The Yearbook

For Inspiration and Recognition of Science and Technology

1994

U.S. FIRST

For Inspiration and Recognition of Science and Technology

The Competition

The Dream...

This souvenir of the 1994 U.S. First Competition is dedicated to all those who share the vision and helped to make it a reality. They recognized that the wealth of our country is visited in our youth, and that teaching, learning, and applying science and technology can be fun!

An Idea Whose Time Has Come

Directory of Teams

Directory (continued)

Thanks to:

William N. Fish, Photographer, U.S. FIRST
Paul Bradicich, Cover, TOWER POWER
Jessica Forbes, U.S. FIRST
Elaine Anselm, Xerox
Mary H.Wertz, Designer, Wind Song Studio
Christine Cummings, Editor

Thanks to all who contributed amateur photographs and special material

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"We are beginning to convince kids that science and technology are exciting and fun elements in their lives..."

Dean Kamen
President, DEKA Research & Development Corp.
Founder, U.S. FIRST

"Many have never been exposed to the process of getting satisfaction out of math and science. This does it."

Dr. Woodie Flowers
Professor of Teaching Innovation
Massachusetts Institute of Technology


For Inspiration and Recognition of Science and Technology

1992 Maize Craze

"Dean came into my office and said, now, if these corporations can sponsor Olympic athletes, why isn't it a great idea that they encourage young scientists the same way. And he's absolutely right about that."

President George Bush, June 23, 1992

▲
National Champions
Nypro, Inc.
Clinton High School
Clinton, Massachusetts

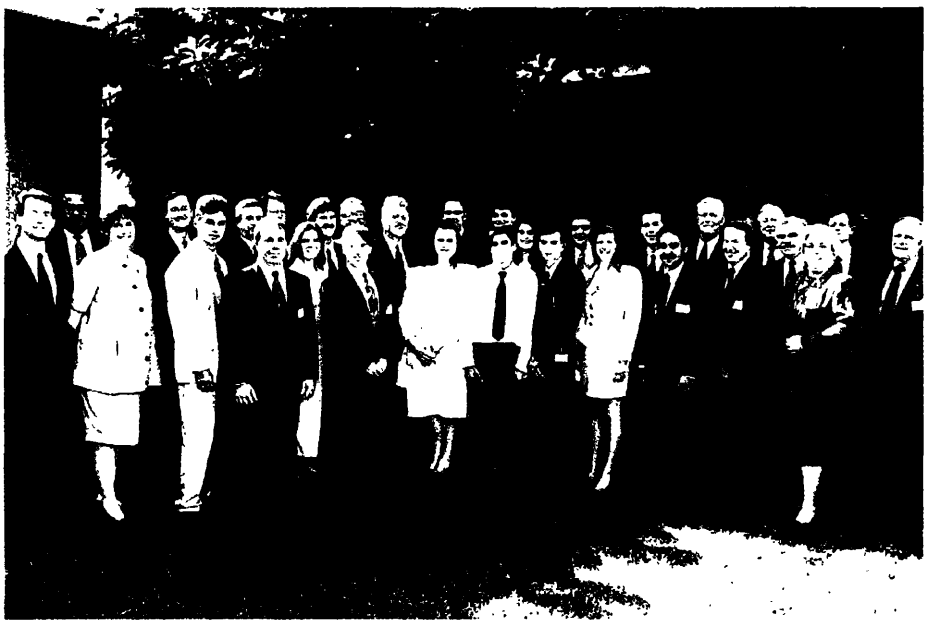
◀
Chairman's Award Winner
Xerox Corporation
Joseph C. Wilson
Magnet High School
Rochester, New York

1993 Rug Rage

"The competition truly is a fine, creative example of what can be done to excite the next generation about science and technology and motivate young Americans to the pursuit of the scientific and technological excellence."

President Bill Clinton, March 27, 1993

National Champions
E-Systems, Inc.
Dallas Christian
High School
Mesquite, Texas



Chairman's Award Dinner
AT&T Bell Laboratories
Science High School
Newark, New Jersey

..."In my view, all of you who are participating, whether you are students, teachers or the support from the other organizations, universities and corporations, you're really all winners just for being here, and just for participating."

excerpt from speech at U.S. FIRST Awards Dinner

"The message is clear--the commitment of the world's best engineers to be new role models for our nation's youth can make a difference. ...No other program has the potential to influence so many young minds while reinforcing the national goal of being a world leader in business and education."

Paul A. Allaire
Chairman and CEO, Xerox Corporation
Chairman, Council on Competitiveness

PARTNERS

For the experience of ***unity***
Between one another

Hard work *and* ***sacrifice***
For ourselves and each other.

Guidance *of* ***significance***
For the students from the adults.

Ideas *from the students*
Not followed by insults.

Hard work *and* ***determination***
Taking hours of ***dedication.***

Everyone *Working* ***together.***

For Inspiration and Recognition
of Science and Technology.

Forever.

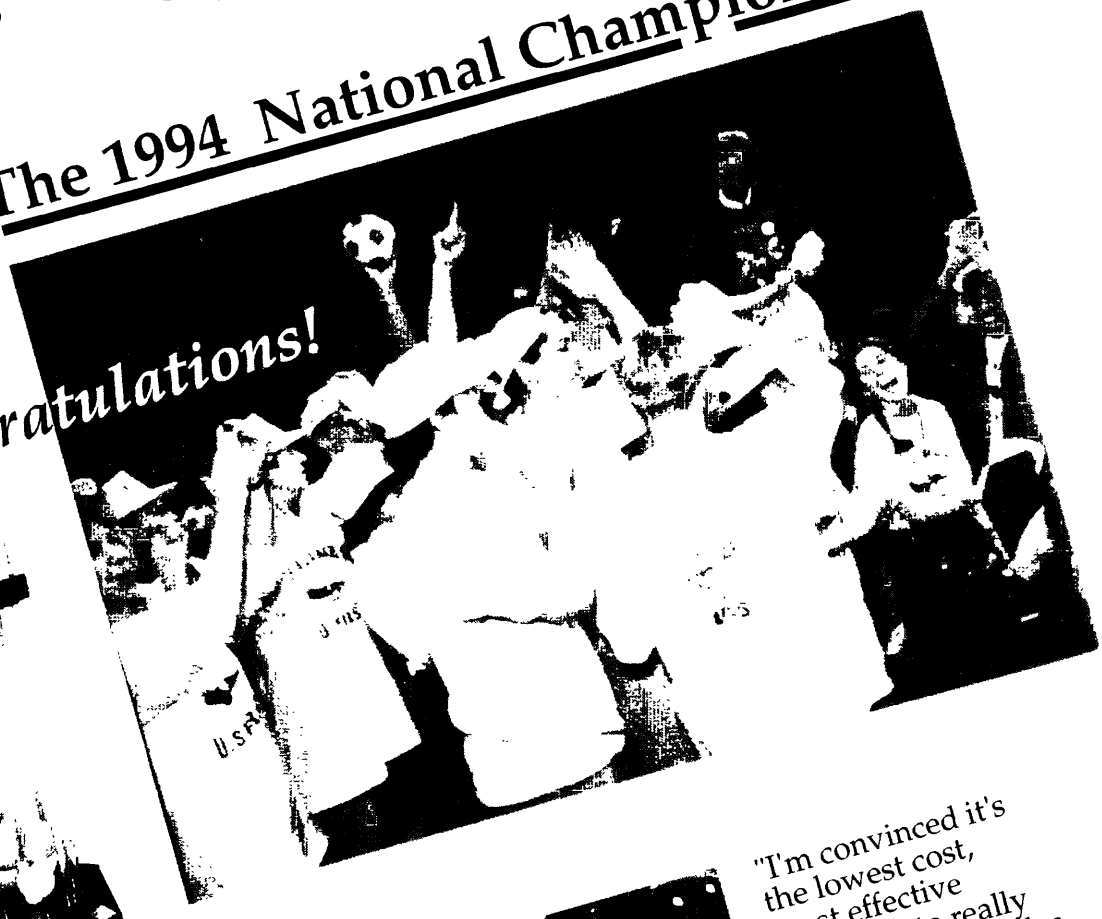
Sienna Rowland, 10th Grade

The Ball'ed Eagles

The Procter & Gamble Company Walnut Hills High School
Cincinnati, Ohio

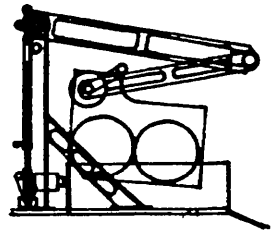
The 1994 National Champions

Congratulations!

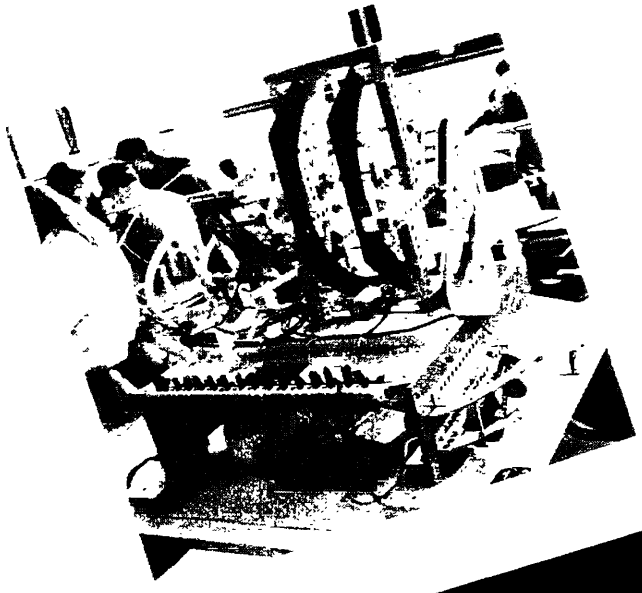


"I'm convinced it's the lowest cost, most effective approach to really change the attitudes of our youngsters to science and technology. We'll be continuing to do what we can to further this objective."

Gordon F. Brunner
Senior Vice President
The Procter & Gamble Company



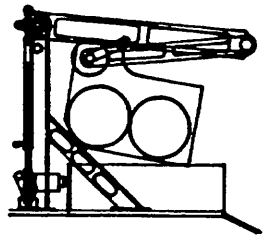
"They're doing very well on the design. You have to give them a lot of credit for what they've come up with. I think they are learning at the same time they are teaching us something."
Norm Reibolt, Engineer



"I think it's good that there is something that's exciting and fun for kids to do in science. Usually, science is not considered a very fun activity but something very hard to do. ...This let's people know that science can be fun. ...It's really neat.
Naomi Feinman, Student

"The time I spent on the U.S. FIRST team was the most exciting time of my life. I would like to thank all the engineers involved.
Jeff Ernst, Student

"I think that anytime students get to experience math and science in a creative and competitive way like this, something happens to the way we think about math and science. And it's something good.
Arielle Parker, Student



WELCOME HOME CHAMPIONS!

"If the goal of the program is inspiration and recognition, we've met both. Win or lose, we'd already won."

Bob Dirksing, Research Fellow

Parents Reaction

"This is really impressive... I feel so fortunate that she's had the opportunity to do this..."

"It seem like he's begun to focus on what he wants to do with the rest of his life."

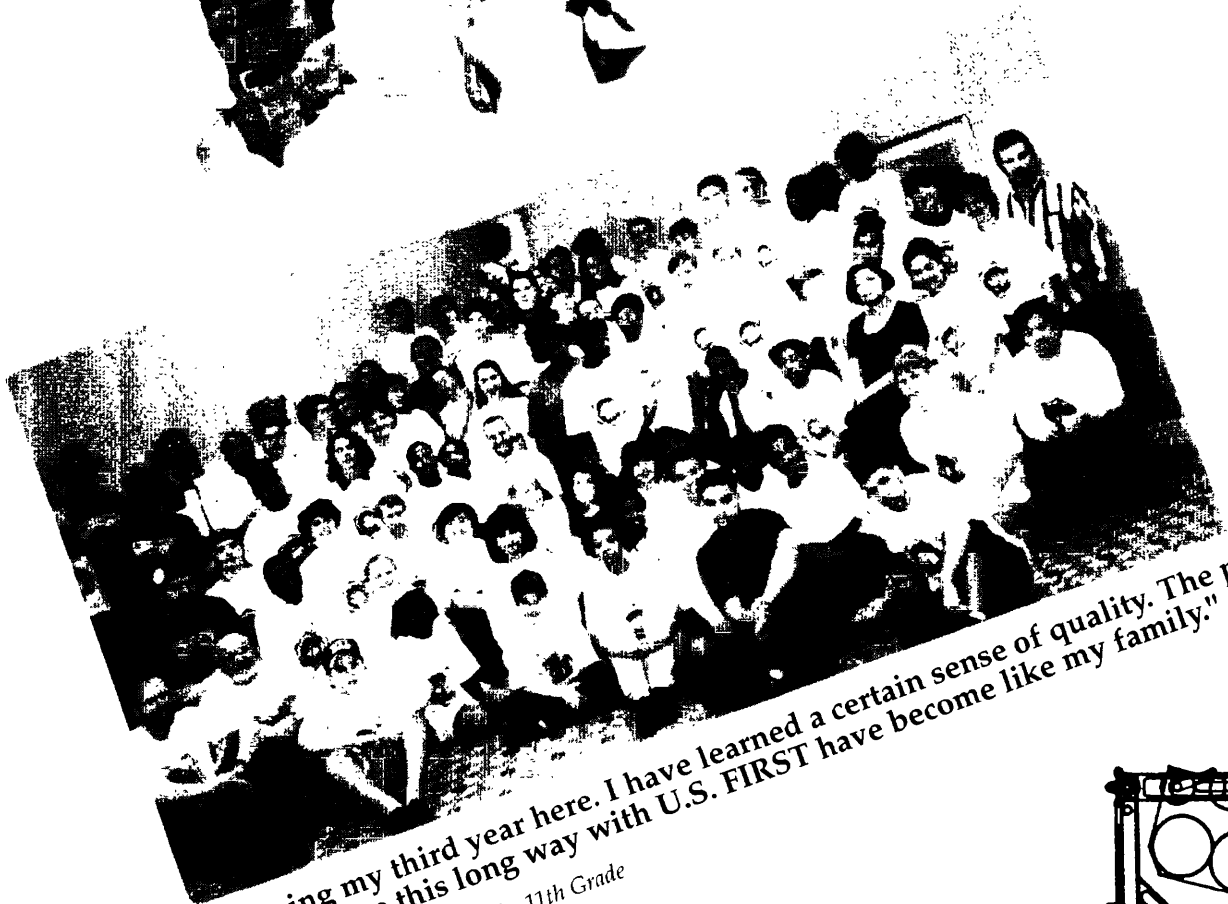
"I've seen my son start semi-interested (and grow) to totally interested now... It's been an incredible learning experience."

The X-Cats

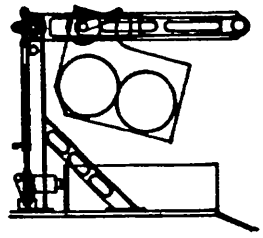
Xerox Corporation Joseph C. Wilson Magnet High School
Rochester, New York

Chairman's Award Winner

"I am a role model."
Leonard Edmunds, 10th Grade



"This being my third year here. I have learned a certain sense of quality. The people that have come this long way with U.S. FIRST have become like my family."
LaShondra Edwards, 11th Grade



...For a young engineer, U.S. FIRST is a wonderful chance to work closely with experienced and gifted people whom we might otherwise never contact in the vast pool of a corporation. ...We've learned how to focus and complete tasks in an efficient manner, the advantages of teamwork, that engineers are not stereotypical 'nerds' and high school kids are not as bad as the media makes them out to be. *Molly Gregas, Mechanical Engineer*

"I realized something I hadn't realized before. That before U.S. FIRST I was a little bit prejudiced and it made me feel kind of bad because I was that way in the first place. But now, just today, I realized I started perceiving people from what I know about them instead of what I think I know about them." *Yolonda Flowers, 10th Grade*

"The engineers that I'm working with are very patient and open to new ideas. Even though they are very educated in this, they give us a chance to express our thoughts and they regard it very highly. For the few weeks that I have been working with them they've showed me that I can do anything that I want as long as I put my mind to it. They have taught me to take certain risks. ...All of this has made me feel very special and important. It has given me a feeling of maturity, because of the fact that I can get along with adults and act like an equal to them. It's such a good feeling!" Mesode Sobe, 12th Grade

"That's the thrill of working with the kids. ...They ask the all important simple questions with difficult answers that make you scratch your head or raise an eyebrow."...
Peter Chu, Systems Analyst

"The jobs I do aren't very big but, I feel good that I know how to use these tools and I know what they are. The one thing I will try to change is the way women are looked at in engineering."
Liz Taylor, 11th Grade

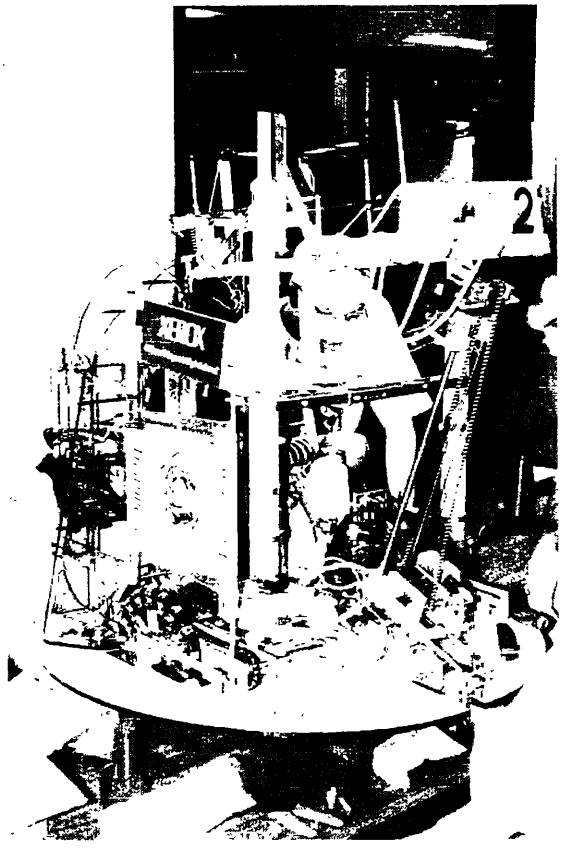
"Through this project I have felt like an equal to the people in the model shop. Rich and Mark have not gotten mad at me, even when I broke a band saw. ...I go to meetings and I never feel like leaving.
Joe Vellozzi, 10th Grade

"I participated in and watched major discussions and debates over issues pertaining to our vehicle in which students of all educational backgrounds not only participated in, but took a leadership role. I had been part of programs before, but had never seen motivation on a level such as I saw there. 'Good' students were working along side 'bad' students, both respecting each other's ideas and working together to mesh them into a common product.

Gene Gordon, Physics Teacher

"When I think about the competition, I sometimes worry about the performance of our vehicle. Negative thoughts, like 'what if someone else has a better, more efficient design? What if our best is simply not good enough?' But then I realize what it is we are doing here. We're building an actual, real, working machine to perform a task. And that's just so incredible to me that I almost think the competition is irrelevant: we're doing something great here, whether we're the fastest or not.

Adriane Giebel, 11th Grade, January 12, 1994



Honeywell, Inc

1994 Founders Award Winner

Sponsor of Five U.S. FIRST Teams:

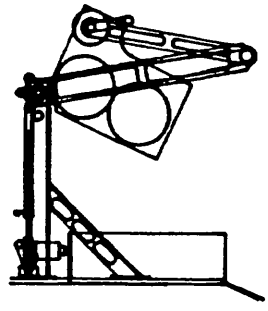
Alliant Techsystems, Inc., Washburn Senior High School, MN
Alliant Techsystems, Inc., Kamiak High School, WA
Honeywell, Inc., North Community High School, MN
Honeywell, Inc., Commercial Flight Systems Group, Cortez High School, AZ
MICRO SWITCH, A Honeywell Division, Freeport High School, IL

L-R Dean Kamen, Dallas Burns, retired Vice President of Technology, Dr. James Renier, retired Chairman, and Michael Bonsignore, current Chairman and Chief Executive Officer.

Honeywell proudly accepts the 1994 Founders Award in recognition of their contribution to the continued growth and expansion of the U.S. FIRST Competition.

"We're extremely proud of the commitment and dedication of Honeywell employees to the U.S. FIRST effort. Their time and energy will surely pay off in the next generation of engineers.

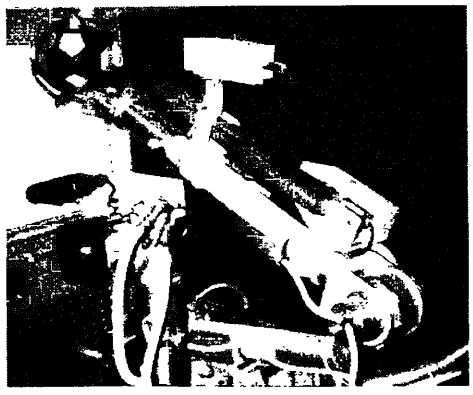
The Founders Clock, so magnificent in its design and engineering, is a symbol of the kind of excellence that will inspire other companies to join. The spirit of this program is contagious, as is Dean's enthusiasm and energy. If anyone can convince kids that science and engineering are exciting, he can. Honeywell will be proud to have helped."

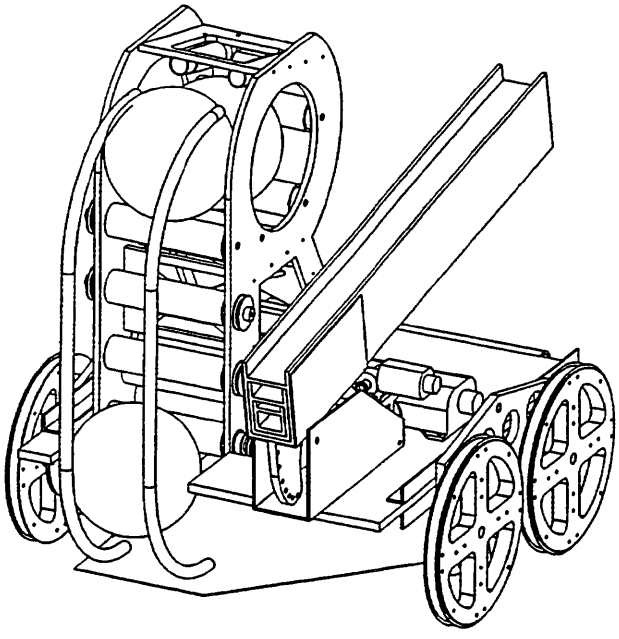


Ursus Maritimus (Latin for Polar Bear)

Honeywell, Inc. North Community High School
Minneapolis, Minnesota

We found the students, teachers, and engineers working side-by-side as genuine peers. ...In general, everyone involved with the program has experienced significant personal growth. We have all learned from each other and we have developed great friendships from working side-by-side toward a common goal—Being the best that we can be together!

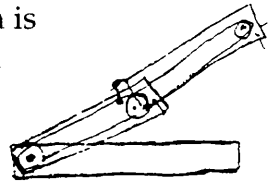


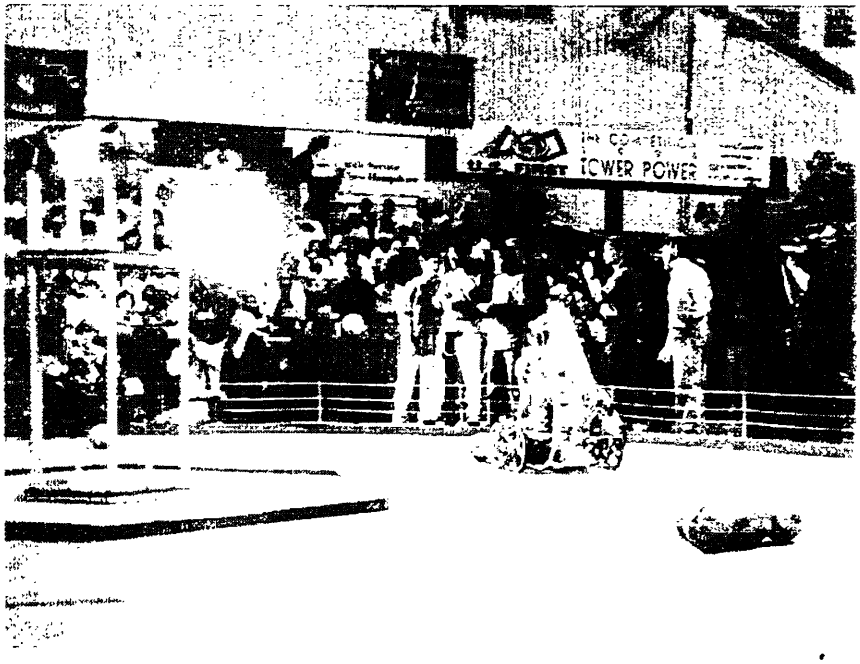


BOMB SQUAD!

To help stimulate the generation of design ideas, John Howard (a Honeywell engineer) invited the Minneapolis Police Department in for a demonstration of the robot that they use to diffuse bombs or handle hazardous materials. The van with its 'Bomb Squad' decal that they parked in front of the Honeywell facility generated a lot of attention from the building's occupants! Their robot was the embodiment of many of the features that we were talking about building in our system. It really helped to see how it was constructed and how it operated.

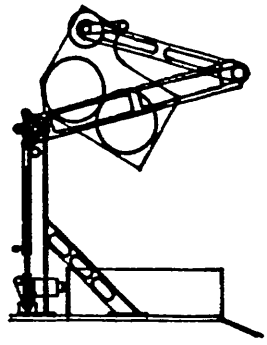
Along with the joy and pride of watching our team prepare for the tournament, there is sadness in knowing that this year's program is over and we won't be getting together over at Honeywell twice a week again - until next year...We had a great time and we have a treasure chest full of memories and experiences.



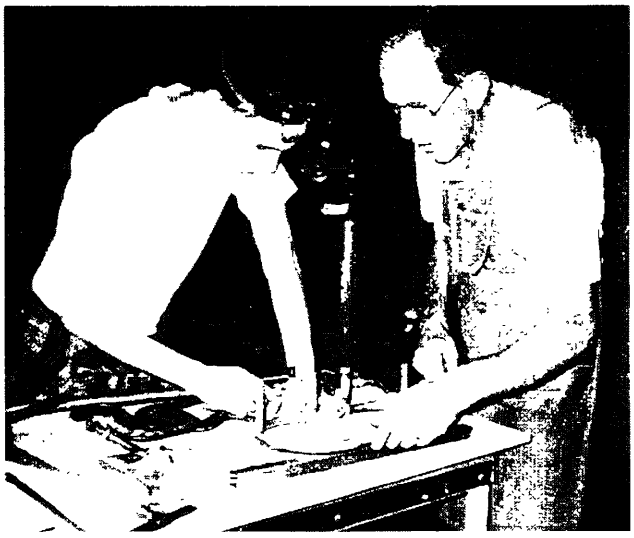


PULLEY/CABLE (ATTACH)
PARALLEL SECTION EXTEN.

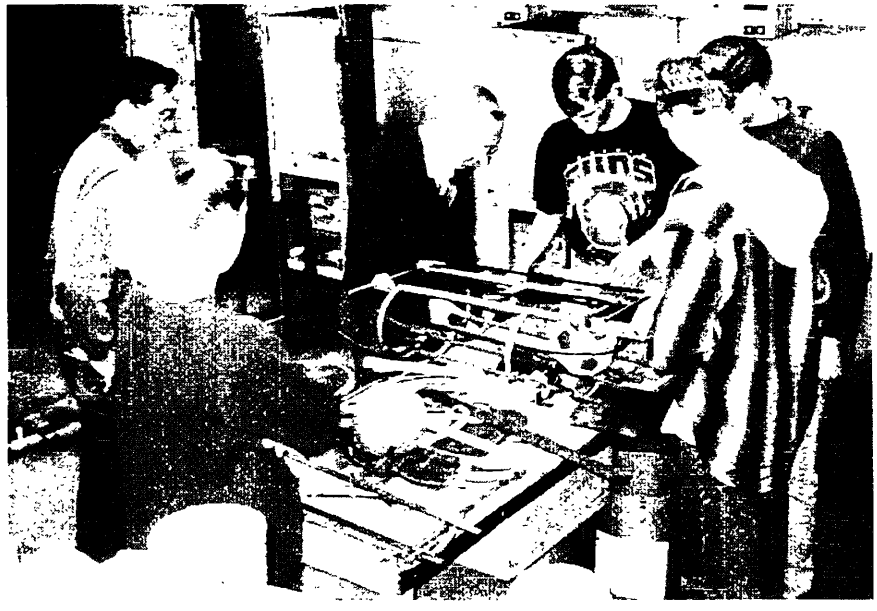
- FAST
- LOW WEIGHT
- DRIVE BOTH SIDES
- DRIVEN RETURN
- EXTENDIBLE TO 3-SHELLS
- 1 MOTOR / 2 DIRECTION
- WEAK LINK AT ATTACHMENT POINTS



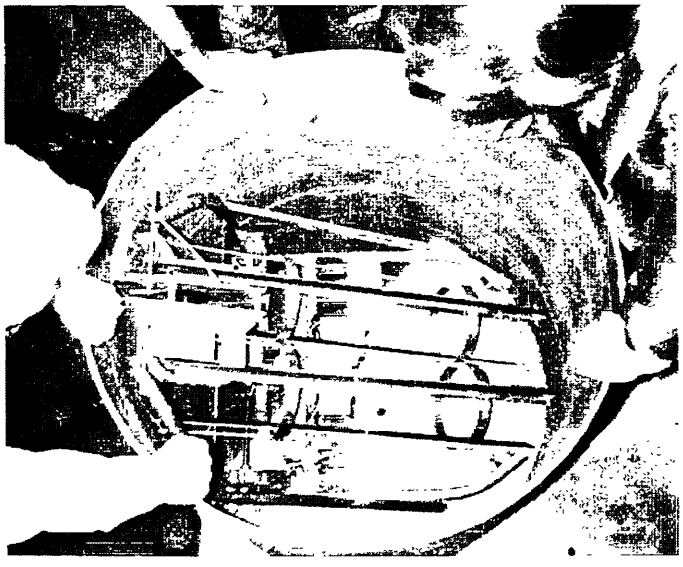
Honeywell Inc., Commercial Flight Systems Group
Cortez High School Phoenix, Arizona



Rookie All-Stars
National Semifinalists

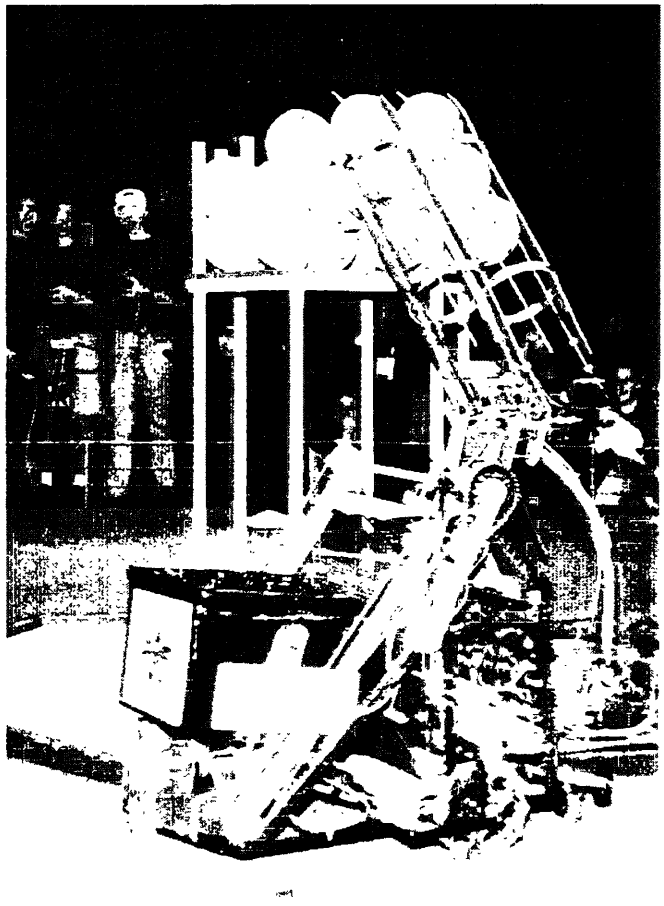


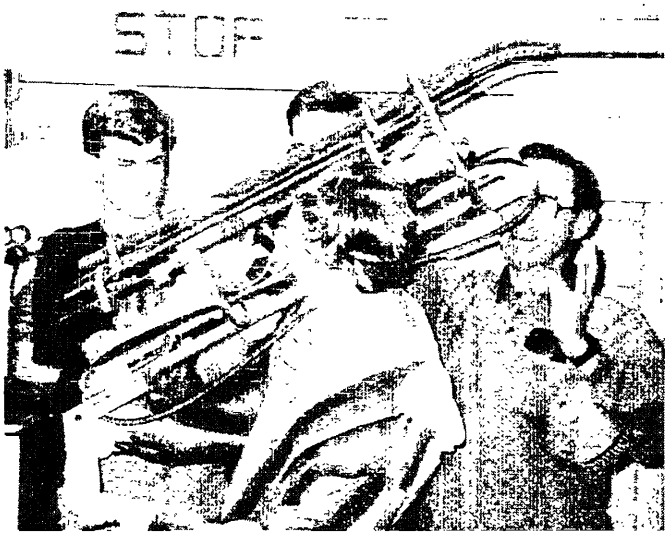
Our team is comprised of eleven students and eleven engineers. All of our engineers are volunteer retired engineers.

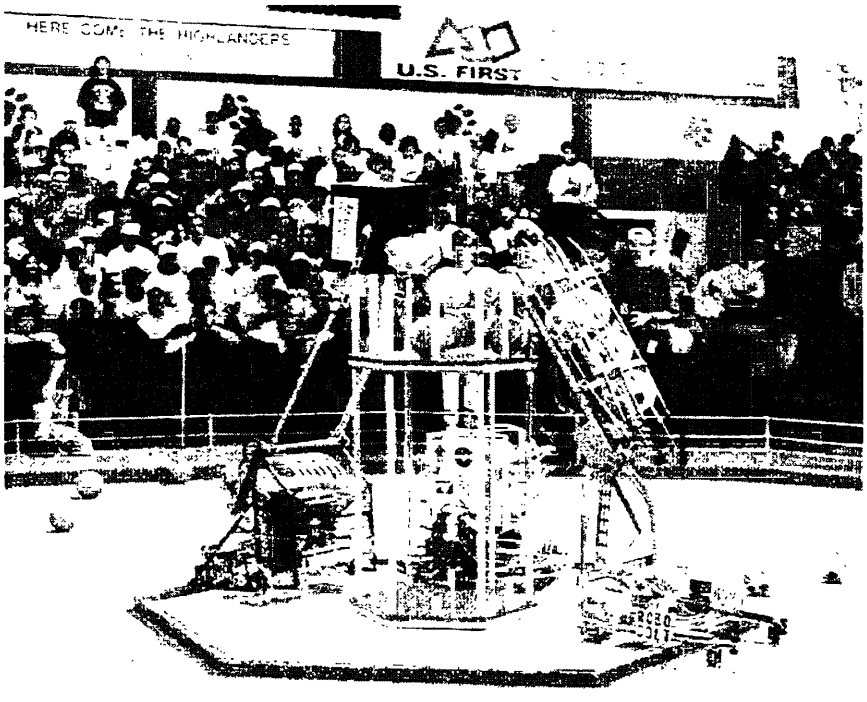


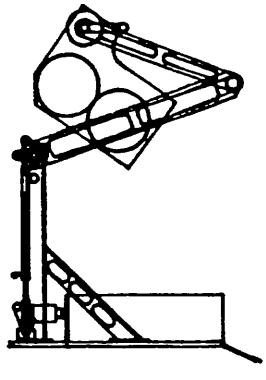
The Robocolt team was established prior to the Kick-Off Workshop. Copies of the 1993 Competition Rules were distributed to all on the assumption that the 1994 Rules would be generically equivalent, although significantly different in detail. On that basis, we identified all the tasks to be accomplished prior to January 10. The strategy was to be in position to move out immediately upon return of our delegation to the workshop.

...The students and engineers worked side-by-side through it all. The relationships that developed are priceless, and the experience was worth every minute spent on the project. ...Participation by the students, school staff, and engineers has been inspiring. Support by Honeywell management and shop facilities has been excellent.



