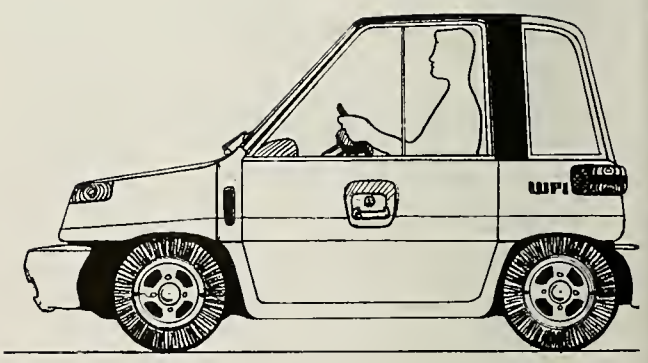
A variation from the river model type of study, but still aimed at the heated effluent problem, has been several

studies of spray cooling. One study for a Gulf Coast utility was directed at the optiming action of spray cooling of a flow from a steam power plant and involved an experimental review of nozzle design and operating conditions. A recent study (both laboratory and field) for New England Power Company has covered a wider range of parameters associated with spray cooling. In addition to temperature reduction efficiency the amount of spray drift interaction of a number of nozzles and associated phenomena have been studied. This aspect is particularly important in situations using brackish water or sea water and thus can produce an impact on adjacent land areas and the possible uses of neighboring lands.

Associated with a number of the pumped-storage projects the flow patterns in the reservoirs have been studied to insure minimum velocities compatible with migratory fish movements. Clear passages have been maintained or developed for the particular design of intake/outlet structures. This has also been developed in terms of other uses of the water body, such as navigational and recreational. Water velocities at the bar racks and other intake sections have been studied and patterns developed to minimize the entrapment of fish and other swimming life forms.

In the hydraulic machinery field several studies have been performed for filters and screen manufacturers. This work has involved new types of equipment designed to improve the efficiency of such equipment as used in the treatment of water and wastes such as sewage.

The interaction or interrelation of power production and water supply has generated the impetus for another model study. In this case the model (at a rather large ratio — 1/4000) of Quabbin Reservoir, which serves Metropolitan Boston, has been developed to review possible introduction sites of additional water sources — notably the Connecticut River — to the reservoir. The study involves density currents and travel times under a variety of conditions and for a number of points of introduction. The aging of the reservoir as well as water quality are involved in the problems and concerns to which these model studies are addressed.



automotive pollution

After reading Professor Roger R. Borden's article on page 12, one can readily appreciate why his major research efforts are being directed toward the development of cleaner automobile engines. His first efforts in this field involved about 60 students, who designed and modified the five WPI entries in the 1970 Clean Air Car Race. WPI teams took two first-place awards and the college had more entries than any other participating institution.

Since the 1970 race, a second generation of students has taken over several of the cars and are working to decrease the emissions even further.

The major project in this area today is the design and construction of an entry for the 1972 Urban Vehicle Design Competition. The competition is sponsored by SCORE, Inc., a non-profit organization of engineering schools whose purpose is to promote engineering design competitions in socially relevant areas of engineering. The first competition will judge the efforts of student teams in developing an *urban* vehicle which will be small, safe, and will produce minimum pollution.

Prof. John A. Mayer (mechanical engineering) is faculty advisor for the WPI group, which now numbers about 50. students. Although most are mechanical engineering students, there are several from other departments. Prof. Mayer was also a faculty advisor to the Clean Air SAAB team in the 1970 competition. The UVDC team began its work a year ago, developing an initial design during the spring and summer. The project is now at the construction stage. The former aero laboratory on the top floor of the Washburn Building has been taken over by the team. Here they are doing their final designs, building the molds for the plastic body, and working on smaller components.

The vehicle is being built from the ground up, although many standard automotive components will be used. It will have an internal combustion engine which will drive the car through a hydraulic transmission to the wheels.

food and fuel synthesis

Dr. Alvin H. Weiss, chemical engineering, began his work in this field on an out-of-this-world project. It began with a grant from the National Aeronautics and Space Administration for the development of a process of creating edible food on long space voyages. Simply stated, Dr. Weiss was trying to develop a process for making sugar from the exhaled breath of the astronauts.

Behind this project lies the fact that in the small closed ecosystem of a space ship it becomes impractical to carry large supplies if the recycling of material within the ship can accomplish the same ends. Experimental results have been obtained which show the feasibility of producing not only potentially edible sugars but also a new class of branched carbohydrates that do not occur in nature.

Even with man's space flights to the moon already history, the concern about manufacturing food in space may not seem as important to the average man on the street as some of the more current problems here on earth. However, "current population growth is such that it is predicted that the manufacture of foods will be required within the next generation. The availability of carbon monoxide from natural gas, petroleum, and proposed coal refineries makes CO a preferred raw material for producing both carbohydrates and single-cell protein," says Dr. Weiss. He believes that large-scale food refineries may well be built in the foreseeable future to produce man-made food. These will be used for animal feed, thus releasing farm land for human needs.

Briefly, the process for creating food from carbon monoxide begins with converting the CO into formaldehyde. The formaldehyde can then be converted to "formose" sugars, which in turn serve as substrate for single-cell protein growth.

Dr. Weiss and his team of researchers are also working on a process to make oil from solid waste. "Present methods of solid waste disposal are ineffective and will become more so in the future, due to the sheer volume of materials. Refuse per capita is expected to increase much faster than population growth, and therefore more effective means of disposal must be explored now." His process is to convert the cellulose in solid waste material into useful oil. The great bulk of household refuse is paper and paper products. With the ban on burning in many communities the amounts of waste have multiplied many times. In his process, which Dr. Weiss described on the NBC Today Show in September, the waste is ground up to fine particles. These fine particles are then mixed with a liquid, probably some of the end-product oil, and fed into a reactor where the cellulose is hydrogenated. The resultant product is about the consistency and the grade of crude petroleum.

Dr. Weiss envisions this process being operated in larger municipalities. Solid waste would be collected from the community and processed in a central plant. The resulting crude oil *could* be burned in power plants or certain municipal buildings. More likely, however, the oil would be sent to a commercial refinery where it would be processed in the same manner as natural crude oil to produce the various fractions which might be needed.

His process handles not only waste paper but also garbage, tree branches, and leaves. He envisions a processing plant which will take assorted rubbish and mechanically separate out glass and metal for salvage and recycling. Just about everything else would go through his oil-making process. This will help solve two of man's pressing problems, a declining reserve in fuels and a mounting potential of rubbish and garbage. And about the only by-product of his process would be steam going into the air with no air pollution.

urban planning

Since the principal sources of the pollution of the environment result from the urbanization of man, the civil engineering department's urban planning program, headed by Prof. B. Allen Benjamin and Prof. George E. Mansfield, is deeply involved in environmental studies.

Student projects in the program for the past seven years have involved consideration for the environment as students planned hypothetical new communities, investigated blighted areas suitable for redevelopment, and considered the impact of a new jet port in central Massachusetts (a proposal made and since dropped by public officials).

An important part of the urban planning program involves the study of the political processes by which things get done in municipalities. In this area, members of other WPI academic departments have contributed their special expertise.

A new program has just been funded by the U.S. Department of Health, Education and Welfare to provide off-campus, non-credit courses for public officials concerned with urban planning. Directed by Dr. James Demetry of electrical engineering, the program will involve classes conducted in area communities during the evening for town selectmen, planning board members, and any other public officials faced with the problems of growing communities.

oceanography

The public is slowly awakening to the fact that the seemingly limitless seas of the world are also affected by pollution. The sea has been a vast dumping-ground for many years, and there is ample, visible evidence that man cannot continue this practice without causing possibly irrevocable damage.

The civil engineering department is offering an advanced undergraduate-graduate course in oceanography to acquaint students with basic knowledge of ocean processes. Prof. Armand J. Silva, head of the department, has been involved in research with the Woods Hole Oceanographic Institute for more than two years. He has been analyzing samples obtained by boring into the ocean floor. Knowledge of the ocean's floor is essential if man is to anchor structures to it. At the present time these are mainly oil-drilling platforms, but long-range predictions suggest that man may someday erect bases for the recovery of minerals or for power generation on the ocean floor.

"The assessment of the engineering properties of marine sediments is vitally important to the design of structures to be founded on or anchored to the sea bed," says Prof. Silva. "Proposals have been made to build rather large structures on the ocean floor, and the stability of these depends largely upon the support provided by the underlying sediments. Thus, it may at some time become feasible to place a nuclear power plant on the sea floor."

"Slumping of marine sediments on even very gradual slopes is not uncommon. These submarine movements can impart tremendous loads to structures such as oil-drilling platforms, and the result may be the collapse of the structure, rupture of the oil line, and disastrous oil spills."

water pollution control

The main thrust of WPI's efforts in the study of water pollution is now centered in the newly built Water Quality Research Laboratory in Kaven Hall, headed by Dr. K. Keshavan, civil engineering. This laboratory was made possible by generous support from the George F. and Sybil H. Fuller Foundation. Facilities are available to both graduate and undergraduate students.

