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Volume 88, No. 5

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wisconsin engineer

Summer Issue

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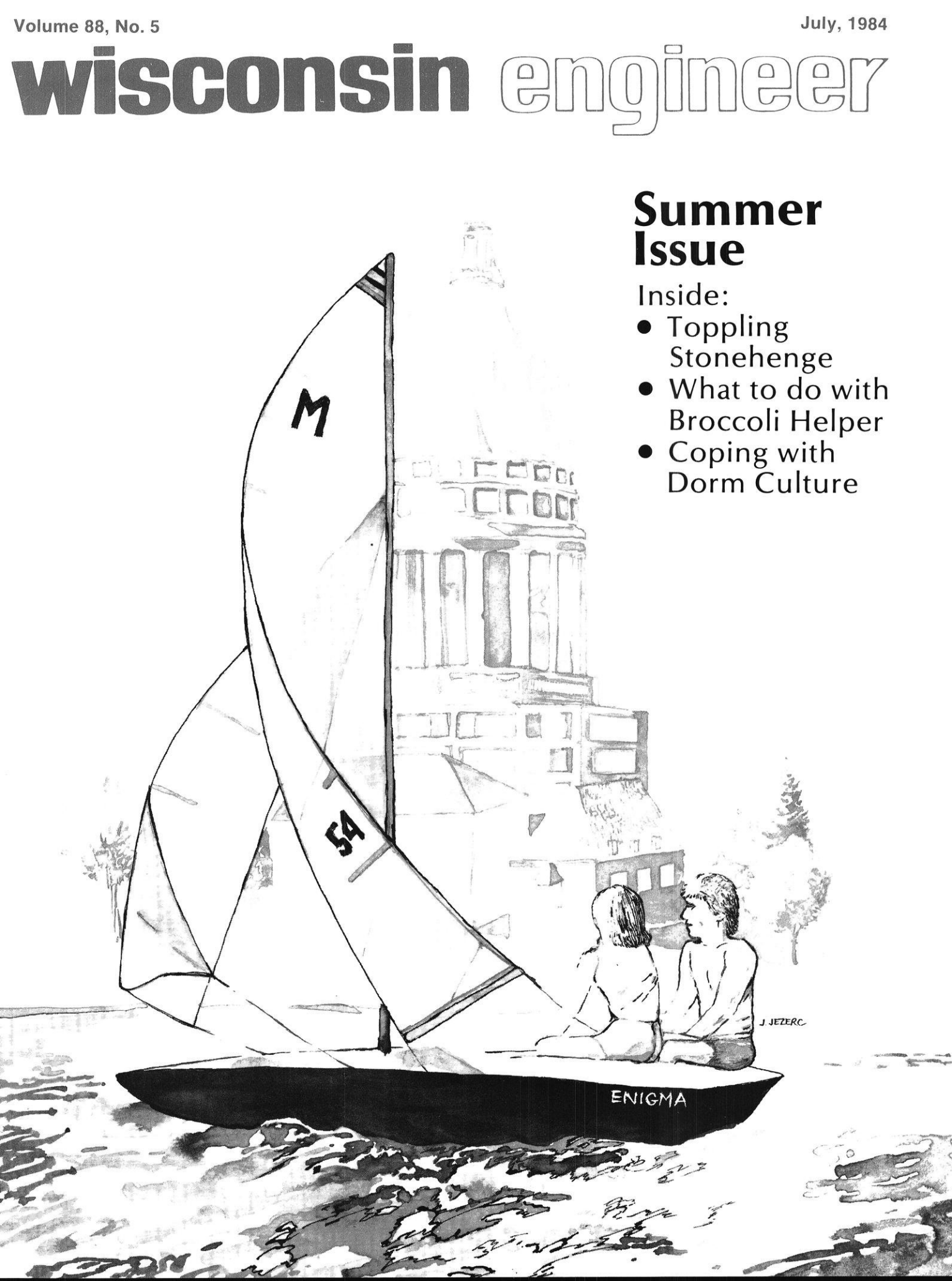
- Toppling Stonehenge
- What to do with Broccoli Helper
- Coping with Dorm Culture



wisconsin engineer

PUBLISHED BY THE ENGINEERING STUDENTS OF THE UNIVERSITY OF WISCONSIN-MADISON July, 1984

Columns

Features

About the Cover

This month's cover drawing of Madison's summer skyline as viewed from Lake Monona was drawn by Jeff Jezerc. Jeff is a member of our graphics staff and has supplied most of our cover art for the past year.

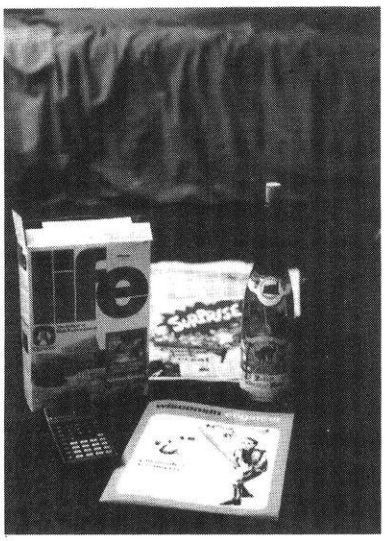


Photo by Scott Paul

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Lake Water
A Bound Edition

by John Wengler

Upon their graduation, *Wisconsin Engineer* editors receive bound volumes of the issues during their tenure. On the binder the graduate's name, title and year are stamped in gold print. Though these bound editions are held dear, the *WE's* impression upon the seniors is far more important than their names stamped on the cover.

Working for any campus organization is an experience in growth, an investment of one's resources. The student's creative energy undergoes a phase change into productive output. It's much harder to do this in a classroom. Extracurriculars introduce students, often for the first time, to the office-type cooperative efforts basic to the "real world."

Companies understand the value of active experience; interviewers often look for those graduates who won't require additional training to work in a group.

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Often club experience dominates one's resume. Many former *WE* staffers (including myself) owe our jobs to the *WE's* impression upon our employers. It's also no coincidence that many career minded students hold leadership roles in their respective professional groups.

Another aspect of groups is the sheer joy of being involved. Clubs can become a social means to a professional end. Working in a group adds in learning to deal with people, an invaluable skill to any professional.

Friends are the fringe benefit of activism. Every group has its Alicia Diehls, Carl Bellows, and Betsy Priems -- people to be fondly remembered. Staff friendships differ from de facto dorm relationships because there exists a common interest and goal. Such solidarity is rich soil for comradery and can well sustain ties even as "alumni".

But stressing the professional and social aspects of getting involved is a trap. A trap to catch freshman's attention. A trap to ignore a less tangible but equally important benefit--maturity.

Clubs can become a social means to a professional end.

Group involvement increases the chance to expose one's weaknesses and strengths. Criticism and praise erodes the silt of high school arrogance, allowing the collegian to make an honest inventory of his or her true desires (and the skills to meet these dreams).

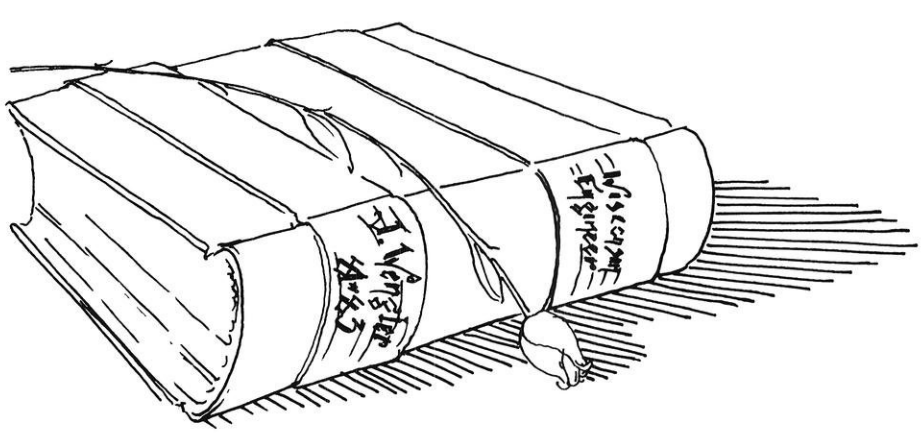
The title "Lake Water" symbolized to me what the downcast eyes of a freshman will see while sulking about the campus. There, embedded in the concrete, the caps to the lake water mains from Mendota act as milestones for shuffling feet. But now as a graduate, I concentrate on the horizon and only see "Lake Water" on these title blocks, not on city blocks. A person needs a full perspective to move Forward -- Wisconsin's motto -- and to appreciate the past.