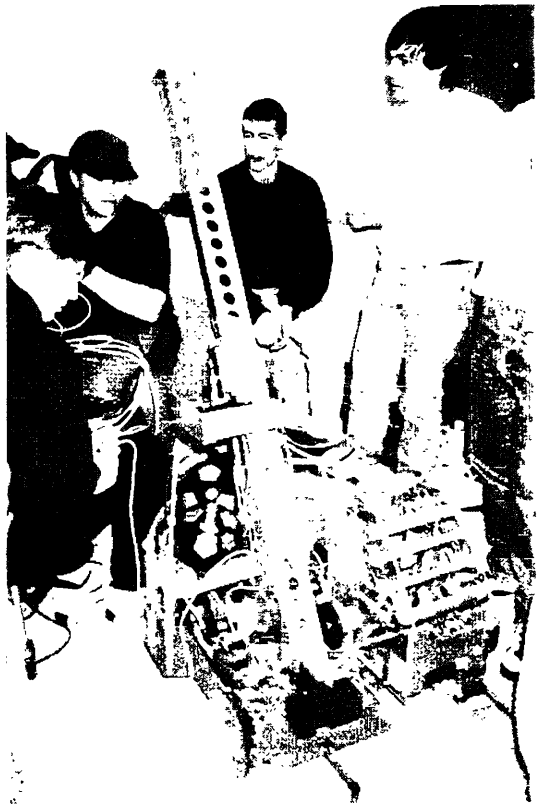


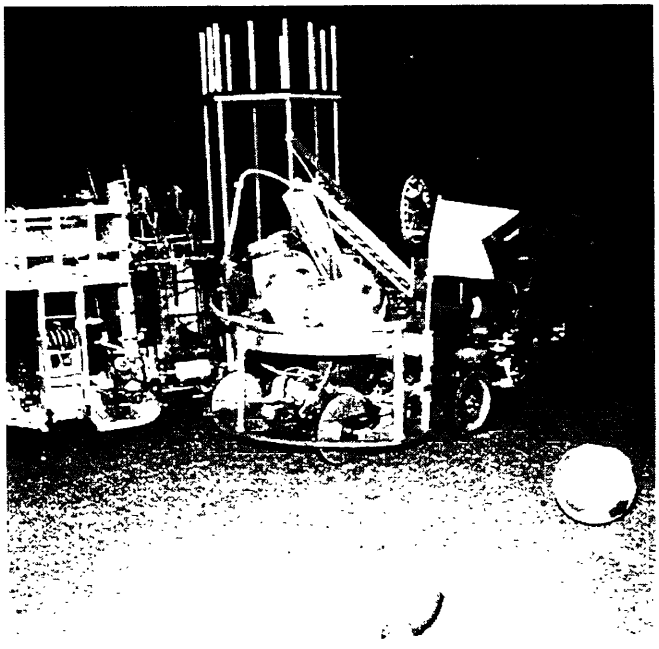




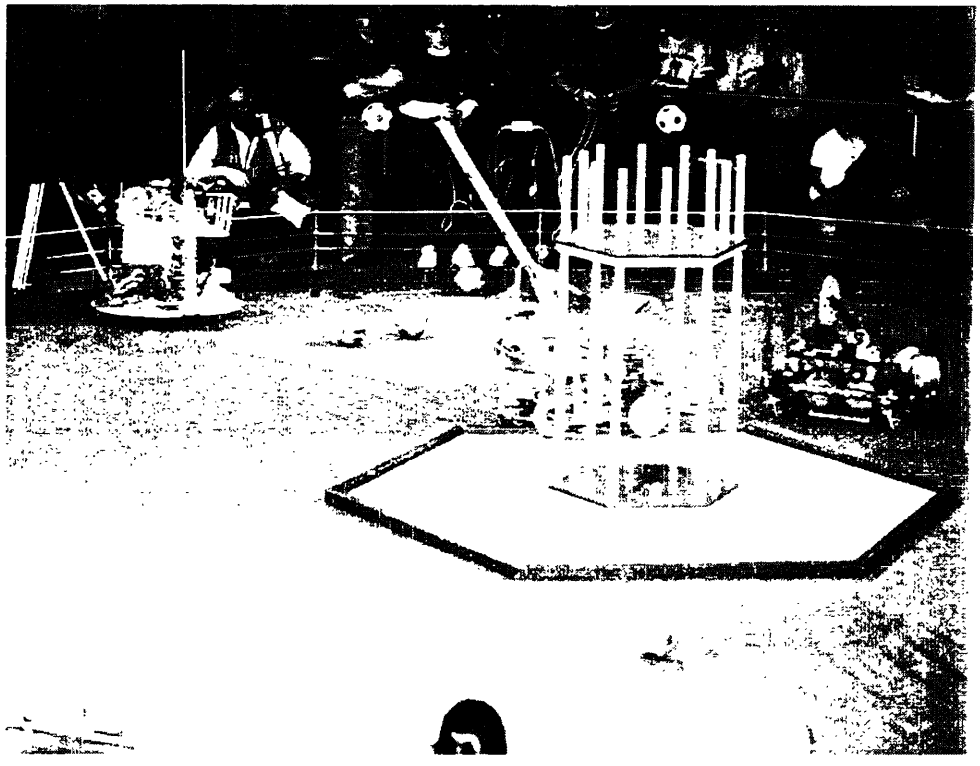
Purple Haze

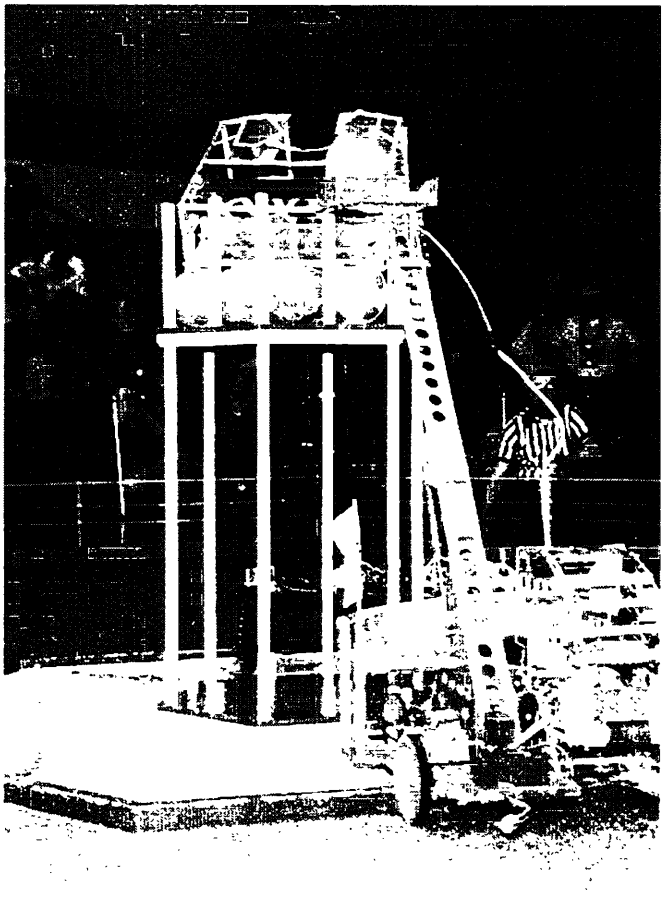
Alliant Techsystems, Inc. **Kamiak High School**
Mukilteo, Washington



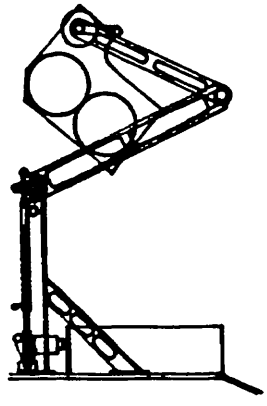


Twenty-five Kamiak students and 12 Alliant Techsystems engineers built the Purple Haze machine. Kamiak students from the video and journalism departments became the public relations leaders. Five groups of engineers and students designed, developed and produced the major subsystems. Each group also elected one student to represent the group in the cross-functional teams. Once the competition rules were received, the entire team developed potential design and operational strategies. From there, smaller groups of two engineers and five students proceeded to design and build major subsystems. Prototyping these components aided in the selection process for the final design concept. Communication between smaller work groups was highly emphasized. To maximize the student's hands-on experience the robot was built at Kamiak High School.





The overriding design principle was to keep Purple Haze as simple as possible. As a first year team, with no seniors, our primary objective was to build a rugged, reliable machine that would operate as well at the end of the competition as it did at the beginning.



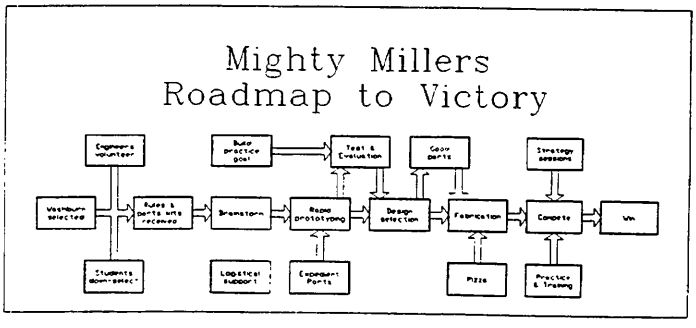
The Mighty Millers

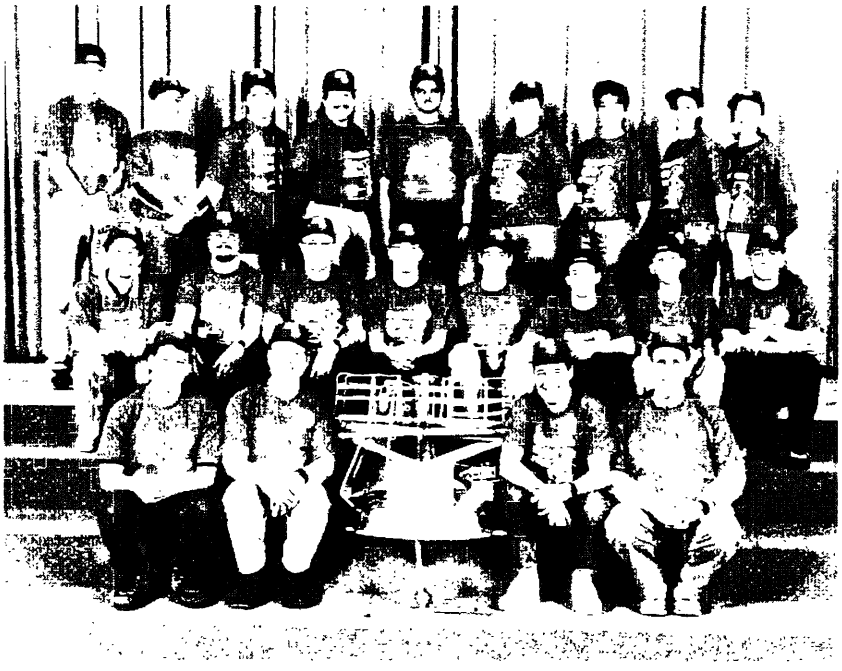
Alliant Techsystems, Inc. Washburn Senior High School
Minneapolis, Minnesota

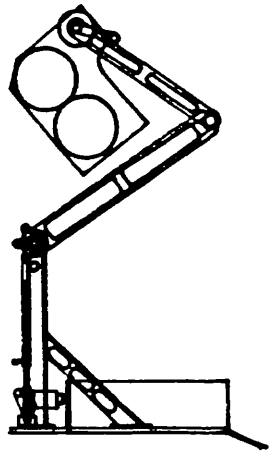
The Mighty Millers engineering team is composed of 12 high school students, two instructors, and nine engineers. The students are a mix of tenth, eleventh and twelfth graders, biased towards the tenth grade. One of the instructors teaches physics, the other teaches shop.

The engineers include two mechanical engineers, three electrical engineers, one electronics technician, one computer scientist and one nuclear physicist. In addition, several Alliant Techsystems employees and a team member's parent are providing logistical and administrative support.

Our engineering approach is to build rapid prototypes to prove out concepts and trade off competing concepts. Each concept is demonstrated by a quick prototype using available materials such as PVC pipe and duct tape. If the concept shows promise, a better version is built to test against competing ideas.

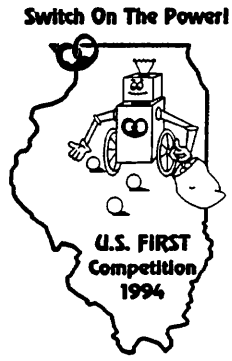






The Pretzelator

MICRO SWITCH, A Honeywell Division
Freeport Senior High School Freeport, Illinois



Chairman's Award Finalists

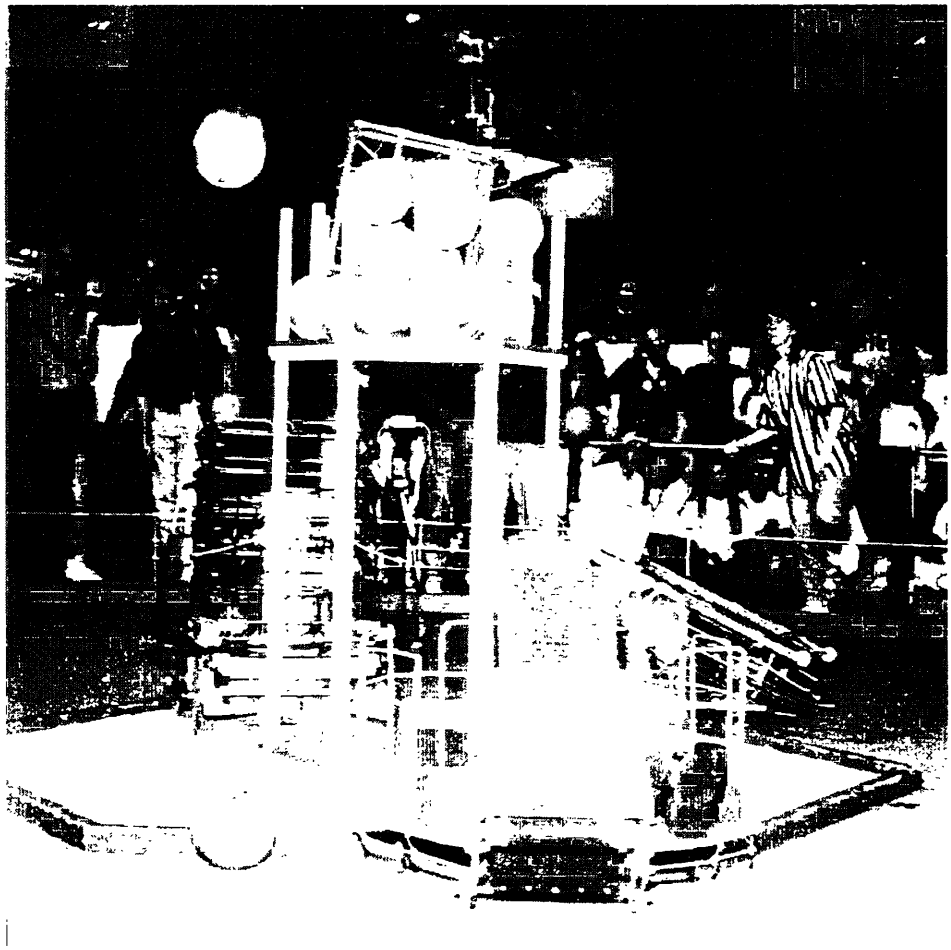
Student Quotes from Chairman's Award submission:
"I am now on the build team. It is so neat to see our drawings of this idea really coming to life as a working machine. It is funny that the guys in U.S. FIRST all laughed when I said I knew how to use a jigsaw!

"The Freeport High School-Microswitch team has worked hard and we've done things that no one really believed possible. ...We've had an experience that will change all our lives. Everyone has learned and grown as a person. We've made new friends and learned to appreciate people who may have different interests or abilities than our own."

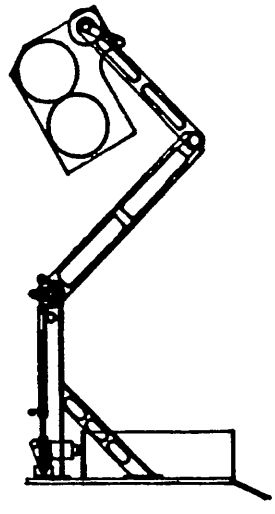
Now, where is Nashua, N.H. again?
"I would get along well with my other teammates, knowing that the more at ease we are with each other, the better we can perform and the more we will get accomplished in a lesser amount of time."

"I think I could be a good 'team builder' because I know and can communicate well with many of the kids involved. I think I could keep all arguing under control and keep an open mind to others' opinions..."

Pretzelator vs. Robocolt vs. Freudenberg



"I love the teamwork - not only between students but also between students and adults. I am learning more from all of the hands-on work than I could ever learn in a classroom. It is just so exciting."



High-tech team racing for first place

By Carl Nogg
Journal-Standard Reporter

FREEPORT — Freeport High School students began preparing to play "a real, live video game" Wednesday night.

Four months, some of them will be in [illegible] N.H., piloting a radio-controlled [illegible] carpeted field covered with [illegible] U.S. First [illegible] to go, there's [illegible]

strategy.

"It gets teachers and kids and people in industry together," Micro Switch Engineering Manager Bob Nickels said.

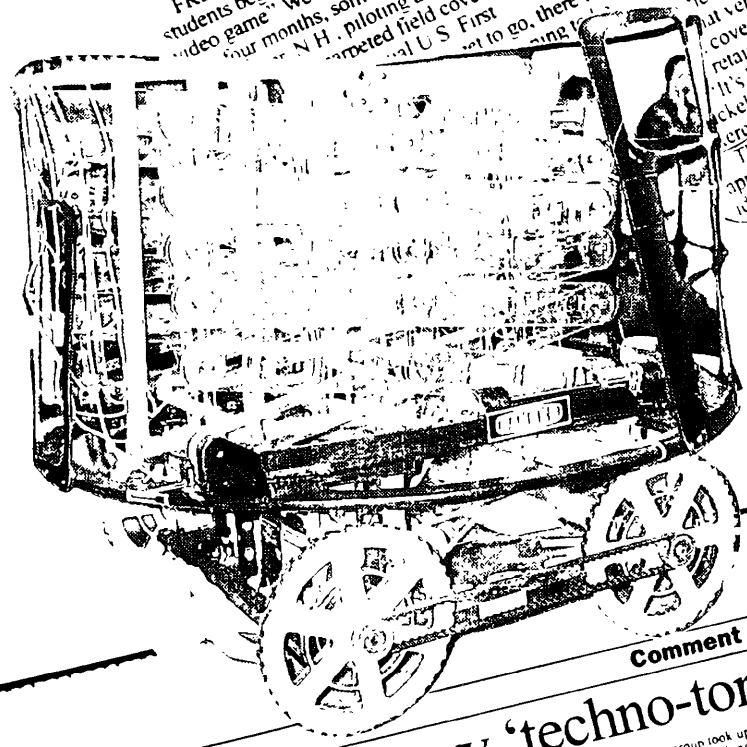
About 50 teams from across the country are already signed up to compete in the 1994 U.S. First competition, set for late February. None of the teams will know the exact competition rules or robot specifications, until U.S. First releases them Jan. 7.

However, there are a few general guidelines. Teams must construct a radio-controlled [illegible]ic vehicle that fits into a 3-foot cube. [illegible]at vehicle competes on a carpeted playing [illegible] covered with balls in its goal. The team that can retain the most balls by trying to retrieve [illegible] wins.

"It's kind of like a real, live video game," Nickels said. "The whole thing is really an exercise in creativity."

The Freeport School District originally approached Micro Switch with the U.S. First idea. Nickels believes this type of collaborative community effort toward a goal will be used more and more in the future.

"There's a little bit of a missionary gleam in everybody's eye," he said. "We really believe this is the way people are going to have to work together."



THE JOURNAL-STANDARD Freeport, Ill., Wednesday, February 2, 1994 **Page 13**

Comment

FHS students carry 'techno-torch' in U.S. First efforts

By Kevin Moore
Guest Columnist

A lot of people from the community have voiced their questions about U.S. First. Well, here is a summary of what we have done, what we are doing, and what we hope to do before the competition.

COMMENTARY

U.S. First is a process designed by Dean Kamen to get students interested in science and technology. The teams, comprised of students, teachers and engineers, are supposed to design a robot that brings soccer balls into a goal in the center of the field.

Last year's competition was the subject of a "20/20" special on ABC Television. This program was shown over our classroom channel. When we saw it, we were hooked. This brainchild of Kamen looked to be what we were waiting for: a chance to build a robot. What could be better?

I, for one, expected to arrive at the first meeting and start putting parts together into the perfect ball-scoring, point-racking robot. Yeah, right! Hang on to that dream, pal.

When we arrived, there were no robot parts, no rules booklets, no design plans; none of the things we expected to find. Just a group of excited engineers from Micro Switch and a bunch of students with looks on their faces that telegraphed "Where's the robot?"

Come to think of it, it looked to be a complete waste of time on our part to wait around until January to start designing and building. As we listened to our coordinators we began to see a distant light at the end of our robotic tunnel.

We listened as they explained the get-ready process. The factors of good teamwork, the importance of marketing, and the steps involved in any design process.

Some of our group took up the techno-torch and ran with it, looking at it as a challenge. Some decided they'd rather not do this; some dropped out along the way.

However, there is still a goodly sum of us here near the finish.

This is not to say that we just coasted until January; there was much work to be done and not much time to do it in. We had to come up with a time line, schedule, estimated trip costs, fund-raising plans, a logo, T-shirt design, team divisions, fund-raising plans, methods of design, and a host of other things. (Did I mention fund-raising?)

Through the course of this planning stage we all learned something about modern business.

Before the fun, hands-on of any design and construction job there comes long hours of planning, preparation, frustration, and a few altercations. These long hours, as I'm sure many of you know, are not fun (at least not by the standards of teen-agers with short attention spans, like myself).

Now, where was I? Oh, yeah.

With three of our five months gone, we were starting to get a bit worried. Keep in mind we didn't know when we were building this robot, what we were building this robot to do or what we were building this robot with.

Finally the unthinkable happened. The rules came. We immediately re-divided our groups and set out with a fury that makes mid-terms look easy. We came up with thousands of ideas for our robot, every thing from assault weapons to zeta particles.

You name it, we thought of it.

After what seems like several thousand hours of revision and review, we finally settled on one design concept. This concept, of which I can tell you nothing (for security reasons) except that it will win, entered the detail design and construction phase on Monday.

Now you are probably thinking to yourself: "Self, what does this have to do with me?"

Well, I'll tell you. Cleverly hidden in my summary of U.S. First is a shameless plug. As much as I want you to be informed about what the youth of our community are doing, I also want you to attend the U.S. First Open House.

It will be held from 6:30 to 8:30 p.m. Thursday at the Freeport High School Library.

It is conveniently scheduled right before the winter play at the Jeannette Lloyd Theatre. So come on down. See our progress, then see the show.

Who knows, you might just learn something.

I know I did.

Kevin Moore is a freshman at Freeport High School.

Freeport-MICRO SWITCH US First

Fund-Raising Activities

As US First grows, regional and local competitions will be held. But this year, all 50+ teams will have to go to Nashua NH for the National Competition. Thus, the need for fund-raising activities.

The students brainstormed over 70 ideas, and decided to pursue the following:

Sales of T-Shirts, caps, etc. Look for a Very Cool Logo, and graphic design T-shirt that highlights US First, MICRO SWITCH, and the one and only Pretzels! Team members will be selling shirts, caps, and similar items soon - prices to be announced. Students may place orders in the FHS Business Office. This is a great way to help support the team and put Freeport on the map!

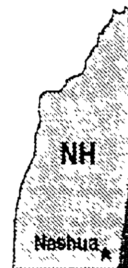
Car Wash. Through the cooperation of Spotless Image Car Wash, team members will be selling tickets with part of the proceeds going to offset travel costs. Whether Freeport streets use salt, sand, or both - it doesn't take a "rocket engineer" to know that this time of year is the worst on your car's finish. Our car wash (dates to be announced soon) is environmentally safe and tickets can be used at your convenience.

Stock Sale. While we can't sell actual "stock", we would like to encourage local businesses and individuals to support the team's efforts. In return for your financial gift ("par value" of a share of "stock" is $25.00) you will receive a handsome certificate and your name will be recorded on the machine.

Financial Gifts and Donations: Student members of the US First team would like the opportunity to speak to your service club, organization, civic group, etc. Hear the details of this exciting program from the students perspective, and support the Team with your financial contribution. For details, contact Bob at 232-7142.

How much money is needed:
Approximately $475 per student. Our plan is to take 12 students, for a total of $5700.

...nd-raising needed? Part of the ...learn to sell one's ... We



Trip...

A team, consisting ... and engineers will ... February for the ac... time, the plan is fo... students to make ... done by adult tea... based on objective criteria, includ...

- Attendance at team meetings
- Knowledge and skills
- Participation in the design phase
- Desire and Team Spirit
- Must be Academically Eligible
- Must have Parental Cons...

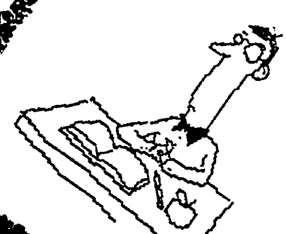
All students, regardless of ... assignment, will have an ... make the trip. The co... make daily reports ba... to keep all team me...

What you mu...

- Turn in...
- Be a...
- ...

Dear

Don't forget that you have volunteered your beautiful face for the U.S First Pie in the Face. The event will be held Thursday, January 27, 1994 in the cafeteria at 2:00. Please be on time. Thank you for supporting the U.S. First Team.



Sincerely,
the U.S. First Team

PAGE 2 • FEBRUARY 7, 1994 • USAUTO SCENE - DEARBORN

Pie Contest Benefits Future Engineers

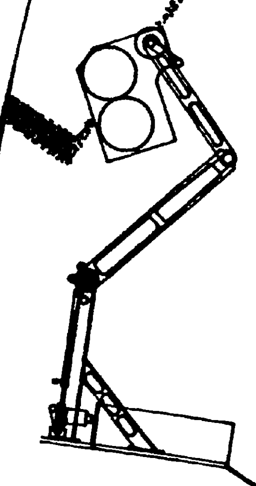
"An apple for the teacher" has given way to "an apple pie for the teacher" at one local high school, only, the pie in this case is in the face.

More than a dozen teachers at Fordson High School made themselves available to the entire student body on Jan. 27, as the Dearborn high schoolers paid for the privilege of smearing their favorite teacher's face with dessert.

The pie-in-the-face event was organized by 34 Fordson students to help finance a trip to New Hampshire in February for a national engineering competition.

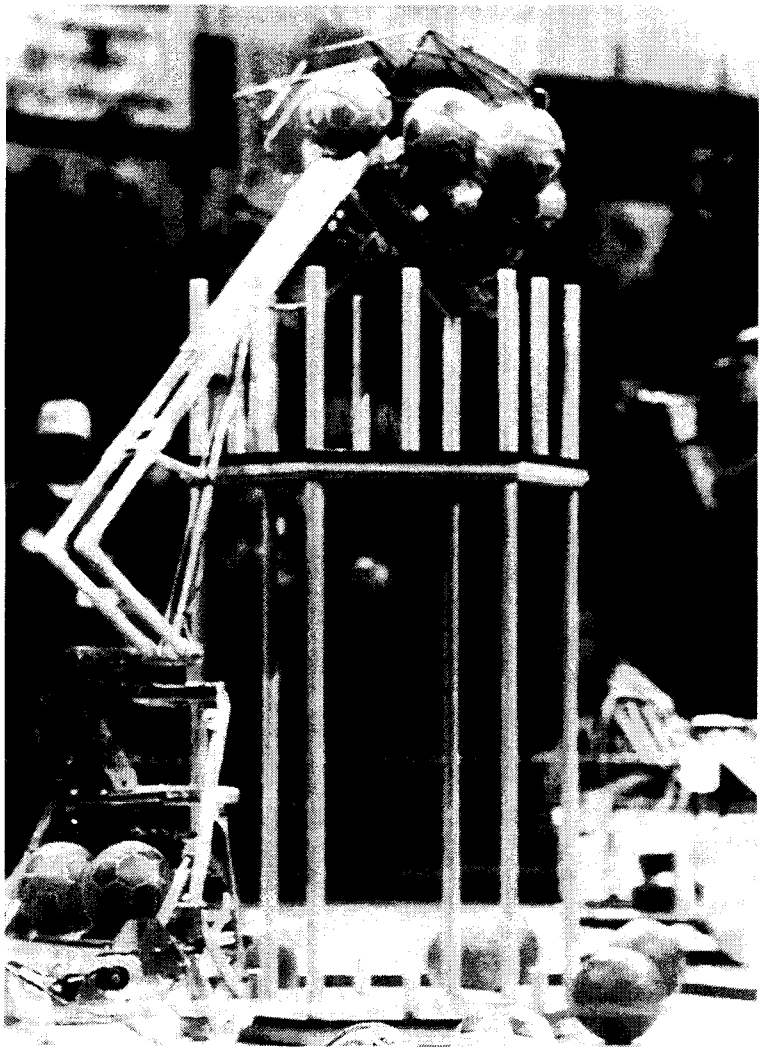
Fordson is one of 44 high schools from across the nation to be paired with a corporation or university in the competition. Fordson's corporate partner is Ford Motor Co.

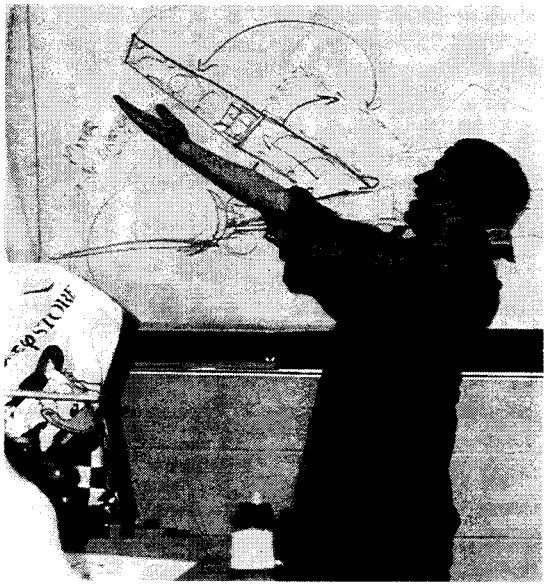
The seven-week competition requires the students to design, engineer and manufacture a mobile, robot-like machine that will compete against entries of other schools in a three-day, head-to-head, elimination-style tournament.

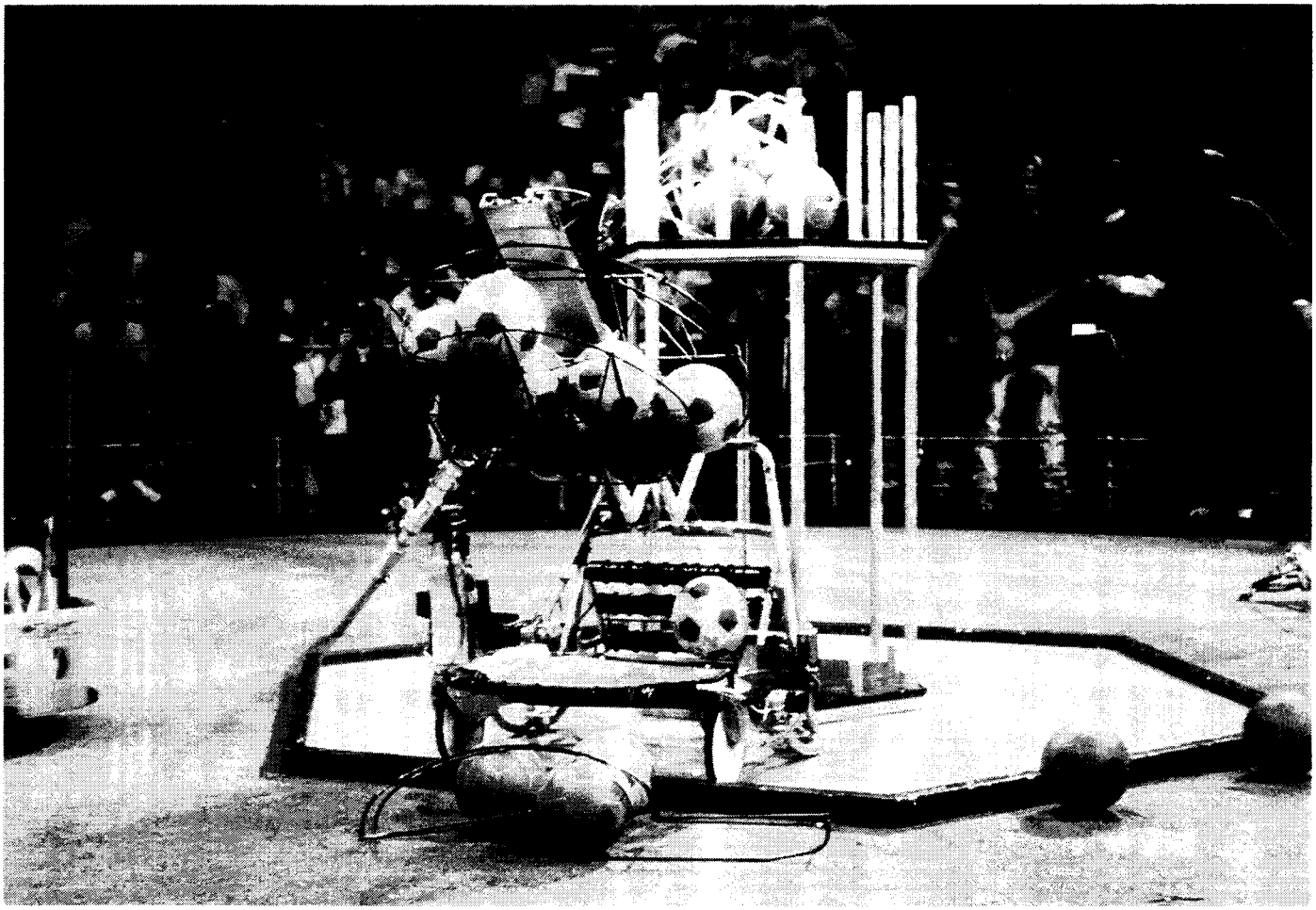


The Tractors

Ford Motor Company Fordson High School
Dearborn, Michigan

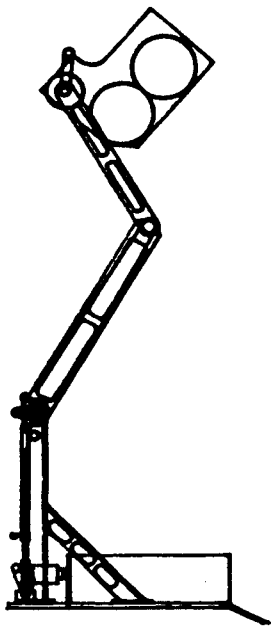




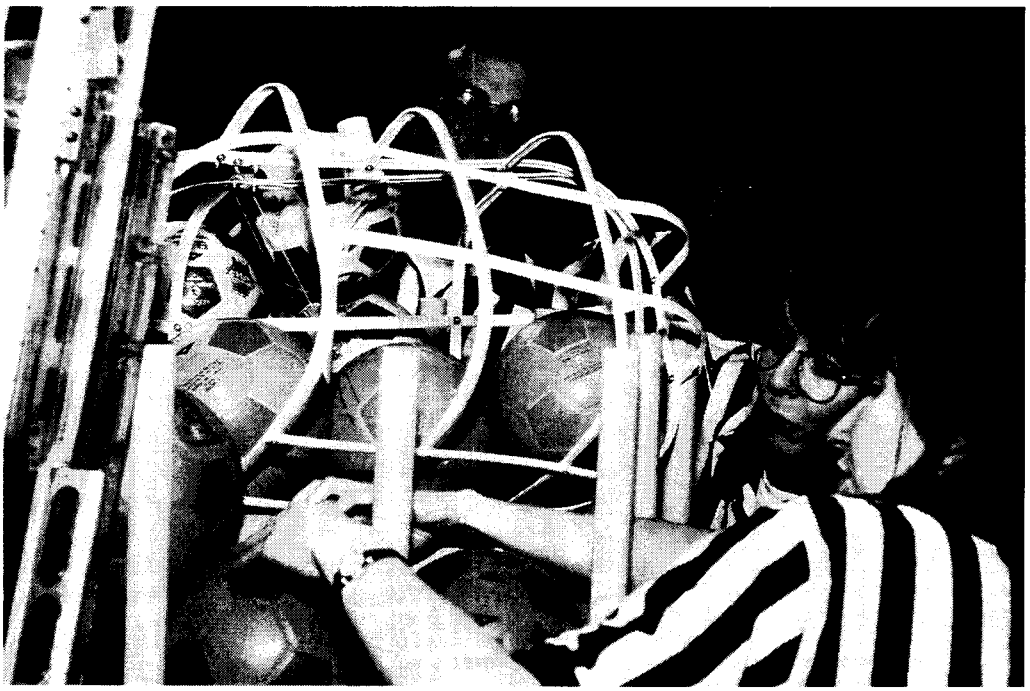


We're Baaaack!

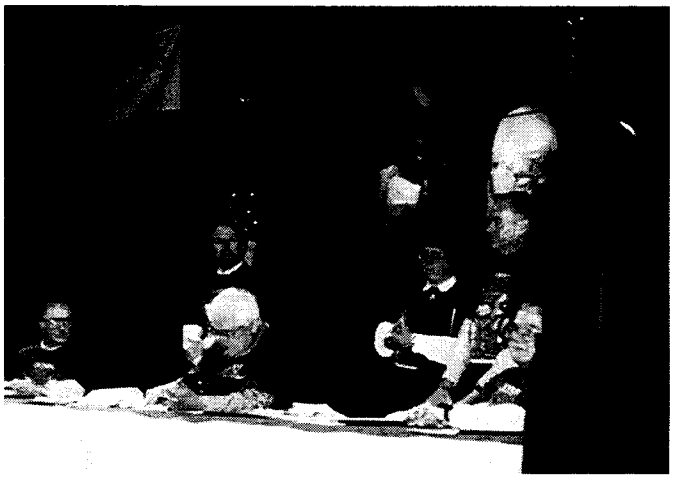
This is the second year of our participation in U.S. FIRST, and we dedicated ourselves to expanding the quality and scope of our involvement. 'The Tractors began turning their wheels' in October to hone our creative and teamworking skills in preparation for this year's event, holding mini-competitions after school each week. It is estimated that through our partnership efforts, more than 4,600 hours of personal time was contributed this year. Students organized and accomplished a variety of special support activities including a school-wide fund-raiser and a series of 5 U.S. FIRST awareness meetings which our team initiated with eighth graders at Lowrey and Woodworth Middle Schools. A Parents Orientation Meeting was attended by more than 60 parents and other family members.



Judges, Referees



"How many Dartmouth Thayer School of Engineering Ref's does it take to count to 12?"



"Thank you for including me as a judge for the 1994 U.S. FIRST Competition. It was, without a doubt, one of the most exciting activities in which I have been engaged. ...I look forward to working with you in the future to continue this important effort."

Dr. Jane Stutsman, Deputy Assistant Director
National Science Foundation

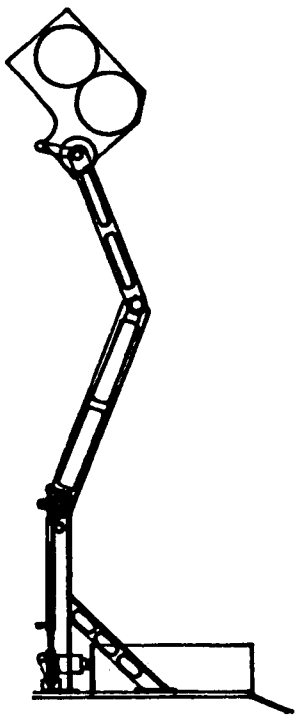
"The thrill of the kids participating in this is just unbelievable. They're engaged. They're involved. They're thinking. They're working together as a team."

Roland Schmitt, President Emeritus
Rensselaer Polytechnic Institute

Staff

"So, if we all head in that direction, maybe we can get out of here without anyone noticing!"