Water pollution studies normally involve an interdisciplinary approach between the civil engineer, the chemist and the biologist. A typical project is one now investigating the possibilities of hazardous chlorinated organic compounds (similar to DDT and other pesticides) being created when natural run-off water is chlorinated in the processing of water for general use or in the treatment of industrial discharges. Dr. Keshavan and Dr. Theodore C. Crusberg, chemistry, are directing the work on this $44,000 NSF-sponsored project.

Another project involves the development of a mathematical model to determine what happens when both organic and thermal pollution are simultaneously discharged into a stream. Here, the active participation of Dr. George C. Sornberger, mathematics, and the facilities of Alden Research Laboratories have been essential.

the quality of quinsigamond

Worcester's Lake Quinsigamond, once a summer resort for the people of the area, has become badly polluted. In recent years, there has been increasing public concern and awareness of the lake's rapidly deteriorating suitability for recreational purposes. This lake is considered one of the finest courses for crew racing in the East, and for several years it has been the scene of the annual Eastern Sprints regatta. However, crew members are told, only partly in jest, "God help you if you fall in."

During the past summer, a comprehensive study was made of the lake by a team of four students, two from WPI and two from Clark University. Working under Prof. Leon S. Graubard (economics, government, and business) of WPI and Prof. Terrance Moody of Clark, these students (one an undergraduate) investigated the lake's pollution from all aspects, including the economic considerations, to determine what future actions might be recommended.

The project was financed by a grant from the New England Board of Higher Education.

The study was planned to (1) determine the subject and scope of existing studies, (2) determine the nature of the pollution problem, and (3) suggest alternative solutions to the problem and investigate their implications. The first two of these objectives were accomplished without much difficulty.

However, the heart of the project was really to determine the social and economic considerations which would affect any corrective action that should be taken. The students' conclusion was that the development of Lake Quinsigamond and the surrounding region would most probably be residential and recreational. The team recommended that pollution abatement should be directed toward the improvement of water quality to meet standards for fishing and swimming. They determined that this could be accomplished through improved sewage handling in the surrounding area and through aeration of the lake itself to increase the oxygen content for fish and reverse the eutrophication process.

nuclear power and cleaner air

As the nation moves toward a recycle economy, striving to reduce waste and pollutants, there will be an increasing need for electric power. At the present time a 1000 megawatt electric generating station burning coal consumes about 160 railroad cars of coal every day; it discharges up to 250 tons of sulphur dioxide into the atmosphere each day along with 80 tons of nitrogen oxides as well as particulate matter. Nuclear power plants of the same size use only a few tons of fuel *annually* and have negligible discharges to the atmosphere. On the other hand, nuclear plants now under construction will require more cooling water than the fossil-fuel-burning plants. The dangers of a nuclear accident in an atomic power plant are extremely remote though not impossible. The storage of waste is also a major problem.

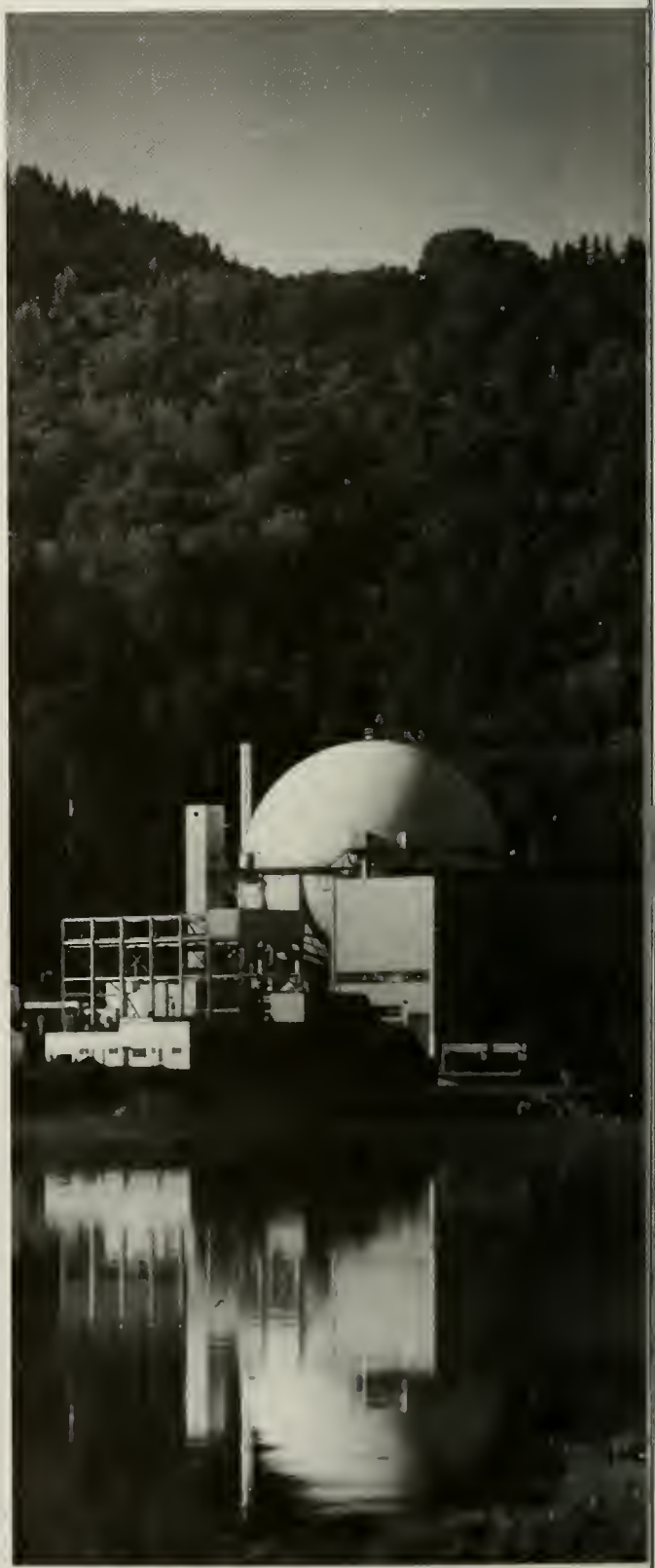
Proposals to build nuclear power plants have generated a storm of controversy in many communities. According to Prof. Leslie C. Wilbur, director of the WPI nuclear reactor facility, some of the arguments advanced are based on technical data. However, all too frequently opposition to the location of a nuclear power plant is based on fear and misunderstanding.

To help provide background information for the public, Prof. Wilbur is now giving a course called"The Nuclear Power Controversy." This is an evaluation of the risks and benefits associated with nuclear power plants. Topics include the governing principles of nuclear reactors and matters of public concern such as radiation effects, thermal pollution problems, and accident potentials.

According to Prof. Wilbur, "the active participation of the public in controversial, technologically based issues deserves recognition and educational support. High school teachers are often no more knowledgeable than the general public concerning the basic principles, terminology, and constraints involved.

"WPI has the staff expertise to readily offer evening graduate courses for consortium students and high school teachers in topics such as air- or water-pollution control, urban planning, power generation, etc. This new course dealing with the nuclear power controversy is intended to be a pilot course for others to follow." A unique feature of this course is that James Hensel, associate professor of English, will assist Prof. Wilbur, who will handle the technical aspects of the issues. Prof. Hensel's primary function will be to insist on lucid and objective presentation compatible with the academic backgrounds of those not specifically trained in science and technology.

The new course is being assisted by a grant from Yankee Atomic Electric Co. However, under the terms of the grant, Yankee Atomic is not influencing course material, classroom discussions, or conclusions.



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COMPLETED CAREERS

GILBERT C. LAMB, SR., '08

Gilbert C. Lamb, Sr., former navigator of the USS Enterprise, died July 6, 1971 in Milwaukee, Wisconsin at the age of 87 years.

Mr. Lamb was born in Franklin, Connecticut on April 17, 1884 and was educated at Worcester South High School and WPI. As a youth he was a cadet on the Enterprise when it navigated the Neva River in Russia and at that time he was permitted to visit the winter palace of the Czar. Among his superior officers were Admiral "Fighting" Bob Evans and Rear Admiral Robert E. Coontz.

After eight years at sea he worked for the Wisconsin Electric Manufacturing Co. and later headed Gilbert C. Lamb, Inc., (Manufacturers' Representatives). He was a member of A.I.E.E. and was active in Masonic organizations.

Among his survivors are three daughters, Mrs. Lorraine MacDonald, Brown Deer, Wisc.; Mrs. Douglas Paust, Wauwatosa, Wisc.; and Mrs. Lee Price, Newport News, Virginia; and one son, Gilbert, Jr. of Milwaukee.

JEROME W. HOWE, '09

Jerome W. Howe, 85, dean emeritus of students and admissions at WPI, passed away on November 16, 1971 in Worcester, Massachusetts.

Dean Howe was born in Worcester on October 12, 1886, was educated at English High School, and graduated from WPI in 1909 with a degree in civil engineering. Prior to World War I he taught at Pennsylvania Military College in Chester, Pa., and was a bridge draftsman for Phoenix Bridge Co., Phoenixville, Pa. He was in the U.S. Army from 1913 until 1924 when he retired with the rank of Major. While in the service he received two Silver Star citations.