Ironically, this column and summer issue will not be included in my bound edition. But the memories and experience from being active in Madison will long influence my life, as they would any graduate. The trick behind achieving such organizational nirvana is to choose carefully one's extracurricular tonic before striving under its influence.

Retraction and Apology

In the February "Lake Water" column I wrongly state that the Chi Epsilon Civil Engineering Honor Society used a beer stein as one their T-Shirt logos. What I had remembered was a proposed *design which was never used by the group.*

In addition to the written apology sent to them, I would again like to apologize to the Chi Epsilon members, advisors, and alumni. □



Graphic by Alicia Diehl

The Domino Thesis

He was struck down by a girl, and he struck back at the world.

by Scott Paul

"Since the Stonehenge was built over four thousand years ago during the New Stone Age, it is reasonable to assume that the natives must have had some form of sophisticated assistance. Perhaps the ancients were even aided by intelligent beings from another world." Most of the class was eating up Professor Beanly's lecture, but Dale Pumberton squirmed in his seat. Beanly's off-the-wall theories made him want to barf. Last week Beanly had tried to get his Ancient History class to believe that the pyramids of Egypt were constructed for the purpose of focusing cosmic rays.

Dale let his attention wander away from the podium. There were too many Liberal Arts majors in this class, he decided--not enough engineers. But he had figured this would be the case when he signed up for the course. It was a four credit blow-off class he took in order to boost his grade point and to fulfill his Liberal Arts requirement. Unfortunately Professor Beanly was a poor lecturer and not worth paying attention to, so Dale was getting a B minus in the course.

He also decided that Beanly was an idiot for not realizing that you didn't need to have a lot of fancy pants alien technology to build something really big, just careful planning and sound methods. Some ideas came to mind and he began sketching in his notebook. His notebook contained two pages of Ancient History notes from the semester, and thirty-seven pages of assorted doodlings.

Professor Beanly was about to say something important. Dale sensed this instinctively and riveted his attention to the podium. "For students not wishing to take the final exam we are going to offer the term paper option. Any student who decides to do some sort of research project and write it up can submit that for a final grade instead of taking the exam."

How typical of Letters and Science courses, Dale thought. There's always an easy way out. He knew people who studied their buns off for this class, but were still failing it.

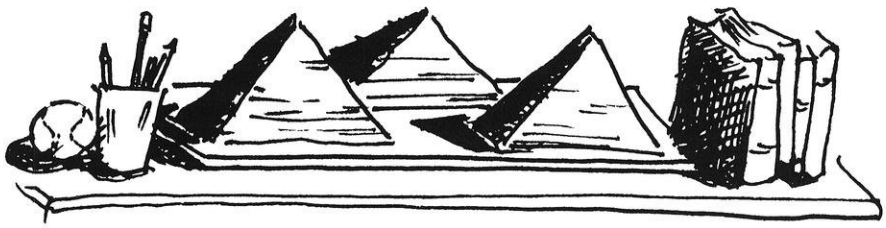
Some of last year's class projects adorned tall shelves around the cramped lecture hall. Someone named Gracie Murdock had made a paper mache replica of the Parthenon in Athens. Gracie had received an A minus for her artistic efforts. Suddenly that B minus didn't look so final. A strong A on this project might give him an A minus in the course. On the way out of class Dale signed up for the term paper option.

Thank goodness for Cheryl. She was the only thing that made the whole situation at least bearable.

Dale didn't feel like heading home right away. The warm dusty afternoon air was calling to him. He wandered off the road and headed off cross country over the Salisbury Plain.

The Stonehenge had always been a special place for him. It was only a few kilometers from his home and he came here often when he needed to get away for awhile. It was a great place to think. He climbed up onto the altar stone and watched the shadows.

Graphic by Alicia Diehl



He waited for Cheryl to make an appearance after class, when she didn't show after a few minutes he decided that she must have had to run some errand. Dale started walking home.

He shuffled along the dusty road and cursed his fate. Wiltshire College wasn't much of a school; a large number of girls went there to get trained so they could work in offices. It didn't have much of an engineering program either, but it was all Dale could afford. His job at his father's hardware store barely covered expenses at Wiltshire. And with the way the economy was going lately there was no way that his father was going to be able to send him off to one of the really good universities. Like it or leave it, Dale thought. There's no way I'm going to get out of this pit.

He hoped that if his grades were high enough he might be able to win a fellowship to one of the big universities. It took a long time to sink in that no one gave fellowships to Wiltshire graduates. It just didn't happen.

No one was sure what the Stonehenge was used for, but most agreed that it was some sort of Druid temple. He thought of Professor Beanly and his absurd theories and wondered if the Druids ever practiced human sacrifice. It was a pleasing thought.

At one time the Druids used the Stonehenge as a calendar of sorts. By sighting across certain stones they could determine the seasons. Dale thought it was kind of silly to carry forty ton blocks from a hundred kilometers away just to be able to tell when it is getting cold out. But who are we to question the wisdom of the ancients. From the center of the prehistoric monument be watched the sun set.

In an astronomy class Dale had learned that each year the sun sets a little more to the north each year. If this is true then the Stonehenge didn't even work well as a calendar any more. He figured that someone ought to realign them and fix it. No one would though, it has too much value as a historical

relic since it is very old. Big fat hairy deal, thought Dale as he walked home alone in the dark.

Dale sat eating his lunch under the shade of a large oak tree in the commons area of Wiltshire College. He was halfway through his second peanut butter sandwich when Cheryl finally popped out of the music building. The sandwich stuck in his throat; she was talking to another guy, Charles Guilding.

Charles had money, good looks, and charm. His reputation as a ladies man was such that one might think that he was a prince or something. Dale calmed himself. Perhaps they just had a class together. Don't do anything rash, he told himself.

He put on a face of iron reserve and marched to the stairs. "Hello Cheryl," he said stiffly.

"Oh, hello Dale," said Cheryl at her classiest. "Would you excuse me a moment Charles. I must speak to Dale."

"Most certainly Cheryl," he said. He gave a slight, but still exaggerated bow and stepped to the side of the building.

Anxiety returned in short tight waves. Dale wanted to barf. His instincts told him that all was not well in the world.

"It's about us Dale. Things just aren't like they used to be between us. The magic just isn't there when we're together any more." She watched Dale patiently.

Dale had never understood what she meant by "magic", but he did understand what it was like to be alone and lonely in the world. If he lost Cheryl he knew he would be destroyed forever. "Do you really think so?" is what he said.

"I just think I need to meet some new people and try new things."

"I could take you scuba diving," Dale smiled weakly.

"That's not what I mean," she said. "I mean we can still go out--as friends, but I just don't think we should be so serious all the time. Do you understand? Can we still be friends?"

In less than a minute she had torn apart his world into infinitesimal pieces and now she wants to know if they can still be friends. "Sure," he said. "Why not?" He walked awkwardly back to his tree and sat down to finish his sandwich. He chewed one bit for about a minute before he dared turn around and look. Cheryl was gone.

Dale sat at the old wooden desk in his bedroom. He had been trying to figure out what his destiny would be, but had finally reached the conclusion that his fate would only be found by actually going out and finding it; it could never be predetermined. And on that note he resolved to go out into the world and meet his destiny--just as soon as this semester was over. Perhaps he would join the Peace Corps.

Eventually Dale's overactive brain turned itself to the problem of what to do as a final project for Beanly's Ancient History course. Anything to get Cheryl off his mind. He doodled around for at least a half hour until an idea finally coalesced into clarity. Within an hour he had worked out most of the details.