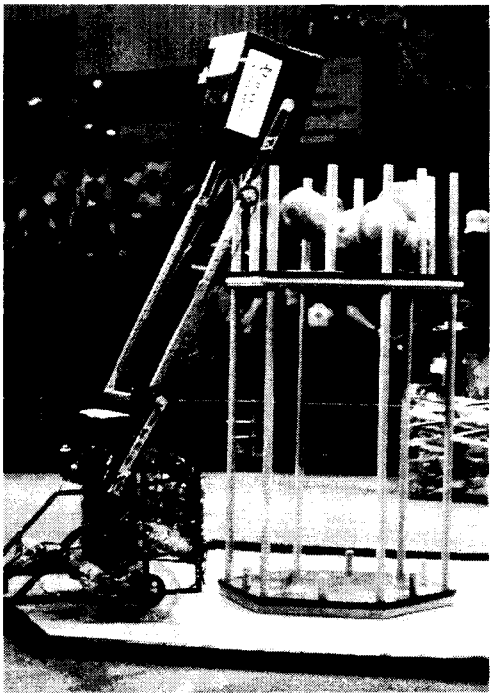
DEKA Research & Development



The Lone Star Stingers

Texas Instruments, Inc. Denison High School
Denison, Texas

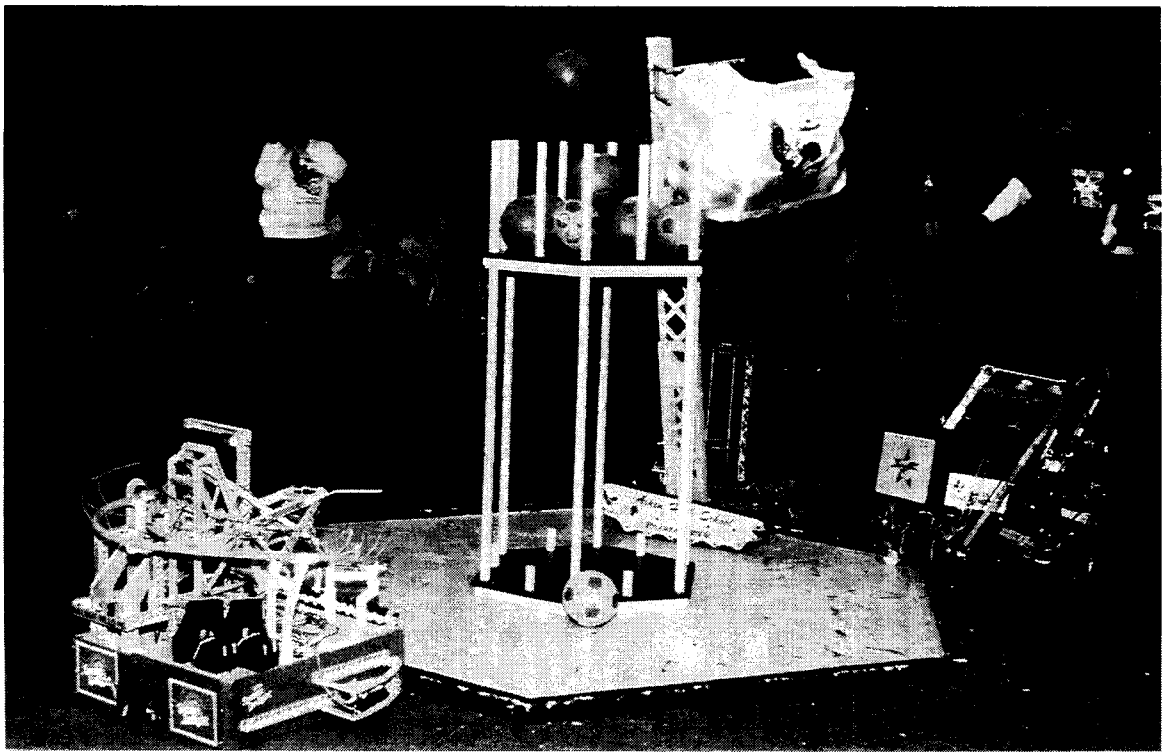
National Finalists
Best Offensive Round Award

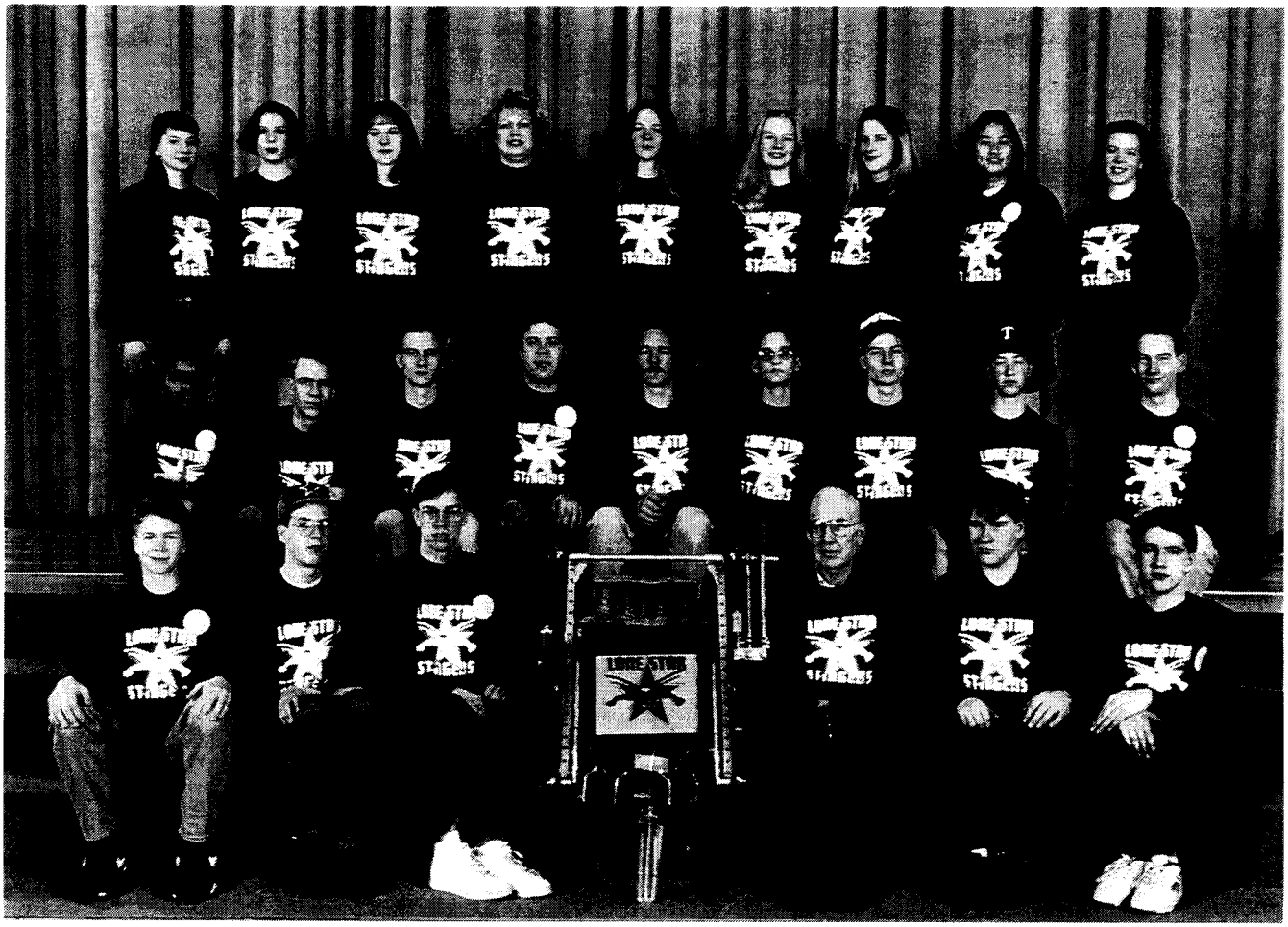


DHS Second in Nation!
The Denison Herald- Sun., Feb. 27, 1994

"We're very proud of the kids and the job they did," said DHS *Principal Robert Mears* by telephone from Nashua on Saturday. "This is a great representation of our school and an honor for Denison and our state. It was a pleasure to see the kids' hard work pay off so well."

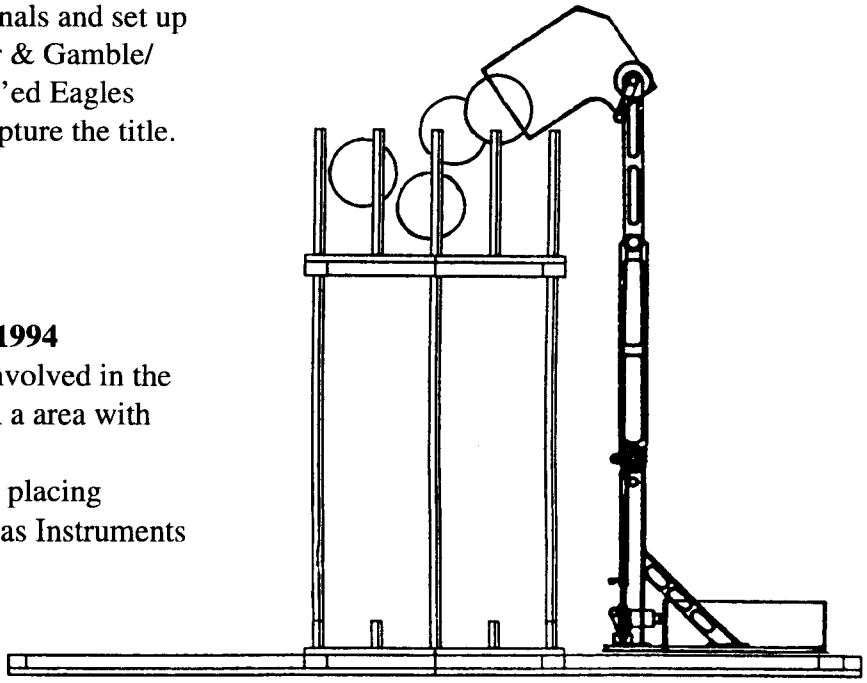
The Denison Herald-Wed., Mar. 30, 1994
"There were teams from all over the nation cheering for us: teams from Michigan, teams from Illinois. They were all cheering for Denison, Texas. It was so awesome!"
Chris Mahaffey, Senior, DHS

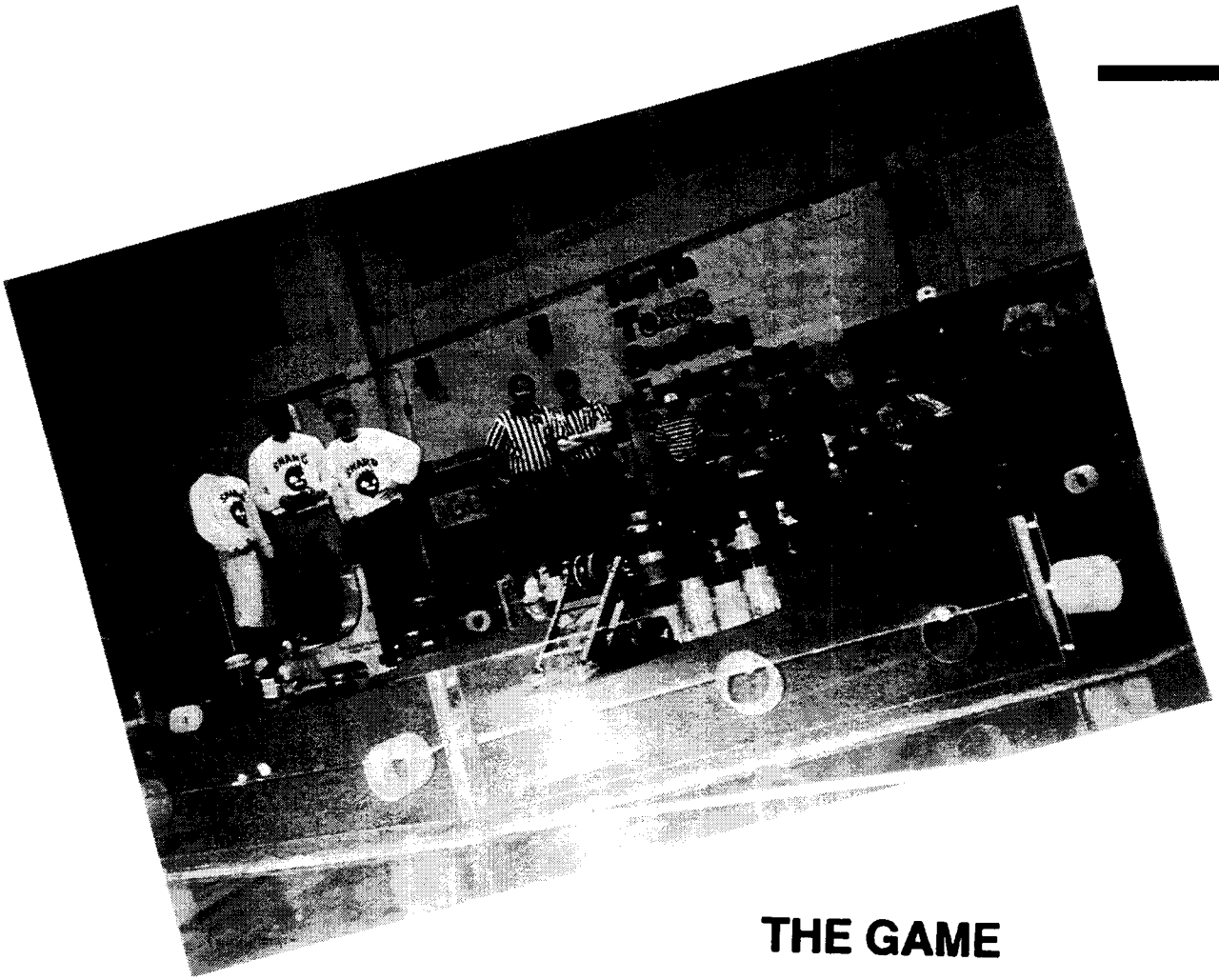




These Lone Star Stingers placed second to Lockheed Sanders/Nashua High School in the third round, and second to Procter & Gamble/Walnut Hills High School in the final elimination rounds to stay alive and reach the semifinals. The Stingers then defeated the magnificent 'Robocolt', Arizona's Honeywell/Cortez High School entry, in two straight games to reach the finals and set up a rematch with the deadly accurate Procter & Gamble/ Walnut Hills creation. The Champion Ball'ed Eagles edged the Stingers, 36-31 and 34-29, to capture the title.

Letter to the editor:
The Denison Herald-Sunday, March 6, 1994
"Even though I didn't have any children involved in the project, I feel very fortunate to be living in a area with such dedicated teachers.
Congratulations, Denison High School, on placing second in the nation, and thank you to Texas Instruments for sponsoring this!"
Debbie Blackwell, Denison





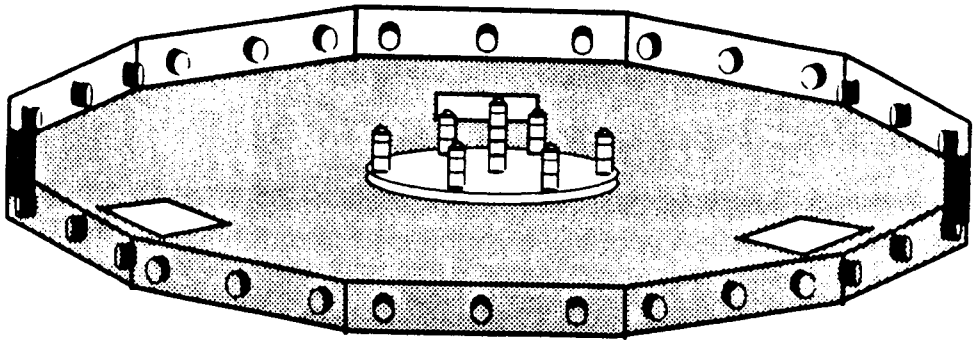
THE GAME

Competitors attempt to collect their colored PVC rings from the perimeter of the playing field, depositing them in the scoring area and defending them, all in three minutes. Machines are limited to 24 lbs. of weight and must fit in a 24 inch per side cube.

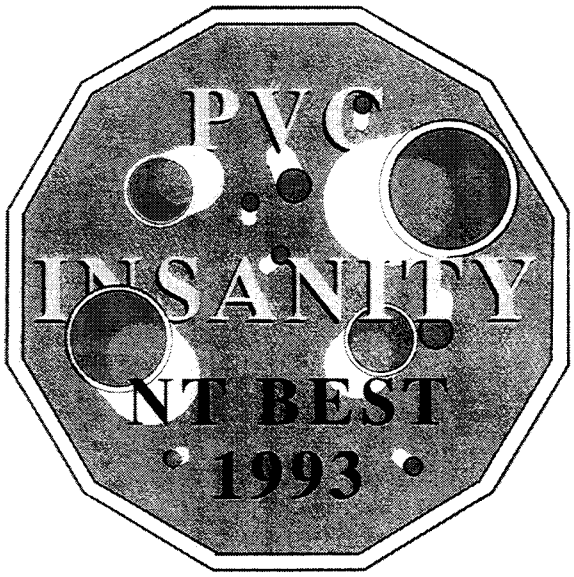
Points are based on the position of the rings at the end of the match. Rings on starting pegs, touching carpet, or out of the field, score no game points. Rings on/over raised platform but not in a machine or detached container, scores one Game point. Rings on the six outer posts score additional points if color of ring matches color on top of post; only one game point is scored if color of the ring does not match the color on top of post. One point is scored for a ring placed anywhere on the cake. The center post scores game points and is open to all teams.

<u>Scoring Zones</u>

	Center Post	Short Post
Top:	2	0
	4	0
	6	2
Bottom:	8	4



NT BEST (North Texas Boosting Engineering Science and Technology) was formed by the Texas Instruments, Sherman Site technical council.
A committee created a game called PVC Insanity. This design contest would be held for all 13 of the local high schools with the winner being the Texas Instrument sponsored team to U.S. FIRST Nationals in 1994.

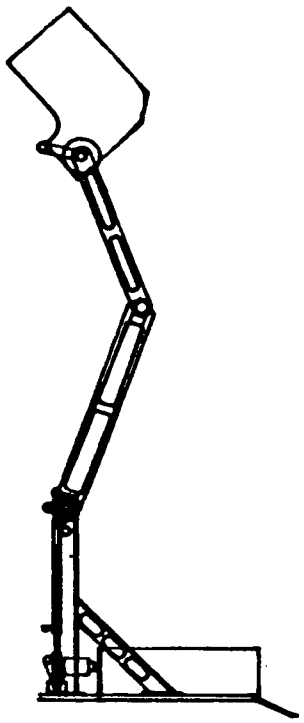


Like U.S. FIRST, the students had six weeks from start to finish. Without expectation of TI sponsorship to Nationals, a high school from San Antonio (500 miles away), having trouble securing funding for a U.S. FIRST team, requested and received the go ahead to enter a PVC Insanity team. Just before the competition, a practice session was set up at a local mall providing visibility for the effort and a preview glimpse at the other teams. Several inquiries of interest came from those not yet involved.

Sherman High and Denison High ended up head-to-head in the finals. After some tough struggles, Denison emerged as the winner. TI would sponsor Denison. General Telephone and Electronics (GTE) was so impressed with the contest that they stepped forward and agreed to sponsor Sherman. GTE did not have enough engineers on site to support the team, so TI supplied engineers to coach.

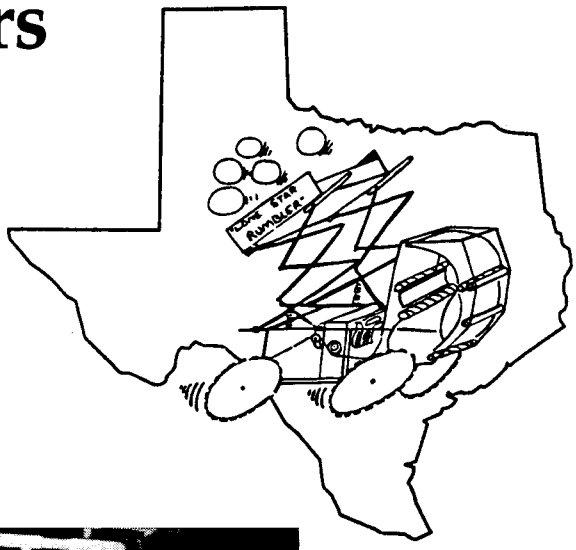
NT Best is expecting 24 teams this year including some southern Oklahoma schools. The San Antonio team enjoyed the game so much, they now have 6 teams ready to compete.

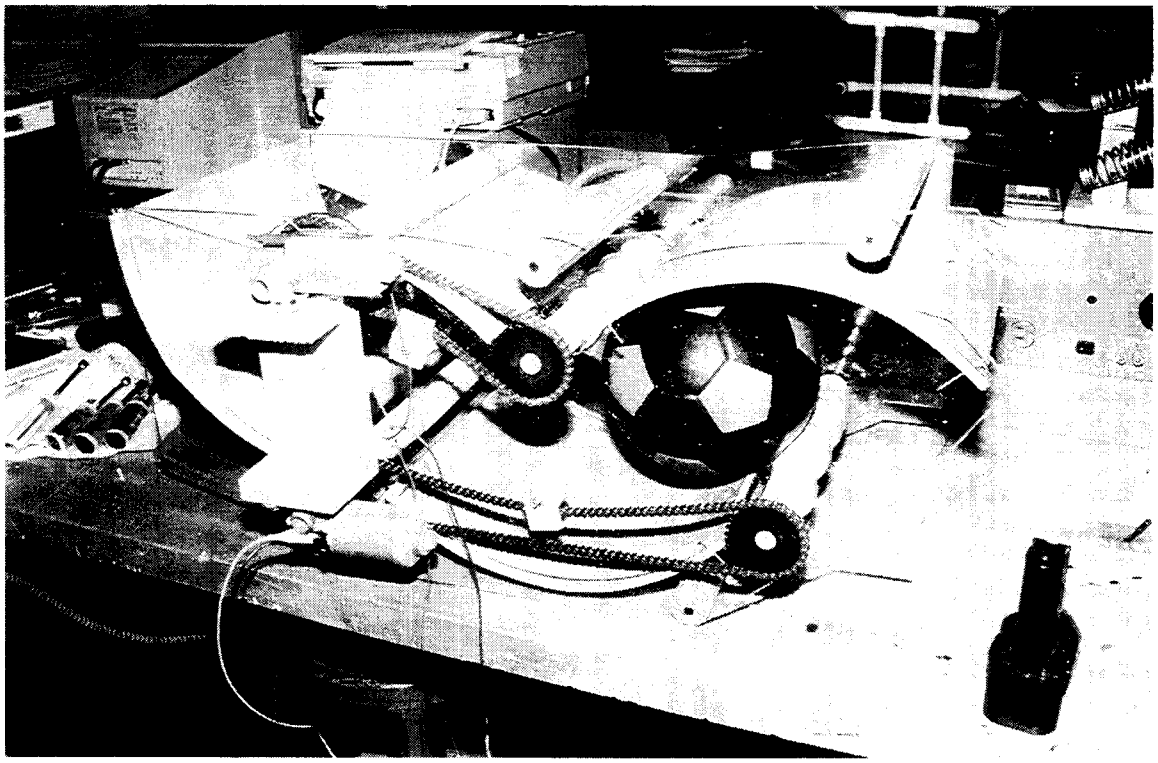
After PVC Insanity was history, the NT best team decided to donate the playing field to other interested parties. PVC Insanity will now travel and continue providing the experience of a design contest to students.



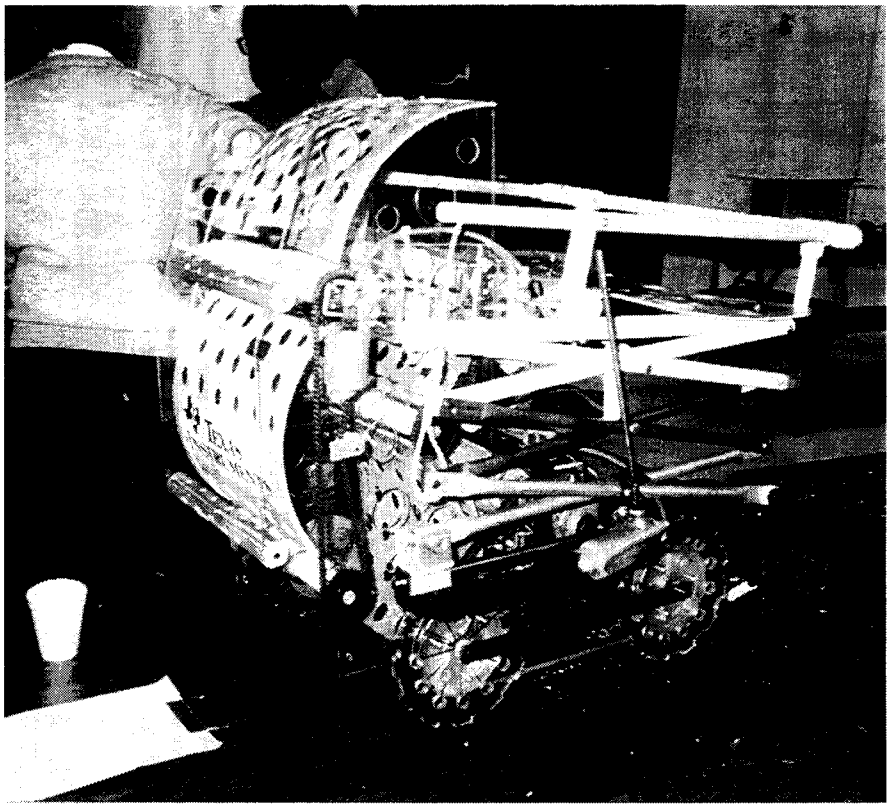
The Lone Star Rumblers

General Telephone & Electronics Texas Instruments
Sherman High School Sherman, Texas

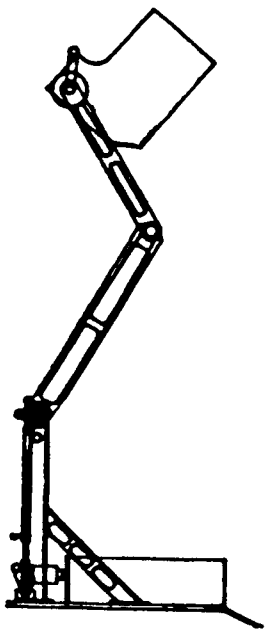




The Lone Star Rumblers are composed of 18 students and 5 GTE/Texas Instruments engineers. Student members were nominated by various teachers throughout Sherman High School. Throughout the weeks of preparation, teamwork was always an important factor in accomplishing goals. The engineers were very enthustiastic about working with and instructing their students, just as the students were eager to learn and participate. The Rumbler students took time to make special presentations to large industries and organizations, making it possible for every team member to attend the National U.S. FIRST 'Tower Power' Competition.



The Sherman High School Team placed second in the North Texas Best PVC Insanity Competition thus earning their spot in the national 'Tower Power' spotlight of U.S. FIRST. Trouble in early rounds at the "Tower" caused them to be eliminated, but it did not spoil the experience. No longer needing to compete against their NT BEST rivals, Lone Star Rumbler students and advisors took pride in the accomplishments of the Lone Star Stingers, forming a strong bond between them.



Science KATS

Delco Electronics Corporation Kokomo High School
Kokomo, Indiana

Chairman's Award Finalist

PROCLAMATION

WHEREAS, the future of our democracy and the health of our economy depend on whether our children can compete technologically worldwide; and

WHEREAS, Kokomo, also known as the "City of Firsts", has a tradition of leadership in technical involvement; and

WHEREAS, the DEKCS organization, which is an educational partnership between Delco Electronics and Kokomo-Center Schools, supports the U.S. FIRST (For Inspiration and Recognition of Science and Technology) competition because it promotes excellence beyond the classroom; and

WHEREAS, the Science-Tech Kats, represented by KHS drivers Jennifer Kunkle, Roy Griffin III and Lesley Roberts along with Extra-Mile Award winner George Drake, under the direction of Kokomo-Center officials Jim Tappan, Jack Davidson and Tim Railey; Delco Electronics engineers Bill Ramseyer, Max Davies, Tom Lewis, Howard Free and Elmer de Leon; and Delco Electronics skilled tradesmen Frank Robinette and Ron Moore, will take their "Katapult" to Nashua, New Hampshire, to represent the City of Kokomo and the State of Indiana in the U.S. FIRST "Tower Power" national competition February 24-26, 1994.

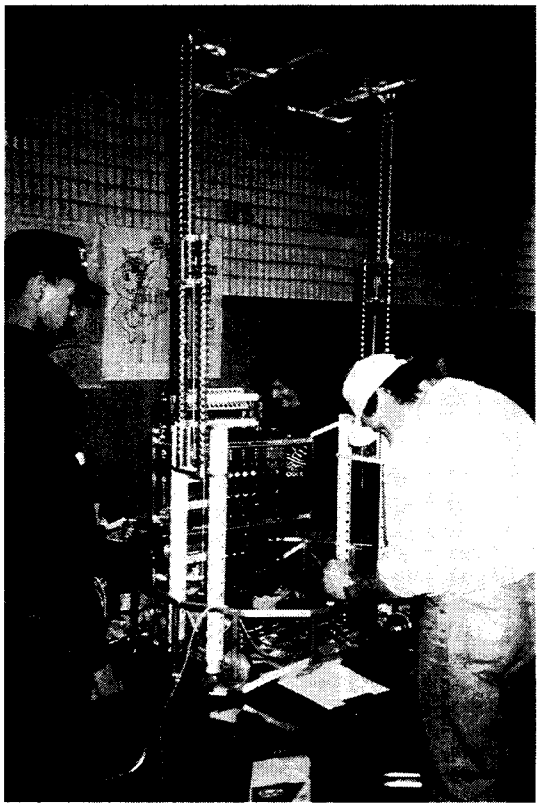
NOW THEREFORE, I, Robert Sargent, Mayor of the City of Kokomo, Indiana do now hereby proclaim February 24-26, 1994 as

TOWER POWER DAYS

in the City of Kokomo, and on behalf of the citizens of Kokomo, extend the thanks and best wishes of the community to those involved in the competition as they add to Kokomo's reputation of being in the forefront of technical achievement as the "City of Firsts."

IN WITNESS WHEREOF, I have hereunto set my hand and caused to be affixed the Great Seal of the City of Kokomo, Indiana, this 15th day of February , 1994.

ROBERT SARGENT, MAYOR
CITY OF KOKOMO, INDIANA



"I am proud to be involved with U.S. FIRST for some personal reasons. I am proud of being employed by Delco Electronics for many years, and I am a proud graduate of Kokomo High School. It is nice to be able to give something back to my community and school in return for all they have done for me.

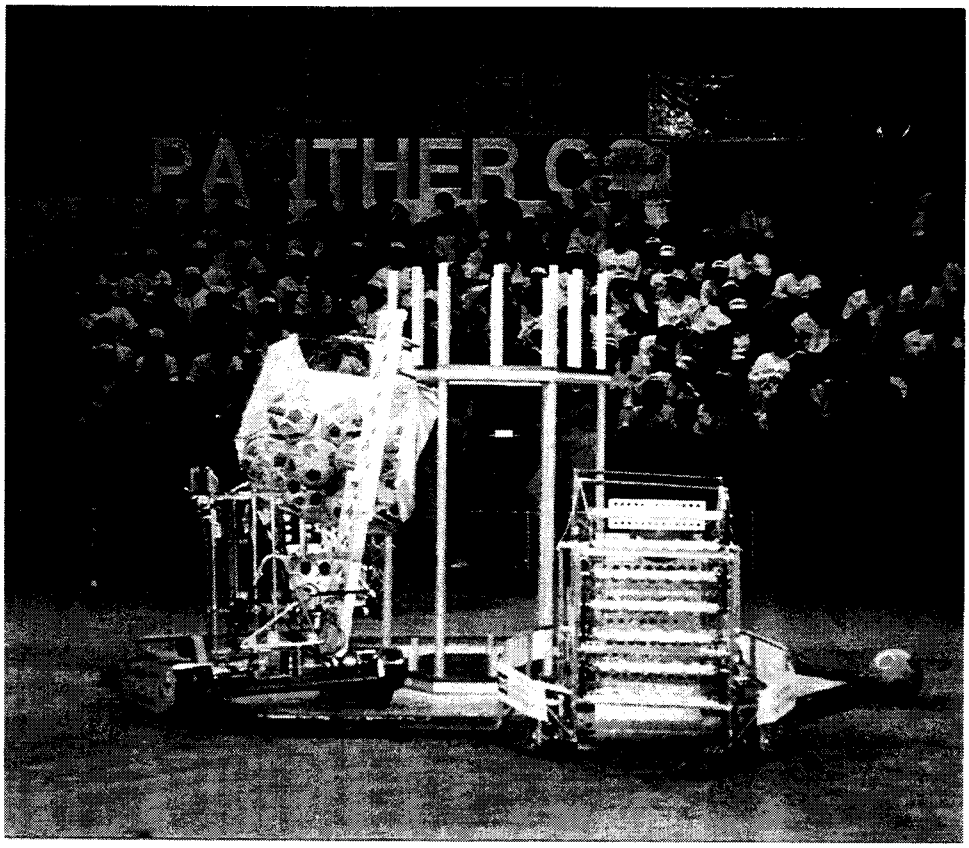
It is an honor to be welcomed into the classrooms and in a small way experience what our school teachers experience.

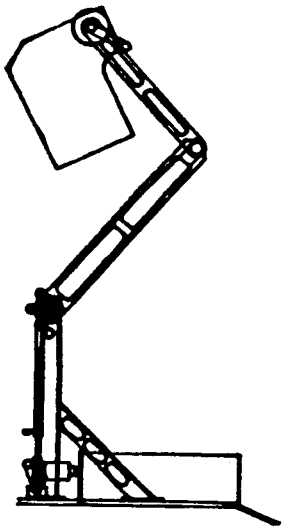
Like a farmer, U.S. FIRST has given me the opportunity to plant seeds. Some of the seeds are blooming already, some may not grow, but I firmly believe that this program will lead to a bountiful harvest.

Bill Ramseyer, Advanced Manufacturing Engineer

"The kids have already won. They're making new friends and have become a team. You can see lights in their eyes when they see something happen."

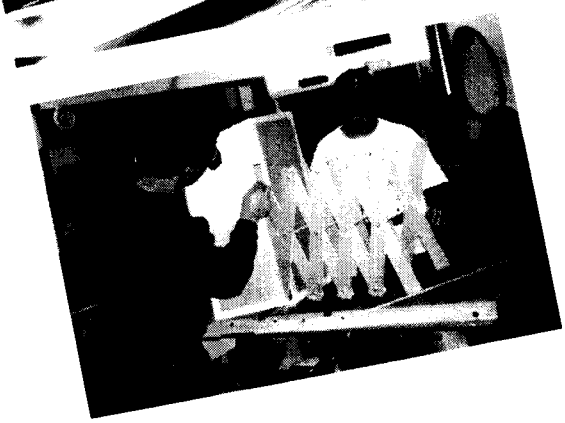
Max Davies, Engineer,





Gael Force

NYPRO, Inc. Clinton High School
Clinton, Massachusetts

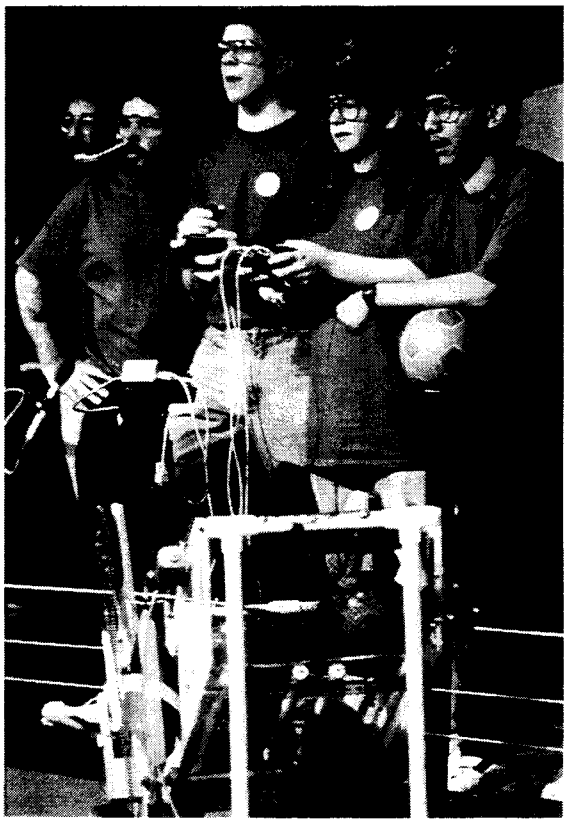


U.S. FIRST afforded us the opportunity to challenge the students' abilities...And their abilities challenged us!

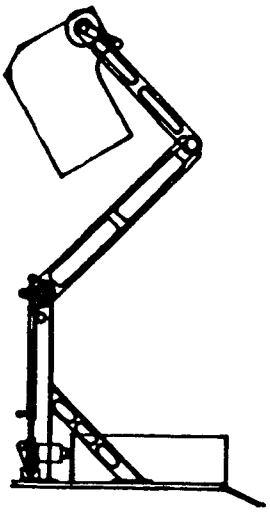
"I have seen a mutual respect and understanding grow between the students and the engineers. The barriers between business and education have become doors."
Sharon DiMeco, Secretary, C.H.S.

"The things I have learned and the people I have met have had a great impact on my views of the outside world. ...I never thought an engineer would listen to what students had to say, but I was wrong."
Jason Bailey, Student

"The one thing I enjoyed most of all was that everyone's opinion was important. ...I learned that nobody is a nerd. Everybody has a special talent. They helped me seek an ability that I never knew I had..."
Albert Mercado, Student



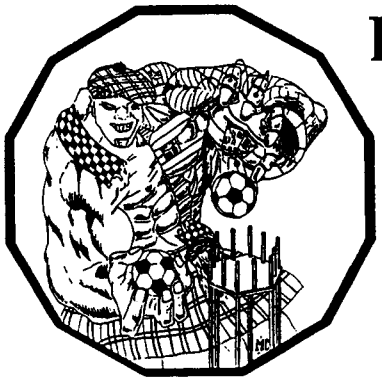
"I feel that the U.S. FIRST program helps high school students meet new people. ...(It) isn't just for boys, but for girls also. ...Lisa Illuiano shows that women can make it in the modern world of today; she is the only woman engineer in Nypro. I hope to be the next.
Vivian Santiago, Student



The HIGH-LANDers

NYNEX Corporation Somerville High School
Somerville, Massachusetts

Chairman's Award Finalist
Best Team Spirit Display Award



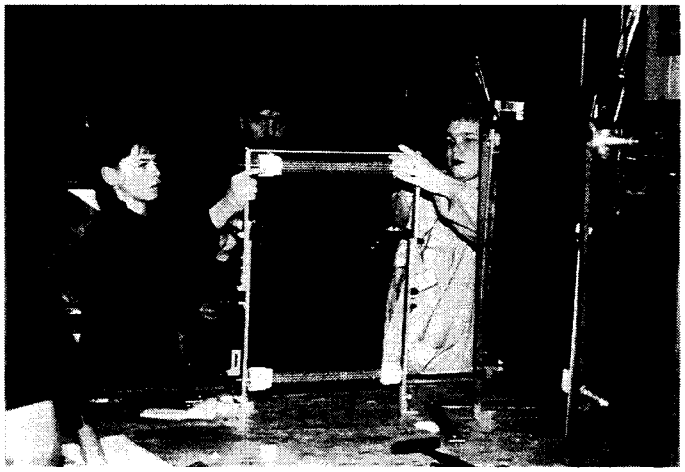
People **who work with their hands are laborers**

People **who work with their hands and their heads are crafts people**

People **who work with their hands, their heads and their hearts are artists.**

Special Needs students in the Building Maintenance Department painted the practice playing field built by the Carpentry and Metal Fab shops and erected it in the school's Atrium outside the gymnasium.

"The first time we rolled out the machine it was unbelievable. We couldn't believe we did this. We built it. Everyone was in awe."
Bill Gianoukos, Student



"Almost anything is possible if you work at it and try it."
Katie Delaney, Student

"The teachers don't seem like teachers anymore. They seem more like students or people that you work with.
Mike Costa, Student

THE BOSTON SUNDAY GLOBE • FEBRUARY 27, 1994

44 robots vie in national contest

Corporate sponsors, school teams design machines that teach the joy of science

By David C. Pugh
CONTRIBUTING REPORTER

NASHUA, N.H. – The competition was fierce and mechanical yesterday when 44 robots of all shapes and sizes battled it out for victory in a national competition designed to persuade students that science is fun.