In 1924 he joined the WPI staff as an assistant professor of civil engineering. He was promoted to professor in 1926 and became head of the department in 1933. He was appointed dean and assistant director of admissions in 1937, posts from which he retired in 1953. In 1944 he was awarded an honorary doctor of engineering degree from WPI.

Dean Howe was a frequent book reviewer and authored his own book "Campaigning in Mexico, 1916". He was past president of the Worcester Society of Civil Engineers, Sigma XI, Friends of the Library, Tech Old-Timers Club, and was a developer of the WPI Techniquest program. He was also a former deacon and treasurer of the Central Congregational Church.

Besides his widow, Mrs. Helen C. Howe, Worcester, he leaves a son, Jerome W. Howe, Jr., of Baltimore, Md.; a daughter, Mrs. Beverly Osborn and a sister, Mrs. Florence Andrews, both of Worcester; and four grandchildren.

HAROLD C. HICKOCK, '16

A retired sales manager of the Westinghouse Electric Company, Harold C. Hickock, died in La Jolla, California, November 3, 1971.

He was born in North Adams, Mass., on June 7, 1894 and graduated from WPI in 1916 with an electrical engineering degree. Ten years ago he retired from Westinghouse after 45 years of service, and moved to La Jolla where he was a trustee of the Presbyterian Church and chairman of the Town Council's Mini-Bus Committee. He was a Navy veteran of World War I.

He leaves his wife, the former Ethel M. Howard; a daughter, Mrs. Graves of Denver, Colo.; and five grandchildren.

FRED B. CARLISLE, '17

Fred B. Carlisle, '17, who aided in the secret development of an armored personnel carrier scheduled to be used during World War II, died on October 13, 1971 in Los Gatos, California.

Born in Hillsboro, Ohio, he was educated at Hillsboro High School and graduated from WPI with a Degree in Mechanical Engineering in 1917.

Mr. Carlisle was a retired design engineer for Studebaker-Packard Corp. and played a major role in the development of the controversial post-war car, the bullet-nosed Studebaker Champion. He was with Studebaker for 35 years until his retirement in 1959. He was a member of Alpha Tau Omega.

Among his survivors are his widow, Mrs. Dolly Holladay Carlisle; a son, Dr. Frederick B. Carlisle, Jr. of Los Gatos, California, and a sister, Mrs. Ferris Hughes of Ohio.

HAROLD W. THOMPSON, '19

Harold W. Thompson passed away on October 13, 1971 in Needham, Mass. at the age of 76.

Born in Brockton, on Sept. 25, 1895, he attended Brockton High School and graduated from WPI in 1919. In 1960 he retired from the New England Power Service Co. where he had been an electrical engineer for over 42 years. He was a member of the Massachusetts Society of Professional Engineers and was a Mason. He sang with barbershop quartets in Waltham, Wellesley and Newton.

He is survived by his widow, Mrs. Ruth Ives Thompson; three sons, Donald W. Thompson of Shrewsbury, John Ives of Schenectady, N.Y., and Frederic Ives of Hartford, Conn.; a daughter, Mrs. Nancy Quinlan of Framingham; a brother, Joel Thompson of East Bridgewater, and three grandchildren.

HOBART A. WHITNEY, '19

Hobart A. Whitney, 74, passed away on October 7, 1971 in Pensacola, Florida.

He was born on October 21, 1896 in Leominster, Mass., and attended Leominster High School, Phillips Exeter Academy, and WPI. Mr. Whitney, a retired agent for the Metropolitan Life Insurance Company, was a member of Theta Chi.

Among his survivors are his widow, Mrs. Margaret Brown Whitney; two daughters, Mrs. Betty Boll of Pensacola and Mrs. Claire Ehlers of Atlanta, Georgia; two sons, Hobart A. Whitney, Jr. of Atlanta, Georgia; and Lt. Col. Richard A. Whitney, USAF, Vandenburg AFB, California.

WALTER SMITH, '20

Walter L. Smith, deputy director of Quincy City Hospital from 1951 to 1964, died suddenly in West Harwich, Mass., on September 30, 1971. He was 72.

Born on January 3, 1899 in Whitinsville, Mass., he attended Northbridge High School and WPI. He served with the U.S. Army in World War I and was later employed as an auditor by Kaufmann's Department Store, Pittsburgh, Pa.

HAROLD F. TOUSEY, '21

Harold F. Tousey, Branford (Conn.) park commissioner, died November 11, 1971 in New Haven, Connecticut. He was 73 years old.

Born at Cowes, Isle of Wight, England, on April 27, 1B9B, he attended Bridgeport (Conn.) High School, Lafayette High School, Buffalo, N.Y. and graduated with a degree in mechanical engineering from WPI in 1921.

For over 25 years he was with the Malleable Iron Fittings Co. of Branford. He retired after serving as office manager in 1967. At the time of his death he was with Ben Nek Holder, Inc., Branford.

Mr. Tousey, a past member of Alpha Tau Omega, is survived by his widow, Mrs. Adeline C. Tousey; a son, Richard C. Tousey, Guilford, Conn.; a daughter, Mrs. Richard F. Kilburn of Vestal, N.Y.; a sister, Mrs. W. Sherwood Wilmont, Bridgeport, Conn.; and five grandchildren.

EVERETT E. JESSUP, JR., '26

Everett E. Jessup, Jr., 68, died on December 5, 1971 in Worcester, Mass.

He was born in Bridgeport, Conn., on September 25, 1909, studied at North High School, Worcester, and WPI. A Navy veteran of World War II, he served as a First Class Carpenter's Mate with the Seabees in the Pacific area. He retired in 1967 as a cabinetmaker for the former Franklin Window Co.

Besides his father, he leaves two cousins, Charles Platt of Milford, Conn., and William Platt of Stratford, Conn.

CLYDE W. HUBBARD, '26

Clyde W. Hubbard, 6B, a former assistant professor of hydraulics at WPI, died in Nahant, Mass., on November 12, 1971 after a brief illness.

He was born in Holden on February 11, 1903, attended North High School, Worcester, and graduated from WPI in 1926 with a degree in mechanical engineering. From 1926 to 1941 he was an assistant professor at WPI. During World War II he was employed in the research department at the David W. Taylor Model Basin, Washington, D.C. and later served in the Navy as a lieutenant commander in ship salvage operations in the Pacific theater.

After the war he was affiliated with the Great Northern Paper Co., Millinocket, Maine. In 1949 he joined the Boston firm, Stone and Webster Engineering Corp., as a hydraulic engineer.

Mr. Hubbard was a fellow of the American Society of Mechanical Engineers and was a commander of Mortimer G. Robbins Post, American Legion, Nahant. He was a member of Sigma Alpha Epsilon.

Among his survivors are his widow, Mrs. Virginia Haley Hubbard; two daughters, Dr. Dorothy Gampel of Weston and Mrs. Nancy Marden of Ticonderoga, N.Y.; a brother, Edward, of Endicott, N.Y., and five grandchildren.

FLOYD C. HUNTINGTON, '28

Floyd C. Huntington died October 12, 1971 in Denver, Colorado. He was 64.

A native of Hardwick, Vermont, he attended Hardwick Academy and was graduated from WPI in 192B with a degree in mechanical engineering. He was employed as a fire protection engineer and insurance broker. At the time of his death he was vice president of Hiram C. Gardner, Inc.

He was a member of the Denver Athletic Club, Society of Fire Protection Engineers, Rocky Mountain Chapter of the Chartered Property Casualty Underwriters, Honorable Order of the Blue Goose International, National Association of Mutual Agents, Colorado Independent Insurance Agents, and Phi Sigma Kappa Fraternity.

Among his survivors are his widow, Mrs. Florence Ellanson Huntington; two sons, Richard R. of California and Clinton W. of Grafenoehr, Germany; a brother, Carroll Allen of Dover, Mass., and four grandchildren.

CHARLES S. O'BRIEN, '32

Charles S. O'Brien passed away suddenly of a heart attack on February 9, 1971 in Palos Verdes Peninsula, California at the age of 61.

He was born in Worcester, Massachusetts on July 29, 1919, attended Springfield Technical High School and graduated from WPI in 1932 with a degree in mechanical engineering.

A member of Sigma Alpha Epsilon, he worked in various capacities for the U.S. Envelope Company and Milton Bradley Co., both of Springfield, Mass., before becoming associated with the Bemis Co., Inc., Wilmington, Calif., in 1946. He served as manager of the company prior to his death.

Mr. O'Brien is survived by his widow, Mrs. Mary Kelly O'Brien of Palos Verdes Peninsula, California.

RICHARD L. GOODWIN, '34

A recently retired building contractor, Richard L. Goodwin, died in Bay Pines, Florida, on September 30, 1971. He was 5B years old.

Mr. Goodwin, a native of Springfield, Mass., was educated at Springfield Technical High School, and graduated from WPI in 1934 with a degree in Electrical Engineering.

During his working lifetime he was employed by the Worcester Industrial Power Survey Co., Graton & Knight Mfg. Co., and Logan, Swift & Brigham Co., all of Worcester. During World War II he was a Lieutenant Commander in the U.S. Navy. In later years he was president of Vega Bolt & Nut Supply Co., Worcester, and also associated with the Dayton Rubber Co., Dayton, Ohio. He was a member of Phi Sigma Kappa.