It was just dark when Dale took the keys to the families beaten up jeep. "I'll be over at Cheryl's," he said to his mother who was in the living room watching television.

"Have fun," she called. "And don't stay out too late.

"Okay mom. See you later." Dale paused for a moment. then ran up to his room and dug his camera out of a dresser drawer. Finally Dale Pumberton was off to meet his destiny.

The lights were off inside the Pumbleton Hardware store as Dale drove past it. He pulled the jeep around to the back. He was kind of worried that the police might come around and ask bothersome questions while he was entering the store, but it went without a hitch. He found four five hundred foot spools of nylon rope of varying thicknesses. It would suit his purposes. He loaded them into the jeep. The pulleys he was after were harder to find, but he managed to dig out fifteen 3-wheel pulleys from the cluttered stockroom. One day he would go back and clean that place up, but not tonight.

He wasn't actually stealing those supplies, he planned to have them back where they belonged by dawn. Fifteen pulleys weren't quite enough for what he had in mind, but he could rig the empty rope spools as a final touch.

The plains were quiet, and the darkness was broken only by the plowing wedge of his headlights. With an utter lack of reverence characteristic only of ghouls and heartless young women he drove over the grass and right up to the ancient historical relic. Before setting to work he looked over a set of diagrams one more time. "The Destruction of Ancient Historical Architecture of Immeasurable Value by Primitive Means" was the name of the Project he had decided to submit for a final grade in Professor Beanly's stupid Ancient History class.

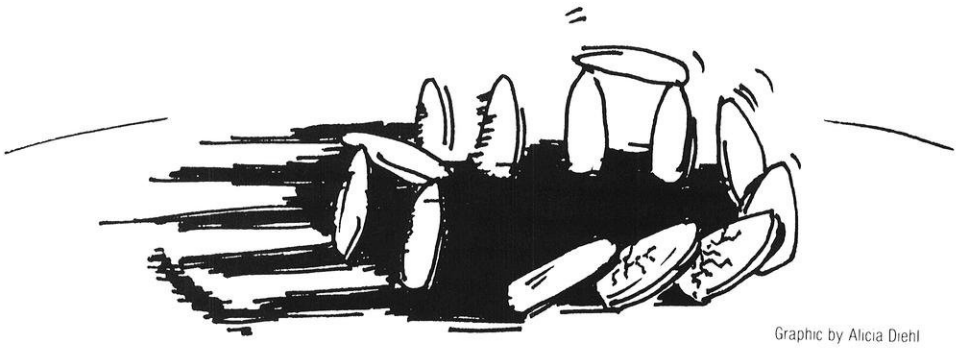
The most difficult part of the project was getting the ropes attached properly. He would often have to throw a rope over the top of one of the great stone crosspieces, climb to the top, then work his ropes into position and secure them. This process took nearly three hours.

It didn't take nearly as long to string up the pulleys. One bulky arrangement of pulleys went behind each rear wheel. The flash of his camera wasn't bright enough to let Dale take a picture of his handiwork. Too bad, some photos would have been a nice touch. No matter, photos or not, this was still an "A" project.

He put the jeep in low gear and tightened up the slack. The use of a jeep could be justified by noting that twenty men could lift the jeep; and since he did not have twenty men at his disposal it would be fair to use just one little old jeep instead.

He poured on the gas. The pulleys popped and squeaked and the first of the forty ton boulders moved. Encouraged he floored it, but the wheels spun out and he lost traction. "Damn stupid excuse of a car!" he cursed. He backed up and moved over a fresh piece of grass.

The system of pulleys multiplied the force supplied by the jeep twenty times. This time the huge block gave way--it toppled forward. Dale had left about



Graphic by Alicia Diehl

eight feet of slack between boulders. As one fell it yanked another from its ancient resting place. It worked perfectly, in less than a minute not a single stone was left standing. The dust settled slowly in the cool Brittish night. The prehistoric monument to fallen gods had itself fallen at the hands of one angry young teenager.

If everything else should go wrong in his life at least he could have the satisfaction of knowing that he would make the history books--the man who toppled Stonehenge.

Dale felt like crap when he woke up. But this was nothing new, as far as Dale was concerned morning was made for feeling crappy. He staggered down the stairs and fixed himself a bowl of cornflakes.

His mother walked into the kitchen. "Did you catch the news this morning? Stonehenge fell over last night. It just came over the television. Imagine that."

Dale didn't look up from his cornflakes. "Imagine that," he replied.

"Why would anyone want to knock over Stonehenge for goodness sake?" she asked while pouring herself a cup of hot coffee.

"Because it's there," he mumbled.

"What's that?" She looked at him.

"I don't know," he said.

Professor Beanly never got around to giving Dale a grade on his final project. After looking at it he turned it over to the authorities who promptly had Dale Pumberton arrested on charges of vandalism. The case was given worldwide publicity, of course; and so Dale Pumberton had left his footprints on the sands of time. He was fined two billion pounds, and sentenced to twenty years in prison. The government had no intention of collecting the two billion pounds; the fine was given to deter others from committing similar crimes.

Dale pointed out that there was only one Stonehenge and that they wouldn't have to worry about someone wrecking it again. Dale should have saved his breath; the judge remained inhumanly unsympathetic.

But what jail can hold a man who can tear down Stonehenge in just four hours? Six months after his conviction the news media announced that Dale Pumberton had escaped from prison in a hang glider he made from plastic garbage bags pilfered from the penitentiary's kitchen. Dale Pumberton, the man with a purpose, the man who had found his destiny, the man without a girlfriend, the world's greatest vandal, was on the prowl again.

Last week a mysterious underground explosion in India had destroyed most of the Taj Mahal. What would be next? All around the world countries were doubling or tripling security at great monuments of historical significance announcing that "Our heritage is what makes us great. Without a past we have no future. No cost is too great to protect our greatest accomplishments from one who would destroy all that we are."

Egypt, however, was one country that did not increase security about its national monuments. "It is not in the nature of a pyramid for it to fall over," stated one top official.

The killer of history remains at large. □

Former UW Faculty Member Flies in Space

by Anne Lederer

Robert Parker doesn't seem like the astronaut type. In fact, his small, 5 foot 8 inch frame is quite unlike the stereotypical image--tall, well built, and athletic. And when he applied for a spot in the NASA space program in 1967, Parker had no background in aviation or military training.

He is, however, a bonafide astronaut. The former assistant professor at UW-Madison was a mission specialist during the voyage of Spacelab 1, a laboratory that was transported into space and back to earth aboard NASA's space shuttle Challenger last December.

Parker returned to his old stomping grounds this spring to speak before a lecture hall filled with students, scientists, and other curious people. His presentation included a 20-minute film of the mission, his first.

The spellbound audience watched as a sphere of water wiggled and wobbled in the weightless environment inside the shuttle.

They watched as the astronauts took a short break from their work to engage in some free-fall acrobatics. The astronauts performed multiple somersaults that would have been envied by any gymnast on earth.

Bob Parker said that his trip into space was "a heck of a lot of fun." But it was not without its problems. He told of trying to make a sandwich--a trick that would have taken four hands and gravity to accomplish. "The big problem are the crumbs," he said. "They just don't settle down."

Although they did have fun, they went into space to do experiments. One of the experiments was highlighted in the film that Parker presented. An astronaut was strapped into and spun around in, a chair quite similar to one that the barber might cut your hair in. As he spun about, the fluid in his inner ear began to rotate as well, giving the man the impression that he was no longer spinning. When the chair finally was stopped, the fluid continued to rotate, making the man feel as if he were now spinning in the opposite direction. Parker made the point that Spacelab was a laboratory for doing experiments similar in nature to those that are done on the UW-Madison campus.

Parker wrapped up his talk by pointing out how the shuttle missions were affecting the way we used space. He noted that flights into space have become regular enough so that experiments conducted under poor conditions could be conducted again without the expense and long wait that was standard in the past.

The shuttle is allowing more people access to space. For the first time scientists, such as Parker, are flying along. And Parker said that NASA soon would select artists and poets and ordinary citizens to travel in space just for the experience.