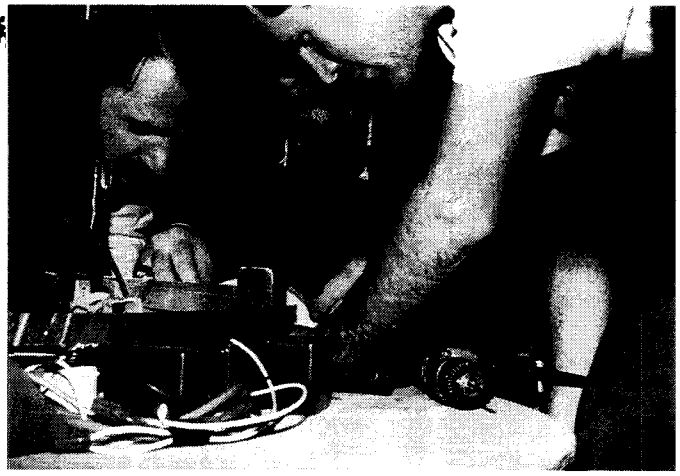
But the robots did not come on their own for an afternoon of android Olympics at the third annual US First Tower Power robotics competition.

The robots were accompanied by some competitive humans. Teams of high school students representing 26 states worked with corporate sponsors for the past seven weeks to design and build a robot for the national competition at Nashua High School.

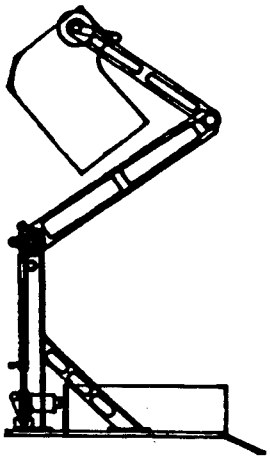
Behind the gym, in the cafeteria, was the heart of the competition, the pit room: the think-tank where problems ranging from coordination to drive-trains were being solved by students and their professional partners at a quick rate so as not to fall out of the competition.

"We had to switch our wheel design to fit notched wheels, and when we did, we had to change the driver jams to account for more torque," said NYNEX/Somerville High team member Joe Porreca, while his teammates and professional engineers tuned their robot for an upcoming round. "It's been an incredible learning experience."

"They don't have enough time, information, resources, materials or money - now do it anyway. This is the real world of engineering."
Paul Mauriello, Engineer



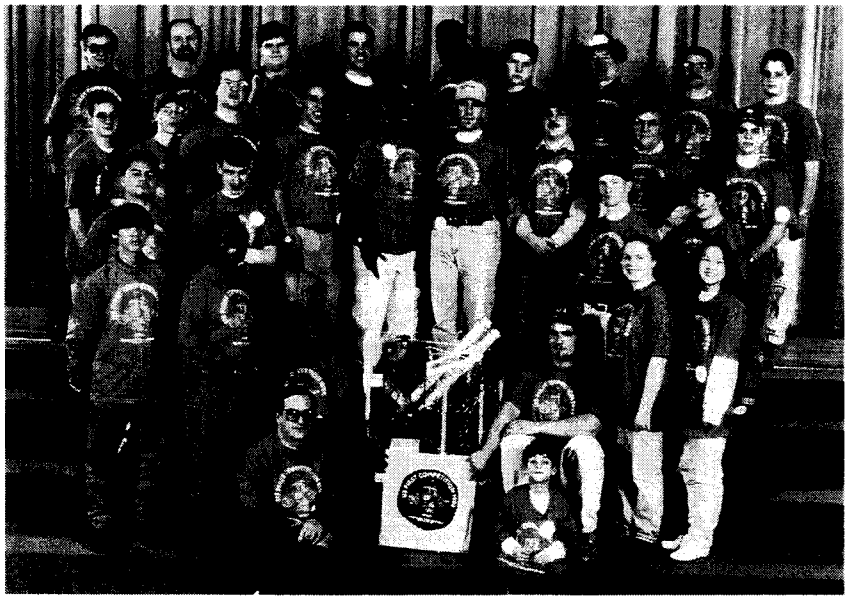
"More than 200 students of diverse backgrounds, interests and abilities took the opportunity to contribute in some way to this effort.
The U.S. FIRST competition has planted 'seeds' of ideas with faculty, engineers and community volunteers for curriculum revision and future collaboration. There's a feeling of cooperation between the 'tech. ed.' kids and the kids on the college course. There's no more 'us and them,' they're a team."
Paul Mauriello, Engineer



SCOREBOT

NYNEX Corporation Newburgh Free Academy
Newburgh, New York

from Chairman's Award submission:
Like the quote says; 'The important thing in the Olympics is not winning but participating...'To feel like the mind, the heart and the body of the Olympian is quite an experience. Our 'SCOREBOT' team was like the Olympic Athletes who prepared under the most difficult weather conditions and completed our initial U.S. FIRST Competition. Even though we had many slippery starts and stops and didn't win, we are smitten from the competition.

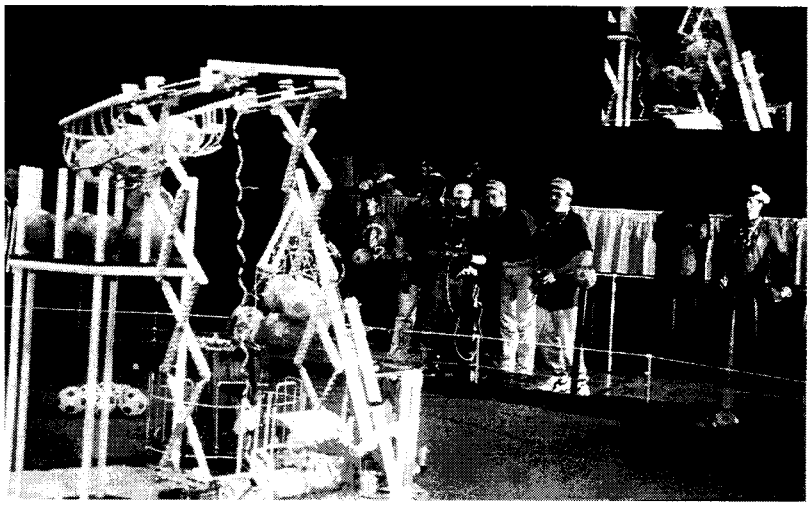


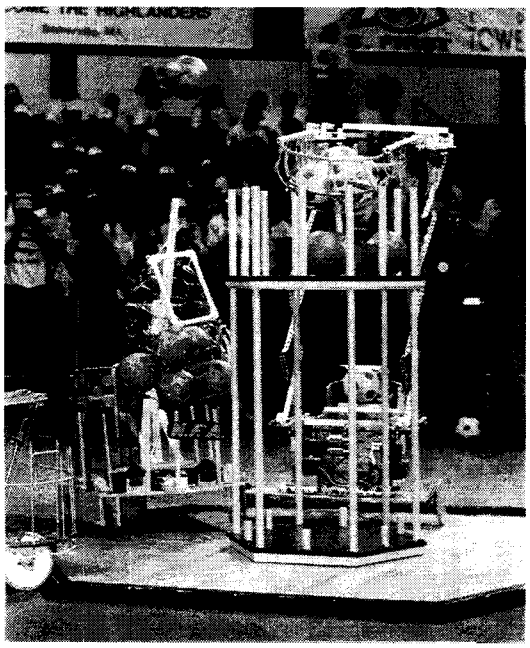
Soccer ball
Collecting
Obstructing
Retrieving
Elevating
Brute
On
Tracks

From The Times Herald Record, (Newburgh, NY) Sat., Feb. 26, 1994

NFA robot out to snag contest title

by Kathy Swanwick
Record Correspondent

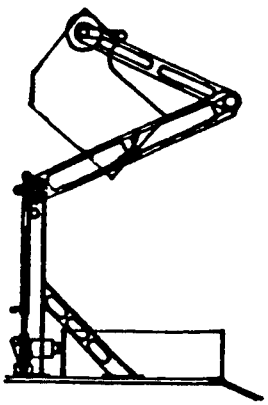




It's affectionately known as SCOREBOT: a squat, remote-controlled robot designed to be a giant on the soccer field. ...SCOREBOT is equipped with nets to snag opponents' shots and arms made of PVC pipe launch its own.

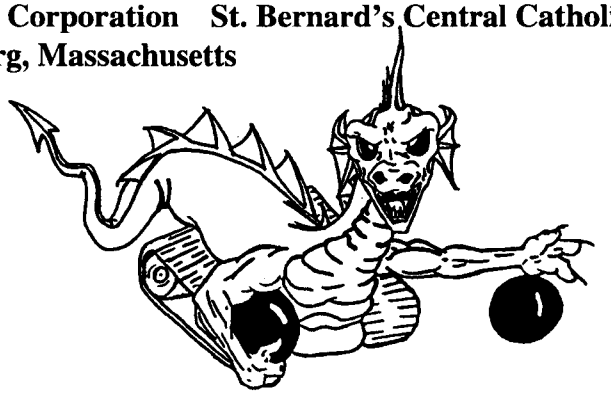
"Now I know how to work and use new tools and machines. It's been very positive, said student Donald Kascum, 17.

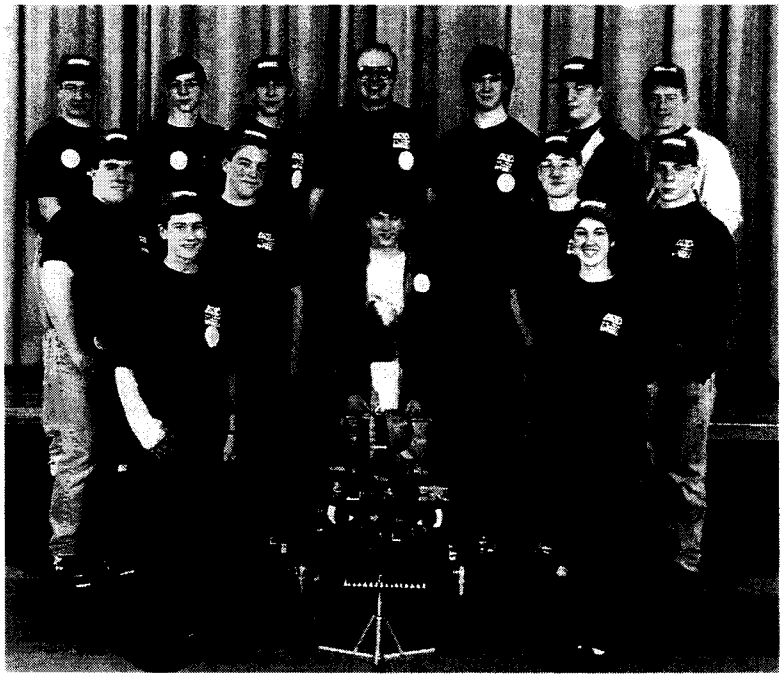
Teacher Jacqueline O'Malley said Nashua was "swarming" with students. ..."It's unbelievable, overwhelming," O'Malley said. "It's a thrill; they're excited about science."

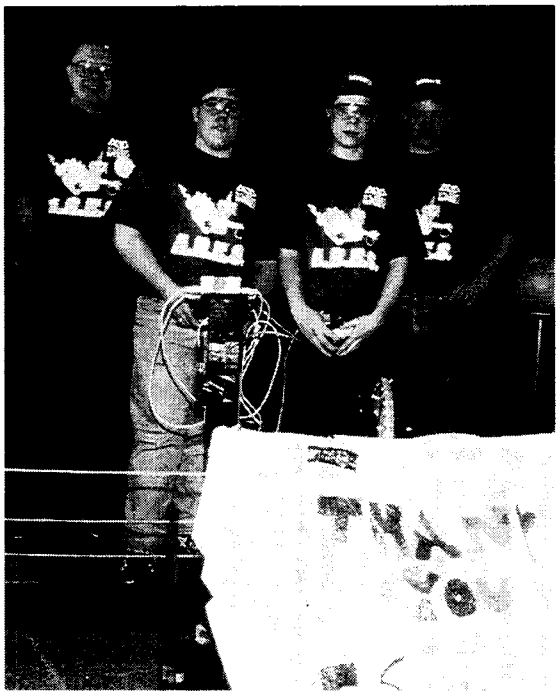


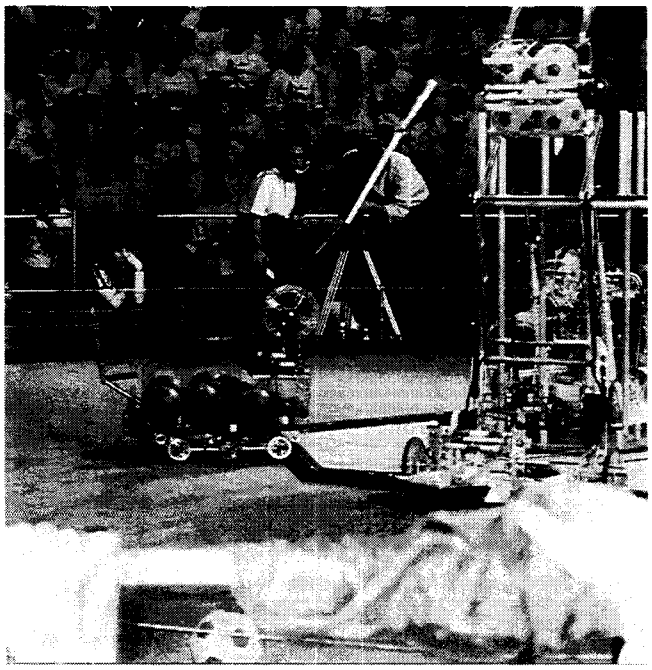
A.R.E.S. (Adaptable Robotic Elevation System)

NYNEX Corporation St. Bernard's Central Catholic High School
Fitchburg, Massachusetts



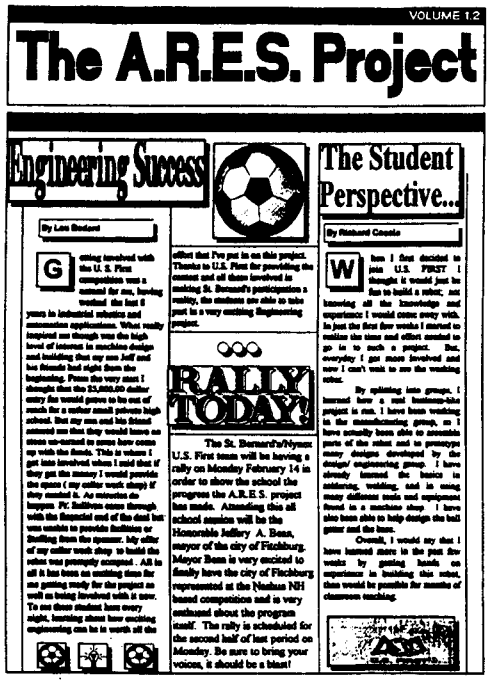






Thank you!

The motor on Nynex/St. Bernard's 'A.R.E.S.' failed.
The newly united E-Systems/Dallas Christian/Greenville High School team heard about the problem that A.R.E.S. faced and donated one of their motors. The story could end there, but it doesn't. Not only did they donate the motor, but they stayed most of Friday night to help this competitor put it in their robot. A greatful team, Nynex/St. Bernard's finished the competition with "Thank you E-Systems" clearly painted on their entry.



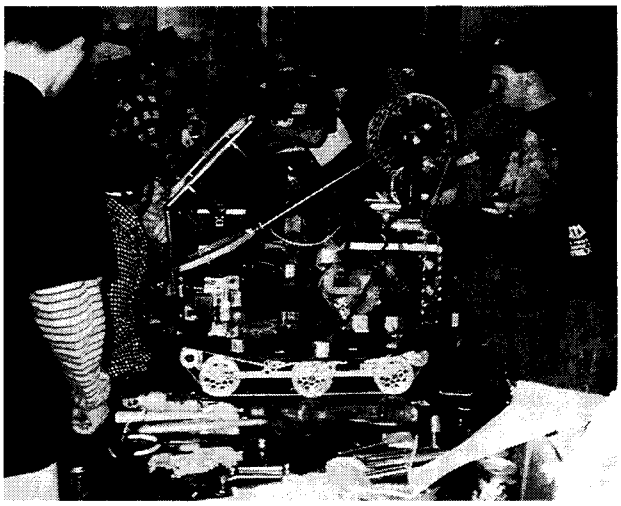
VOLUME 1.2

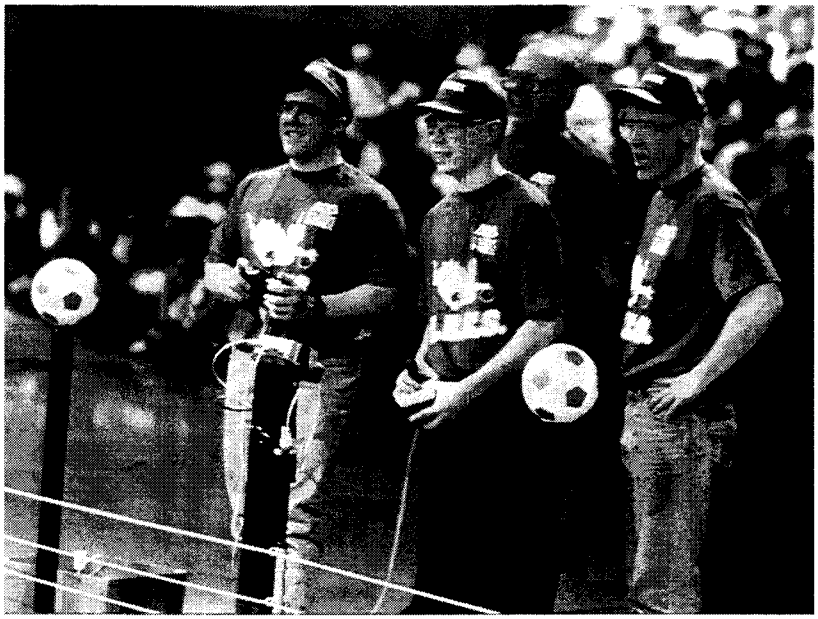
The A.R.E.S. Project

Engineering Success

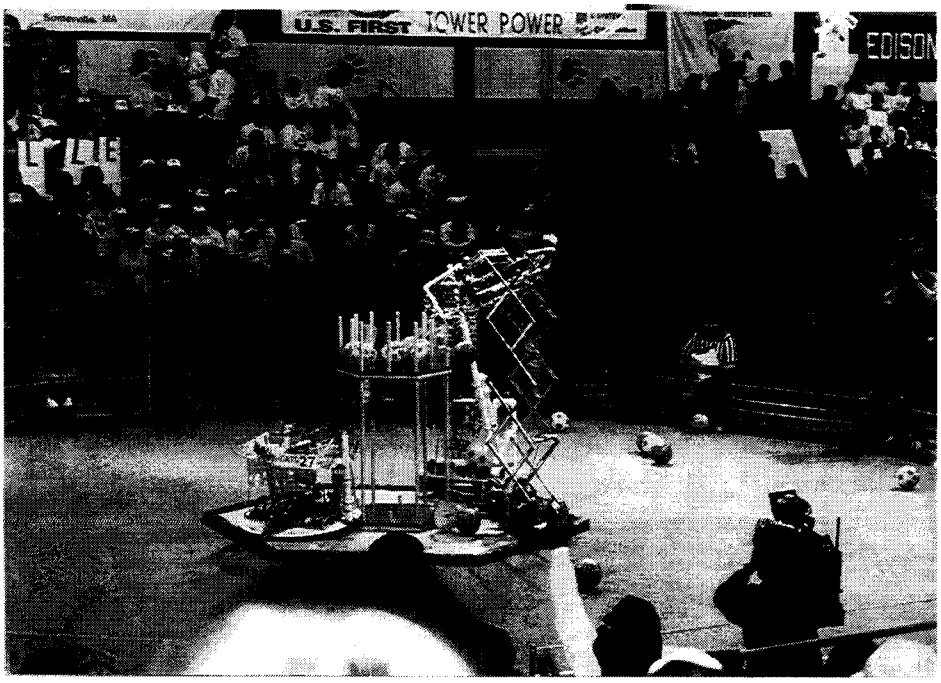
The Student Perspective...

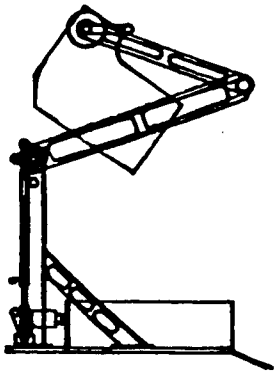
RALLY TODAY!





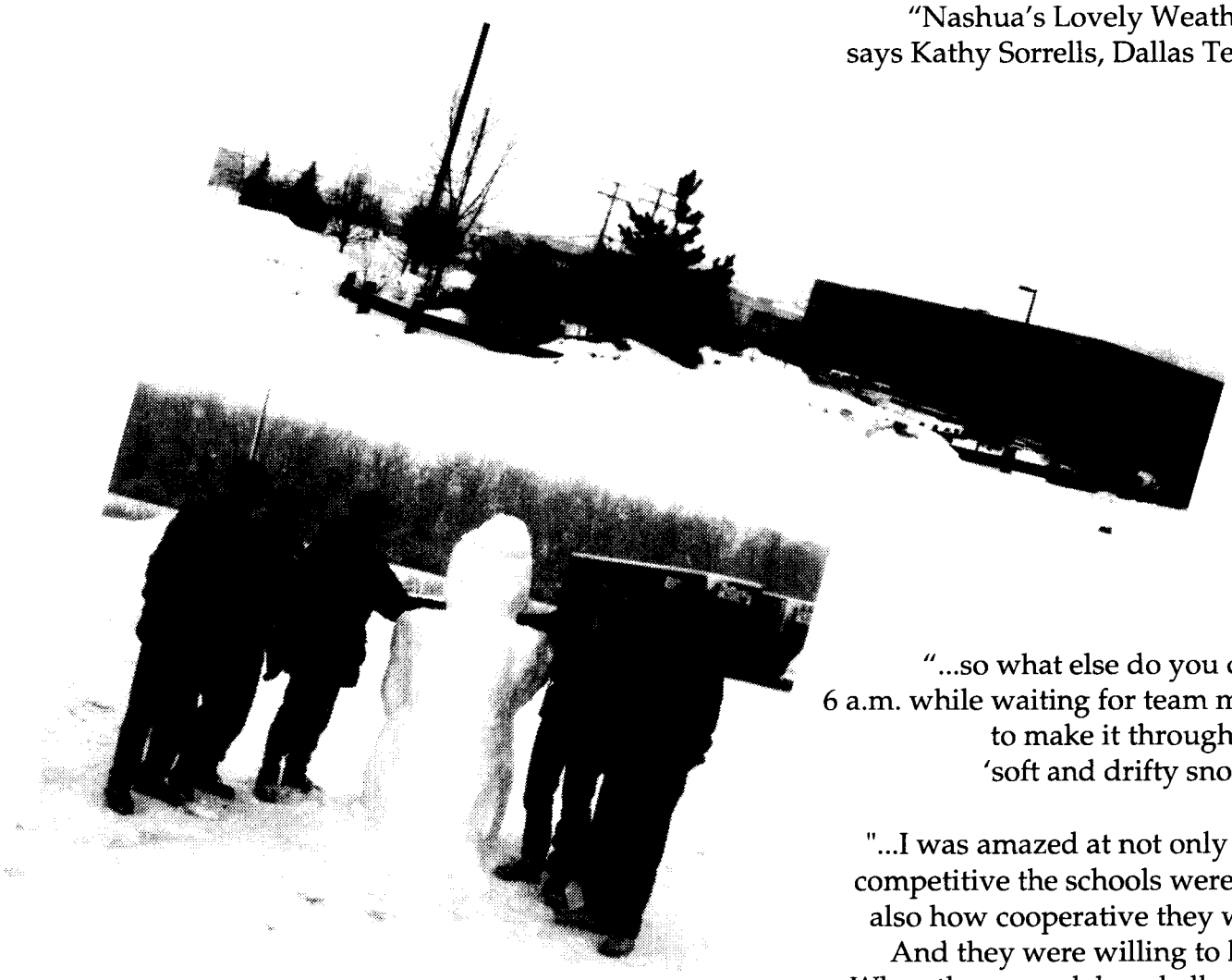
..."The competitors learn by doing, but even more important is the excitement they generate in their schools and communities and ultimately all across America... Every participant in this event, whether contestant, sponsor or observer is carrying that message forward."





...it's Shhhnnow time...

"Nashua's Lovely Weather,"
says Kathy Sorrells, Dallas Texas.



"...so what else do you do at 6 a.m. while waiting for team mates to make it through that 'soft and drifty snow'?"

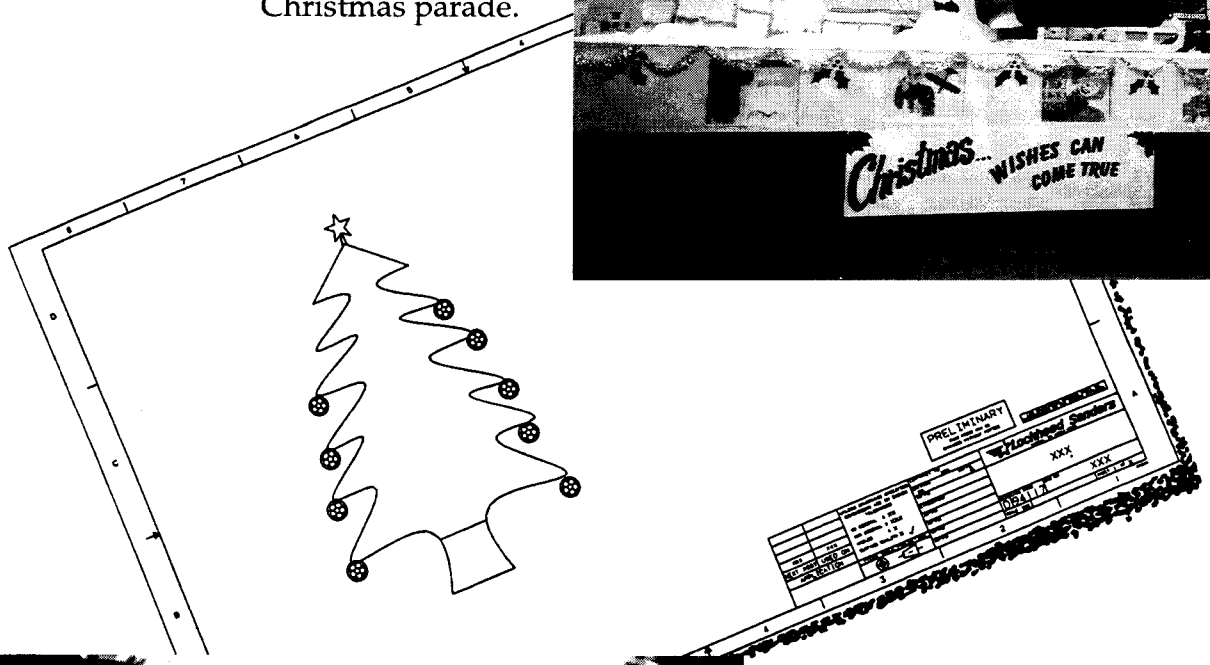
"...I was amazed at not only how competitive the schools were, but also how cooperative they were. And they were willing to help! When the snow delayed all of our tools and spare parts by 15 hours, the teams from Alliant Techsystems/Kamiak High and E-Systems/Dallas Christian High School loaned us tools, materials and whatever help they could until our tools arrived. It was amazing."

Walt Howard, Boeing/Bellevue High

"This big guy appears to have 'juggled' the elements with good humor." January 18, Governor Carlson closed all Minnesota schools due to the bitter 75 degree below zero temperatures (including windchill) - however, more than half of the students endured these potentially fatal temperatures to get to the Honeywell facility and follow through on their assignments so that design and development programs could stay on schedule.

"Holiday Spirit Snowballs into U.S. FIRST Spirit"

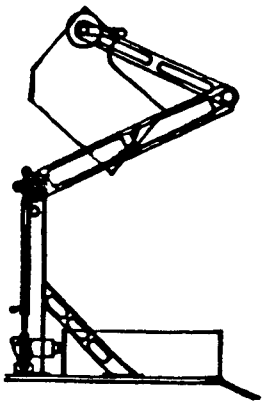
Johnson & Johnston/Astro/Brooks/ Salem High School enters a float in the Christmas parade.



"If you're seeing your first snow, you might as well see a lot of it."

Every team was so glad to see the Jamaica team arrive safely.

"Our LOGO illustrator was hard at work with critiques being passed through fax and over iced roadways until the final example was accepted. Only with sheer belief that everything would work did the SCOREBOT LOGO arrive at school in a blizzard for our teacher to stat a copy and be ready to make our T-shirts for the competition."



ACES (Atlantic Coast Engineering Staff)

Mann-Horton & Associates, Inc. Dwight Morrow High School
Englewood, New Jersey

(The vehicle build) progressed steadily...as students, teachers, and others worked 7 days a week 'til late at night to finish our project. It was during these marathon sessions that our team joke evolved. It seemed as though all we ever got to eat was bagels and butter. For variety, sometimes we would have butter and bagels, or bagels and bagels or bagels with extra butter. If you were really desperate you could have butter and butter. Long days have their effect on your sense of humor.

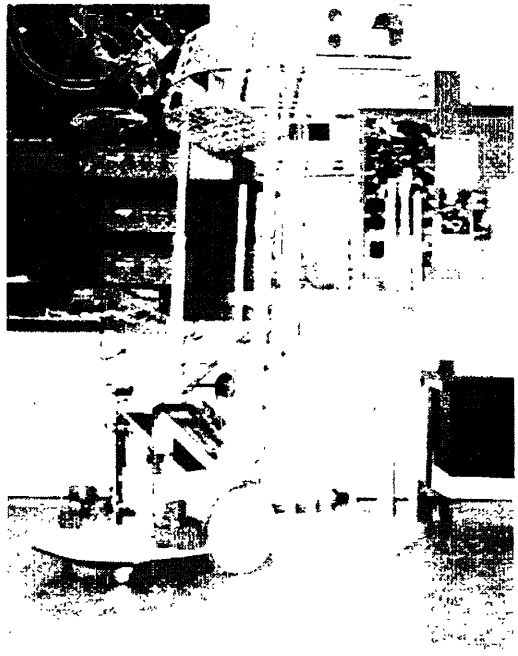
Little Ace had to be shipped via UPS in less than 3 days and it still wasn't finished. Our telescoping lifting mechanism, designed to score in the high goal, was only partially complete and never tested. Late Saturday night (2 days left) our entire vehicle was finished. However, the telescoping arms proved unreliable. ...If we had another week, we could have solved all the problems and proceeded with our original plan. ...We quickly had to alter our design to score only in the low goal. We were greatly disappointed, but still hopeful and competitive. We finally got Little Ace in the 'mail' and felt much relieved.

...(Practice day,) we went to Nashua High School at 9 a.m. to rendezvous with our robot, to check out the facility, and practice (we never had time to practice before we left.) We were shocked when we opened our shipping carton to find our vehicle had been badly damaged, literally broken in half during the UPS shipment. A day we thought would be leisurely and light turned out to be a marathon as we scrambled to rebuild our entry. We didn't get back to our hotel until almost 10 p.m. that night, but Little Ace was up and running.

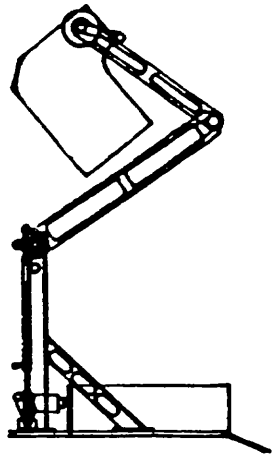
On Friday, with our spirits much improved, Little Ace performed well, finishing in first or second place in each of the five seeding competitions we entered. We were seeded 25 out of 44 teams. Considering some of the high tech machines we were up against, we felt really good.

"...and it is clear that the excitement is slowly growing into a mental frenzy. As the Superintendent of Englewood Public Schools recently wrote, 'this creative, technical endeavor will, no doubt, have a long term, positive impact on all...' We're excited!"

Saturday, competition day, we were excited about being in our first U.S. FIRST competition. Our machine was performing really well. We managed to place second in the first couple of rounds.



...It was a tremendous experience for our entire team and now that it's over, a very fond memory. We survived U.S. FIRST! Would we do it again? Don't ask yet, we still haven't caught up on our sleep!



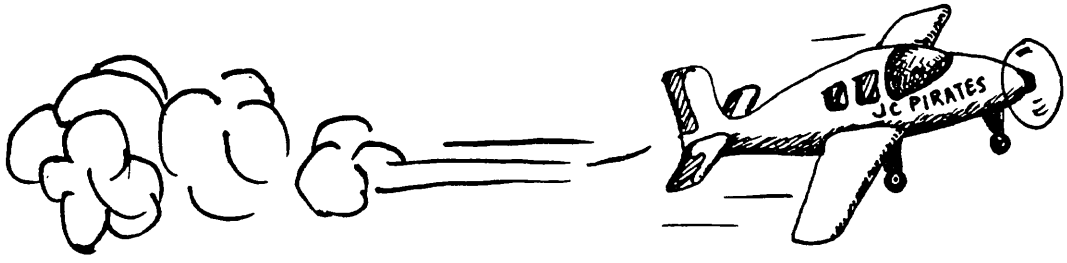
JC Pirates

Advanced Integrated Systems University of the West Indies Jamaica College
Jamaica, West Indies

"We thank U.S. FIRST for the opportunity of being a part of this adventure."

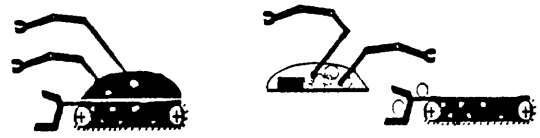
"(We) had to do most of the construction with hand tools and very limited school workshop facilities."

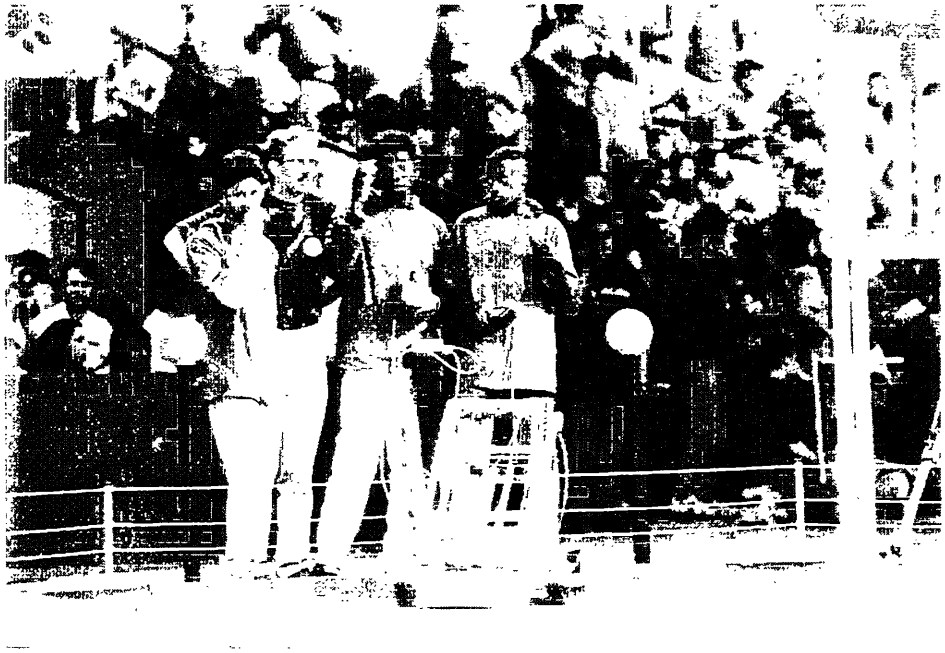
"THE JAMAICAN SPIRIT - the spirit of working at solving problems that others consider insurmountable. Customs detained our kit of materials for a week; 1/2 " aluminum plate and Lexan of any size is unavailable in Jamaica. We cannot get 1 1/4" closet rod anywhere. And so on. For people in the U.S.A. it may seem strange that these things are unavailable, for us in Jamaica it is the norm. We solved some of these problems by flying to Miami and buying the material needed.

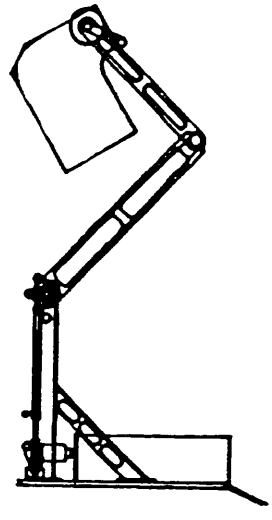


They're Here!

Unusual North Eastern snow storms in the New England coast area made travel difficult for most, but the J.C. Pirates from Jamaica were forced to miss the entire day of Seeding Competition. Their absence was felt by all. They worked as long and as hard as everyone else. In what other competition would you find team members and fans so concerned for an opponent. The cheer of welcome was deafening.







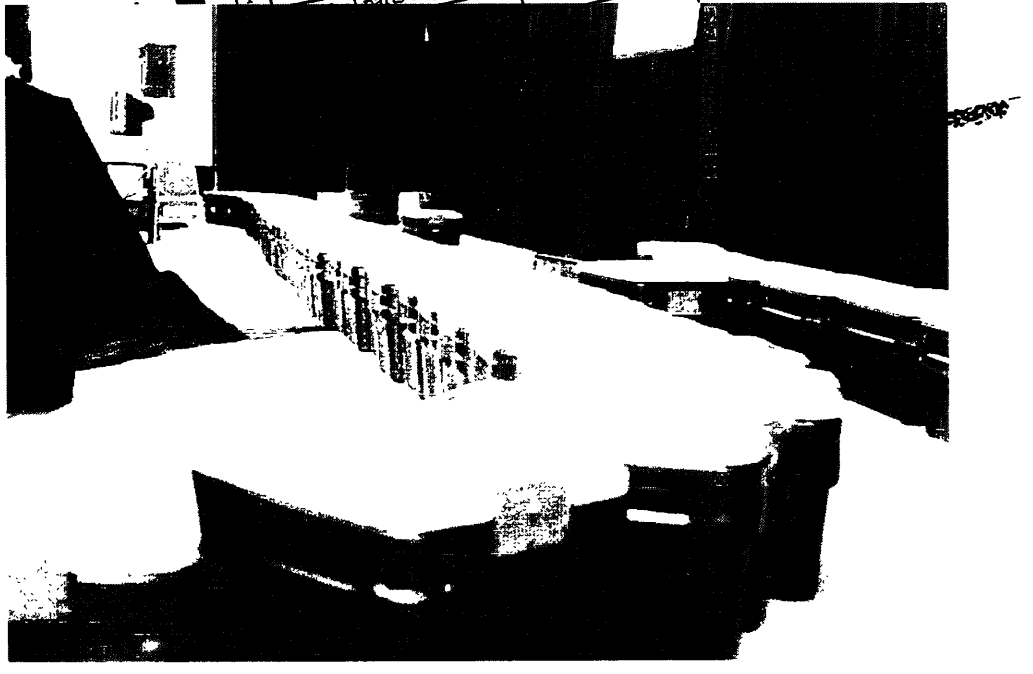
1994 U.S. FIRST

The Kit: Parts Checklist

Everything in The Kit, except the Rubbermaid container and packa... can be used in the construction of your vehicle. Some of these items are also samples ... be used in larger quantitiaccording to the restrictions on the Hardware List.