Among his survivors are a son, Clifford R. Goodwin of Worcester; a daughter, Mrs. Susan E. Anderson of Concord, N.H.; and a brother, Ross W. Goodwin, Hadley, Mass.

MARTIN G. CAINE, '37

Martin G. Caine died on October 25, 1971 in Maplewood, N.J.

He was born in Worcester, Mass., on February 1, 1916 and attended Classical High School. After graduating from WPI in 1937 with a Degree in Chemical Engineering, he served as a chemist for the Siemon Co. and later for Monsanto Chemical Co. He joined Tenneco Chemical, Inc., in 1967 and in 1968 was made president of the Tenneco Plastics Division.

Mr. Caine was a member of Alpha Epsilon Pi, the Society of Plastics Engineers; American Chemical Society; and the Society of Naval Engineers.

EDWARD J. CAVANAUGH, '46

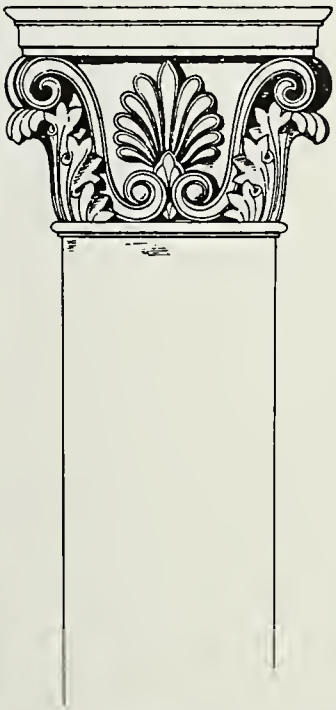
Col. Edward J. Cavanaugh was killed in Vietnam on July 29, 1971.

Born on November 27, 1923 at Worcester, Mass., he attended South High School and WPI. He was a graduate of the United States Military Academy and the Army War College at Carlisle Barracks, Pa.

In 1968 he received his second Legion of Merit award. The distinction came while he was on duty at the Vietnam Headquarters of the U.S. Army near Long Binh. The citation was for "exceptionally meritorious conduct."

Col. Cavanaugh had previously been awarded the Silver Star, the Bronze Star and the Purple Heart while serving in Korea.

YOUR CLASS AND OTHERS



These items are based on information received at the Alumni Office by December 15, 1971.

1908

ROYAL W. DAVENPORT's permanent address is South Leisure World Blvd., Silver Spring, Maryland.

1917

CHARLES HOLLERITH has moved from Jackson, Michigan to Columbia, S.C.

1923

HAROLD H. JUDSON is retired and living in San Antonio, Texas.

1926

RANDALL P. SAXTON has moved from Shelton, Conn., to Green Valley, Arizona.

1927

Having retired as a Rear Admiral, USNR, BRADFORD M. BOWKER is now self-employed as a civil engineer in Las Vegas, Nevada. . . RUSSELL G. WHITTEMORE was the author of an article entitled: "The Nonlacerative Windshield: Not an Impossible Dream" which appeared in the

JAMES J. SHEA, SR., '12, announced his retirement as chairman of the board of Milton Bradley Co., East Longmeadow, Mass., at the quarterly board of directors meeting held in December. He is 82 years old.

The internationally known manufacturer of educational toys was elected chairman emeritus by the board of directors assembled at the meeting. In 1968 when he was elevated to chairman of the board, his son, James J. Shea, Jr., was elected president.

Mr. Shea is credited with saving the firm from bankruptcy after joining it as president and chief executive officer in 1941. He built the games, puzzles and educational materials business into a worldwide corporation. Included in the corporation are Playskool Manufacturing Co., Chicago, Illinois; South Bend Toy Manufacturing Co. of Indiana; Amasco Industries, Inc., Warminster, Pa.; and Lisabeth Whiting Co. of Jamaica, L. I., N.Y. Under his leadership the company founded MB International in Holland and subsidiaries in West Germany and France.

In 1963 he received an Honorary Doctor of Engineering Degree from WPI. Always a strong supporter of the WPI Alumni Association, he was awarded the Herbert F. Taylor Award for outstanding service to the Alumni Association in 1967. He served as president of the Association for two years and was on the Board of Trustees for ten. He was active as a Connecticut Valley Chapter Officer, as a member of the Alumni Council, Fund Board, Techni-Forum and as a program chairman of WPI's Centennial Gifts Campaign.

October issue of the magazine, *Glass Digest.* In the article the author states, "It is our best judgment that future safer windshield developments will not alter the present replacement market." He also went on to say, "The newest windshield does have to be handled somewhat more carefully. We should all realize that strength and safety in windshield performance are not necessarily related, and our purpose has been primarily to develop a safer windshield." Mr. Whittemore is director/product development/automotive sales, Glass Division, Pittsburgh Plate Glass Industries, Inc., Pittsburgh, Pa.

1928

Now living in retirement, JAMES A. MacNABB is located in Palo Alto, California.

1930

HERBERT D. BERRY has retired as vice president of the Thomas Smith Co., Worcester. He lives in Westboro, Mass. . . At Southeastern Massachusetts University, North Dartmouth, Mass., it was recently announced that DR. ELLIS H. WHITAKER of the biology department has been promoted from associate professor to full professor. Dr. Whitaker has been at SMU since 1964.

1931

IDOF ANDERSON, JR., writes that he is retired and living in Sandwich, Mass. . . Having retired as Boston district manager of the Jones & Lamson — Waterbury Farrel division of Textron, JOHN H. HINCHCLIFFE now resides at Hilton Head Island, South Carolina. . . HARRY N. TYLER presently makes his home in Pocasset, Mass.

1932

DR. WILLIAM E. HANSON has retired as senior scientist and executive of the Gulf Research & Development Co., Pittsburgh, Pa., and is planning to move to the state of Washington. Bill, the immediate past chairman of the WPI Board of Trustees, was a leader in the development and adoption of the WPI Plan for education. He served for eleven years as a trustee of the College, three of which were as chairman of the board.

1934

E. LOVELL SMITH, JR. resides in Farmington, Conn.

1935

The director, secretary and treasurer of Gilbarco Canada Ltd., Brockville, Ontario, is HAROLD A. LeDUC.

1936

EDWARD V. MONTVILLE has moved from Pittsburgh, Pa., to Madison, Conn. . . JOHN H. WYMAN writes that he has retired from his position as sales engineer with Durakool, Inc., Elkhart, Indiana. He now lives in Augusta, Maine.

1937

Brewsters of Hartford has named ROBERT S. DENNING as sales manager. He makes his home in Windsor, Conn.

1939

Associate Professor of mechanical engineering HOWARD DUCHACEK is on leave from the University of Vermont, which is located in Burlington. Until August of 1972 his address will be Fort Collins, Colo. . . Allen-Bradley Co., Framingham, Mass., employs JOHN C. HARVEY, JR., sales representative. He resides in Wellesley Hills. . . JOHN P. MOLONY, manager of technical services for Wyman-Gordon's Eastern Division, Worcester, Mass., has been named chairman of the Technical Council of the American Society for Nondestructive Testing.

1941

NORMAN G. KLAUCKE reports that he has three sons in college this year. Doug is now at the University of Vermont Medical School; Jeff is a junior at Cornell and Brad, the youngest, started Dartmouth last Fall. Norm, an executive with the Acme Chain Division of North American Rockwell, resides in Granby, Mass., and has a summer home in South Dennis. . . WILLIAM R. HIGGINS serves as head mechanical engineer for Dresser Machinery Ltd., Tokyo, Japan.

1944

JOHN E. ("Ned") BIGELOW, manager of the Terminal and Display Program of the Information Physics Branch of the General Electric Co., in Schenectady, N.Y., celebrated 25 years of service with the company on November 5th. Ned joined GE in 1946 as a development engineer. Later he became senior engineer in the X-Ray Department and manager of the department's Advanced Engineering and Consulting Lab. A registered professional engineer, he is a senior member of IEEE and a member of the Society for Information Display and Sigma XI. He holds 24 patents. . . A Des Plaines, Illinois resident, CHARLES S. COOPER, works as product manager (development) for Precision Scientific Co., Chicago. . . FRED S. MOULTON has changed his address from London, England to Denver, Colorado.

1945

EUGENE C. LOGAN of Trenton, N.J., has been promoted to chief engineer in the gas department of Public Service Electric & Gas Co., Newark, N.J. Prior to his promotion he served as assistant chief engineer.

1946

JOSEPH J. CONROY reports that he has been plant manager at Whitney Blake (a Superior Continental Co.) since March of 1971. The company is located in Hamden, Conn. . . It was recently announced that JOHN E. LAFFEY has been named vice president and general manager of the Austin-Western Division, Clark Equipment Company, Aurora, Illinois. The new vice president has had an extensive background of experience in the heavy construction equipment industry. He served as eastern regional manager of the Harnischfeger Corporation, manufacturer of cranes and shovels, and general sales manager of the J. I. Case Construction Equipment Division, manufacturer of crawler tractors and wheel loaders. The Clark Equipment Company manufactures construction and material handling equipment. . . The Farrel Co., Rochester, N.Y., employs ROBERT C. TAYLOR, manager-process development, who resides in Fairport, N.Y. . . CARL F. SIMON, JR., has moved to Erie, Pa., where he is program engineer for the General Electric Company.