The shuttle has given NASA the ability to fix things that brake down while in space. This means that expensive investments can be protected--satellites can have components replaced, or be boosted into more useful orbits.

He also mentioned that commercial use of space on board the shuttle was starting to make the shuttle missions pay for themselves, and that this was a big step toward making journeys into space more commonplace and routine.

Parker said that he felt that it was necessary for missions into space to continue to be routine if we were to accomplish new and important things in space. □

The Robot Abstraction

Until now, matching robots to specific industrial tasks has been done by trial and error, requiring the creation of expensive prototypes. Recent advances at the General Motors Research Laboratories have produced a computer system that can be used not only to select the right robot, but also to program it to perform the task in the most efficient way.

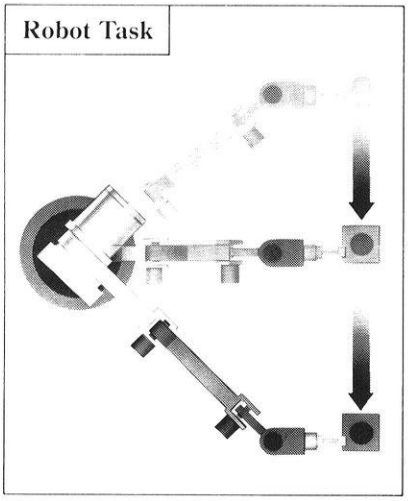
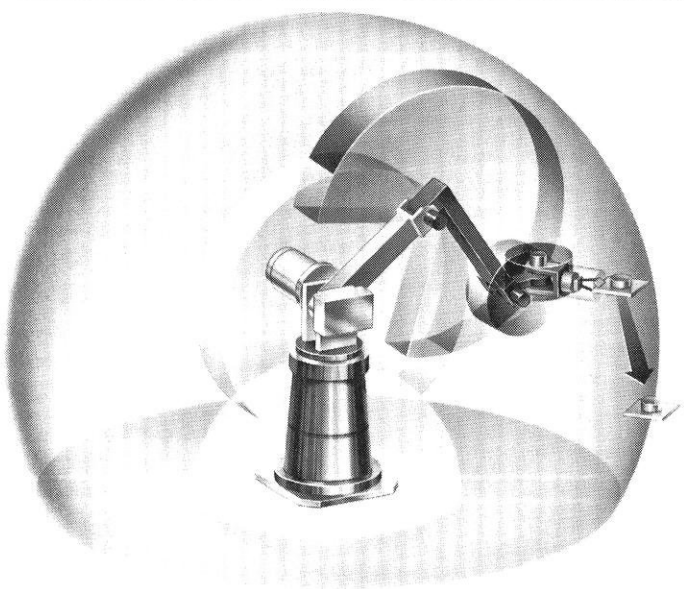


Figure 1: Two-dimensional overhead view of a robot task—the straight path trajectory of a solid.

Figure 2: Three-dimensional illustration of the robot work cell layout, showing reach capability for the task in Figure 1. Areas of color show total reach as well as the joint limits stored in the robot model.



THE DECISION to use robots to automate a manufacturing facility introduces the need for more decisions. There are several dozen kinds of robots, each with different capabilities. Thus far, choosing the right robot for a given set of tasks has been largely a manual process, involving great expenditures of time and money. By combining previously separate disciplines in a single computer system, two General Motors researchers have made the introduction of robots to the factory floor a more rational, less costly undertaking.

RoboTeach is the first computer system which integrates robotics, solid modeling, and simulation. It was designed and developed by Dr. Robert Tilove and Mary Pickett, both members of the Computer Science Department.

The use of powerful programming languages for manipulating robots is a major new development in the discipline of robotics. The languages specify desired robot motions, but they have no way of describing the robot's environment. Hence, they cannot automatically take into account physical obstacles or anticipate collisions. With only robot programming languages at one's disposal, assuring proper interaction with the environment requires testing with actual robots and parts.

Solid modeling, on the other hand, provides geometrically complete representations of environmental components and their spatial relations. But solid modeling cannot represent processes, because it has no way of representing temporal relations. Traditional solid modeling deals only with static relationships. While robot programming is without physical context, solid modeling is nothing but physical context. Neither by itself is adequate.

Nor are they satisfactory together. Only by simulation of both the robot and its environment can the sequence of discrete steps in a robot task be converted into the continuous .motion of a process. Also without simulation, there is no way to represent accurately the robotic process as it unfolds in its environment.

RoboTeach, by combining all three disciplines, provides computer representations of the environment, the robot, and the task. Consequently, it helps users reach high-

level decisions about the real world without the investment of time or money in actual robots, actual parts, or the factory setting.

One key RoboTeach abstraction is a mathematical robot model. Solid modeling techniques represent the geometric form of each link of the robot. Then constraints are imposed on the relative positions of mating links to produce a mathematical abstraction of a mechanical joint. By insisting that the joint constraints always be satisfied, RoboTeach insures that the abstract robot model corresponds to a physically realizable geometric configuration.

OTHER representational facilities in RoboTeach handle robot task definitions. The representation of any task can be matched with the representation of any robot. In this way, RoboTeach helps users to determine the optimal robot for the task. Once a robot has been selected, RoboTeach can be used to program the robot off-line.

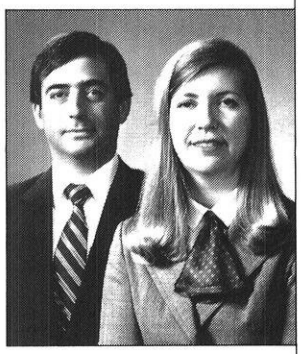
Not only are robots proliferating, but the tasks assigned to them are becoming more complex, making the need for off-line programming more urgent. When there are only a half dozen robots in a factory, the prospect of reprogramming them all by conventional show-and-teach methods for every new task is not overwhelming. But when there are hundreds of robots, the value of being able to reprogram without interaction with each robot becomes more apparent. Without off-line programming, the savings which justified the initial robot investment may quickly vanish.

RoboTeach distinguishes between two kinds of off-line programming: at the task level (what to do) and at the robot level (how to do it). For example, in the creation of a mechanical assembly, task-level instructions would include what components to assemble, the alignment of the components for the assembly process, and criteria for verifying that the final assembly is correct. Typically, there is a one-to-many relationship between task-level instructions and robot-level instructions.

"RoboTeach is currently in use," says Robert Tilove, "to study robot reach capabilities and to simulate simple robot-level tasks."

"Future research," adds Mary Pickett, "will explore the possibility of using RoboTeach to approach problems from the more abstract task level, with the user defining the task at a high level and RoboTeach filling in the details."

THE PEOPLE BEHIND THE WORK



Dr. Robert Tilove and Mary Pickett are Staff Research Scientists in the Computer Science Department at the General Motors Research Laboratories.

Mary Pickett received her B.S. in mathematics from Iowa State University and her Master's in computer science from Purdue University. She was a member of the team that developed GMSOLID, an interactive geometric modeling system. Her research at GM has also included the design of real-time programming languages. She joined GM in 1971.

Robert Tilove received his undergraduate and graduate degrees in electrical engineering from the University of Rochester. His Ph.D. thesis concerned the design and analysis of geometric algorithms for solid modeling. His current research interests also include the application of geometric modeling to computer vision and robot control. He joined GM in 1981.

Engineer's Library

The Technological Society

by Hassan Syed

All of us are well aware of the world technique. As engineers we spend a fairly large part of our time learning such techniques as solving differential equations and electrical circuits, or of finding "optimum" solutions and making optimal decisions. But, techniques are not restricted to the educational sphere of our lives. There are techniques to win elections and there are techniques to win wars. In fact, one can walk into a bookstore and find books on techniques ranging from making love to formulas for success in the business world, but have we ever stopped to think that our obsession with finding

Every time techniques are used facts, forces, and phenomena are reduced to the logical scheme.

the "one best way in the world" has gotten to be point where these techniques are viewed as ends in themselves.