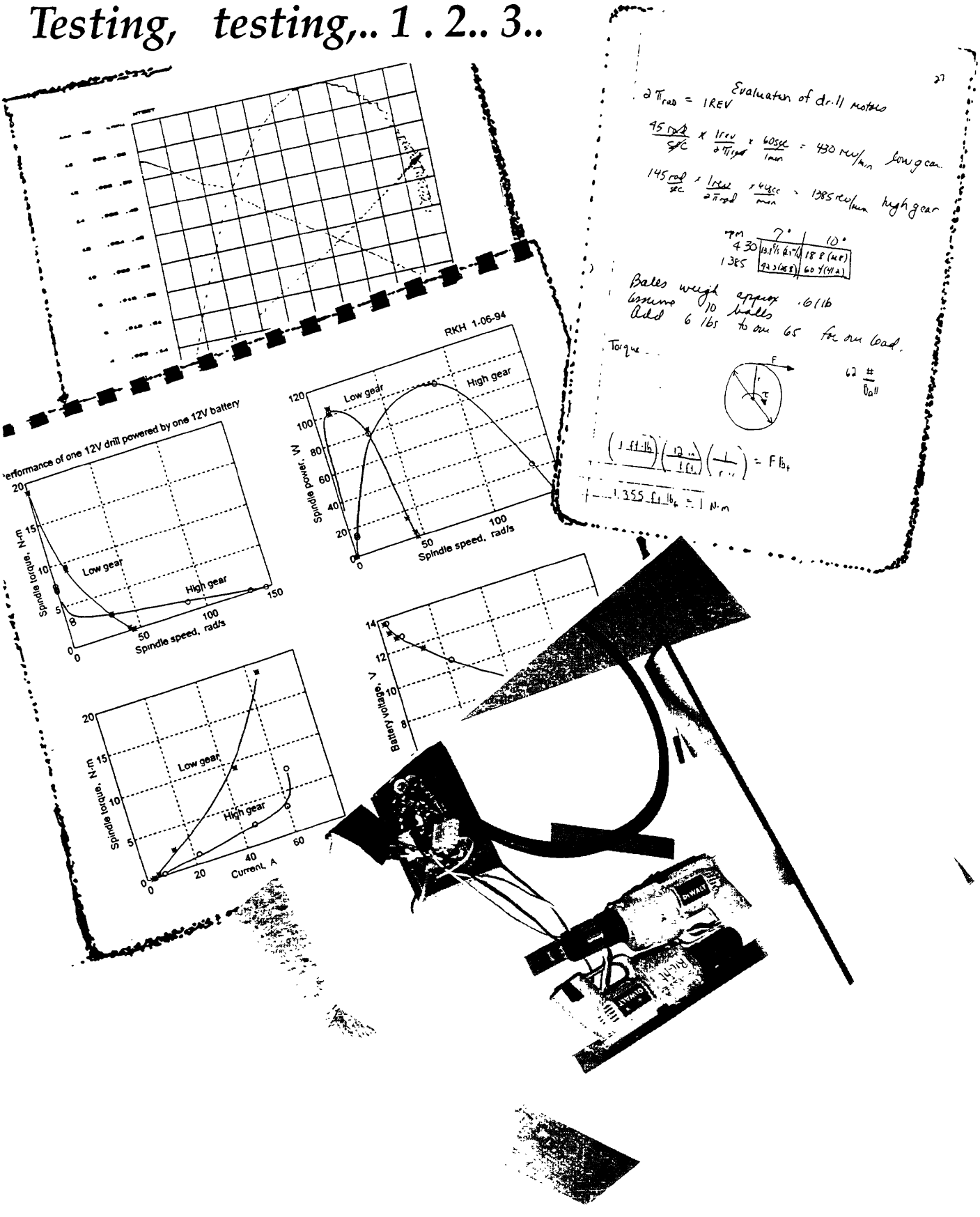
	1	Aluminum Sheet	1/16", 12" x 18"
	1	Masonite board	12" x 18"
	1	Lexan Sheet	1/16" x 12" x 12"
	1	Carpet sample	1' x 1'
	1	Chipboard	1/2" x 6" x 12"
	1	Particle Board	1/2" x 6" x 12"
	1	Plywood	1/4" x 6" x 12" 1/2" x 6" x 12"
	1	Digital Eq. Corp. Printer	
	1	Pine boards	1" x 3-1/2" x 9"
	1	Pine boards	1" x 2-1/2" x 9"
	1	Pine boards	1" x 1-1/2" x 9"
	1	Bundle: Drill Rod (2) Drill Rod (2) Welding Rod (2) Welding Rod (6)	1/2" Ø x 18" 1/4" Ø x 18" 1/16" x 18" 1/8" x 18"
	1	Bundle: Aluminum Rod (1) Wooden Dowel (1) Oil hardened shaft (1)	1/2" Ø x 12" 1/4" x 12" 1/2" x 12"
	4	Delco seat motors	
	4	Flexible motor shafts	1/4"x3"x12"
	1	Aluminum Bar	1"x2"x6"
	1	HDPE	
	4	Milwaukee rechargeable batteries	
	2	Chargers	
	1	Sample/small parts bag	bag
	1	...parts bag	bag

	1	Mushroom...	
	1	Plastic Wire Wrap	
	1	Co-Polymer Gutter Guard	6" x 24"
	2	Small Parts Catalog	
	1	Syringe	140cc
	1	Joystick	
	1	Transmitter/Receiver box	
	4	9 conductor shielded	
	2	Black & Decker or DeWalt drill/drivers	
	1	Battery relay boxes	
	1	7.5V power supply	
	1	R-net Receiver / Transmitter / Antenna	
	1	Rubber Sheet	
	1	Soccer Ball	
	1	3mm Climbing Rope	
	4	Delco motor harness	
	1	55-gallon HDPE drum	To Be shipped direct

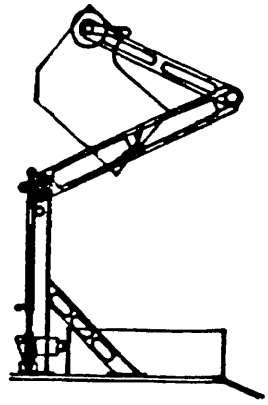



THE KIT
DO NOT REMOVE ANYTHING FROM THIS BOARD. SEE SOMEONE IN MATERIALS
Controls (Weights
4 Delco 1.5lb Each 6lb
2 Drill 3lb Each 6o
2 Batteries 4lb Each 8lb
9V Battery 2oz 0.125lb
?
2D.125lb+
MATERIALS WEIGHTS

Testing, testing,.. 1 . 2.. 3..



"Everybody looks up to Somebody!"



The Fighting Falcons

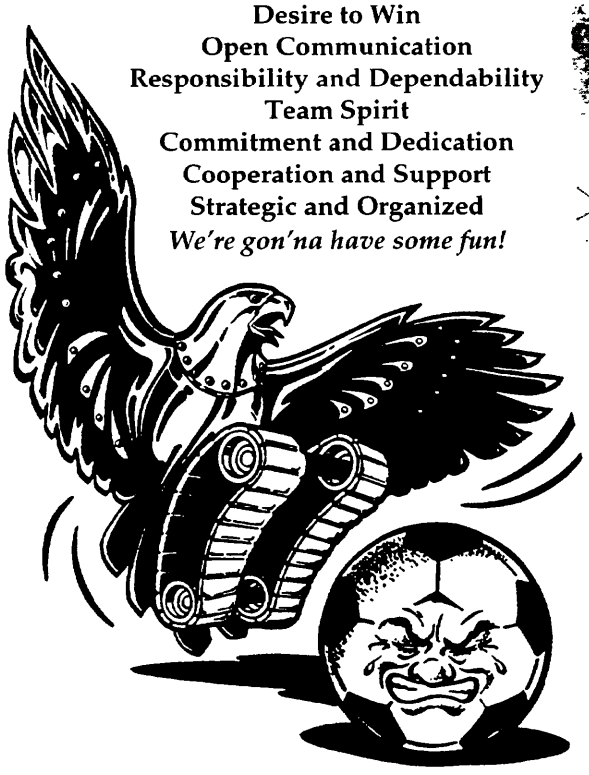
Procter & Gamble Company Aiken High School
Cincinnati, Ohio

Chairman's Award Finalists Rookie All-Stars

"I thought that engineers were people who made a lot of money for doing a little bit of work."

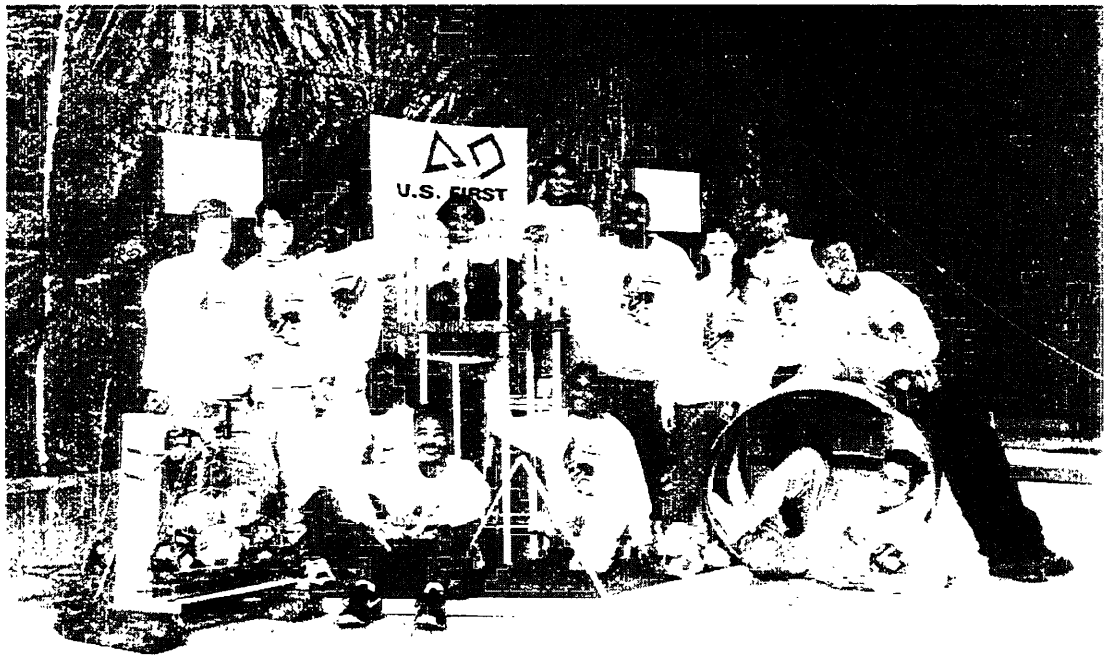
Louis Ferguson, Student

"This is how we are going to build our machine:
Have Fun
Recognition and Respect
Be Bold in Our Thinking
Partnership
Honesty
Desire to Win
Open Communication
Responsibility and Dependability
Team Spirit
Commitment and Dedication
Cooperation and Support
Strategic and Organized
We're gon'na have some fun!

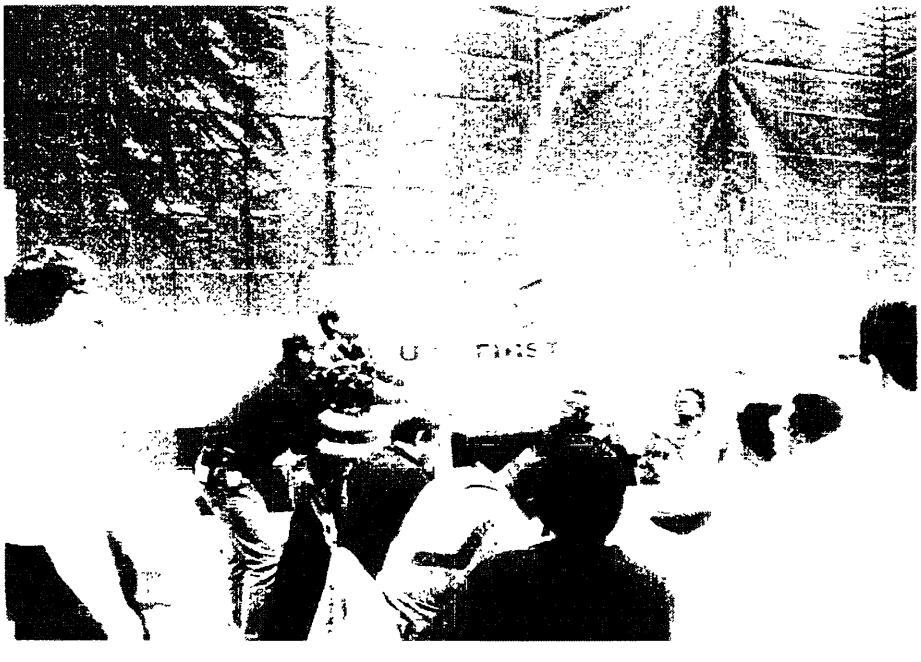


"We get the students' & engineers' ideas. We put them together. When we put them together we don't know if it's a student's idea or an engineer's idea. We just vote on which idea is best. So, if your idea is going to ride, we're going to let your idea ride."

Eugene Wilburn, Student

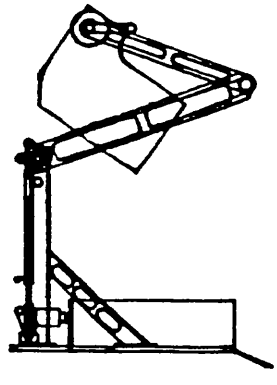


Students learned to appreciate engineers and engineers to appreciate students, not just for their skills, but as people. As the weeks progressed we saw the students blossom. Students who initially were afraid to speak were now afraid to be quiet. They didn't want to miss an opportunity to share an idea. We heard over and over again 'how amazed they were that we listened to them, then acted on what they'd said.' The more we listened the more it energized the kids. Two and one-half weeks into the project, the excitement was contagious.



"We're starting to learn that we can be a big family here, with everyone working together.

Ritchie Hall, Student



"The most important things the students learn are not to be afraid to say what's on their mind and to dream: To exercise that dream and see how it can be turned into reality with teamwork. They see they can't do it alone, they need other people in their lives.
Linda Close, Parent

"I never expected engineers to look like real people."
Ritchie Hall, Student

"The kids have taught me to be free spirited, and to think broadly, then collapse and converge on a solution, but don't overlook the obvious; the simple things."
Earnie Womak, Engineer

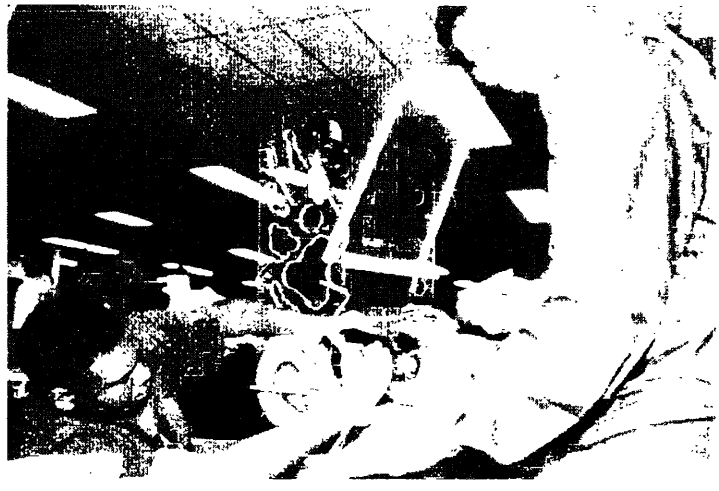
"There were people who reached back for me. I feel compelled. I've got to reach back also."
Chris White, Engineer

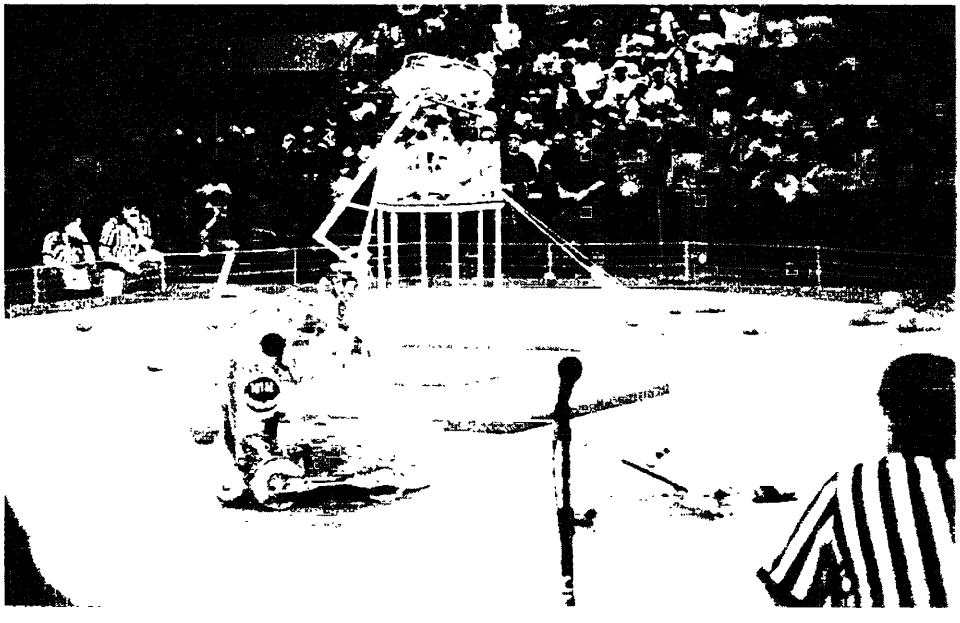
S2D (Strive to Dominate)

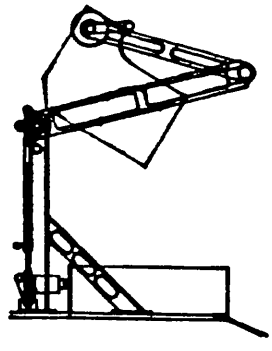
Powersoft Corporation Massachusetts Institute of Technology
Boston Latin High School Boston, Massachusetts

The total team of 28 MIT students and 20 Boston Latin High School students began the brainstorming/best design selection process at the high school and then brought concept to hardware at MIT's mechanical engineering facilities. Powersoft representatives praised the S2D team efforts highly.

Under the support of the Powersoft Corporation, MIT, and Boston Latin High School, students have worked together to create their machine design. Employing new techniques in product design, sub-groups of a combination of MIT engineers and high school students have created a machine to accomplish several detailed tasks.



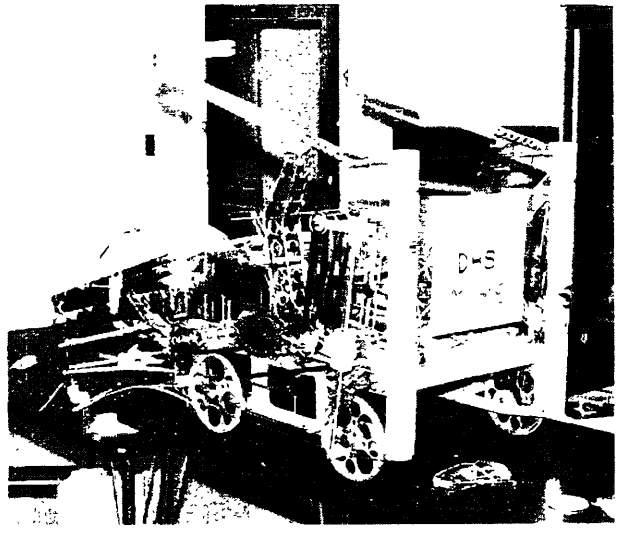


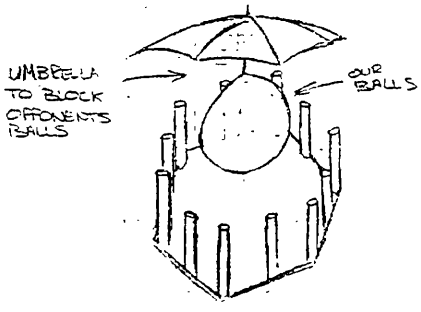


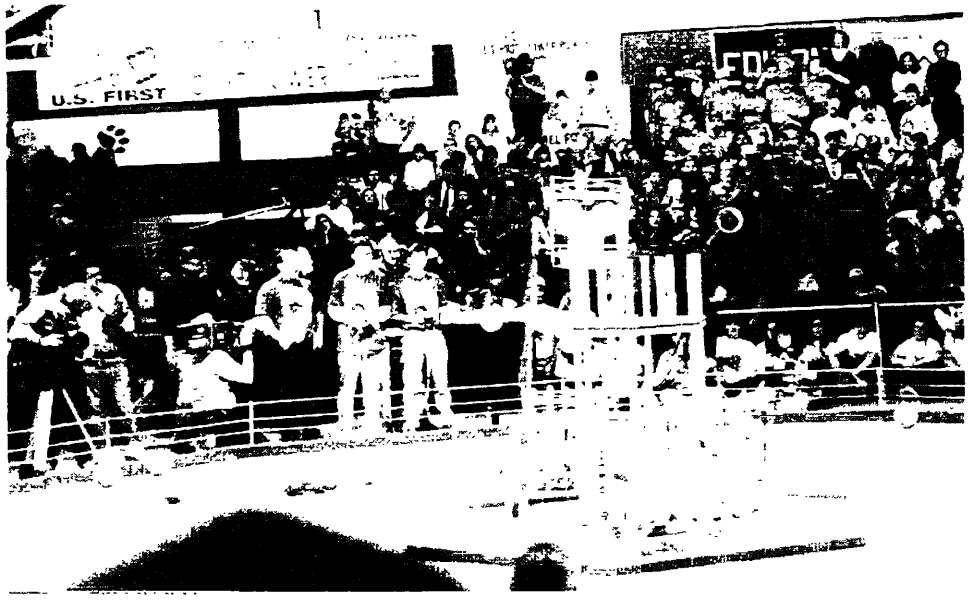
Scorpion

Worcester Polytechnic Institute
Massachusetts Academy of Mathematics & Science
Doherty High School
Worcester, Massachusetts

No ball can escape the sting of our SCORPION!

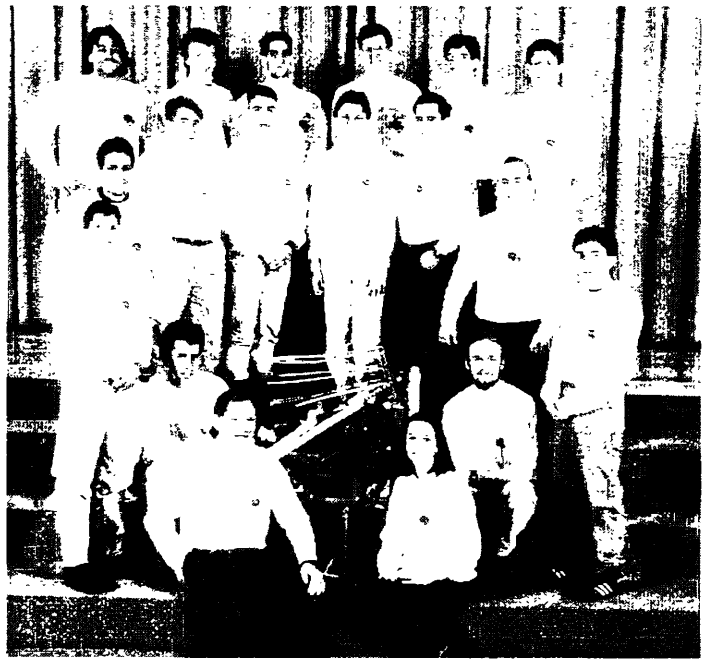




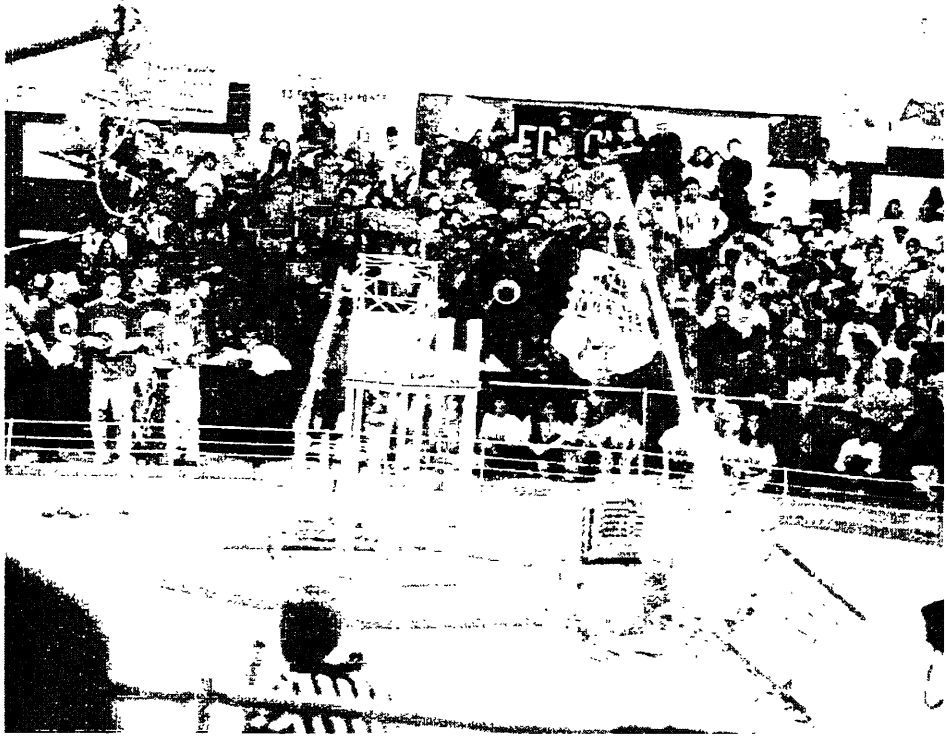


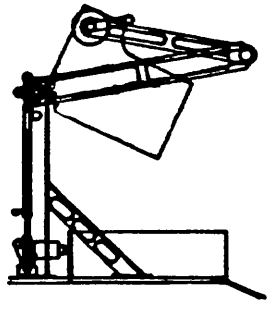
Worcester Polytechnic Institute, Doherty High School and the Massachusetts Academy of Mathematics and Science have participated in the U.S. FIRST games since their inception. However, this is the first season that this celebration of design spirit was merged with WPI's educational goals and qualifying projects yielding over 40 team members! Each WPI student completes a Major Qualifying Project, MQP, which dominates most of their senior year. This capstone design activity truly embodies the challenging problems encountered in one's career.

The U.S. FIRST design competition is synchronized beautifully with WPI's project system. Both activities envelope the student (college and high school) in an atmosphere charged with the excitement of competition, the knowledge that they have built, with their hands and creative minds, an instrument of purpose and design.



Professor Sullivan capitalized on the harmony between these activities and recruited fifteen WPI students to share in the excitement of the design and the joy of watching high school students learn and live the events of the competition...the events of a design engineer. The U.S. FIRST 'Rug Rage' video was all it took to overflow the high school slots. Fortunately, high school teachers were also drawn into the spirit of the competition and signed on to help with the twenty high school students. These new recruits forgot that they were planning to be attorneys, rock musicians, and business managers. They signed on the dotted line with their hearts pounding in anticipation of the games, in the challenge to design an instrument of purpose. This instrument has become the SCORPION.





SM-U Shooter

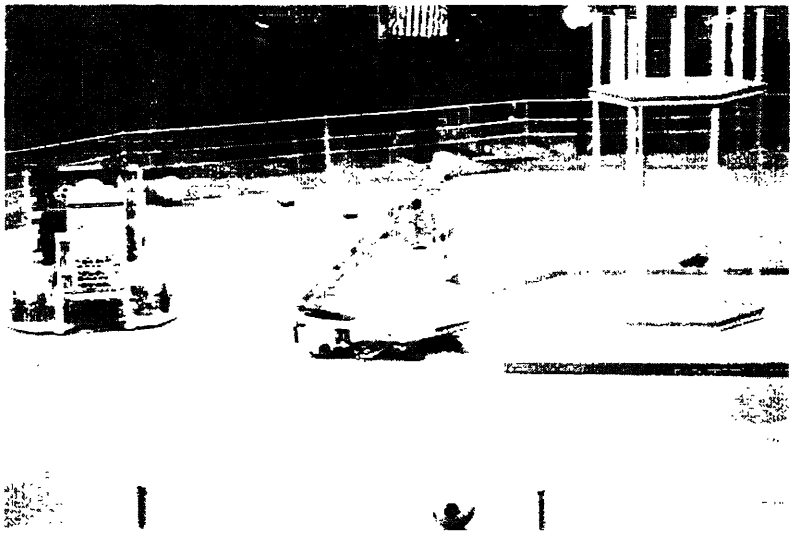
Southern Methodist University St. Mark's School of Texas
Dallas, Texas

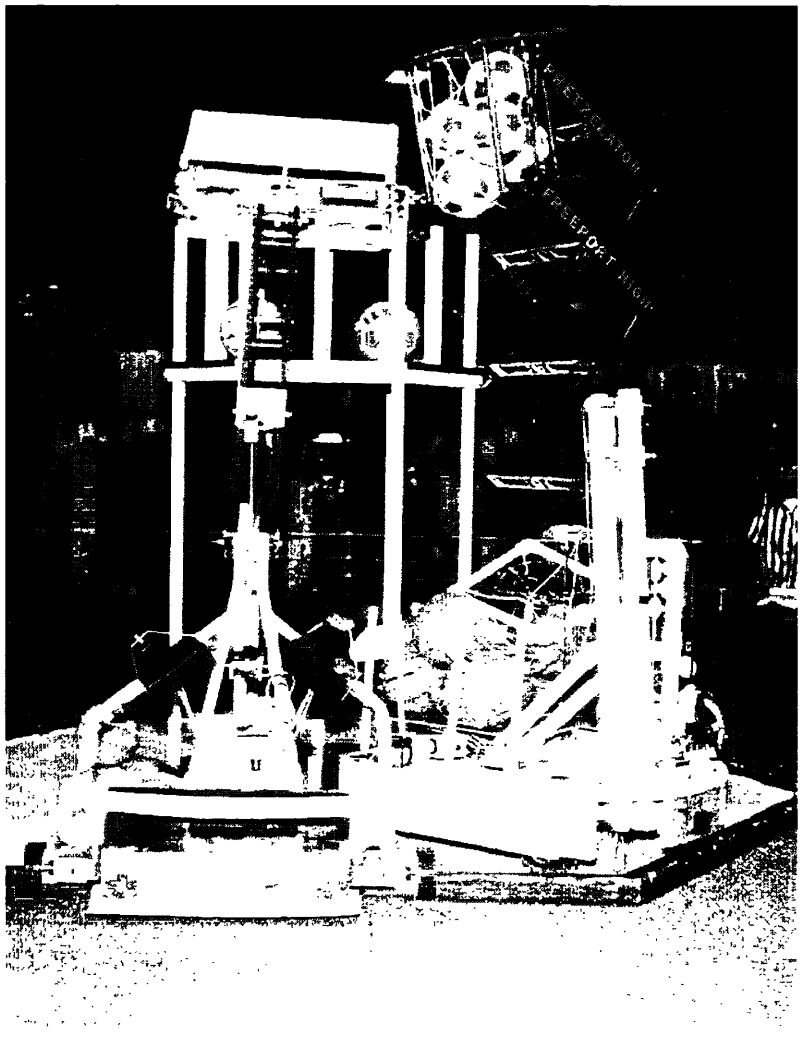
Rookie All-Stars

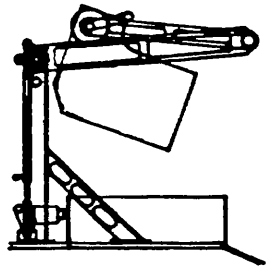
The St. Mark's School of Texas and Southern Methodist University team is composed of three engineers from the Engineering School at Southern Methodist University and approximately twenty-five students and one science teacher from the St. Mark's School of Texas. Three student leaders planned and organized the meetings with the engineers and teachers.

Prior to receiving the kit, we had two meetings at which we elected leaders and practiced brainstorming techniques. Once the kit arrived, one student who had a great deal of woodworking experience was assigned to build a practice goal and a partial field. During the next two weeks, the rest of the team met six or seven times to brainstorm, and eventually we finalized a design.

Our SM-U-Shooter was built in one of the university machine shops.



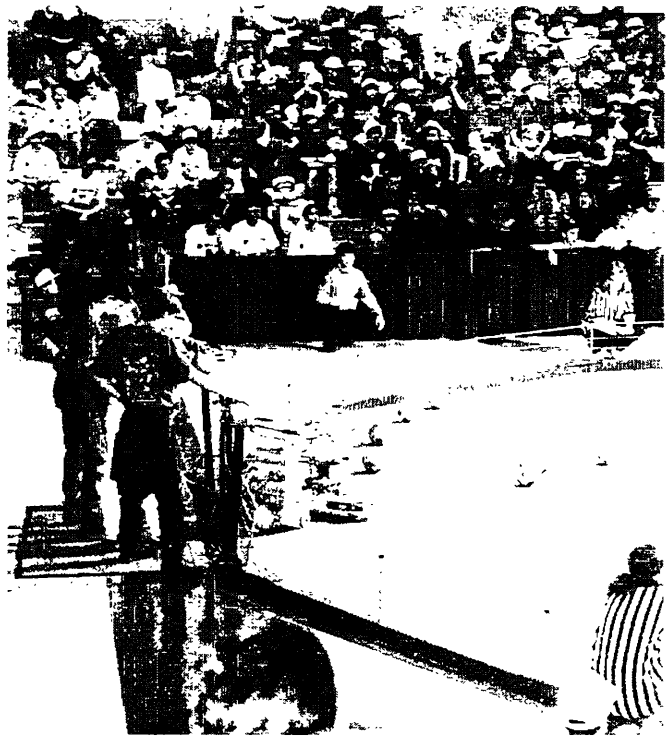


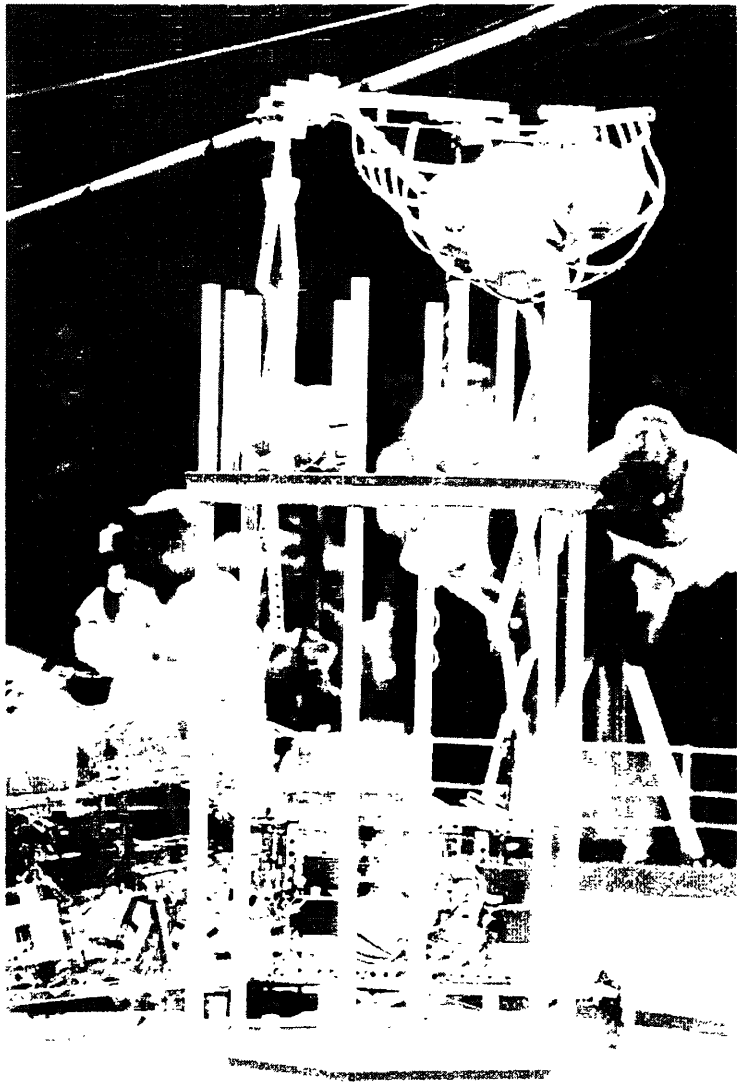


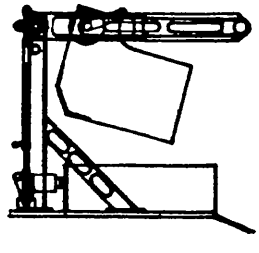
The Power Shopper

University of New Hampshire Bailey Corp Winnacunnet High School
Hampton, New Hampshire

Our team consists of fifteen students and three faculty members of Winnacunnet High School, two students and one professor from the University of New Hampshire, and six engineers of Bailey Corporation. Winnacunnet, known in the seacoast area for its outstanding achievement in math and science, is gaining first-hand experience in an engineering environment.