1947

ROBERT C. MARK, manager of employee and community relations at General Electric's Lynchburg (Virginia) operations since 1960, was recently made manager of non-union and new plant relations. He has been with the company for nearly 25 years. . . In December PAUL D. O'DONNELL, director of Manufacturing Planning and Controls for the Westinghouse Corporation of Pittsburgh, was graduated from the Advanced Management Program of the Harvard University Graduate School of Business Administration in Boston, Mass. . . A Needham, Mass., resident, EDWARD F. SUPPLE, has been awarded the Chartered Life Underwriter designation at National Conferment Excercises of the American College of Life Underwriters in Chicago. He is a special agent for the Prudential Insurance Company.

1948

Ingersoll Rand Co., Mayfield, Ky., recently named ARNE A. KELLSTROM as marketing manager. . . JEROME ECKERMAN writes that he is technical manager at NASA/Goddard S.F.C., Greenbelt, Md. His home is in Potomac.

Art Smith,

Man at the Top

by Lesley E. Small, '72

Over the years there has evolved the popular misconception that WPI graduates seldom achieve professional success greater than the level of "middle management." Possibly this notion stems from the belief that a Tech engineer's education is too parochial, too practical. However, the careers and achievements of many Tech alumni serve to dispel this myth. Indeed, WPI boasts a truly impressive list of eminent alumni.

Among the noteworthy of Worcester Tech's highly successful graduates is Arthur E. Smith, Chairman of the Executive Committee of the United Aircraft Corporation in Hartford, Conn. Mr. Smith, who received his Bachelor of Science degree in Mechanical Engineering (aero-option) in 1933, began his career as a test engineer for International Motors in Allentown, Pennsylvania. Two years later he joined the Pratt & Whitney Aircraft Company, a division of United Aircraft. By 1956 he was the Executive Vice-President of Pratt & Whitney. After serving as president of the division for one year, he became in 1968, the executive vice-president and then president of the entire United Aircraft Corporation. Mr. Smith's latest achievement, appointment to the position of chairman of the executive committee, became effective as of September 27 of this year.

In 1967 WPI presented Smith with the Robert H. Goddard Award, which is given annually to an alumnus for "outstanding professional accomplishment in his field." On June 8, 1969, he was awarded an honorary degree of doctor of engineering by Worcester Polytechnic Institute.

In a recent interview with Mr. Smith, he indicated that he feels the WPI Plan is the "right approach to an engineering education" but like many others, he seems to be withholding enthusiasm until the Plan has substantially proven itself. He noted that the success or failure of the Plan rests largely with the individual advisors – and most especially with the problem of motivation. Mr. Smith also indicated that communication must play a key role in the success of the Plan. He feels that the school has a responsibility to better acquaint both the alumni and the business world with the workings of the Plan.

As far as the role of the alumni is concerned, Arthur Smith maintains that they have an obligation "to give financial support" and "to take part in the direction of the school." He feels however that the alumni should not attempt to "run" the school. On the other hand, he feels that the students should not run the school either. When asked how he felt about having a student member on the Board of Trustees, Mr. Smith said that "a student does not belong as a voting member," but that there should be a student advisory group to insure that the Trustees are aware of student concerns and opinions. He stated that it is "hard (for students) to be objective about the long-term interests" of the school.

In another vein of conversation, Mr. Smith expressed the belief that athletics play an important role in the shaping of the individual, for it is through organized sport that one learns not only how to get along with people but also to accept failures along with success.

When asked to what he attributed his great success, Mr. Smith said, "I suppose you'd like me to say my education from WPI? After assuring him that, all that was wanted was an honest answer, he agreed that WPI had given him an excellent background but that he attributed his success to a lot of hard work and a little bit of being in the right place at the right time.

Smith further stated that five years after graduation, where you are is determined largely by what you have done on the job and not so much by what you did in school. He feels that the education itself is of greatest importance in getting offers and opening the right doors.

Mr. Smith does not feel that the engineers should have to take all the blame for the ecological problems of today. "Engineers have always responded to what the public wants." Now that the emphasis is on clean air and clean water, Smith is assured that the engineers will respond, but that there is bound to be a time lag. According to Smith, "People know what they want but are not able to evaluate what they want to pay for it."

Smith is a warm and personable man who remains unaffected by his tremendous achievements. Talking to Art Smith is like talking to the man next-door. He is truly a credit to himself and a credit to WPI.

Reprinted from Tech News.

ROBERT F. STEWART, '50, former vice president of Litton Industries, Inc., Hartford, Conn., has been named president of the Industrial Products Group of North American Rockwell Corp., Pittsburgh, Pa. In addition to being president of a group, Mr. Stewart will also be nominated as a corporate vice president at the next meeting of NR's board of directors.

The Industrial Products Group which he now heads had sales in the fiscal year ended September 30, 1971 of about $435 million, or nearly 20 per cent of total company sales. It is one of four major groups at NR, the others being the aerospace, automotive and electronics groups. It makes and markets a wide variety of products including printing and textile machinery, gears and other power transmission products, mechanical controls, filters, general aviation aircraft and pleasure boats.

Mr. Stewart was president of Royal Typewriter Co., Hartford, Conn., a Litton Industries company, in 1969 and 1970. He left Royal to take charge of Litton's Machine Tool Group in Hartford, which included New Britain Machine Co. Prior to joining Litton in 1964 he had been president of the Gabriel Electronics Division of Maremont Corp., Millis, Mass.

The WPI Alumni Association awarded him the Robert H. Goddard Award for his outstanding professional achievements in June of 1971. It is the highest professional achievement award given by the Association.

Active in community affairs, Mr. Stewart is a director of the Greater Hartford Chamber of Commerce, the Manufacturer's Association of Hartford County, and the Society for Savings in Hartford. He is also a member of the Economic Club of New York and a corporator of the Institute of Living, Hartford.

1949

Attorney EDWIN E. KAARELA was officially notified in November that he had been appointed as a Finnish consul. He was informed of his appointment by the Finnish Ambassador to the United States, Olavi Munkki, the document of appointment being accepted on behalf of the United States by Secretary of State William Rogers. Mr. Kaarela, who has served as honorary vice-consul of Finland since 1963, lives with his wife and three children in Westminster, Mass.

1950

HAMMOND ROBERTSON, a member of the Queensbury (N.Y.) Town Board since 1964, was honored at a testimonial dinner in October. The affair was co-sponsored by the Queensbury Republican Committee and Republican Club. Mr. Robertson, who is now located in Lincoln, N.H., had served as a director of industrial relations for Finch, Pruyn and Company, Inc., of Glens Falls, N.Y.

1952

H. BURTON RENDALL has employment as a product service engineer with Ethyl Corp., Houston, Texas. . . GEORGE H. SANDERSON writes that he is still with Sperry Gyroscope, Great Neck, N.Y., and enjoying his job as senior research section supervisor. His two daughters are now in school and he and his wife are interested in helping to make their local educational system more "creative". . . The vice president of Incoterm Corp., Marlboro, Mass., is EDGAR L. VAN COTT, who lives in Weston.

1953

G. RAYMOND POLEN resides in Parsippany, N.J., and serves as senior development engineer for Boonton Electronics Corporation. . . The board of overseers of the Foundation for the Advancement of Graduate Study in Engineering at Newark College of Engineering announced in November that DR. ARNOLD ALLENTUCH has been appointed director of research at the college. Dr. Allentuch is a professor of mechanical engineering at NCE and will maintain that rank on the faculty. Active in research and the development of graduate courses at the college, he has centered his personal research in the area of hydrostatically-loaded, stiffened cylinders. His work has been supported by the Office of Naval Research under contracts totaling more than $100,000 since he joined NCE. . . JOHN F. MITCHELL, a science teacher at North Attleboro (Mass.) High School, has been hired by the North Attleboro Board of Health as the town's new full-time health agent. His duties will include responsibility for the administration of local and state health regulations and laws.

1954

DONALD E. ROSS, operations manager of the Split Ballbearing Division of MPB Corporation, Lebanon, N.H., has been named to the Board of Directors of the National Bank of Lebanon. Mr. Ross, who has a background in manufacturing sales, production and management, is a past president of the Lebanon Chamber of Commerce, member of the executive board of the Daniel Webster Council, Boy Scouts of America, and Mary Hitchcock Memorial Hospital Corporation. He is also a director of the New Hampshire Technical Institute in Concord, N.H., and holds memberships in the American Ordnance Association and the American Helicopter Association.

1955

It was recently announced that CHARLES F. McDONOUGH of Bridgewater, N.J., would be chairman of the special gifts department for the 1972 United Fund, Somerset Valley campaign. Mr. McDonough has been associated with the American Cyanamid Co., Bound Brook, N.J., for the past 14 years and is currently assistant to the manager, Refinery Chemicals Department.