Jacques Ellul in his book "The Technological Society" discusses how technique permeates virtually every aspect of today's society. He describes technique as "the totality of methods rationally arrived at and having absolute efficiency." According to Ellul, there are two essential characteristics of today's technical phenomenon: rationality and artificiality.

According to Ellul, the world that is being created by the accumulation of technical means is an artificial world. The artificiality of technique destroys, eliminates, or subordinates what is. The technical environment absorbs the the native in the same way that hydroelectric installations take water and lead it into conduits.

Today, whenever or wherever techniques are applied, a rational process is present. This rationality forces the mechanic to restrict everything that is spontaneous or irrational. Systematization, division of labor, creation of standards and production norms are all examples of such rational processes. Unfortunately, this process does not allow spontaneity and personal creativity. Also, the rational processes found in techniques reduce everything to its logical dimension alone. Every time techniques are used facts, forces, phenomena and instruments are reduced to the logical scheme. Thus, human fancy and creativity is replaced by an automatic process governed only by logic.

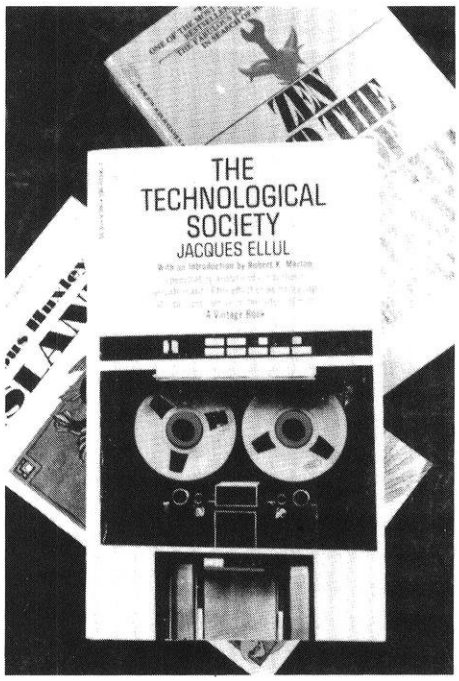


Photo by Scott Knox

This self-directing automatic process is another characteristic of today's technical phenomena. Technique, by its very nature, selects among the means to be employed. Human beings cease to be an agent of technical progress. He or she merely becomes a device for recording effects and results obtained through various techniques. Although it appears that man is still choosing when a technique is discarded, this action is taken only after it is determined that, from a different point of view, the method in question is less efficient. A good example is the decision to abandon certain methods of mass production in order to obtain more constant productivity.

It is always the improvement of the method that determine the human choice. This non-stop process of self improvement goes on augmenting the technical environment. According to Ellul, techniques have arrived at such a point in their evolution that they are progressing almost without intervention by men. Every new technical form names possible new forms and condi-

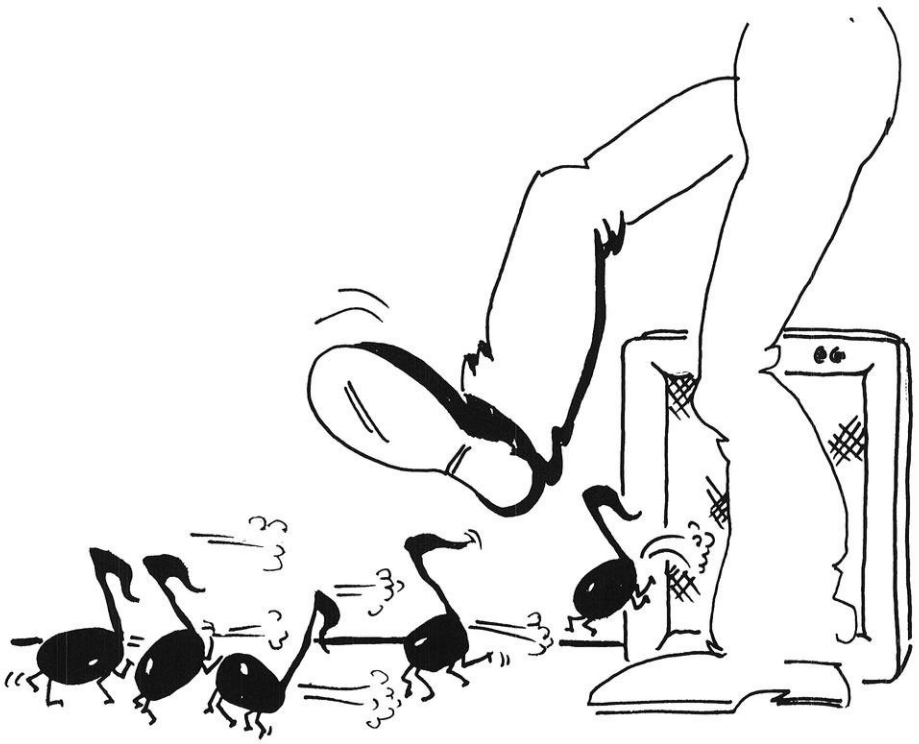
Techniques have arrived at such a point in their evolution that they are progressing almost without intervention by men.

tions in a number of others. For example, NASA flights into space have generated various new "spin off" technologies applicable in all facets of life. In the same way, once a technical procedure has been discovered, it is applicable in many fields other than the one it was primarily invented for. The techniques of operations research, for example, were devised to help make certain military decisions. But it was immediately realized that they could be applied wherever any decision had to be made.

The wide applicability of technique brings technical progress according to a geometric progression. Techniques are combined with one another, and the more techniques there are to be combined, the more combinations are possible. Thus, by simple combination of new data, discoveries are made constantly; and whole fields are opened up because of the meeting of several ideas.

(continued on page 11)

The Dorm Zone



Graphic by Alicia Diehl

by Richard Tobias

Rob was a typical guy. Sure, he'd heard of all the advantages of going to school and living at home. Low cost, family there when you need them, and let's not forget the dog waiting at the door with his tail wagging every day when Rob returned from a hard day at school. But Rob wanted more. So, off went the applications to U.W. Madison. What Rob didn't know was that he was about to enter a fifth dimension beyond that which is known to man. A place untouched by time, space, or sanity. He was about to enter . . . ***The Dorm Zone***.

Possessions were carefully packed three weeks in advance. He didn't want to forget anything. Beer mugs, Hawaiian party shirt, dart gun and "heavy metal" tapes were all thoughtfully thrown into a box and packed into the family station wagon. When the car approached the Zone, it joined hundreds of others anxious to unload their cargo at the limited number of "loading docks". After riding around the block six or seven times, a parking place becomes available and the car is swarmed by creatures in red t-shirts bearing the words U-Who on their backs. (I think that that's Y-O-U Who in standard English, but don't forget, Rob has entered the Dorm Zone and college-level brilliance lurks everywhere.) These U-Who people graciously offer to carry a box or two upstairs. Rob accepts their offer, but takes the box carrying the Rush tapes himself.

It's time to meet the manager of Rob's floor, the house fellow. And what an intelligent fellow he seems to be! He knows everything there is to know about the dorms—how to get meal tickets, laundry tickets, and how to hand out medical and other information cards that Rob must fill out and hand in that evening. It sure is nice to find someone so interested in whether Rob wears contact lenses or what drugs he takes on a regular basis ("prescription" the housefellow explains). The housefellow is always there to keep things under control and to pound on your door at 3:30 a.m. to make sure you haven't slept through the third false fire alarm that cold January morning. Rob wonders where his roommate is. Check in time was at 1:00 and he still hasn't arrived. The housefellow explains that that's because overseas flights are sometimes delayed.