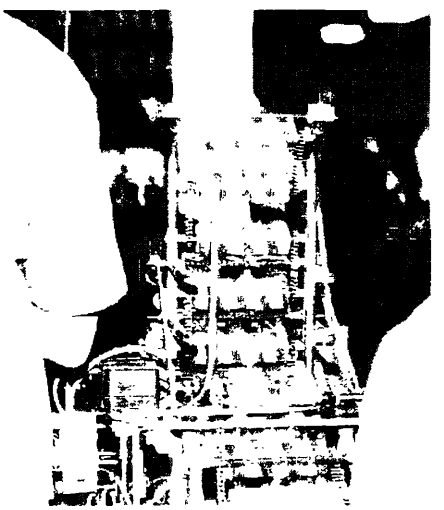






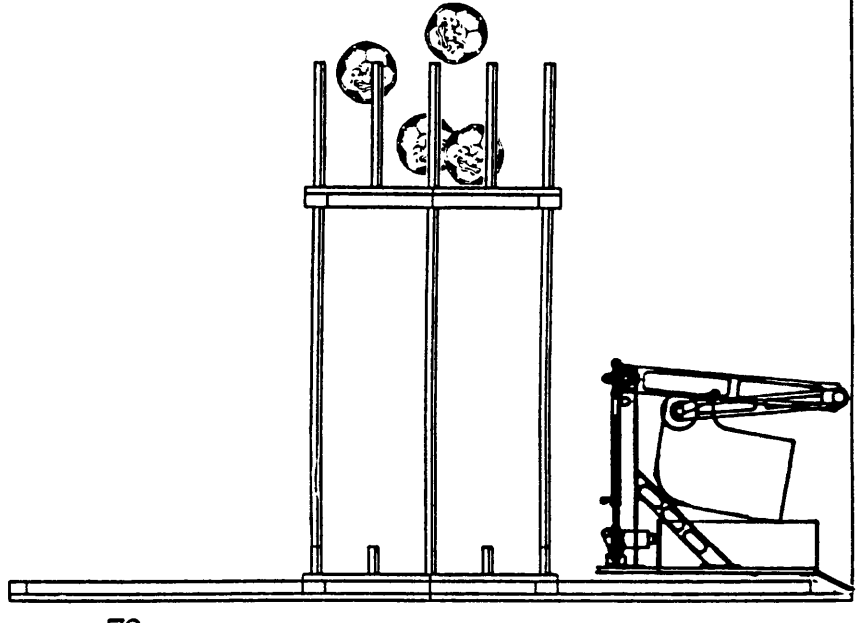
H.O W (Hell on Wheels)

Rensselaer Polytechnic Institute Shenendehowa High School
Clifton Park, New York

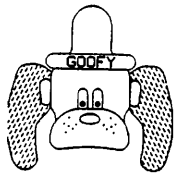


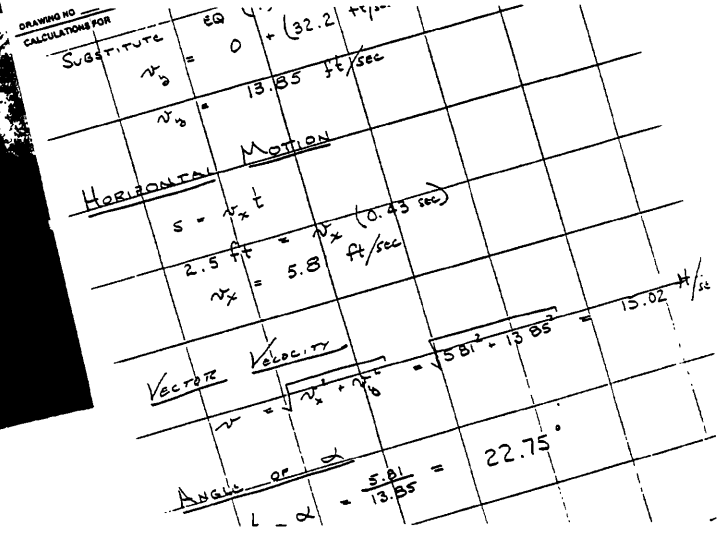
The core of our design team was assembled in January 1993, when students signed up for the Automation and Robotics class, a course which culminates in the U.S. FIRST Competition. The Automation and Robotics class is the final course in an Engineering Sequence which includes College level courses such as Digital Electronics, Principles of Engineering, and Autocad. This past January, 35 Shenendehowa students were joined by an Engineer/ professor from RPI and 24 RPI students from his Introduction to Engineering Design class. The flux design concepts that came from this mass of combined brain power was amazing!

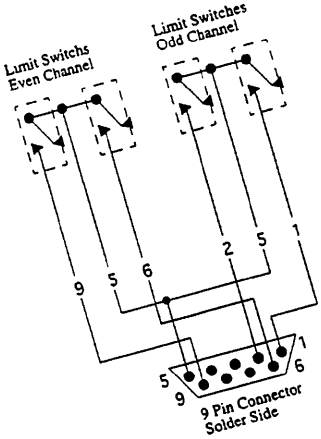
We're gon'na have some fun!

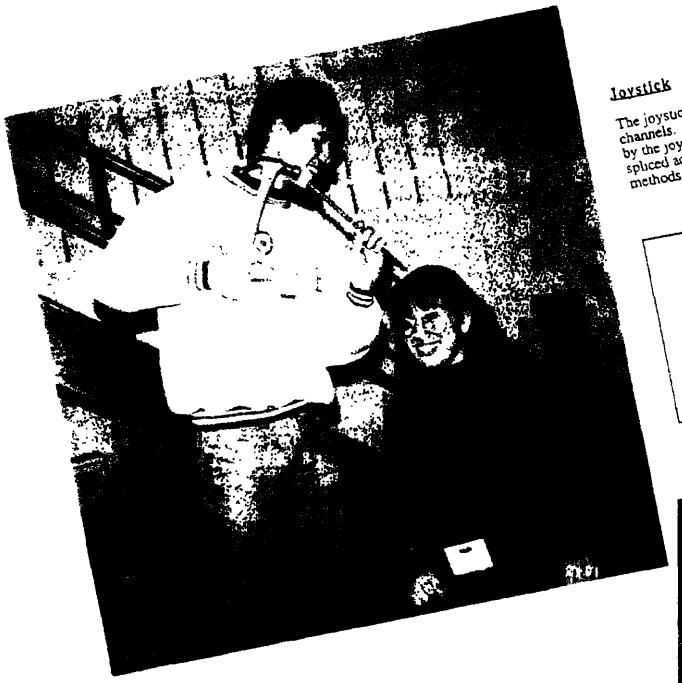


"Time is short, and no fun is too much work."
Warren Lohr, Xerox



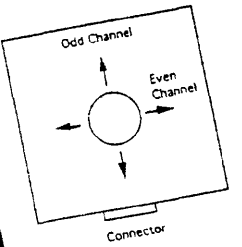




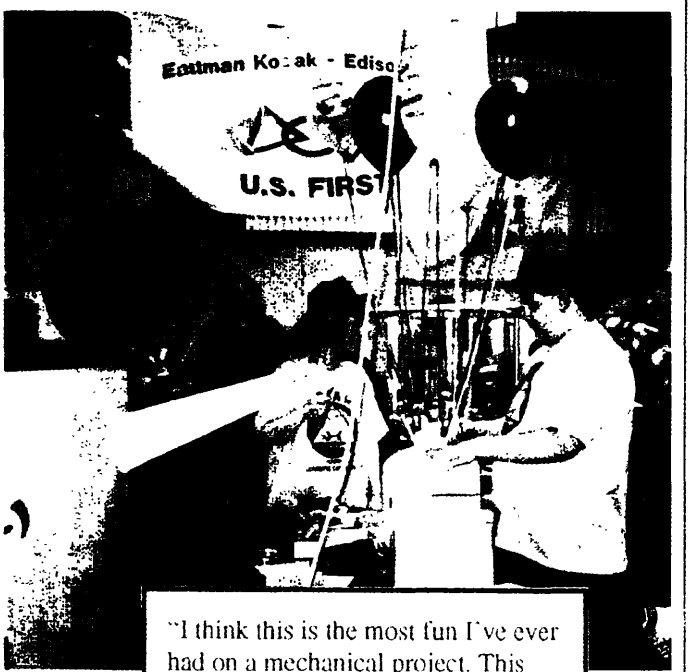


Joystick

The joysuck, like the switch box, controls a pair of the channels. To change the polarity of a motor controlled by the joysuck, the wire harness must be cut and spliced accordingly. Please consider alternative methods instead of cutting and splicing wire harness.

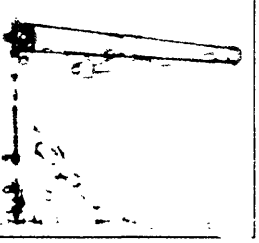


"It was a **blast**, so I signed up for another year.
Jeremiah Bohn, Junior
North Community H.S



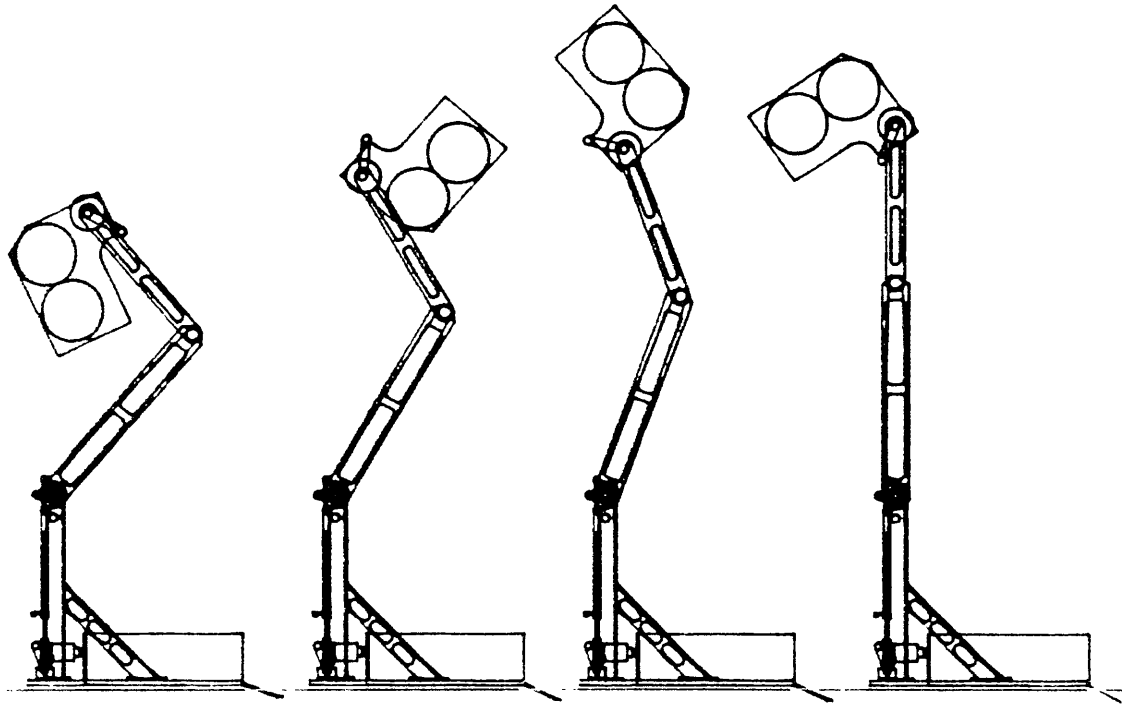
"When I was in high school, I wished that I could see what engineers really did. (If I had been able to do so, I would have become a pharmacist...just kidding). I joined the U.S. FIRST team because I wanted to share some of the excitement, fun parts of the essence of engineering—starting with an idea and a challenge, and making something that works!"
Don Foreman, Honeywell

"I think this is the most fun I've ever had on a mechanical project. This machine has got some very complex functions all wrapped in one fun bundle of gizmos."
Tom Rolfer, Honeywell

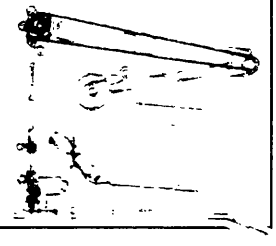


"Floriferious and uhm cn'delic" See and understand

Zheng Lin, North Community H. S.



"I'm not a very 'mechanical' person. Being able to exchange what knowledge I do have for the knowledge of others is what attracted me to U.S. FIRST. No one expected me to know what Bogie Wheels were; they taught me, and I helped them to spell it."
Jahana Berry, Junior
North Community H.S.



Panther Trax

AT&T Bell Laboratories A&T Global Information Solutions
NCR Microelectronic Products Division Harrison High School
Colorado Springs, Colorado

"I often tend to dismiss ideas before actually giving any real thought to them. On the other hand, I believed all of my ideas were perfect and wondered why anyone would disagree with them. As can be expected, I was brought quickly to a harsh reality."
Umar Yousufi, Student

My ambition?
..."play professional baseball and become an engineer - all at the same time!"
Jeremy Hahn, Student

"I have learned to listen to people. That was a big problem for me, but now I listen to my teachers more than I did before."
Mark LaFave, Student

"It is not often that students and teachers work alongside each other, learning together. It was a fantastic experience to have a student teach me how to use a milling machine."
Sandy Smith, Teacher

"It was a wonderful experience when the engineer would assign different tasks and believe enough in us to do them."
Daniel Fortune, Student

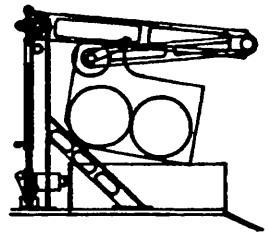
"I think that the students have had a chance through this project, to understand how engineering, and problem solving in general, doesn't always come out right the first time. The U.S. FIRST project also gave the students a chance to take ownership in the project. Taking ownership is difficult, it requires that the individual not be afraid to make mistakes and fail. Taking ownership also requires that those students who make mistakes recover and continue."
John Kaufman, Principle Design Engineer

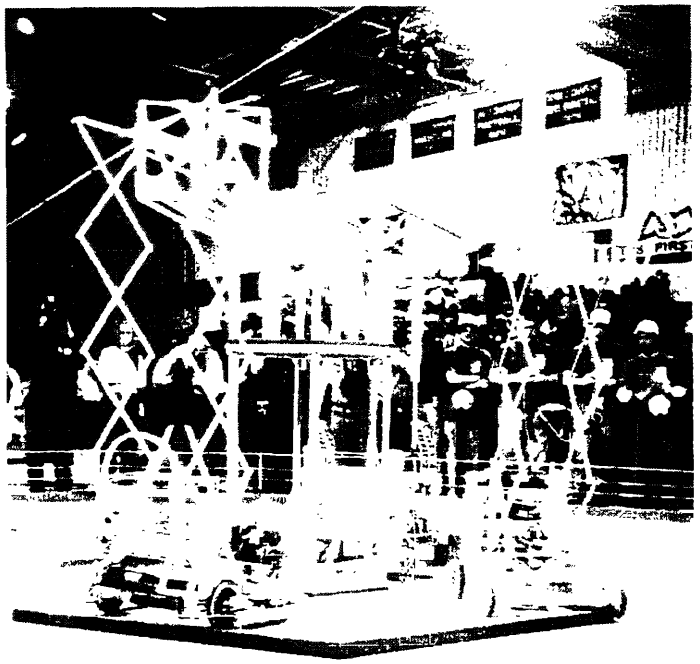
"I was really surprised that students and teachers from all over the school seemed to be interested in what was going on."
Patricia Stines, Student

"I've learned not to wait until the last moment to do something, no matter how little it is."
Josh Mathewson, Student

"In the U.S. FIRST Competition we had to create our own ideas, and there was no real right or wrong answer.
Moe Stenberg, Student

"I've learned that everyone plays an important part on the team. Whether it be drilling, gluing, or being the brains of the operation. What you do for the team saves the team and saves time and stress on others."
Karen Zoebisch, Student





"...the arena of working in groups composed of people other than your peers was totally different than what the students had experienced in class. There was a higher level of anxiety involved in proposing an idea; 'After all, these people are professionals'. There was an intimidation factor of working with new equipment; 'I've seen this done, but can I do it?' There was a learning to deal with disappointments; 'Yours is a good idea, BUT, we're going to use this one.' Finally, there was ecstatic joy of achieving success; 'It works! I can't believe it really works!'
...So while I will continue to require team projects in class, I'm much less naive that I am actually modeling real-life team work."
Teri Smith, Teacher

"Traditional education involves a teacher, a textbook, and a lot of lectures. The questions you are asked already have answers and can be used to help understand things that relate to these problems. This project was a whole new type of learning. The problems that came up didn't always have answers, and some of the problems still haven't been solved!"
Joseph Harris, Student

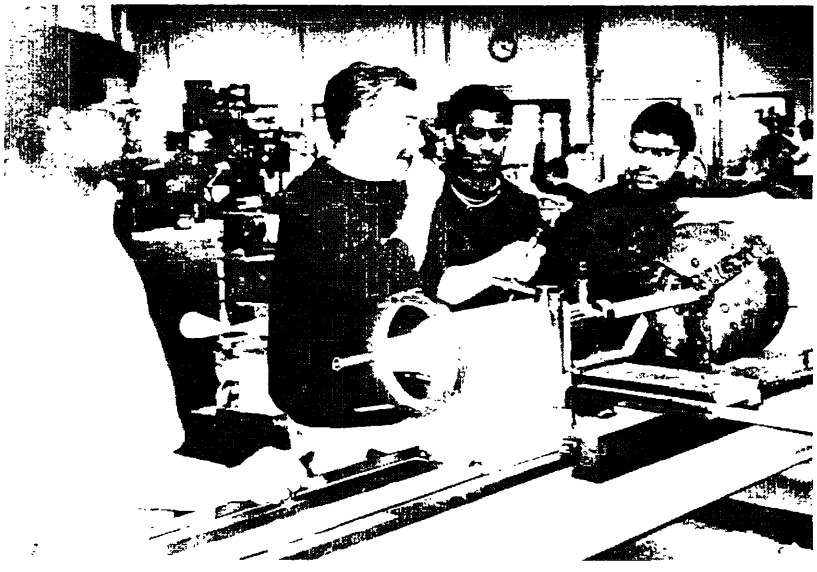
A S T.R O (Applied Science and Technology Research Operation)

NASA Lewis Research Center Cuyahoga County Schools
East Technical HS, Holy Name HS, Lakewood HS, Magnificat HS, North Olmsted HS, North Royalton HS, Parma Senior HS, Strongsville HS.
Cleveland, Ohio

Outstanding Defense Award

"The talents, technical skills, and patient guidance provided by the many NASA Lewis technicians, engineers and other professionals enabled us to design and build a successful entry which was recognized for 'Outstanding Defense' at the competition. We extend our gratitude for having had the opportunity to be involved in such an exciting project and to have worked with such dedicated advisors and friends."

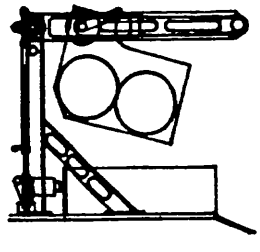
Student members of Team A.S.T.R.O.



Students have limited opportunities to participate as a member of a team with an intellectual versus physical focus, the very experience most needed by business today.

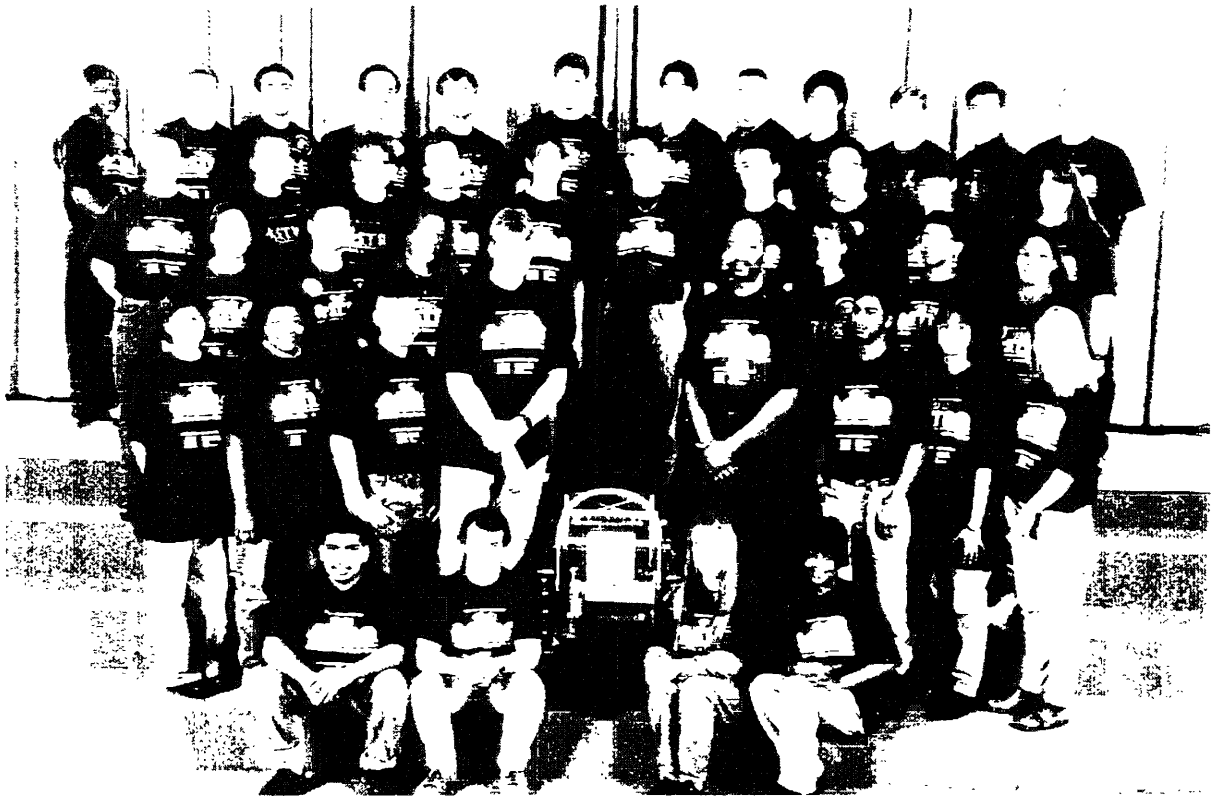
"U.S. FIRST forced us to adopt new ways of working between engineering, designing, and manufacturing. This is an example of concurrent engineering at its best."

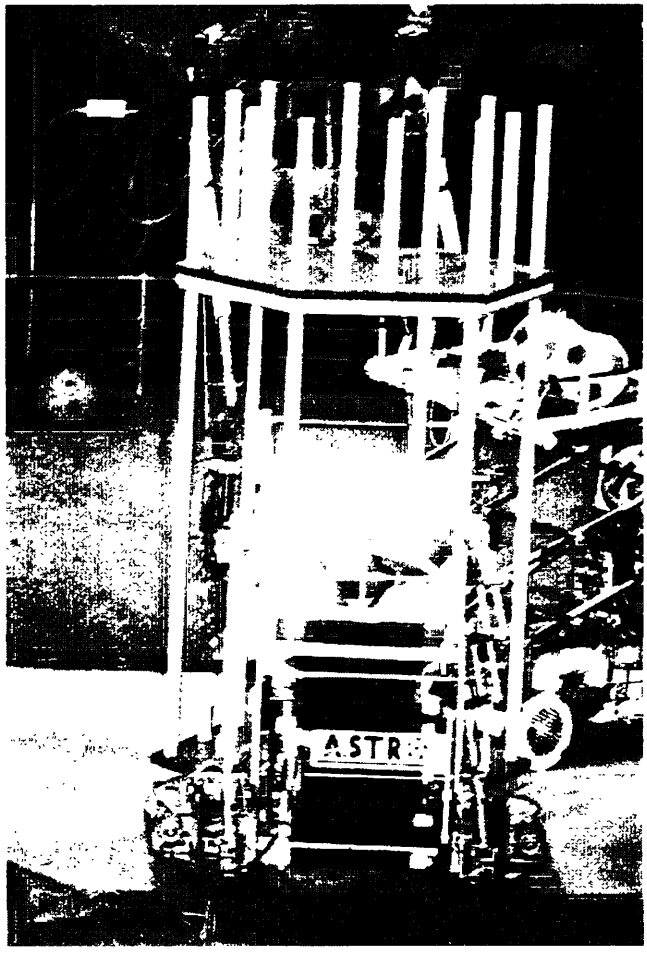
Peter J. Murray, Model Development Manager
NASA Lewis Research Center



Fifteen engineers, designers, technicians, and professionals from NASA Lewis Research Center teamed with 30 students from eight high schools in the Cleveland, Ohio area to form Team A.S.T.R.O. The combination of students from urban and suburban, public and parochial schools strengthened the team by allowing a variety of viewpoints and concepts to be expressed and explored in constructing the machine. In addition, U.S. FIRST had greater exposure in the Cleveland area and will allow a number of teams to 'hit the ground running' in 1995.

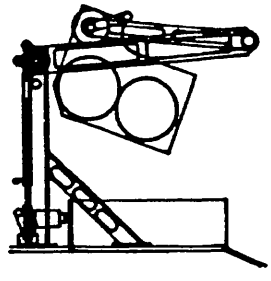
The U.S. FIRST Competition is a great way to energize and revitalize both the school system and the business organization. It allows students with a variety of backgrounds and interests and professionals from different functional areas to share their strengths and learn to appreciate others' ideas in a fast-paced environment with a focused objective.





"It was a real team effort. We learned a lot and I'm really looking forward to next year."
David Boyce, Sophomore
Parma Senior High School

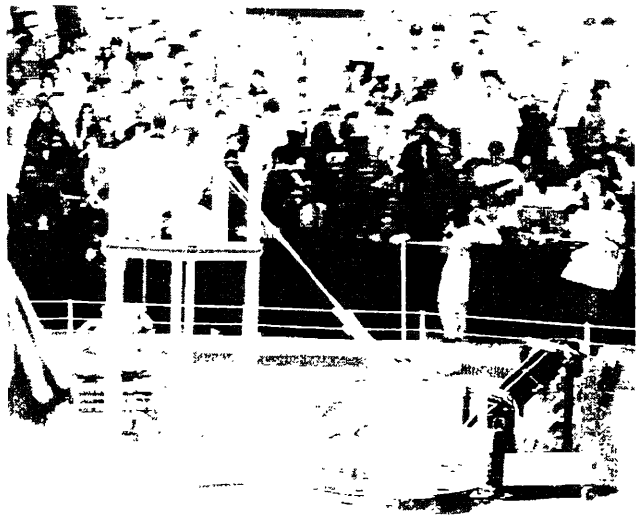
"Involvement in U.S. FIRST proved to be an outstanding experience for our students. Our sincere compliments to all of you for a job very well done."
Theodore G. Barto
Principal, Strongsville High School

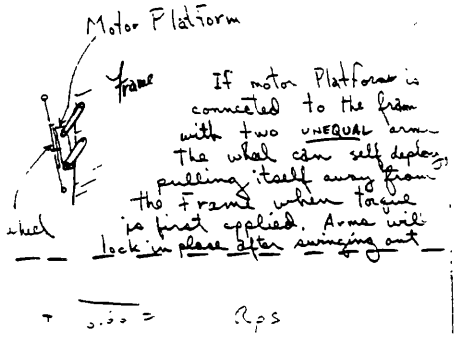


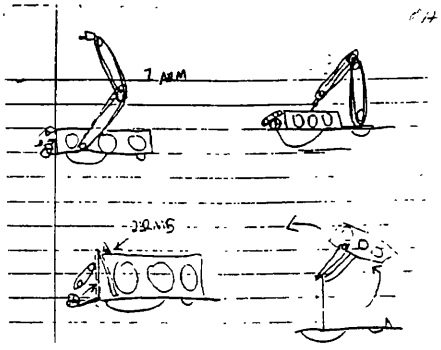
The Flying Springs

Symbiosis Corporation Miami Springs High School
Miami Springs, Florida

Procter & Gamble Creativity Award

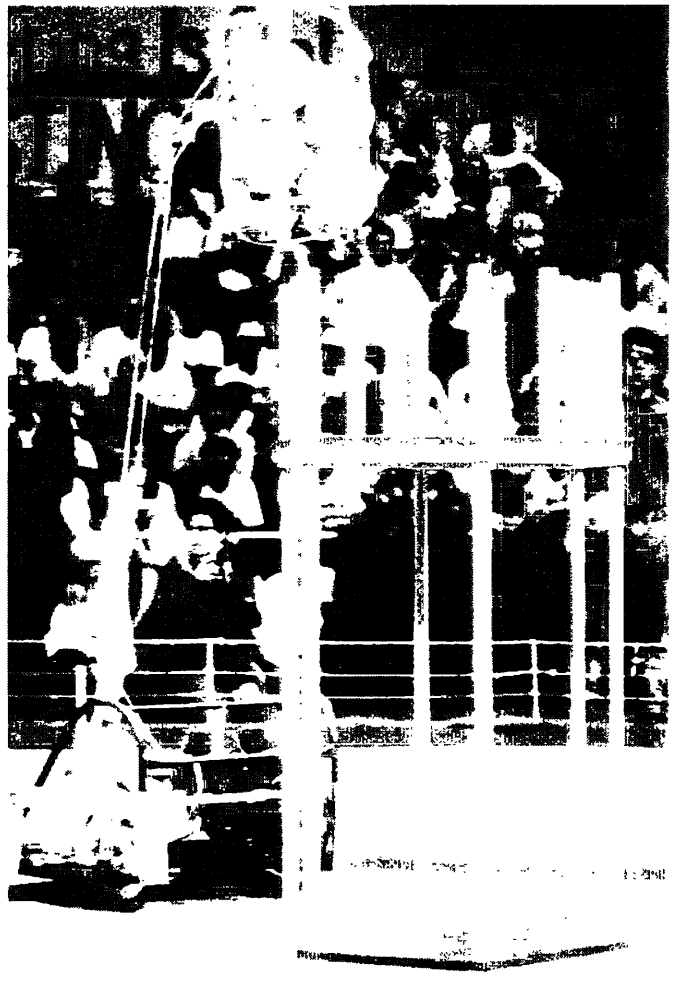


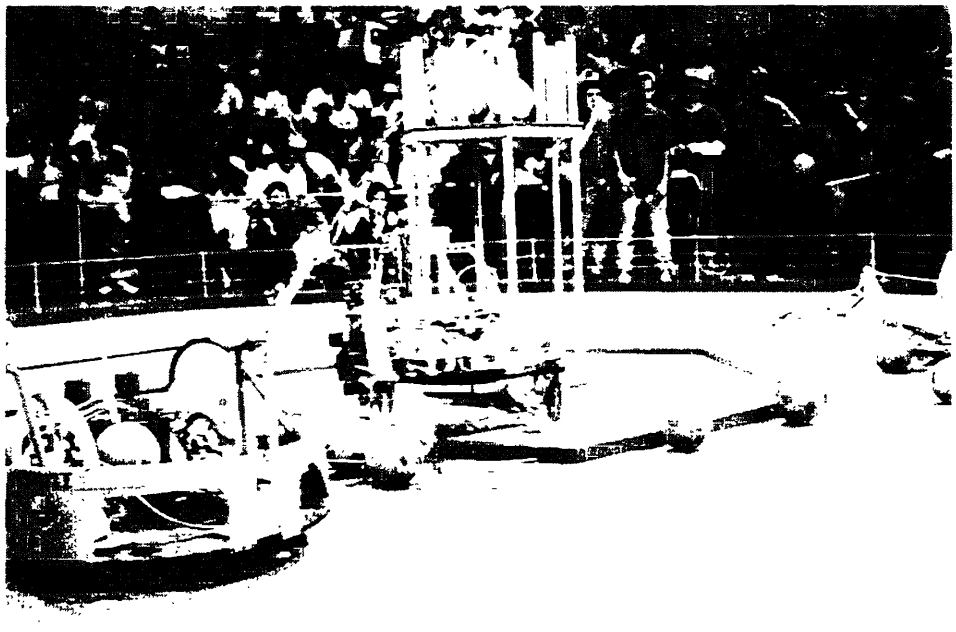


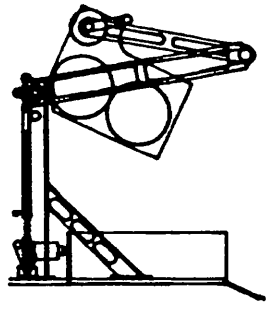


We began by introducing the high school students to basic engineering in October of 1993. We had two teams of 15 students come twice a week while different staff members discussed likely strategies and past competitions such as course #270 at MIT. We built a go cart frame and played with remote control systems.

The students from Miami Springs High School can be described as academically superior and inexperienced in basic mechanics. None of these students could relate to stories about our high school days when we would buy and fix our own 'beater cars.' On the other hand, the students were impressed with our machine shop and went through considerable effort to be present during critical stages of manufacturing. They also assisted in the CAD design of robot parts and graphic design of the logo as well as spreadsheet budget analysis.







The I Omegas

Navi Dowty & Associates, Inc. D.C. Everest High School
Wausau, Wisconsin

Chairman's Award Finalist
Motorola Quality Award:

Robot required no repairs during competition.

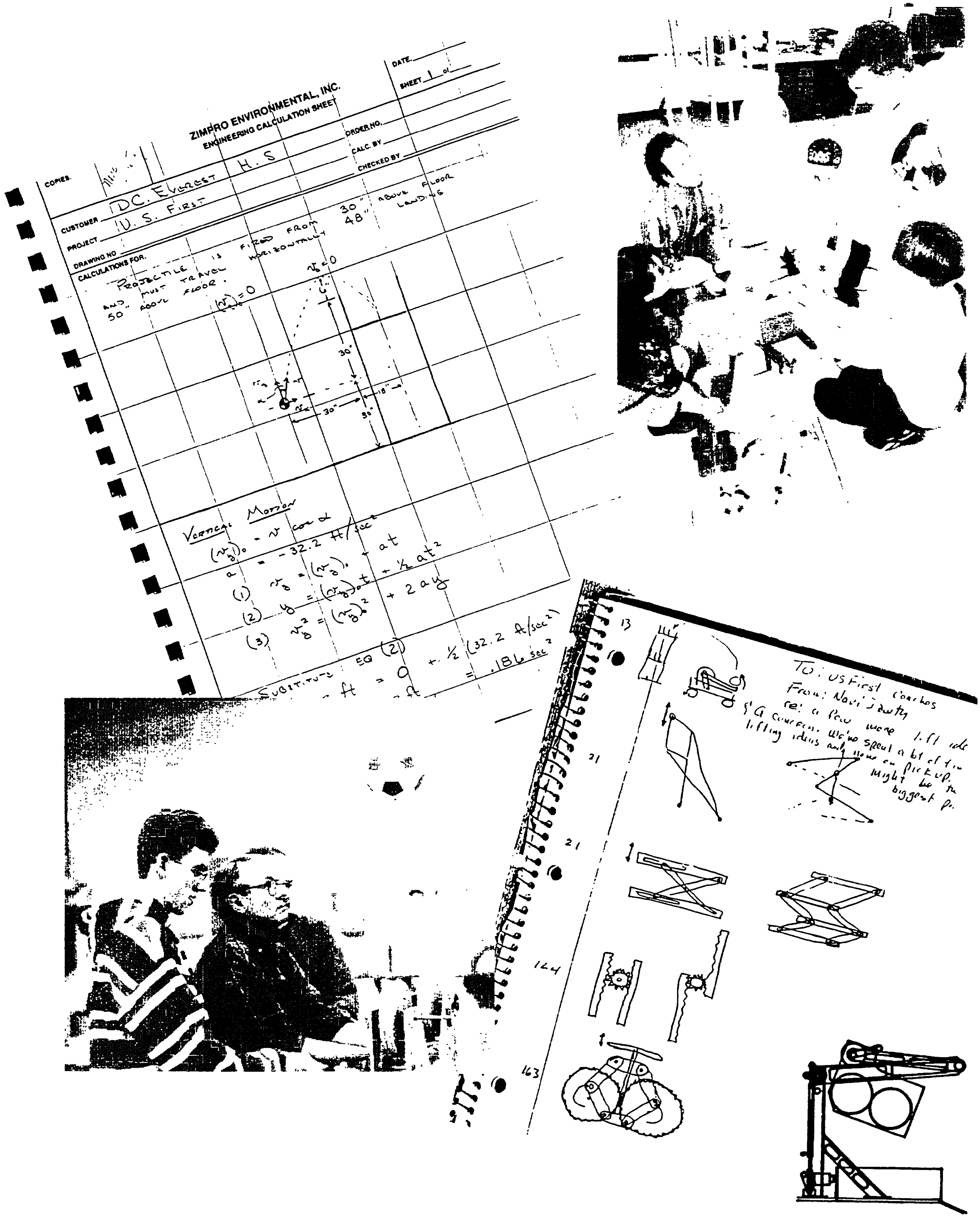
The I Omegas Team is made up of 12 students from D. C. Everest High School and six advisors/engineers/scientists from the local area. We have made this a community coalition project with advisors from local companies, the high school, and our local university campus. Primary funding was provided by Navi Dowty and Associates, Inc., with additional help from the Wausau Area Community Foundation and the Wisconsin Public Service Foundation. Engineers and scientists from Zimpro, Wisconsin Public Service, the University of Wisconsin - Marathon Campus, and a retired engineer, Rudy Horsch, from the now closed J.I. Case area plant lent their expertise.
Our machine was built at the D. C. Everst School Technical Education Shop.

"I think they can see what can be done. I hope they get the excitement (of engineering), particularly when they see something running."

Rudy Horsch, Engineer, retired

"It's neat because it really forces the kids to think like little 'MacGuyvers.' They have to try and try again and it gives them a little more appreciation when they hop into a car."

Mark Brehmer, Teacher, Technology


ZIMPRO ENVIRONMENTAL, INC.
ENGINEERING CALCULATION SHEET
DATE
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ORDER NO.
CALC. BY
CHECKED BY
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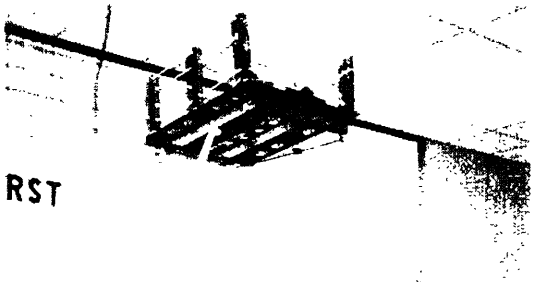
CUSTOMER
PROJECT
DRAWING NO
CALCULATIONS FOR
DC. Everest H. S
U. S. First
Vertical Motion
To: US First Coaches

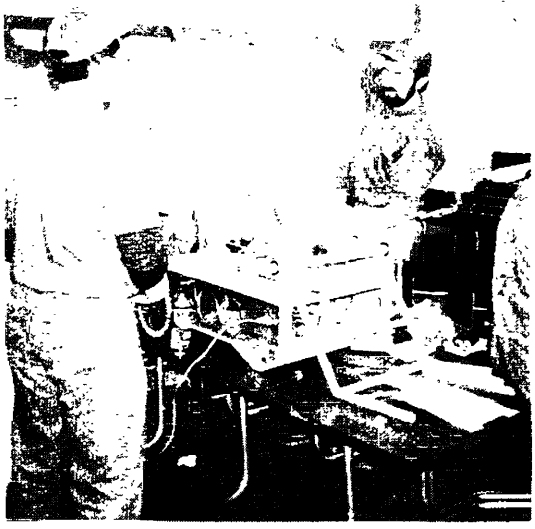
The Sonic Boom

The Boeing Company Bellevue High School
Bellevue, Washington

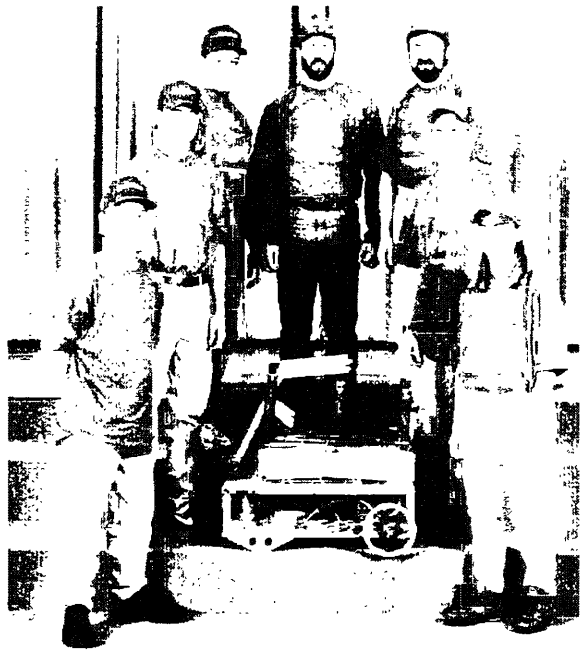
We (the students and engineers) started with "hair brained" ideas of how to score in the upper goal and turned them into a practical, robust and efficient machine. A machine equal to all at the competition.