1956

RICHARD N. BAZINET is currently located in Houston, Texas, where he is employed by Singer, General Precision, Inc. . . EDWIN B. COGHLIN, JR., of Shrewsbury, Mass., has been elected commissioner of the Mohegan Council, Boy Scouts of America. Also elected to the council board of directors was DR. RICHARD BESCHLE, '50, of Auburn, Mass. . . HENRY J. DUMAS, JR., is the new senior vice president of MFE Corporation, Wilmington, Mass. . . In November 1971 the Hatco Chemical Division of W. R. Grace & Co. announced the appointment of JOSEPH G. WAHL as sales manager. The firsm is located in Fords, N.J.

1957

DR. JOHN M. MATUSZEK, JR. has been named director of the Radiological Sciences Lab., New York State Department of Health, Albany, N.Y. He resides in Delmar.

1958

JAMES K. KARALEKAS, East Providence City Traffic Engineer, presided at the Rhode Island WPI Alumni Chapter meeting held in November at Seekonk. He lives in

Alumni Fund Progress Report

Richard F. Burke, Jr., '38, Chairman of the Alumni Fund Board, reported at the mid-winter meeting of the Board that the 1971-72 Alumni Fund was well organized with over 300 alumni volunteers visiting or calling alumni throughout the country. Burke further explained that this is a unique year in that every fund gift which shows an increase will be matched to the amount of the increase by the Challenge Fund. He said early returns show:

Total Cash: $107,666.30
Total Additional Pledges: $29,376.08
Total Contributors: 1,409
% Participation: 14.7%
Average Gift: $97.26

Burke went on to comment that several leadership gifts have been received from several groups, including:

Alumni Trustees:
% Participation: 76.2%
Average Gift: $1,179.94

Alumni Association Executive Committee:
% Participation: 77.8%
Average Gift: $600.00

Alumni Fund Board:
% Participation: 100%
Average Gift: $206.00

Faculty Alumni:
% Participation: 82.6%
Average Gift: $73.82

Walter J. Charow, '49, Chairman of the Special Gifts Program which has organized personal solicitation in the Northeast and Los Angeles, reported that his program showed the following level of activity:

% Participation: 27.4
Average Gift: $447.13

When interviewed, Charow stated that the Special Gift Committees were seeking gifts at the $300 level and above. He went on to state that when alumni fully understood the priorities before WPI and the need for alumni support that his volunteers were met with warm and generous support.

Special Gifts Region	*Chairman*
Worcester	Francis W. Madigan, Jr., '53
Boston	James E. Rich, '51
Connecticut Valley	William W. Asp, '32
Hartford	Robert M. Taft, '38
New Haven	Charles W. McElroy, '34
Rhode Island	Manuel Renasco, '46
New York	Spiro L. Vrusho, '57
Northern New Jersey	Waldo E. Bass, '33
Washington	Leonard G. Humphrey, Jr., '35
Los Angeles	Donald R. Bates, '40

Phonothons were reported as being a new mechanism of follow-up solicitation and Mr. Burke noted that this program was being organized by Howard I. Nelson, '54. Nelson briefly noted that an enthusiastic team of volunteers had been enlisted and would be conducting phonothons on the following schedule:

Date	*Location*	*Chairman*
February 7-8	Worcester	Peter H. Horstmann, '55
9-10	Boston	Daniel J. Maguire, '66
14-15	Springfield, Mass.	Gabriel O. Bedard, '28
16-17	New Haven	Joseph J. Conroy, Jr., '46
22-23	New York City	Spiro L. Vrusho, '57
23-24	Washington	Kenneth A. Homon, '62
28-29	Buffalo	John H. Geffken, '63
March 1-2	San Francisco	Clifford H. Daw, Jr., '59
6-7	Pittsburgh	Donald M. McNamara, '55

In conclusion, Burke praised the hard work of the alumni volunteers working on the program, and voiced his opinion that their hard work would produce a fund of record size by its completion date.

Riverside... ROBERT P. MICHAUD works as associate airport development specialist for the New York State Department of Transportation, Albany. His home is located in Guilderland, N.Y... Kewaunee Scientific Engineering Corp. of Adrian, Michigan, has announced that J. CLIFFORD WIERSMA is now vice president and sales manager of the corporation.

1959

Born: To Dr. and Mrs. JOSEPH D. BRONZINO, a daughter, Marcella Jo ("Marcy"), on October 27, 1971. Joe is an associate professor in the engineering department at Trinity College, Hartford, Conn. He and his family reside in Simsbury.

1960

Shell Chemical Company, Industrial Chemicals/Petrochemicals, has made JAMES R. BUCHANAN district manager. The new manager makes his home in Cherry Hill, N.J... WILLIAM J. PALMER writes that he is manager of engineering for Jewell Electronic Instruments, Manchester, N.H. He lives in Bedford.

1961

Born: To Mr. and Mrs. LARRY ISRAEL, a daughter, Ilana Beth, on October 6, 1971. Larry is president of Visualtek which is located in Santa Monica, Calif.

The University of Virginia Reactor Facility, Charlottesville, Va., has added HAROLD W. BERK, physicist, to its staff... DR. JAY A. FOX, who received a PhD in Physics from the University of South Carolina last year, has employment as a physicist on the staff of the U.S. Army Mobility Equipment Research and Development Center, Fort Belvoir, Virginia... A Glastonbury, Conn., resident, RICHARD L. HOLDEN, has been appointed Chairman of District II for the Republican party. Employed as a research engineer at United Aircraft Research Laboratory, he is currently vice-chairman of the Citizens Advisory Committee and is a radio officer for Glastonbury Civil Defense... SVEND E. PELCH serves as manager of business planning for the International Paper Co., New York, N.Y. His residence is in Northport.

1962

Born: To Mr. and Mrs. BRADFORD J. BOOKER, their first child, a daughter, Pamela Jean, on October 4, 1971. Brad is a design engineer with Hamilton Standard, a division of United Aircraft Corporation in Windsor Locks, Conn.

RICHARD W. FROST has been promoted from assistant to superintendent underground lines to assistant superintendent overhead lines at Narragansett Electric Co., Providence, R.I... ROBERT R. CASSA-

NELLI of Yorktown Heights, N.Y., has been awarded a patent of his work in the development of a process for multiple layered gelatin desserts. He is a group leader in the Jell-O research division at General Foods' technical center in Tarrytown... THOMAS J. MERCHANT is appointed to a newly created position of environmental and safety coordinator at Bay State Abrasives Division of Dresser Industries, Westboro, Mass. Company officials say that Mr. Merchant's assignment puts the firm in a position to act directly on all legislation relating to pollution control, occupational health and safety and other related fields. The Westboro resident is also a town selectman and previously served as chairman of the advisory finance committee... Texas Instruments of Attleboro, Mass. employs PAUL L. WESTERLIND, manufacturing engineer, who resides in North Attleboro.

1963

DOMINIC J. BUCCA who is manager of purchases at Jamesbury Corp., Worcester, Mass., makes his home in West Boylston... The new general foreman of chemical production for the Uniroyal Chemical Division of Uniroyal, Inc., is JOSEPH V. BUCCIAGLIA, Beacon Falls, Conn. Mr. Bucciaglia has been with the Naugatuck firm since his graduation from WPI and is past vice president of the Uniroyal Chemical Management Club... DAVID R. EKSTROM reports that he is manager-equipment product development for Kenics, Danvers, Mass... NORMAN FINEBURG received his law degree from Boston University Law School in 1971 and now serves as a judicial law clerk for the Supreme Court of Connecticut in Hartford. He makes his home in Farmington... The Rodney Hunt Co. of Orange, Mass. has appointed MICHAEL A. LITTIZZIO as manager, manufacturing services. He will be responsible for directing and coordinating the services of maintenance, inspection, shipping and industrial engineering on a company-wide basis. Until recently he was a unit manager in Ashland at the General Electric plant... Raytheon, North Dighton, Mass. employs JAMES J. MAGALDI, facilities supervisor. His residence is in Easton... ROBERT M. MALBON writes that he is in the Peace Corps. His residence is in Los Altos, California... Among the instructors at the business management seminar sponsored by the Leominster (Mass.) Chamber of Commerce last fall was PETER A. MICHAELIAN, personnel director at Foster Grant Co., Inc... KENNETH OLSEN, a student at New York University Law School, also works as an engineer for Ebasco Services, Inc., New York. Kenny lives in Brooklyn... Transportation analyst for Washington Metropolitan Area Transit Authority, Washington, D.C. is ROBERT A. PICKETT ... GORDON M. WARE studies at the School of Architecture at the University of Oregon which is located in Eugene, Oregon.

1964

Married: PETER P. BURKOTT, JR., and Miss Diana A. Blandford on October 9, 1971 in Brewster, N.Y. The bridegroom is a development engineer for the Norden Division of United Aircraft Corporation, Norwalk, Conn.

Born: To Mr. and Mrs. ANTHONY CROCE, a daughter, Daniella, on June 10, 1971. The new father is still employed by the U.S. Army Weapons Command in Rock Island, Illinois. He and his family make their home in Davenport, Iowa.