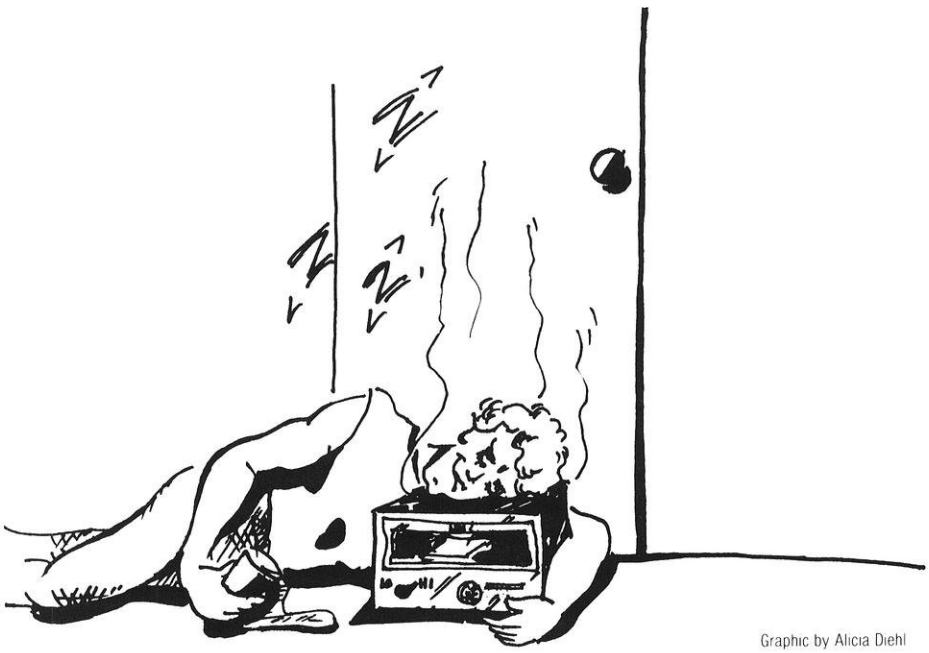
The fun of meeting people (and desperately trying to remember their names for more than a minute) begins the first afternoon at the mandatory house meeting. It's hard to imagine that by the end of the year the fifty some faces will be all too familiar. The people on the floor seem to eventually fit into special groups. Rob meets the weight lifter, a 200 lb. hulk whose main reason for attending college seems to be to find as many occasions as possible to remove his shirt and flex his stuff. Then there's the religious fanatic whose ears pop up in math class every time he hears the word "conversion". Rob never knew that around-the-clock card playing and TV watching could be such a rewarding academic past time. The University awards a 1.3 grade point average to those who partake. And then there is the hall disc jockey. He's kind enough to create a sense of floor unity by daily letting the whole floor simultaneously experience 100 watts of Iron Maiden. Just the opposite of Mr. D.J. are the "Mysterious Ones". These are the people that live next to you all year, but

While he had been in another room, a bunch of guys moved all of Paul's belongings into the bathroom. He spent the night perched over three toilet stalls.

whose names you never learn. Sometimes you see them in the hallway, but they don't seem to be able to speak. It takes a while before someone on the floor testifies that they do, in fact, speak English.

The Zone creates events that could take place nowhere else. One of the more unusual Zone occurences involves one of the rooms in the darkest corners away from the housefellow. Rob encounters it while attempting to get help on a chemistry problem one day. He enters the room and blinks his eyes. Why is there a man outside the eighth floor cleaning windows at 9:00 at night? Oh, that's just Jack out on the window ledge getting some fresh air. Out on the window ledge?! Oh, he's safe. He and his roommate do it all the time.

Then there's the time Paul returned to his room only to find that it was no longer there. At least the furniture wasn't. While he had been in another room, a bunch of guys moved all of his belongings into the bathroom. Paul spent that night sleeping in his bed, perched over three toilet stalls. There's still a bit of grafitti on a stall wall saying, "Paul's room was here". To visitors of the Dorm Zone, the phrase must be perplexing.



Graphic by Alicia Diehl

After a day's worth of moving, one can sure develop an appetite. Rob and his new friends go and pick up their special Dorm Zone money - the meal ticket. These tickets are the lifeline for the Madison student. Even after all other resources are spent on beer, records, and other necessities, there is always a ticket to buy food with. Well, almost always. There is a way Zone money can be converted to U.S. currency. That's by way of the "Wall Street" bulletin board. Students quickly learn all about supply and demand and when to sell and buy at the best

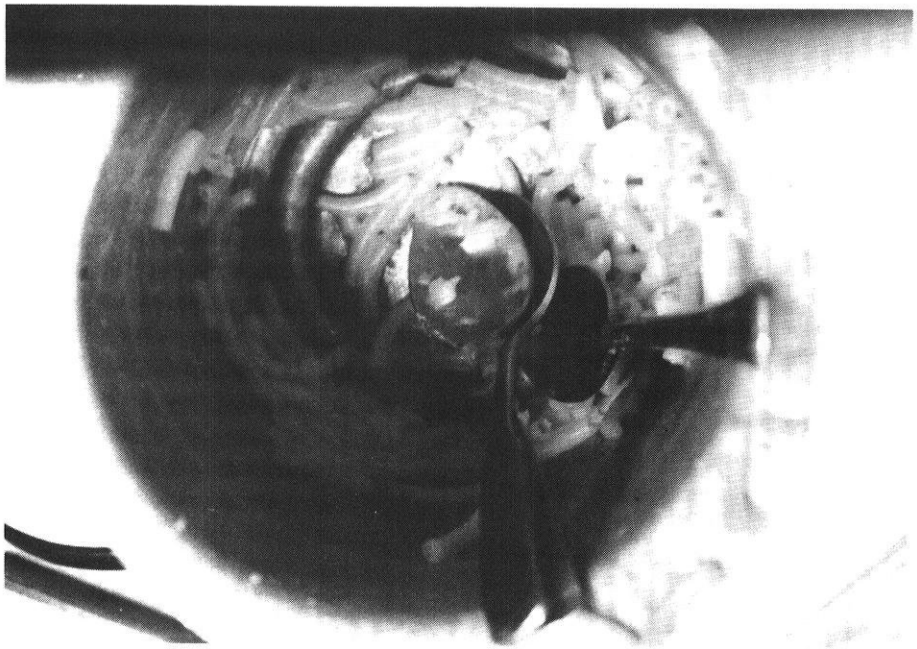


Photo by Scott Paul

When the meal tickets run out dorm residents are sometimes reduced to cooking for themselves. These are the results of one such students culinary experiment.

Apparently, Sara Lee, and her thaw-and-serve collection are a part of the fine UW cooking staff.

rates. Bargains can be found. After all, if it's Friday night and you're short of beer money, what choice do you have but to make a quick sell?

After picking up tickets it is off to the cafeteria to have the first taste of the food they are going to have the pleasure of eating all semester. The Dorm Zone food looks and sounds like

it comes from another time and place. The first entre is Taco Chicken Breast. It looks . . . unique, but something a little more familiar would be nice. What's this? Badger Italian-style Dish, a delicious blend of government surplus macaroni and tomato-colored sauce. Well, there is one more entre. Vegetarian Lasagna. Maybe Taco Chicken Breast doesn't look that bad after all. After choosing a dessert, beverage and other assorted foods, Rob and his friends check out. Rob's total comes to $5.90. Hmm, that seems like a lot, but he's not using real money anyway . . . The main course isn't bad, and as soon as his cheesecake thaws out, he heartily finishes that off, too. Apparently Sara Lee (and her thaw-and-serve collection) is a member of the fine U.W. cooking staff.

Later that evening the guys take off to explore another dimension in the life of the Madison student, the Madison nightlife. After bar time, they head back and go to sleep so that they will be well rested for another day's discoveries. Rob drifts asleep to the happy sounds of people outside yelling "I am **so** drunk", "Ogg sucks", and other unprintable phrases.