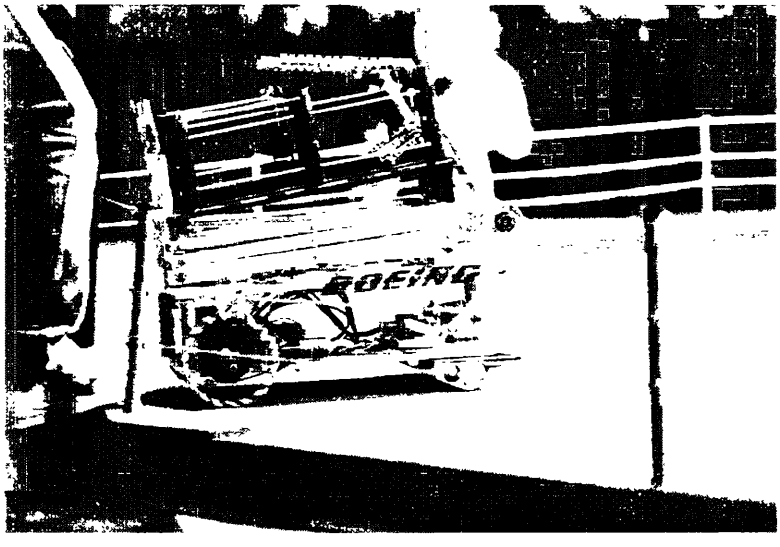


There were many machines that raised a platform of balls up to the top goal and dumped them in. Others took the approach of shooting or tossing the balls into the goal. There were also machines there that utilized a conveyor belt system.

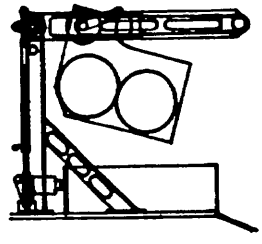


Even though many of the approaches were the same, I did not see any two machines that were exactly alike. The most interesting thing that I found was that everybody focused solely on the upper goal.





The Boeing/Bellevue High School team did not win the competition itself, but we won in terms of what the competition is supposed to achieve. The students got a real taste of what science and technology is like outside the classroom. They were also exposed to "real world" situations of time management and decision making.



Hot Shots

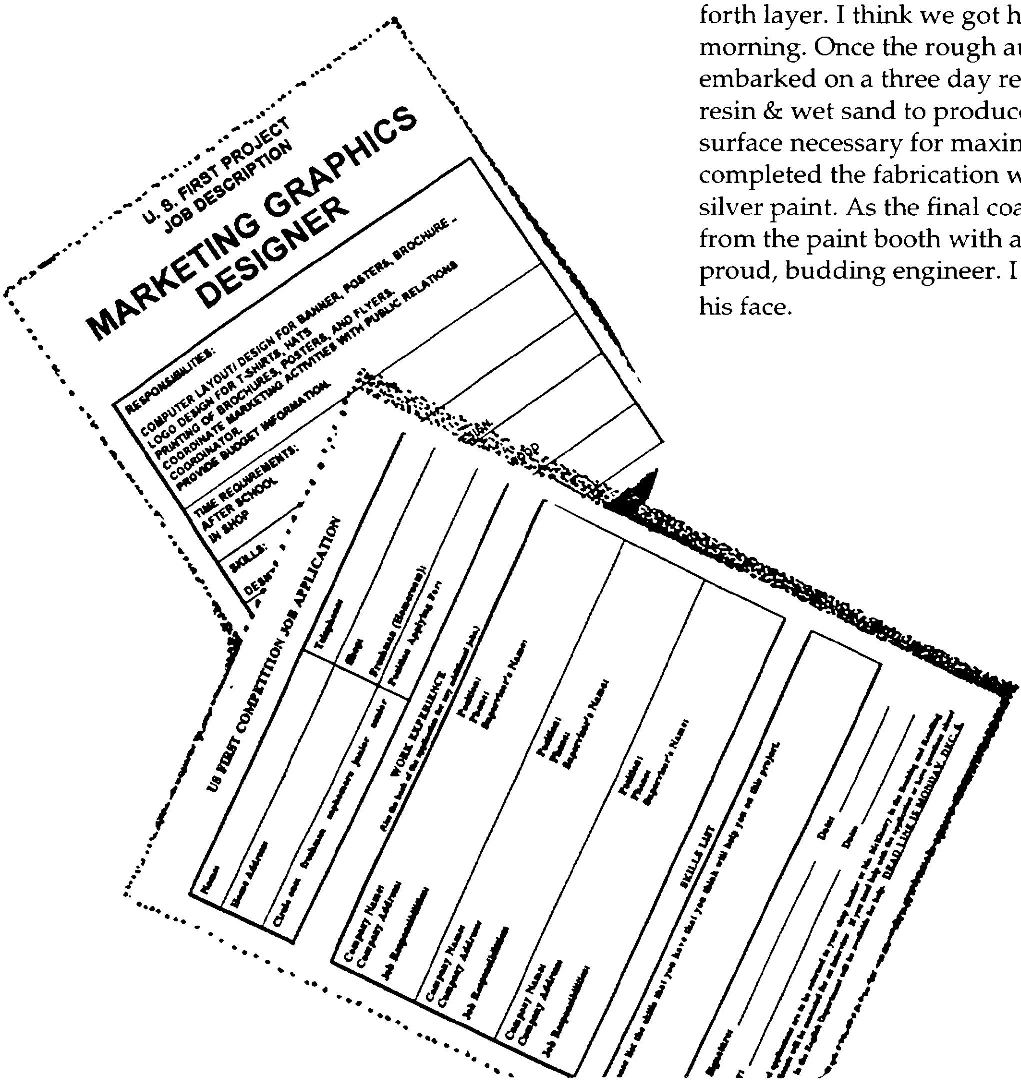
Bose Corporation Assabet Vocational Technical High School Framingham High School
Framingham, Massachusetts

Most Creative Design Award

The Auger:
One of the more striking features of this year's machine was the 'Auger' ball delivery system. Once the concept was developed, the lead student engineer on the Auger Team, Chris Gumee, extruded the 3-D helical profile to scale. He then down loaded the profile to the CNC machining center and with the assistance of our lead machinist, observed hard foam blocks being machined to this profile. Chris then assembled the blocks in the proper orientation so they became the form on which the fiberglass was to be laid.

To maximize the 'engineering-is-fun' factor on this year's machine, a cannon to shoot the balls was decided on as our point scoring concept. The lead Student 'Cannon Engineer,' Nick Maddix developed the trajectory profiles, cannon angles, and energy requirements for a system that could score short shots (5 ft) as well as long shots (17 ft). After several prototypes, Nick settled in on a design, which he then fabricated on his own. Nick really caught the design-build bug. We were regularly chasing him out of the machine shop at 3 a.m. For a student at any level Nick generated first rate design work. He impressed us all so much that he now has a full-time summer job in our OEM development group.

It's important to note that up until now, the most Chris knew about fiberglass was that it was really tough plastic stuff you could mold into things like boat hulls. By 11 p.m. that evening, Chris had completed 'laying up' three layers of fiberglass and resin on the form. At that point, his fiberglass instructor, a Bose engineer, informed him that three layers was probably good enough, but if he wanted to add a forth layer it would have to be done before the resin on the current layers was to cure...that night. Without missing a beat, Chris began applying the forth layer. I think we got him home before 3 a.m. that morning. Once the rough auger was cured, Chris embarked on a three day repetitive process of applying resin & wet sand to produce the smooth, low friction surface necessary for maximum screw efficiency. He completed the fabrication with several coats of a gloss silver paint. As the final coat had dried, Chris emerged from the paint booth with a glistening Auger in hand, a proud, budding engineer. I will never forget the look on his face.



U. S. FIRST PROJECT
JOB DESCRIPTION

MARKETING GRAPHICS DESIGNER

RESPONSIBILITIES:
COMPUTER LAYOUT/ DESIGN FOR BANNER, POSTERS, BROCHURE
LOGO DESIGN FOR T-SHIRTS, HATS
PRINTING OF BROCHURES, POSTERS, AND FLYERS.
COORDINATE MARKETING ACTIVITIES WITH PUBLIC RELATIONS
COORDINATOR.
PROVIDE BUDGET INFORMATION.

TIME REQUIREMENTS:
AFTER SCHOOL
IN SHOP

SKILLS:

US FIRST COMPETITION JOB APPLICATION

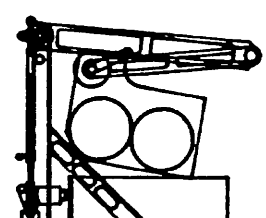
Name
Home Address
Telephone
Shop
Freshman (Homeroom)
Position Applying For

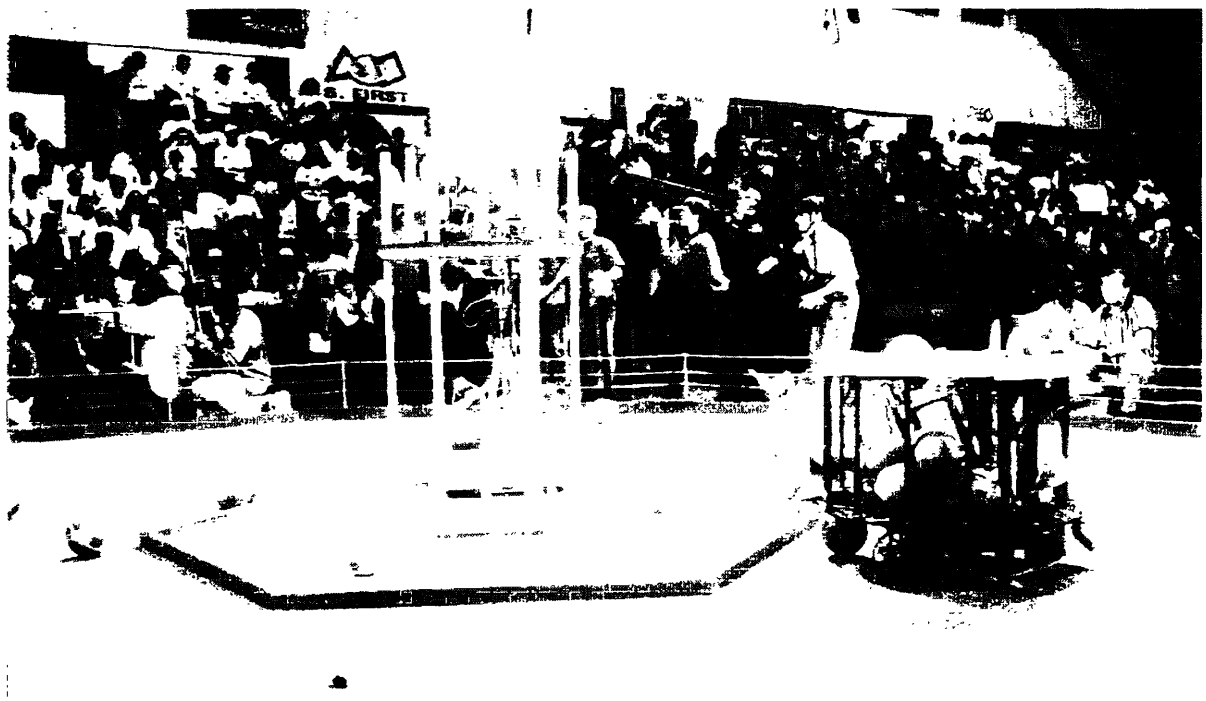
WORK EXPERIENCE

Company Name
Company Address
Job Responsibilities
Position
Supervisor's Name

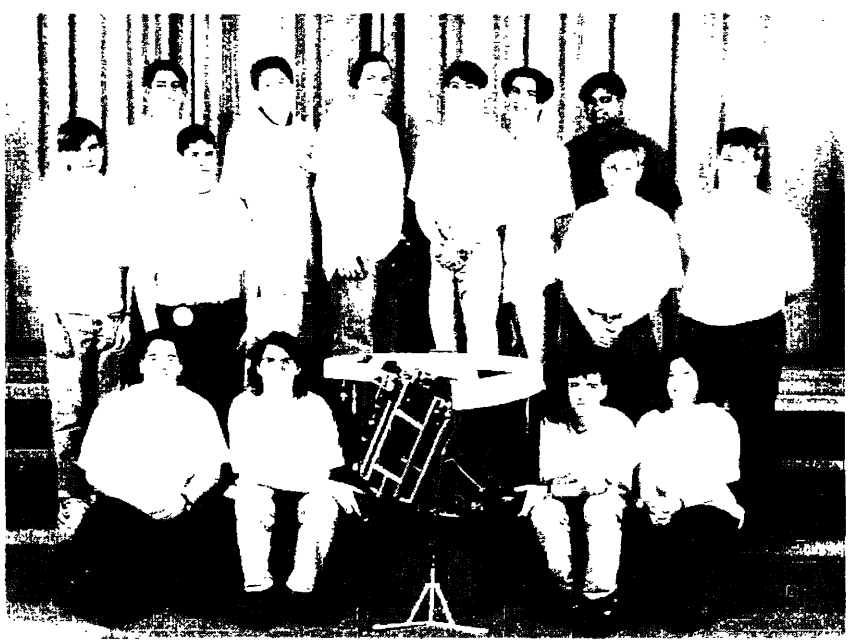
SKILLS LIST

Signature
Date





What made this year's effort so rewarding was that over 50% of our machine was designed, detailed, fabricated, assembled, and debugged by our students! Many of them had little or no practical experience in such areas as design, drafting, machining, welding, painting, etc. The students' abilities to overcome these deficiencies made their contributions to the machine all the more impressive.

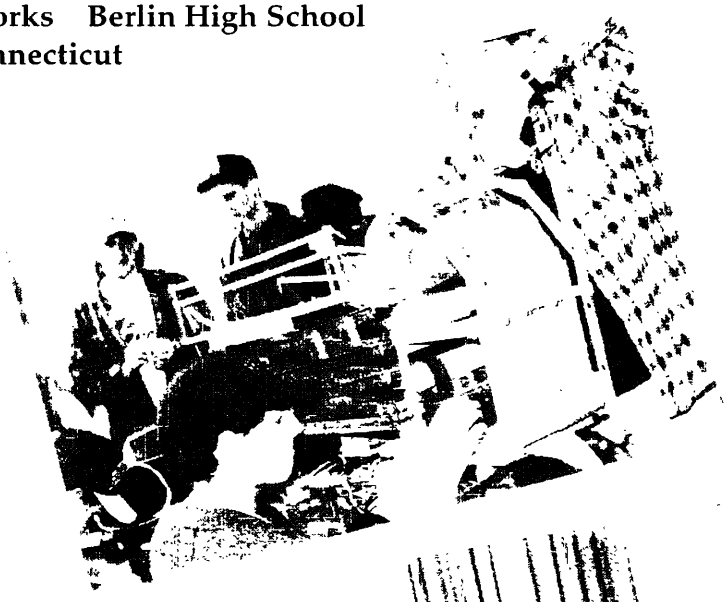


"No matter what you do, you can't lose."

Dave Baker, Equipment Design Manager

ARES (Astounding Redcoats Equipped by Stanley)

Stanley Works Berlin High School
Berlin, Connecticut

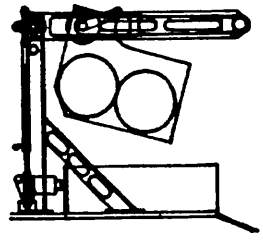


"I got a lot of experience in problem-solving. I can make just about anything now."
Mark Gajewski, Student

"It's given me a different perspective of kids and their capabilities. Some of these kids are really, really, outstanding."
Tom Giove, Stanley, Electronic Design Engineer

"No one could have built this by themselves. Everybody has to work to make the team work."
Huai Chen, Student

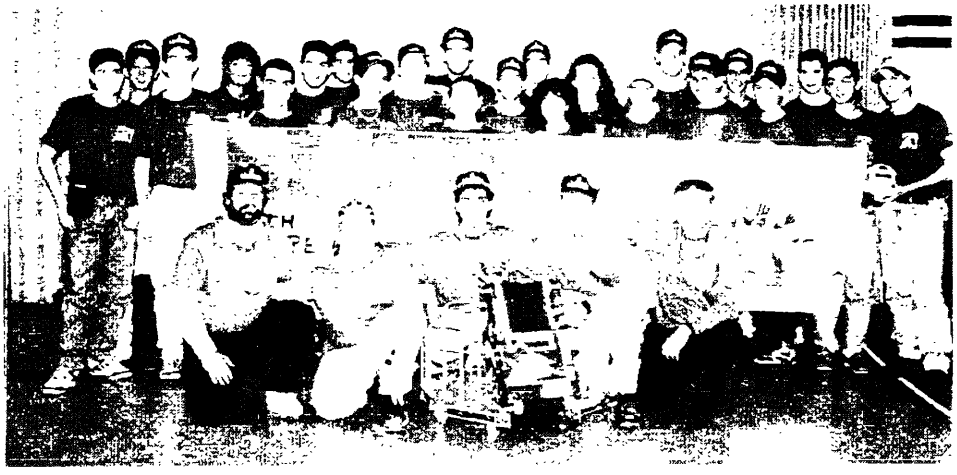
"I learned stress management."
Brian Spendolini, Student, robot operator

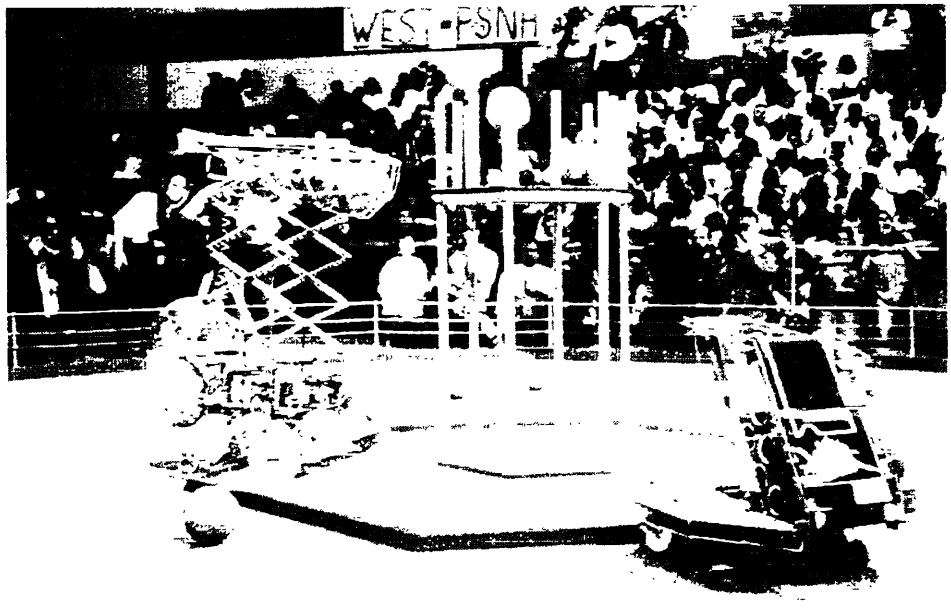


Freudenberg-NOK

Memorial High School Manchester, New Hampshire

The quality program embraced by Freudenberg-NOK, GROWTTH (Get Rid of Waste Through Team Harmony) has been incorporated into our U.S. FIRST team program. Similar to its purpose in our plants, we adopted it to further intensify the focus on lean, efficient development and to further promote a team atmosphere. Each member of the team was given a GROWTTH polo shirt to be worn when working on the program. Time was allotted to inform students as to the purpose of GROWTTH and how it has helped increase productivity and profitability at Freudenberg-NOK over the past years.

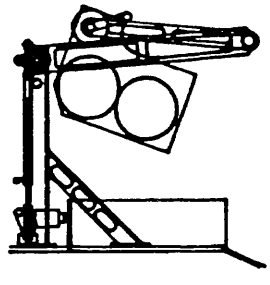




After practicing for several days in our facility at home, our team was fairly confident that our machine was robust and that it would prove to be a competitive threat. However, after we unpacked our machine and began formal practice rounds, our machine developed a significant problem: it could not properly launch balls the required height into the three point goal. After spending the entire practice day trying to debug the problem, two engineers resolved the problem and devised a simple solution during a brief conversation on their drive home that evening. The next morning the fix was implemented a few minutes before the seeding competition was to begin.

U.S. FIRST was one of the most rewarding events we had ever seen and/or participated in.

It was the energy that was present in the Nashua High School gym that made us all proud of our accomplishments and that gave us a true appreciation and respect for all of the teams who had worked to be there.



Little Green Gems

General Electric Aircraft Engines Macy Industries Central High School
Manchester, New Hampshire


Manchester High School Central

Certificate of Recognition

for participation in the

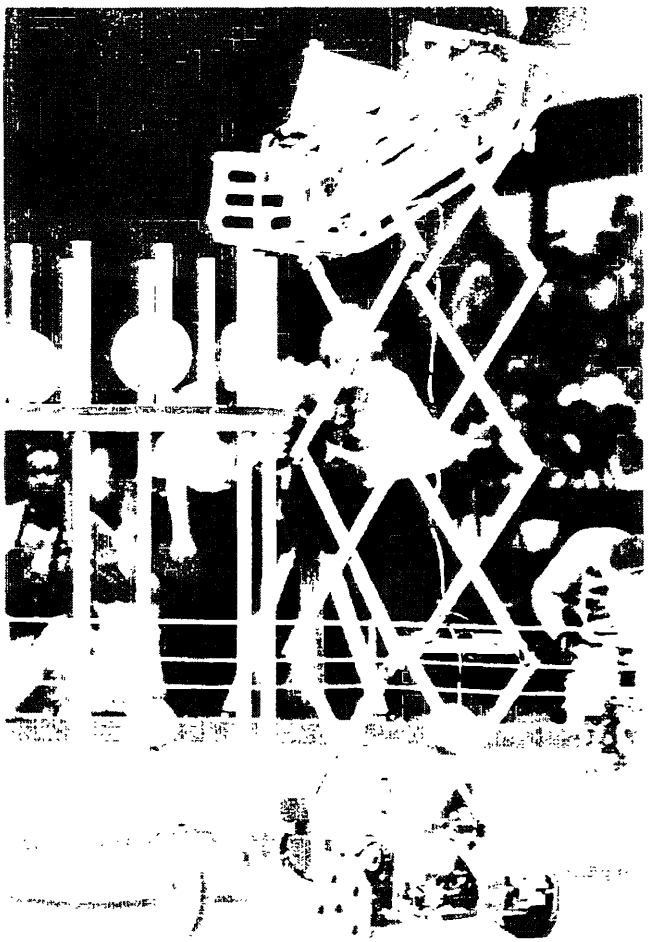
U.S. FIRST 1994 Competition - "Tower Power"

Brian A. Desfosses

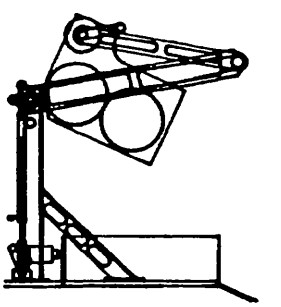
February 24-26, 1994

The above named individual is recognized for his/her participation in this engineering competition. This competition has the expressed goals of making students aware of the vast opportunities available in the field of engineering design and production. To that end the participants have been exposed to all the aspects of problem solving techniques in the sciences, to include brainstorming, collaboration, modeling, prototype production, manufacturing machinery and procedures, incorporation of strategies, system testing and redesign. The participants are hereby commended for their individual efforts to further the progress of science education for themselves and their dedication to the accomplishment of program objectives and outcomes reflect great credit upon themselves, their families, and their community.

Roland C. Blanchard
Principal



Two General Electric Aircraft Engines engineers, Macy Industries, three Central High teachers and their team of more than 30 students make up the "Little Green GEMS" team. The GEMS divided into eight groups to attack the challenge of "The Tower." Male and female students from freshman through senior levels worked on the Vehicle System, Capture System, Lift System, Electrical Power System, Art Design & Ad, Project Coordination, Safety, and/or Rules and Regulations groups. Multiple brainstorming sessions produced five prototype models before the 'polished GEM' was begun the first of February.

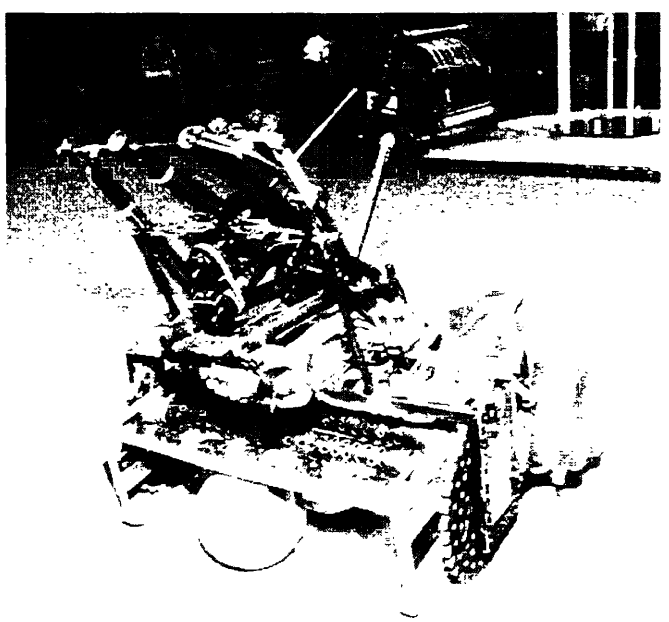


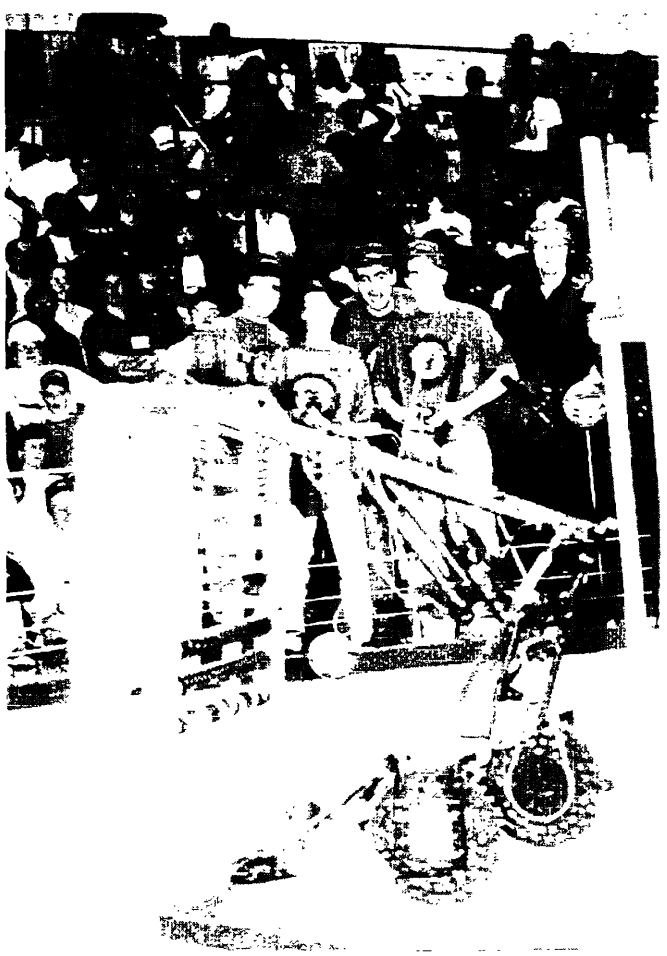
The Cardinals

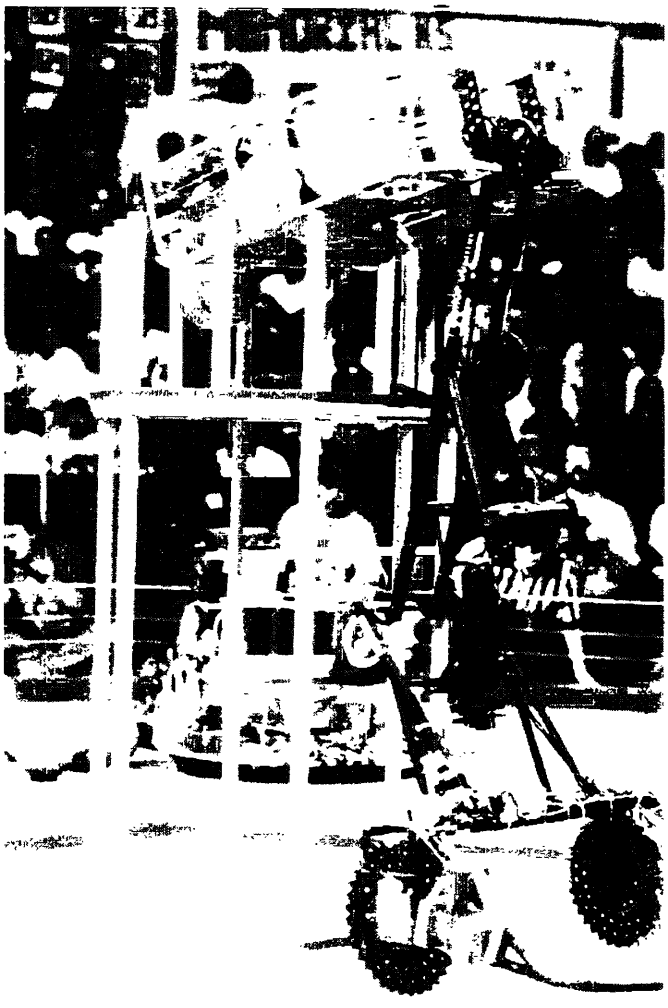
Ingersoll-Rand Company Bishop Guertin High School
Nashua, New Hampshire

National Semifinalist

Recipient of $2,500
First NH Bank Scholarship

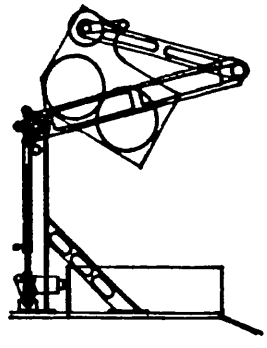






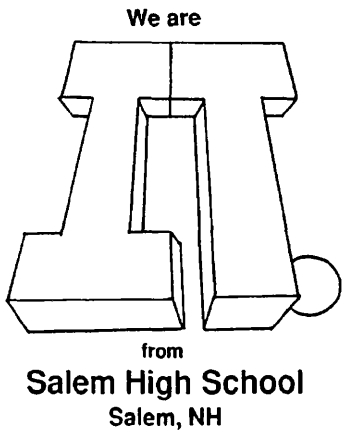
This team was originally organized to maximize effort and student/staff interaction; to minimize working extra hours at the last minute; to provide student team members with real 'day-to-day' situations and to get the drafting, manufacturing, and engineering departments to interact by working together to achieve a common goal.

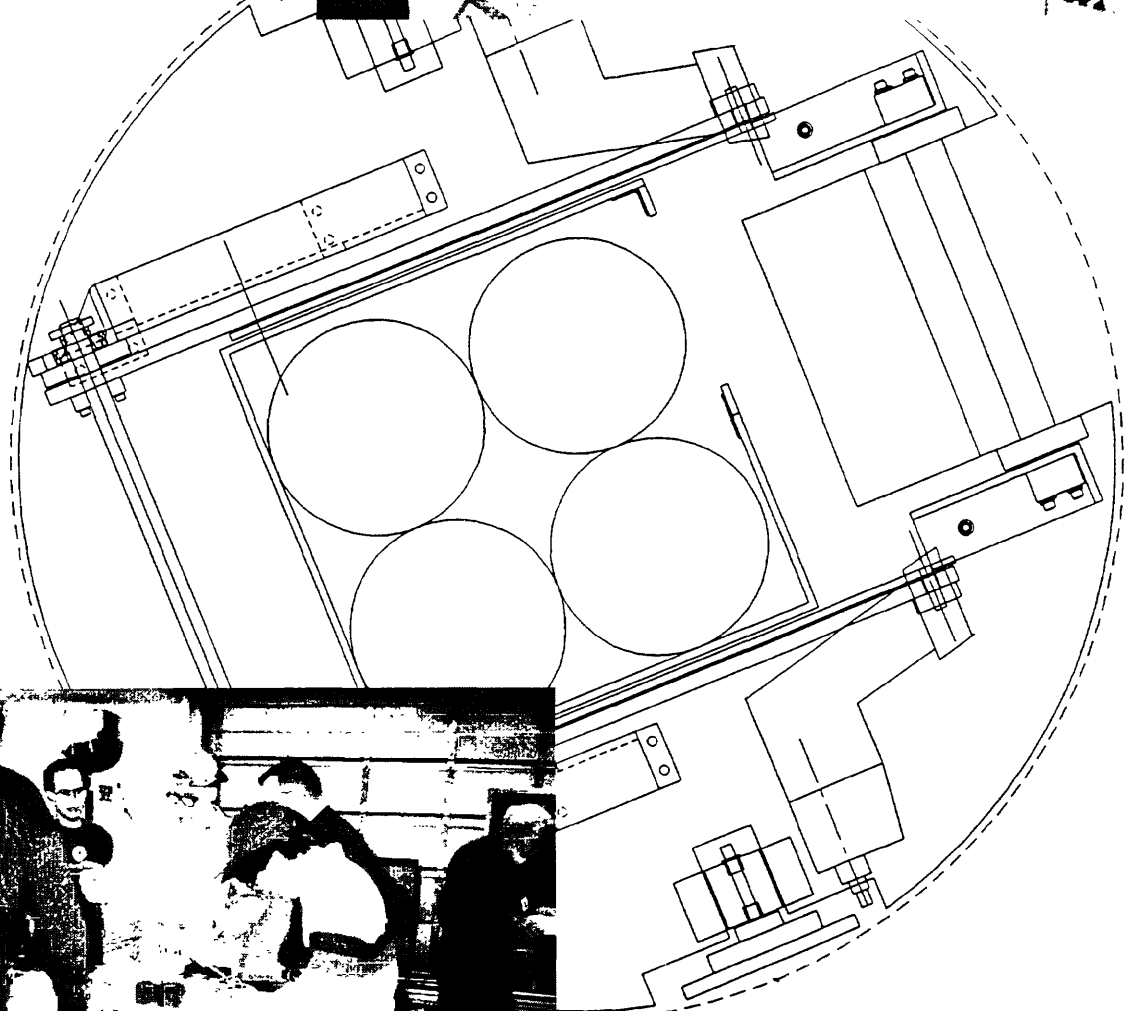
We have fun! Our team spirit is profound and we work together as a complete unit!



IT

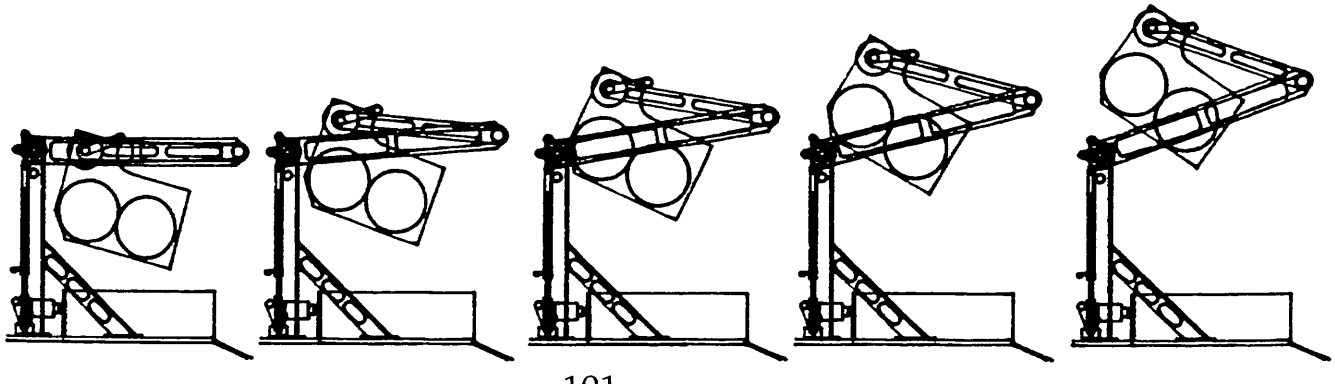
Johnson & Johnston Associates, Inc. Astro Precision Machine, Inc. Brooks Automation
Salem High School Vocational Department
Salem, New Hampshire





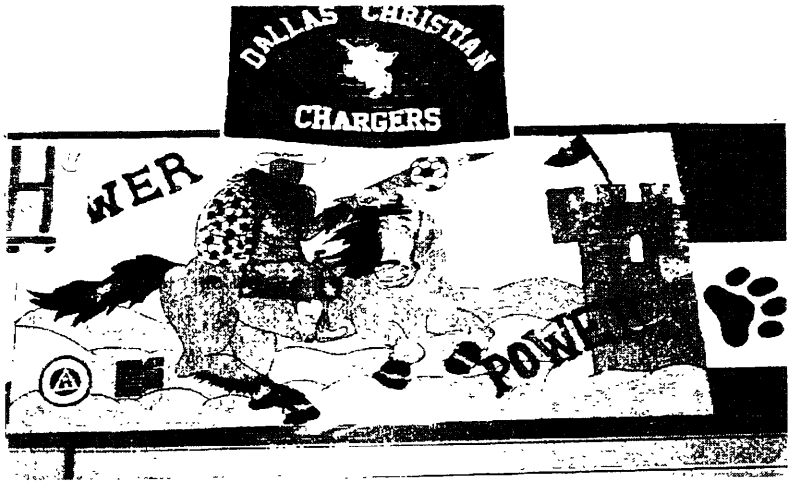
The Salem High School U.S. FIRST team is a joint effort of three company sponsors and the students of Salem High School. Preparation was begun in July of 1993 with a meeting of school and company representatives. It was decided to engage in an activity to build the team. Salem High School students and their sponsoring company partners spent six weeks together building a winning design float for the local Christmas parade. Even Rudolph and Santa are members of this team!
The Salem High School Vocational department provided a get acquainted dinner for students, parents, teachers and sponsors. All team members went on to visit the facilities of all three sponsoring companies. A proud Johnson & Johnston 'Santa' showed up with team jackets for students during their visit there. It's also been reported that Brooks Automation and Astro Precision 'elves' kept this team well fed during the building process.

Our team motto: "Yes We Can!"