RONALD J. ANASTASI has been named assistant director of Magnolia Manor, a health spa located in Gloucester, Mass. Previously he was with the Woods Hole Oceanographic Institute, an assistant executive director for Scientology Coordinated Services, Los Angeles, Calif., and an efficiency expert for Seafood Kitchens, Gloucester... ALLEN W. CASE, JR., who was recently promoted to project engineer for General Electric Company, Schenectady, N.Y., lives in Scotia... The New York firm of Davis, Hoxie, Faithfull & Hapgood employs ALFRED H. HEMINGWAY, JR., patent attorney. Alfred lives on Staten Island... DAVID G. LARRABEE is a student at the University of California, Berkeley. He lives in Albany, Calif... The vice president and treasurer of Community Information Systems, Chaska, Minnesota, is BRIAN SINDER... DR. JOHN A. SPENCER is an assistant chemistry professor at Southern Illinois University, Edwardsville, Ill... DR. PETER C. TROMBI writes that he is a member of the Institute for Advanced Study, School of Mathematics, Princeton, N.J... USAF CAPTAIN PAUL B. WATSON is on duty at Cam Ranh Bay AB, Vietnam. He serves as an air operations officer and is assigned to a unit of the Pacific Air Forces, headquarters for air operations in Southeast Asia, the Far East and Pacific area.

1965

Akron resident JAMES B. CALVIN is currently working toward a PhD in clinical psychology at Kent State University, Kent, Ohio... STEPHEN L. CLOUES now holds the position of regional planner for the Central Midlands Regional Planning Council, Columbia, S.C. He recently received a Master of Planning Degree from Georgia Institute of Technology... LAWRENCE A. HILL is a science teacher at Nashoba Regional High School, Bolton, Mass. He lives in Lunenburg... The Mechanical Drive Turbine Products Dept., General Electric Co., Fitchburg, Mass., employs KENNETH J. HULTGREN as a turbine controls engineer ... In 1971 PETER E. OBERBECK was awarded a PhD EE from the University of Illinois. He is associated with the National Cash Register Company in Dayton, Ohio... RICHARD S. OLSON, vice president – development for National Realty Enterprises, Inc., Pittsburgh, Pa., resides in Bethel Park... DR. DAVID M. SCHWABER, who received his PhD from the University of Akron in 1971, is with Monarch Rubber Co., Inc., of Baltimore, Md... MICHAEL D. SHAPIRO serves as a chemical engineer at The Naval Explosive Ordnance Disposal Facility at Indian Head, Md. Oxon Hill is his home.

1966

Married: STEWART W. NELSON to Miss Carol Ann Cruz in November 1971 at Holyoke, Mass. Mr. Nelson is a sales engineer with The Trane Co., Boston.

EDWARD S. BILZERIAN, Worcester, controller for Bay State Abrasives Division of Dresser Industries, Westboro, Mass., is the new president of the Worcester Area Chapter, National Association of Accountants. . . Speedring Systems — Division of Schiller Industries, Warren, Michigan, has recently given JOHN H. CAROSELLA the position of senior project engineer. John and his family now live in Rochester, Michigan. . . DR. JAMES I. JOUBERT is employed as chemical research engineer for the U.S. Bureau of Mines, Pittsburgh Energy Research Center, Pittsburgh, Pa. . . A native of Whitinsville, Mass., DAVID LONGMUIR, has been named vice president of industrial relations of White Consolidated Industries, Inc., Cleveland, Ohio. Prior to his promotion, Mr. Longmuir was regional director of industrial relations for the corporation . . DR. MALCOLM A. MacGREGOR was recently awarded a resident research associateship at the Naval Research Laboratory, Washington, D.C. He will conduct research in the chemistry division of the laboratory. Prior to his appointment he was a research associate at the University of Chicago. . . DR. MARTIN J. MASTROIANNI is a postdoctoral research associate for Oak Ridge National Lab., Oak Ridge, Tenn. . . The new town planner for Vernon, Conn., is JOSEPH J. PASTIC who was until recently a Captain with the U.S. Army in Germany. His work in the Army was learning "how to allocate shortages," he noted, a problem also apparent in civilian life. Pastic has a wife and three children.

1967

Married: DAVID A. SALAD to Miss Bonny Beth Nezvesky on October 17, 1971 in Fairfield, Connecticut. David is an accountant with Drug City of Watertown. . . ROBERT D. RENN and Miss Nancy Diane DelVecho on December 5, 1971 in New London, Connecticut. The groom is supervisor of production and direct labor planning at General Dynamics Corp., Quincy (Mass.) Shipyard.

ROBERT J. BARON has been employed by the Division of Compliance, Environmental Protection Agency, Research Triangle Park, N.C. . . Chief Civil Engineer RICHARD F. DeFALCO is associated with the Commonwealth Survey Corp. and makes his home in Worcester. . . RAYMOND J. FORTIN of the Mitre Corp. (Bedford, Mass.) technical staff lives in Waltham, Mass. . . U.S. Army CAPTAIN EDWARD A. GALLO, who is now serving in the Ordnance Corp. in Vietnam, received his MS in mathematics from the University of Texas at El Paso last August. . . GLEN R. PARATH is with Ostrow Electric of Worcester, Mass. . . GARY K. WILLIS is a candidate for one of two three-year terms on the School Committee, Mansfield, Mass. He is president of the Citizens Scholarship Foundation and a sales engineer for Bailey Meter Co., Boston.

1968

Married: VICTOR V. CALABRETTA, JR. and Miss Judith Anne Reynolds in Davisville, R.I. on October 9, 1971. The bridegroom is a graduate assistant at WPI. He and his bride make their home in Attleboro, Mass.

Currently serving as a system test engineer with the U.S. Army Strategic Communication Command at Ft. Hauchuca, Arizona, LT. LUCIANO J. COVATI expects to be transferred to Switzigin, Germany in the near future. . . GEORGE F. GAMACHE is assistant project manager for the Beacon Construction Co., Worcester, Mass. . . Now at the University of Illinois, BERTON H. GUNTER writes: "I wish you (WPI) every success in this new money campaign. WPI — small, unassuming and quiet — has a great

deal to offer, and it would be tragic if, for want of money, it could not continue to provide the sort of education and atmosphere which I found invaluable." Bert resides in Urbana. . . LAWRENCE E. JOHNSON works as a systems programmer for the WPI Computer Center. . . Although he resides in Milford, Conn., GARY N. KEELER serves as a systems representative for RCA, Data Processing Division, which is located in Fairfield. . . DR. ROGER L. LUDIN is presently employed as an assistant professor at Burlington County College, Pemberton, N.J. Medford is his home. . . WILLIAM J. KRIKORIAN has been discharged from active duty in Vietnam and is returning to his previous civilian employer, Metcalf & Eddy, Inc., Boston, where he will serve as a structural engineer. . . WALTER C. LYNICK, who was recently with the U.S. Army Corps of Engineers, has returned to work for the New York State Department of Transportation, Region I, Albany, N.Y. . . ANDREW L. PIRETTI, an MBA student at the University of Massachusetts, resides in Holyoke. . . Still employed by Pratt and Whitney Aircraft as an experimental test engineer. . . WILLIAM D. POULIN has moved from Riviera Beach to West Palm Beach, Florida.

1969

Married: RICHARD C. CARLSON to Miss Judith E. Noyes on November 7 in Walpole, Massachusetts. Richard is a civil engineer with the U.S. Army Corps of Engineers, New England Division, Waltham. The newlyweds reside in North Easton, Mass. . . JAMES L. RICHEY, JR. and Miss Frances L. Bryniarski in Orange, Mass. on October 9, 1971. The groom was a lieutenant in the U.S. Signal Corps in Vietnam and is now employed as an electrical engineer. The bride is a French teacher at St. Mary's High School, Lynn. . . DONALD W. RULE to Miss Carleen Elaine Ruohonen on November 27 in Worcester, Massachusetts. Mrs. Rule attended Emmanuel College and is a graduate of Boston University. Her husband is a candidate for his doctoral degree in physics at the University of Connecticut, Hartford.

Born: To Mr. and Mrs. JOSEPH E. STAHL, a son, Jameson Thomas, on October 24, 1971. Joe is still with Moulded Products, Easthampton, Mass. . . Teaching physics at Shrewsbury (Mass.) High School is CRAIG R. BARROWS who resides in Spencer. . . DOUGLAS E. BROWN of Noank, Conn. is a mechanical engineer with the Naval Underwater Systems Center, Ocean Engineering Division, New London . . . U.S. Army CAPTAIN MICHAEL F. DELLEO, JR. has been awarded his second bronze star medal near Long Binh, Vietnam. Capt. Delleo received the award while assigned as a manpower officer in Headquarters, U.S. Army Engineer Command having "distinguished himself through meritorious service in connection with military operations against hostile forces in Vietnam.". . . JOHN M. HISCOCK is currently a department engineer for the Second Taxing District Water Dept., South Norwalk, Connecticut. Previously he was with the water and sewer planning unit of the Philadelphia Water Department. . . E. I. du Pont Experimental Station, Wilmington, Del., employs THOMAS F. X. McAULIFFE who lives in Claymont. . . Thiele-Engdahl, Inc., Elizabeth, N.J. recently gave MICHAEL T. NOWAK the position of ink chemist. Michael's home is in Beacon, N.Y. . . PFC. MICHAEL G. OUELLETTE has completed nine weeks of special training at Ft. Jackson, S.C. He learned the techniques and tactics of a rifle squad, patrolling, and individual combat operations. . . MARTIN SURABIAN works as a mechanical engineer for Bechtel Corp., Gaithersburg, Maryland.