Rob, a typical newcomer to dorm life, finds his first day interesting if not

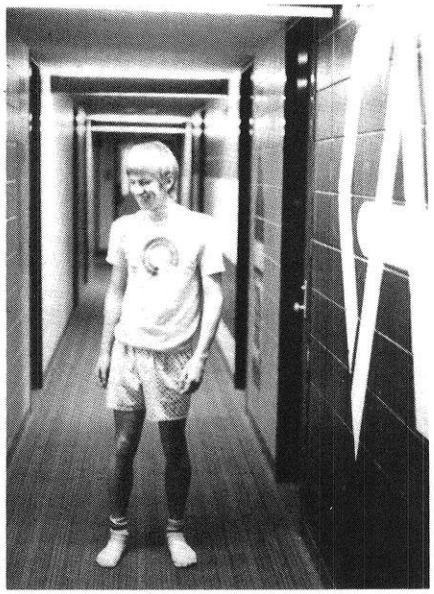


Photo by Scott Paul

a pleasant change from home life. Rob has begun to experience a place untouched by time, space or sanity—a fifth dimension known as The Dorm Zone. What Rob has yet to realize is that not only has he entered this strange new world, but it will be two semesters until he can make his escape. □

(continued page 8)

The techniques of propoganda, for example, comes into being when the material technique of communication, psychological techniques, commercial techniques and techniques of authoritarian government are combined.

Sports have remained no exception to technological encroachment. Nowadays, watching professional sports hardly gives the feeling that the players are enjoying themselves. The overwhelming concern with strategy and technique takes over the spontaneity and creativity.

Nowadays, watching professional sports hardly gives the feeling that the players are enjoying themselves. The overwhelming concern with strategy and technique takes over the spontaneity and creativity.

Newsweek magazine recently reported on an imaging technique to be used by ABC during its coverage of the Olympic games. This technique uses the space between a sportscaster's shoulder and the top of the screen for surrealistic imagery. Such artificial visual saturations give the viewer no time to absorb or reflect upon the competition just presented. Newsweek noted that "when the television coverage becomes the event, and the event merely a prop, the essence of any sport gets damaged in delivery."

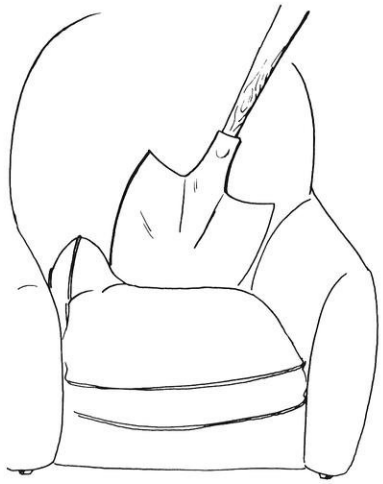
Ellul's book does not give any solutions to the problems created by techniques. But, the book is incisive enough to provoke though on many technological concepts that are unchallenged, and yet accepted, in today's society. The book makes the reader aware of the true nature of the technological society. In Ellul's words, "It is a call to the sleeper to awake." □

Forty Ways to Fight Summer Boredom

Explore some nifty boredom beaters that will brighten your summer.

by Scott Paul

As you may be all too painfully aware, summer vacations can become dull and lifeless after you've played those same summer games so many times that it hurts to even think about them anymore. You may become so bored that even thoughts of school don't give you the heebie jeebies. What you need are some new and creative ideas for fun things to do to beat those summertime blues. After doing a lot of painstaking research, I have been able to compile this list of first class boredom beaters.



Graphic by Alicia Diehl

1. Spray paint your mother.
2. Listen to your favorite record album at 45 r.p.m.
3. Go to the supermarket and put a really weird item, such as Broccoli Helper, into somebody else's cart. You can spy on this poor soul and observe his reaction as he goes through the checkout line.
4. Order a pizza and eat it--then pretend that the pizza box is still full and carry it all around town. Freak people out by "accidently" dropping your pizza and stepping on it.
5. Go through your sock drawer and organize all your socks into pairs and roll them into neat little balls.
6. Dig for small change underneath cushions in all the furniture in the house.
7. Count all your small change.
8. Write a letter to Olivia Newton-John to ask her out for a date.
9. Do badger impressions for your friends.
10. Talk to some old people about the weather and crops.
11. Count all the corners in your house.
12. Swear at a holy person.
13. Go into a department store and pretend to steal something. To do this you have to look about sneakily, then pretend to put some small item in your pocket. The object is to see if you can get the attention of the store security people.
14. Invent a bizarre fad.
15. Ask questions of your parents pertaining to their health and general welfare.
16. Tell a joke to your feet.
17. Tell your parents that you want them to talk to you about sex.
18. See just how long you can hold your breath.
19. Make a list of all the things that you could do if you were invisible.
20. See how much confusion you can cause by playing with your house's circuit breakers.
21. Go to a popular local restaurant and practice your fake apileptic seisures.
22. Wear a stocking cap.
23. Put on seven pairs of sweat socks, then go jogging.
24. Read a novel by John Steinbeck--just kidding.
25. Borrow a ghetto blaster, then go disco jaywalking with 3 friends.
26. Dye all of your sisters clothes green.
27. Visit an old folks home dressed as a terrorist.
28. Go to a shopping mall and spy on someone, anyone, for at least an hour. See if he or she becomes paranoid.
29. Tell your mother that you believe that you have scurvy.

Graphic by Alicia Diehl

30. Hide under a box, then kick the box about six feet into the air when anyone walks nearby.
31. Invite your friends to take the "taste test challenge" between Pepsi and Coke. Just for fun, mix half a cup of vinegar into one of the glasses.
32. Fix up your brother or sister for a blind date with a really weird person.
33. Take all your small change to the bank to have it counted and changed.
34. Go hug a small foreign car.
35. French kiss your hand.
36. Join a cult.
37. Go for a bike ride. Pretend that all the cars that pass you are alien space ships and its your mission to use the laser blasters on your brake levers to destroy them.
38. Imitate everybody you talk to.
39. Chug a whole bunch of anything.
40. Spray paint some cardboard tubes red so that they look like dynamite. Tape them to your chest and walk into a crowded public place. The effect is enhanced when you wear a terrorist style headband and look insane to begin with. □

Patent It

by Mitch Hawker

The patent can be a valuable tool when used properly and is certainly worth looking into if you think that you have an original idea. "If the invention would have long term market value and the person is serious about marketing it, then a patent could be a good investment," says Jean Gilbertson, UW patent librarian.

The Kurt F. Wendt Engineering Library has been collecting patents since the 1800's. It has been an official patent depository since 1977 and is one of two in Wisconsin (the other is in the Milwaukee public library). There are currently fifty-two such depositories in the U.S., although that number is increasing rapidly in an effort by the Patent Office to make them more accessible to all. The Wendt Library stores full text copies of patents numbered from one to over four million as well as copies of some patents issued before the Patent Office started using the current numbering system in 1836. Many people use the library to conduct preliminary patent searches before making application to the patent office.

To apply for a patent you must be the inventor or a legal representative of the inventor if he is insane or deceased. The application consists of a formal written request that your invention be patented, the specifications and claims you wish to make, as many technical drawings of the item as would be helpful, a sworn oath stating that you believe yourself to be the original inventor, and the application fee (usually $300). A patent attorney is often helpful in this process because of his knowledge of the pertinent laws and examination procedures.

Before granting you a patent, the examiner(s) must determine that you are indeed the original inventor, that your invention is "non-obvious" to someone knowledgeable in the field and find that your invention is in some way useful. Oh . . . by the way, there is also an issuance fee of a few hundred dollars.

This entire application process takes an average of two to three years with 50-60% of patents applied for finally being accepted. Over 70,000 patents, ranging in length from two pages to three hundred pages, are now granted in the United State each year.

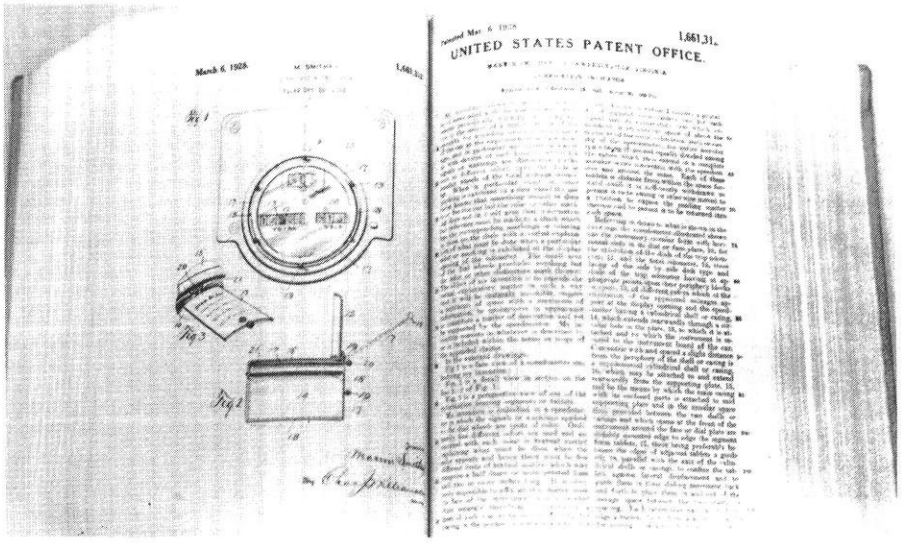


Photo by Scott Knox

Millions of diagrams of interesting inventions, such as this one, can be explored in the UW's patent library. Can you determine what this invention is for?

If you are interested in more specific information concerning the patent application procedure, current legislation, pertinent fees, and further contacts, write to:
Commissioner of Patents and
Trademarks
Washington, D.C. 20231

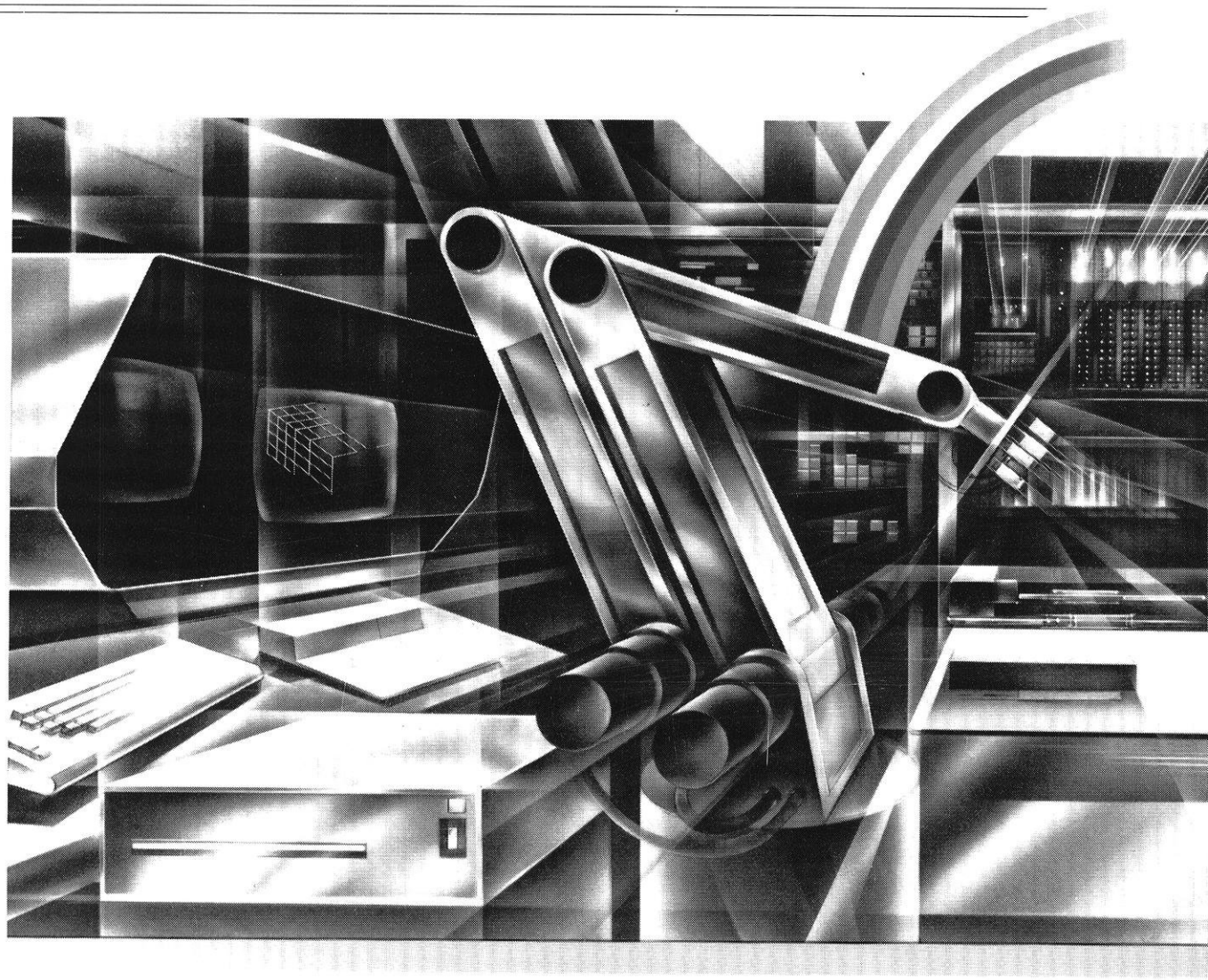
Or, better yet, visit the Kurt F. Wendt Engineering Library and check out one of their many books on the subject. Patent Librarian Jean Gilbertson is on duty Monday thru Friday 8:00 -4:30 (room 313) and would be happy to answer any questions you might have. □

Eta Kappa Nu News

Eta Kapa Nu is the national electrical engineering honor society here at the University of Wisconsin-Madison. Eta Kapa Nu participates in a variety of activities in the college of engineering, and this year has sponsored a tutorial program, an informational open house, a graduate school talk, and a plant trip to AC- Delco in Milwaukee.

We are pleased to announce that the following people have been inducted into the society this year: Manfred R. Arndt, Michael Dorchardt, Richard W. Bunce, Dena E. Carpenter, Shirley Hiu-Ha Chau, Robert A. Cook, Andrew W. Cordes, Paul Fuchs, Poon T. Fung, Matt Geurink, Sue A. Guzman, Rick Hakes, Peter O. Heidmann, Dennis J. Heller, Soegiarto Hendric, Patric L. Jansen, Chew K. Kia, Todd Kinney, Susan C. Kromenaker, David Lieberman, Soek K. Lim, Renda C. Liono, Beth L. McMahon, Jean M. Michalak, Diana M. Peplinski, Thomas E. Petersen, Gregg S. Schilawski, Khay-Tien Sia, Mary Silverling, King-Fai So, Ruth L. Starr, Johannes Sujendro, Andres R. Takach, Edward Sher-Ling Wang, Chiu Tan Yu.

We will be meeting periodically in the lobby of the Engineering building again in the fall. These meetings are usually announced via posters on bulletin boards. If you would like to become involved with Eta Kappa Nu, please come to one of our meetings. □



Convert the production line into a frontier of creativity.

The cast-iron technology of the factory will soon be silicon technology.

Chips and computers transfer design information directly to the factory floor. Other chips make possible flexible robotics, programmable controllers for machine tools, automated test systems and digital inspection cameras. Local area networks tie together all these systems.

These are revolutionary changes that can result in better-made products, manufactured of new materials at lower cost.

GE is deeply involved in bringing manufacturing into the silicon age. In one plant, electronics and computer systems enable us to reduce production time of a locomotive's diesel engine frame from 16 days to 16 hours. At our dishwasher production plant, a master computer monitors a distributed system of programmable controls, robots, automated conveyors, assembly equipment and quality control stations.

We're working on robots that can see, assembly systems that hear, and machinery that can adapt to changes and perhaps even repair itself.

This transformation of manufacturing from the past to the future creates a need for new kinds of engineers to design and operate factories of the silicon age. They have to be as familiar with the realities of the assembly line as with the protocols of software communications.

They will synchronize dozens of real-time systems whose slightest move affects the performance of every other system. The frontiers of manufacturing technology have been thrust outward. Old ideas have been questioned, new ones probed. Some ideas are now on production lines. Others are still flickers of light in an imagination.

All offer opportunities for you to seek, to grow, and to accomplish.

If you can dream it, you can do it.