1970

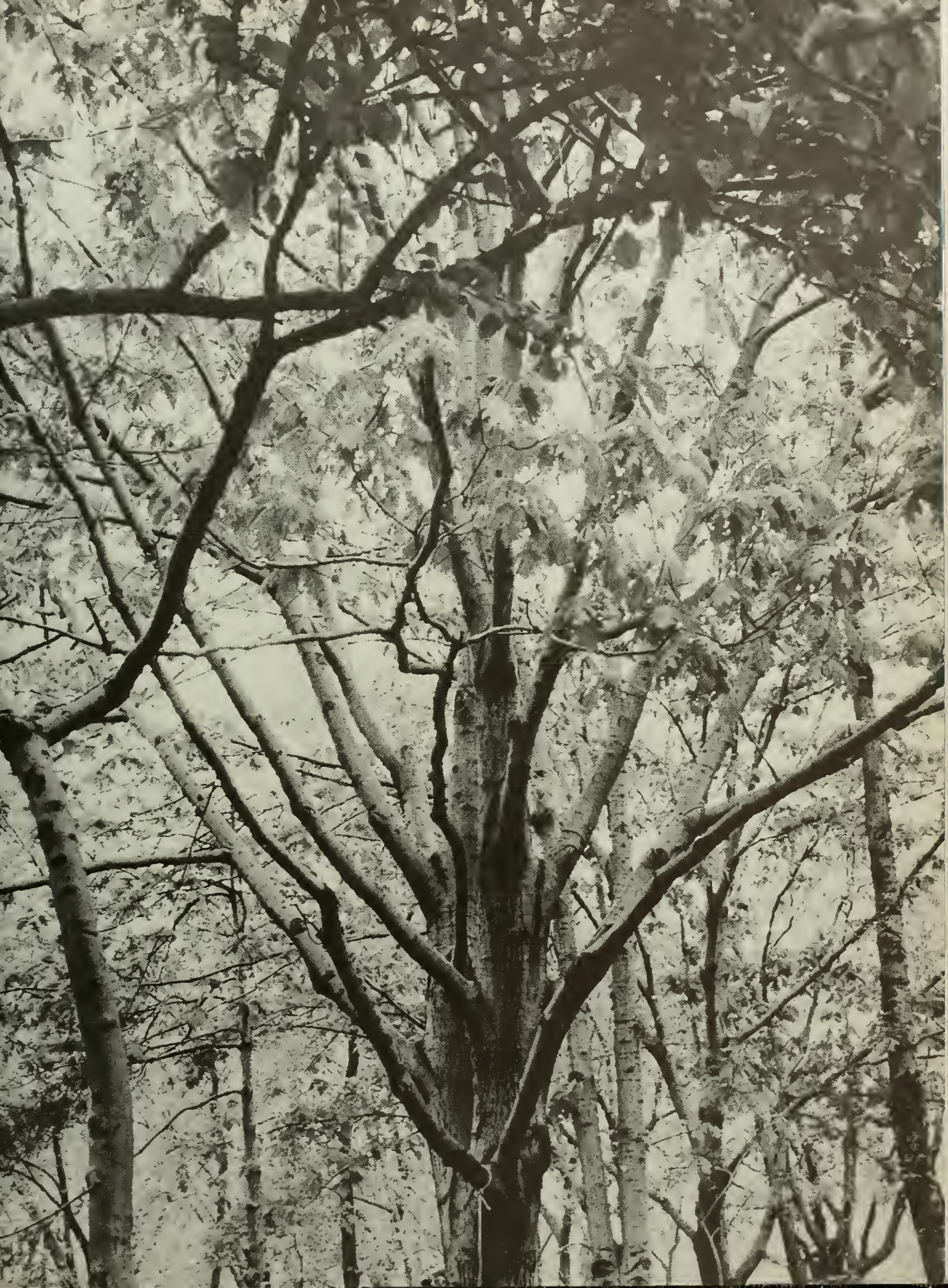
Married: JOSEPH M. CHWALEK and Miss Donna Valerie Longe on October 30, 1971 in Springfield, Mass. The bridegroom is presently serving in the U.S. Army as an electrical engineer in the Foreign Science and Technological Center, Charlottesville, Va., where the couple resides. . . EDWARD E. HOWE to Miss Joyce Essie May Baldwin in Highland Falls, N.Y. on September 20, 1971. They will make their home in Germany where Edward is a first lieutenant in the U.S. Army. . . JOHN A. PELLI and Miss Marcia Karen Mitchell on October 23 in Providence, R.I. John recently joined the Trane Company's Consumer Products Division sales office in Springfield, Mass. Prior to receiving his assignment he completed the Trane Graduate Engineer Training Program, a 10-week course which concentrates on business management. . . PAUL A. PERRON to Miss Mary T. Russell in Springfield, Mass. on November 27, 1971. Paul is employed as a chemist by Scott-Graphics, Inc., in Holyoke. . . RICHARD J. SCHWARTZ and Miss Beth Ellyn Goldman on November 27 in Worcester. The groom is a candidate for his master's degree in computer science at WPI.

CRAIG C. CHASE of Clark, N.J., has been named manager of the Friendly Ice Cream and Sandwich Shop on Main Street in Madison, N.J. . . Army 2/LT. JOSEPH D. HENSEL has completed a 12-week field artillery officer basic course at the Army Field Artillery School, Fort Sill, Oklahoma . . . WILLIAM R. NAAS was recently promoted to Army First Lieutenant at Fort George O. Meade, Md., while serving with the Army Security Agency's support group . . . 2/LT. MICHAEL D. VARDEMAN serves as Safety Officer with the U.S. Army at Fort Hood, Texas.

1971

Married: THEODORE A. FREDERICKS to Miss Mary Elizabeth Martin, September 3 in New Haven, Connecticut. The couple is living in Worcester, Mass. . . STEPHEN P. KATZ and Miss Sandra L. Northrop in Schenectady, N.Y., on October 23, 1971. Stephen is employed by the Morse Shoe Co. in Albany. . . GERALD J. KERSUS to Miss Kathleen M. Dorsey in Worcester, Mass., on October 2. Mrs. Kersus received a degree in executive secretarial science from Quinsigamond Community College, Worcester, and was formerly a secretary for The Thom McAn Shoe Co. The groom is employed by the Naval Electronics Test and Evaluation Facility, St. Indigoes, Maryland. . . JOHN A. LIND and Miss Linda Jean Kelley on September 25th in East Haven, Conn. John is with Harry M. Davis Bros., Inc., North Haven, Conn. The couple resides in West Haven. . . ANDREW B. LISTON to Miss Stephanie Ann Bolton October 9, 1971 in Cabot, Vermont. The bride is a senior at the University of Vermont, Burlington, and the groom is a civil engineer for Thompson-Liston Associates, Inc., in Worcester, Mass.

JOHN A. GIORDANO, who is enrolled in the MBA program at the University of Rhode Island, has been chosen to receive a URI Foundation Graduate Fellowship for this academic year. The one-year fellowship will provide $1,800 at $200 a month for the next nine months. John was recommended for the award on the basis of his outstanding scholastic record. . . GARY J. LARSON has been appointed assistant chemical engineer, Pilot Plant, Nepera Chemical Company, Inc. in Harriman, N.Y. He resides in Crompond . . . Army PFC RICHARD F. LUKAS is serving with the 5th ADA Regiment at Bristol, Rhode Island. He is a crewman with Battery C, 3rd Battalion of the regiment. . . Graduate Student THOMAS A. McKEON attends the University of California at Berkeley. . . JOHN S. MESCHISEN has employment with the Power Authority of the State of New York. . . ABBAS A. SALIM is studying for a PhD at Polytechnic Institute of Brooklyn, N.Y. . . GEORGE M. SIMMONS reports that he competes in motorcycle races and is working on Long Island . . . Peace Corps member ROBERT M. SINICROPE has been assigned to Montego Bay, Jamaica. He teaches mathematics in the West Indies. . . JAMES H. SNIDER works as a research engineer at WPI's Alden Research Labs. He lives in Worcester. . . STEWART T. STOCKING has joined The Trane Company's Consumer Products Division sales office in Boston, Mass. . . DAVID A. TRUE has been promoted from chemical technologist at Salem Harbor to assistant to chief technologist at the Brayton Point facility of the New England Power Co. The facility is located in Somerset, Massachusetts.



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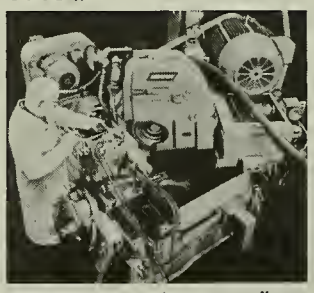

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