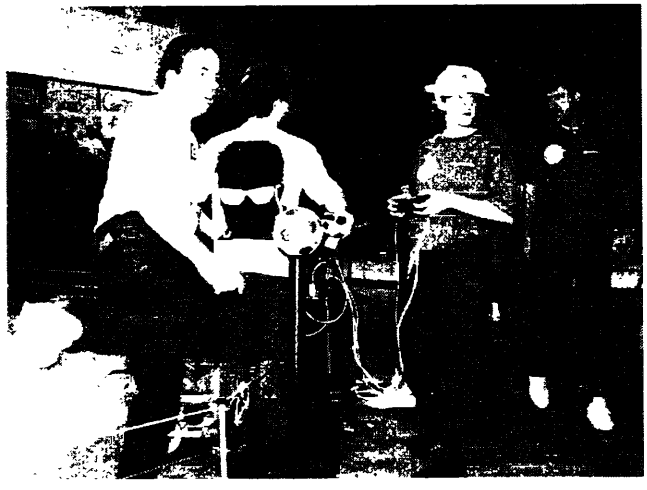


The Dallas Christian Charger

E-Systems Dallas Christian School
Mesquite, Texas

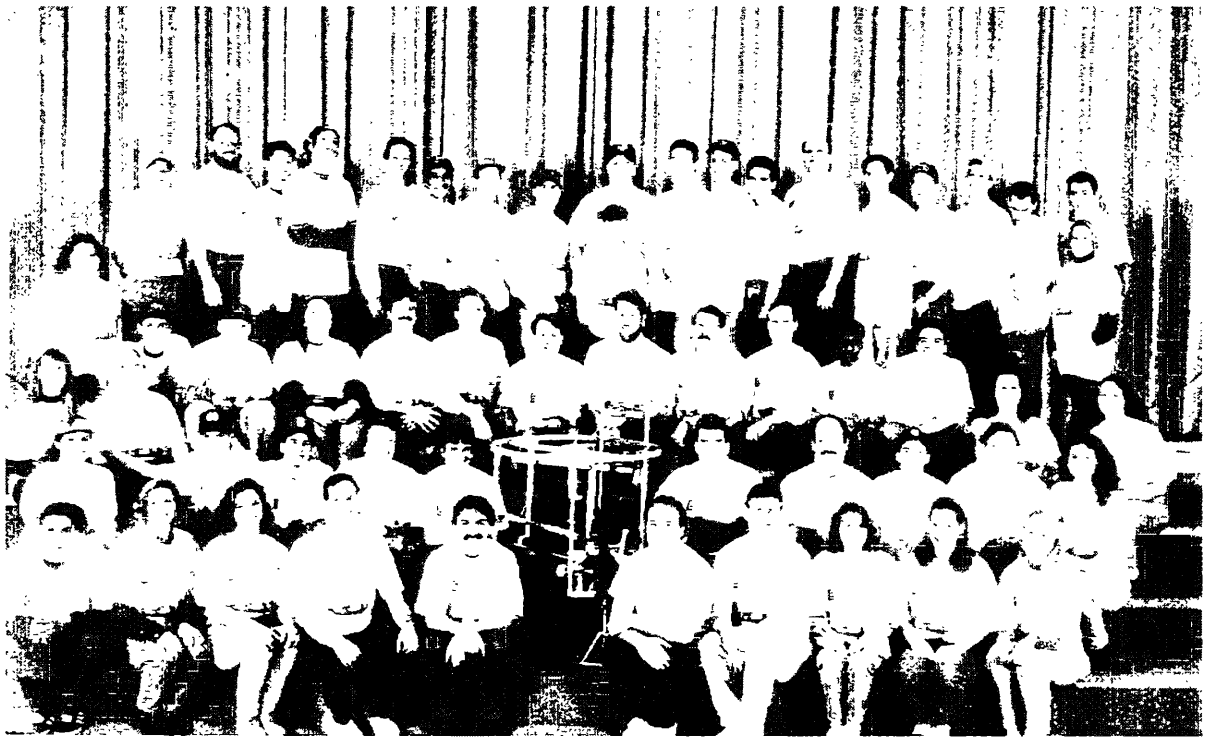


E-Systems engineers arrived at competition as sponsors of two rival teams. As sometimes happens when your heart is bigger than your ability to work 24 hours a day, seven days a week, for seven weeks, the machines arrived untested. Both E-Systems/Dallas Christian School and E-Systems/Greenville High School teams experienced serious machine failure. The engineers could have packed up and gone home. However, concern for their young teammates from both schools gave them the strength to dig deeper. Problem solving began in earnest. Evaluate each machine. Work all night. So intent was their effort, they did not realize they were being viewed as never before. Rival students pulled away unseen wanting to lift a tremendous weight from the shoulders of the engineers they shared and truly appreciated. A tap on the broad shoulders of the E-Systems engineers signaled that they had done enough. United, Greenville High and Dallas Christian School students recommended that the one most reliable machine be chosen. Two became one.

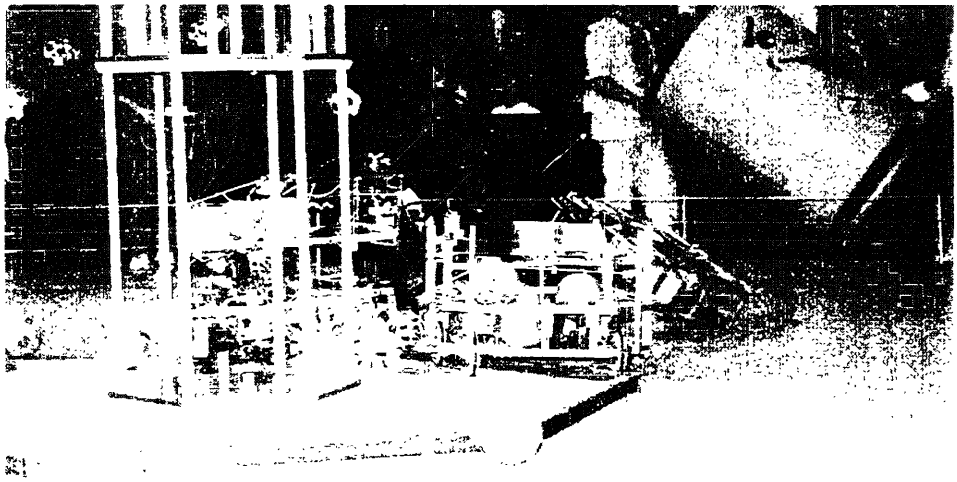


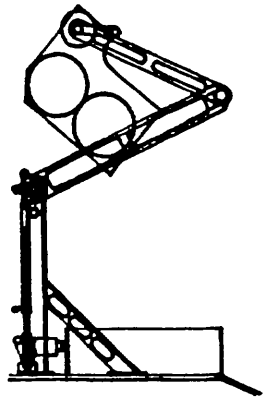
The Mystery Machine

E-Systems Greenville High School
Greenville, Texas



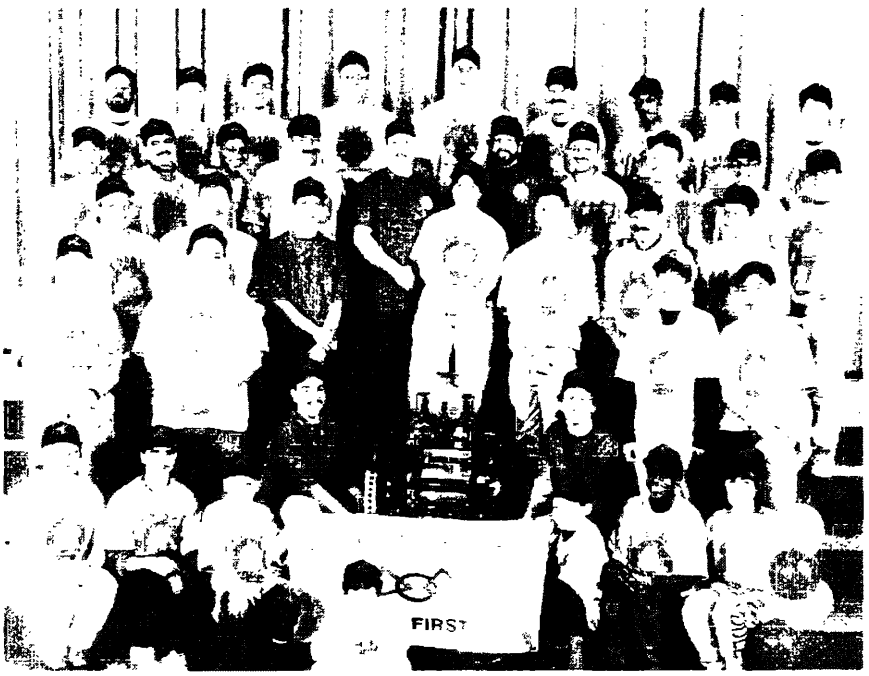
E-Systems Best Play of the Day Award





Edıak

Eastman Kodak Company Edison Technical and Occupational Education Center
Rochester, New York

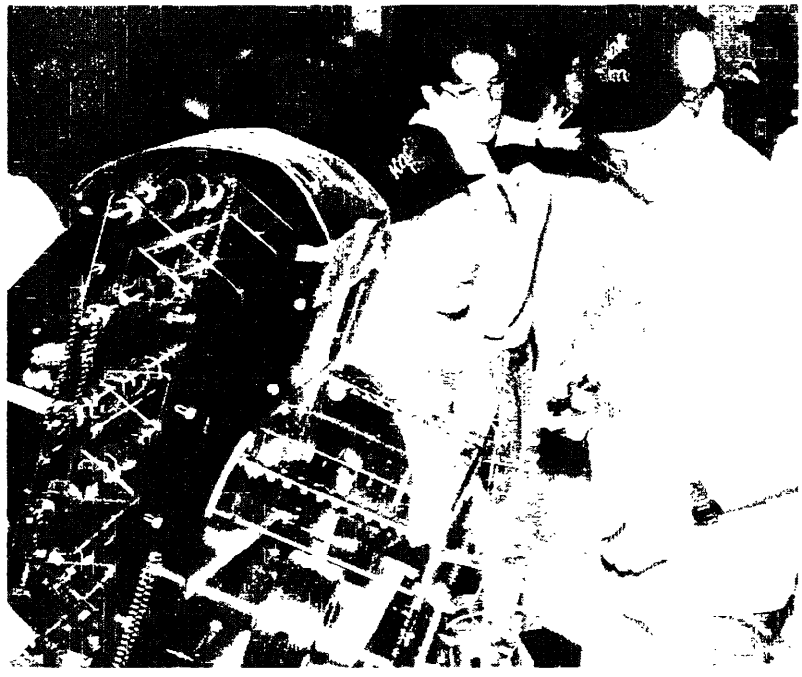


At any given time during our quest for solutions to this year's challenge, it was often difficult to tell just who was the student and who the teacher.

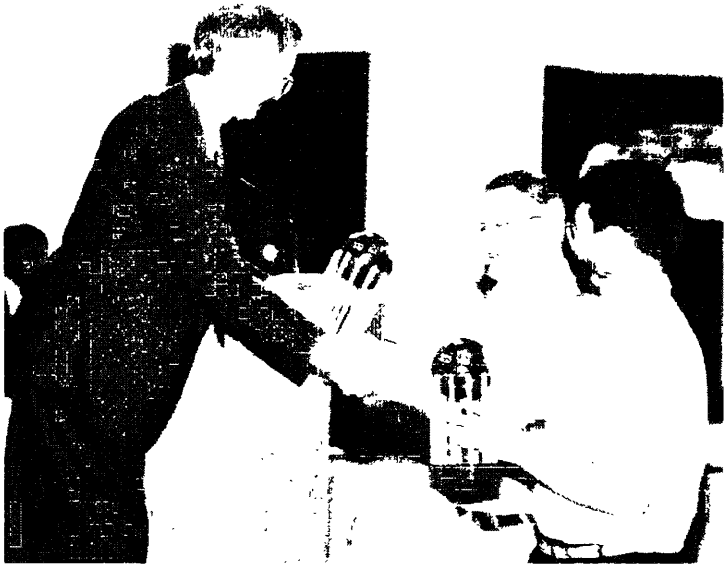
On the journey to inventing a machine that would move soccer balls, we created something that was not included in the original box of parts. We created a wonderful partnership.

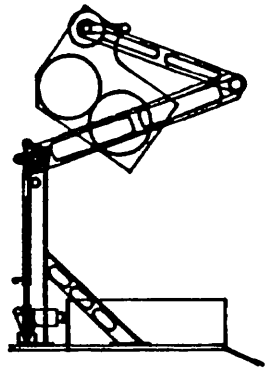
During last year's competition one student at Edison Tech. was dangerously close to dropping out of his senior year. His involvement with our team gave him the necessary motivation to finish high school. He is now in college studying to be an engineer.

Most Photogenic Award



Neighbors count.
The Eastman Kodak & Edison Tech. team kept their Rochester, New York rivals, from Xerox & Wilson Magnet High School, alive by intentionally scoring for their neighbors back home. 'Ediak' recognized during a shared match that the 'X-Cats' were in trouble after a hard hit. The damage was repairable and so the 'X- Cats' were able to experience one more round.

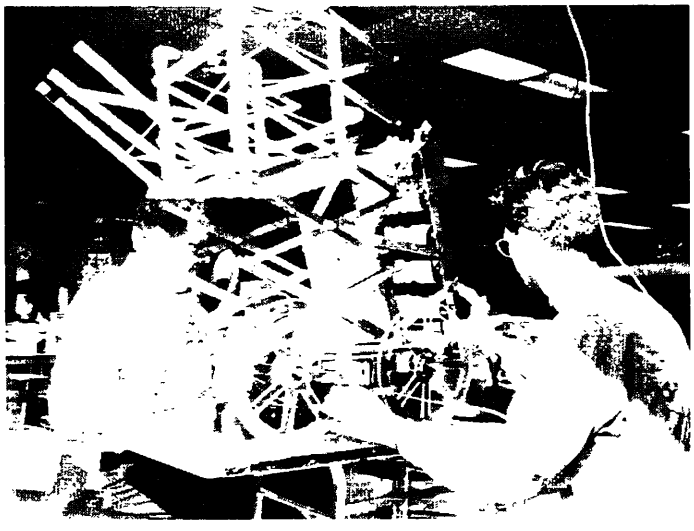


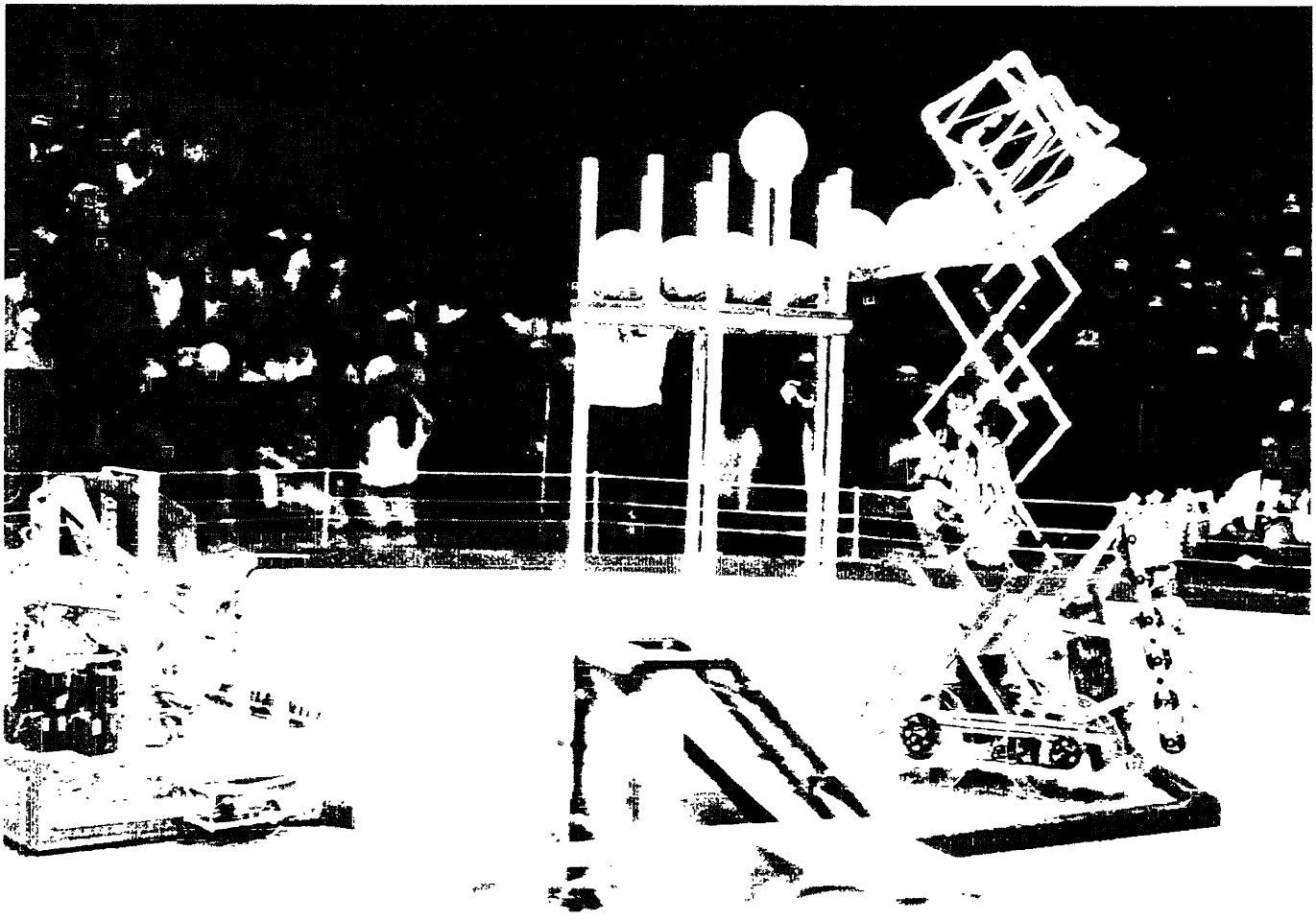


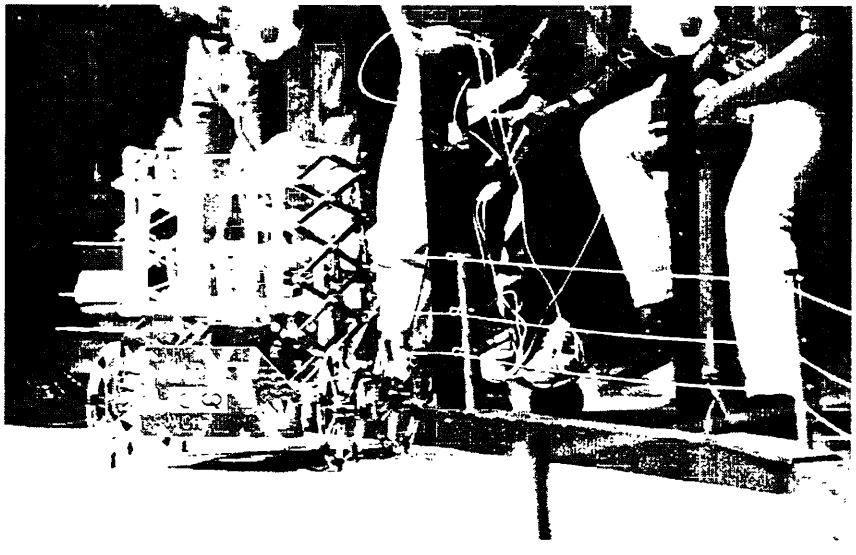
The Snapper

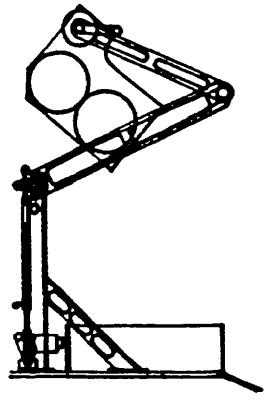
SMC Pneumatics,Inc. Ipswich High School
Ipswich, Massachusetts

This is the third year that 'The Snappers' have been a U.S. FIRST team. The team is comprised of two engineers, three teachers and ten students. Of the ten students, seven are Juniors who returned from last year's team.





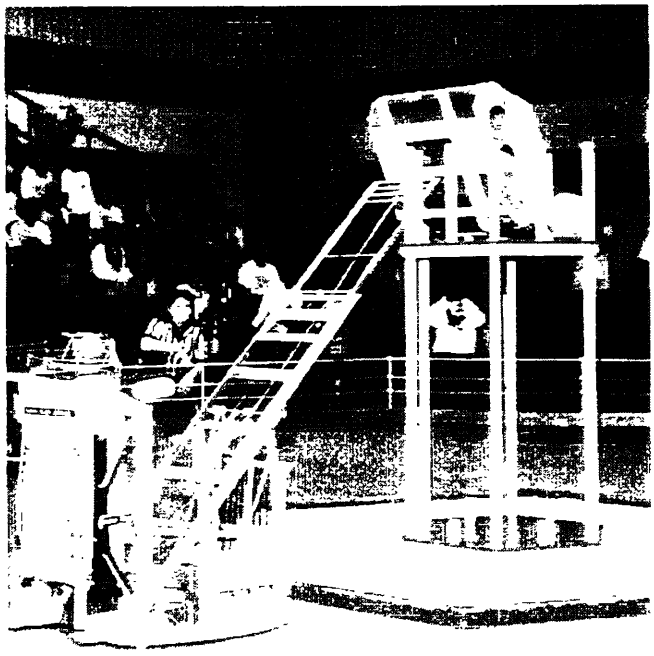




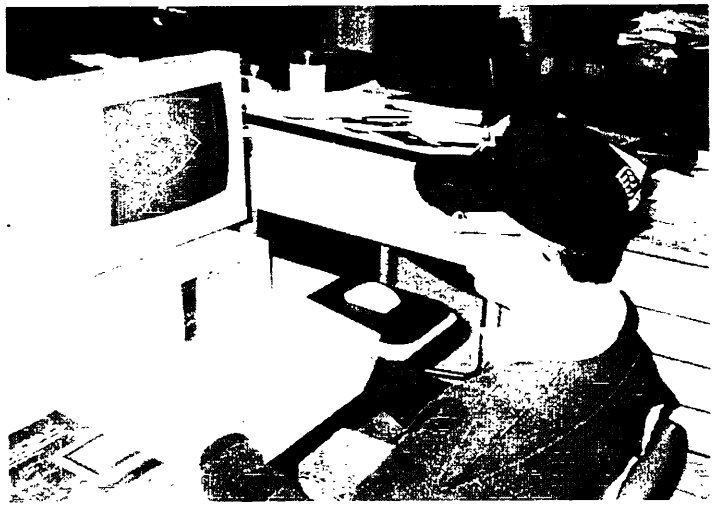
Son of Beast

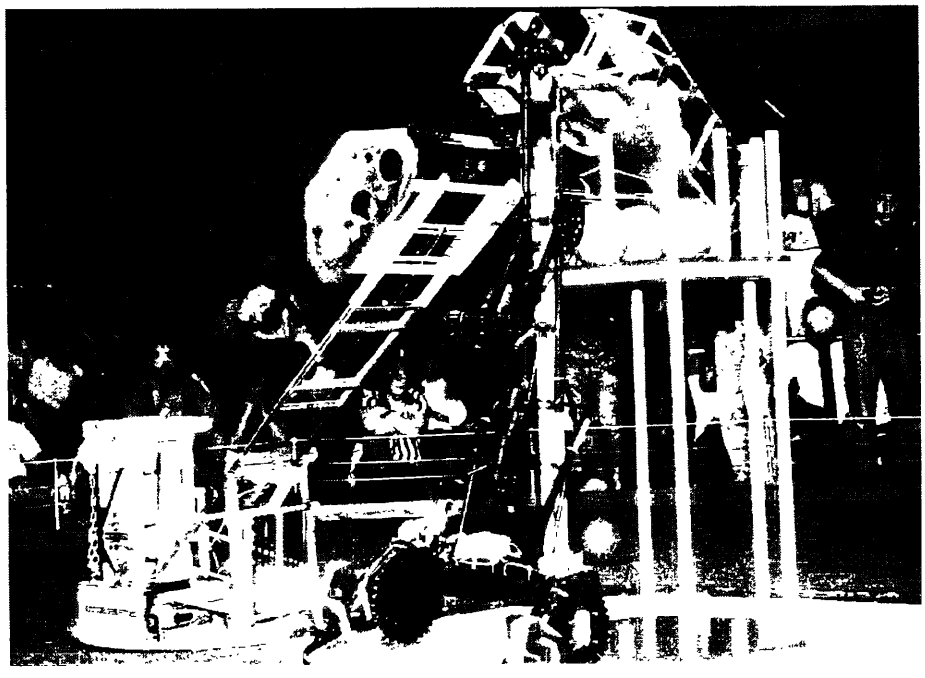
Markem Corporation Keene High School
Keene, New Hampshire

Number One Seed

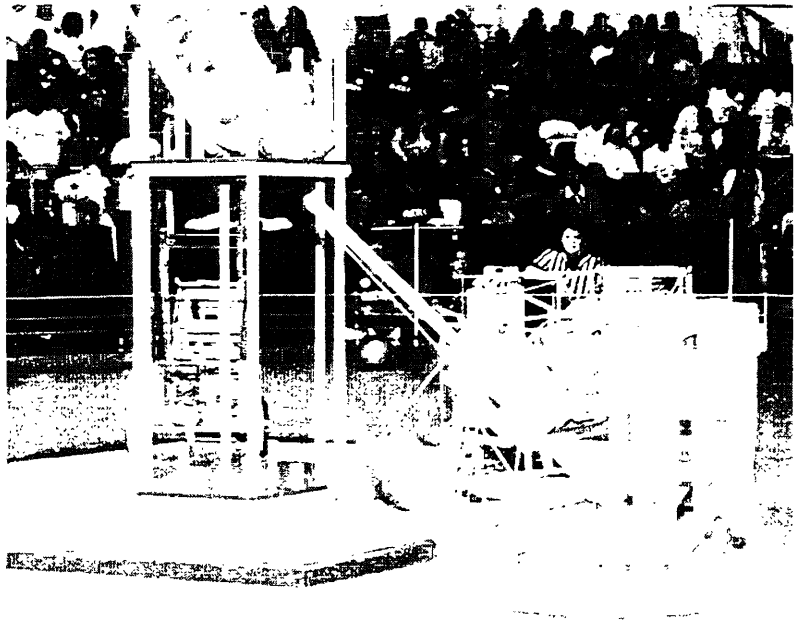


Our U.S. FIRST team consisted of five engineers from Markem Corporation and 60 students from Keene High School. At our first meeting, held before the Kick-off, we discussed the generic aspects of the competition: learning the rules, setting goals, defining a strategy, teamwork, project planning, out performing the opponents, and having fun. We emphasized the many ways students could participate in the project from designing and building the machine to organizing a promotional team and cheering section.



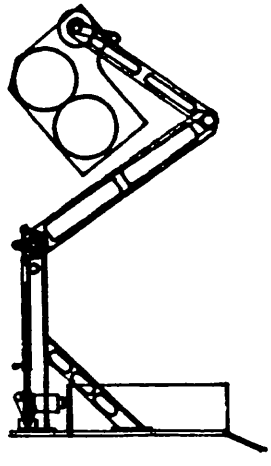


Mike Scholl is one of the 60 students who helped the Markem/Keene 'Son of Beast' team achieve the Number One Seed Position after an intense day of seeding competition.



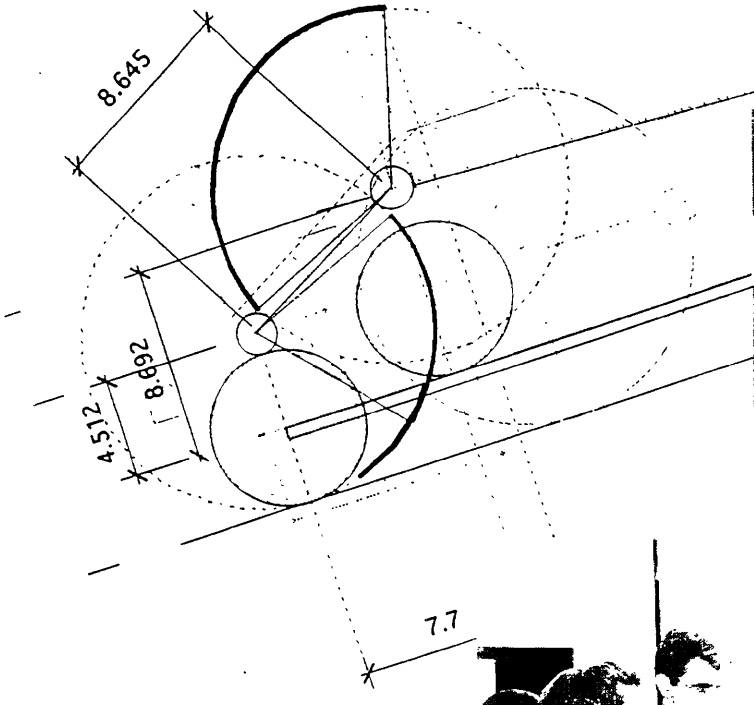
Mike was a 'Beast' on the 1993 'Rug Rage' team. Things were a little different before that. Lack of direction for a student can make school seem pointless at times and he'd experienced that. When asked about his U.S. FIRST experiences, he said. "I really liked it. Hands-on engineering is something I found really interesting. It gave me something to aim for."

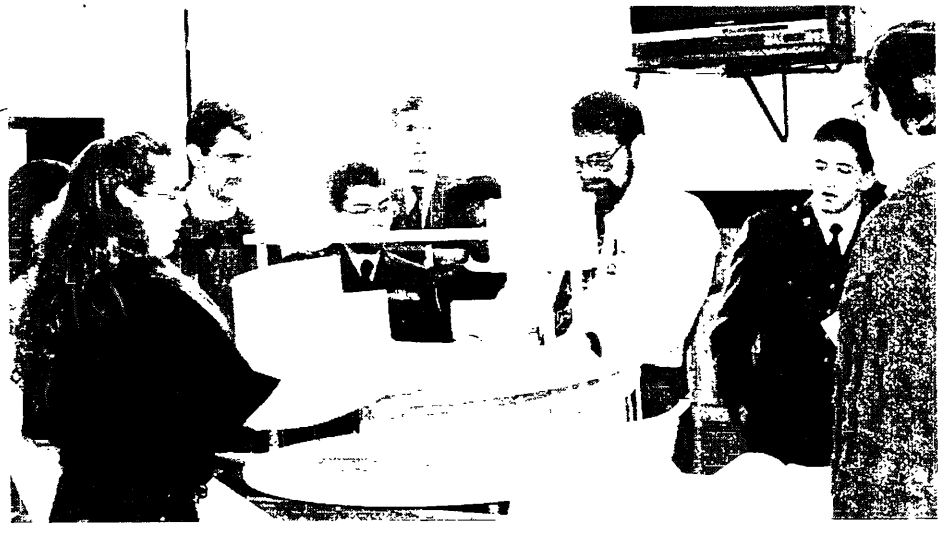
Mike's Mom says it all... **"It was unbelievable. I felt so proud seeing Mike and the other Keene kids competing."**



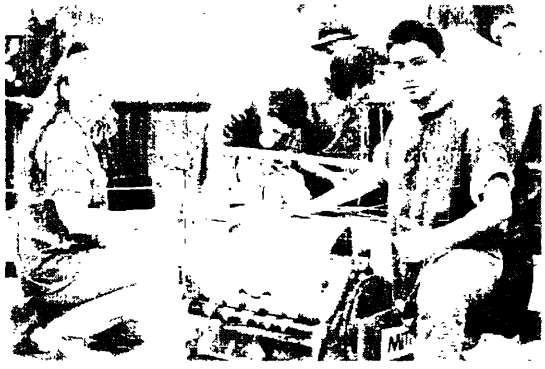
BHAM-BAM (Bedford, Hanscom, and Mitre—Ball Attacking Machine)

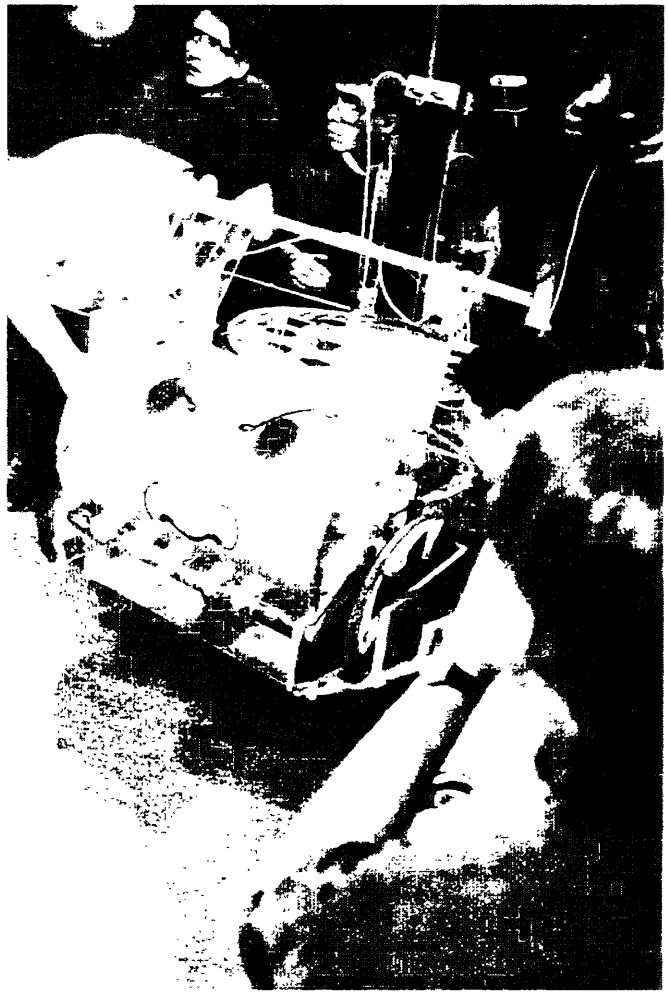
The MITRE Corporation Hanscom Air Force Base Bedford High School
Bedford, Massachusetts

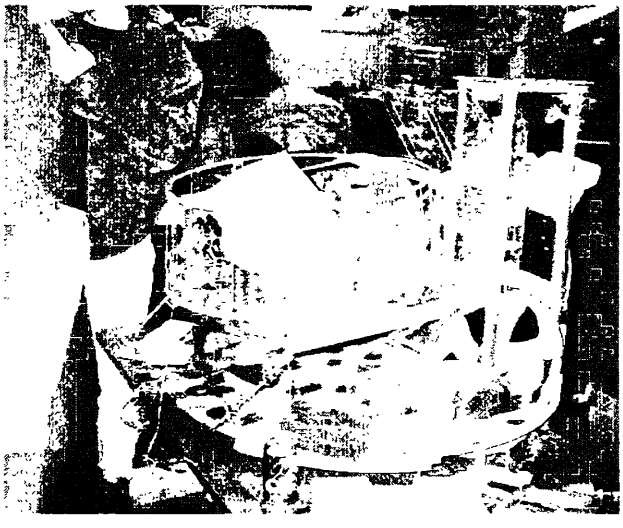




An overwhelming response by the students to participate in U.S. FIRST brought together this unique team from a high school, an air force base and a corporation. The team combines 60 eager students from Bedford's high school and middle school, seven faculty advisors, and seven engineers. A three week late start did not hamper the enthusiasm of the team.

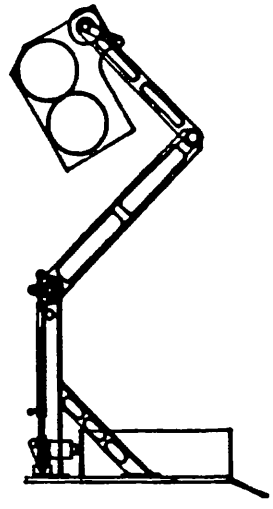






Bedford, Hanscom, And MITRE — Ball-Attacking Machine

Whether working on the technical or team spirit areas, enthusiasm grew to a high peak. As one student put it, *"Wow!...When I saw U.S. FIRST on TV last year, I never dreamed I'd get a chance to actually participate!"* In BHAM-BAM, the dream is alive.



Parents Get Involved .

U.S. FIRST - Parents Orientation Meeting

January 12, 1994

I. Welcome - Public Relations Team
   U S. FIRST Background (Video)
   Principal Events & Key Dates

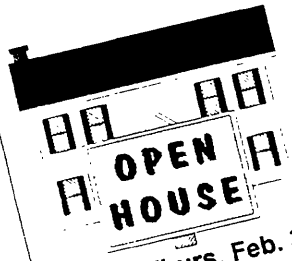
II. Fordson High School - Mrs. Barbara O'Brien
   General Comments
   Introduction of Teachers

III. Ford ALPHA Simultaneous Engineering - Dave Hagen
   General Comments
   Introduction of Alpha Team

IV. 1994 Competition - Dick Kelley
   Contest Objective
   Team Organization

V Informal Question & Answer
   Refreshments

Freeport-MIC



When: Thurs. Feb. 3

6:30-8:30 PM

Where: FHS Library

Come and learn about US FIRST! We will show you how we've been working since October to Get Ready for the 1994 Competition.

Students will be on-hand to answer questions and explain what US FIRST means to them. You'll see a video of last year's competition - our team will be part of the 1994 video which will be aired on ESPN! See concept models being demonstrated and watch students use computer-aided design to to try out ideas. US FIR is all about inspiring students to take adva of the educational opportunities that available - and we share our excitement w you at the Open House!

Everyone's Welcome!!

One Parents' Perspective Mirrors Many.

This is my first year working with U.S. FIRST through Nypro and Clinton High School.

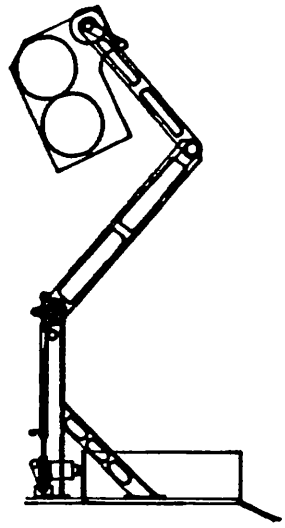
As a Nypro employee for the past 16 years, I was impressed with the way that the professional staff of both Clinton High School and Nypro were able to bring about a viably working team with the eighty students as center point.

I watched bored, disinterested kids turn into energetic, totally involved MEMBERS of the various working teams. This was a remarkably contagious experience for all. I have more at interest in this project than the "WIN." I graduated from Clinton High School in 1969. This type of involvement was not available to me and I am somewhat envious of the eager group that have been able to be involved. I am also a life long resident of the town of Clinton, as is my father, so the pride already bestowed on this town and my work place is tremendous.

My most important reason for becoming involved with the U.S. FIRST project is totally selfish. My sixteen year old son is a participant this year. I am not the only person on the team working with their child; several members have this great distinction. I have had the great opportunity of seeing my son, who is usually consumed with sports or girls, be deeply involved in something totally different, and I can help and understand his thoughts. I watched him and other students make presentations to our Town Leaders, and all town members via the local television network, expressing their feelings toward this competition,

The U.S. FIRST competition helped families become part of the TEAM here in Nypro and Clinton High School; mothers and sons, fathers and sons, mothers and daughters are working side by side with teachers, engineers and friends. We are all reaching out into the community for support and pride in our efforts-win or lose. Even long after the event is over, there will be a group in Clinton that can be on a one to one basis because of this effort. This is a real TEAM, and we feel that we have already won.

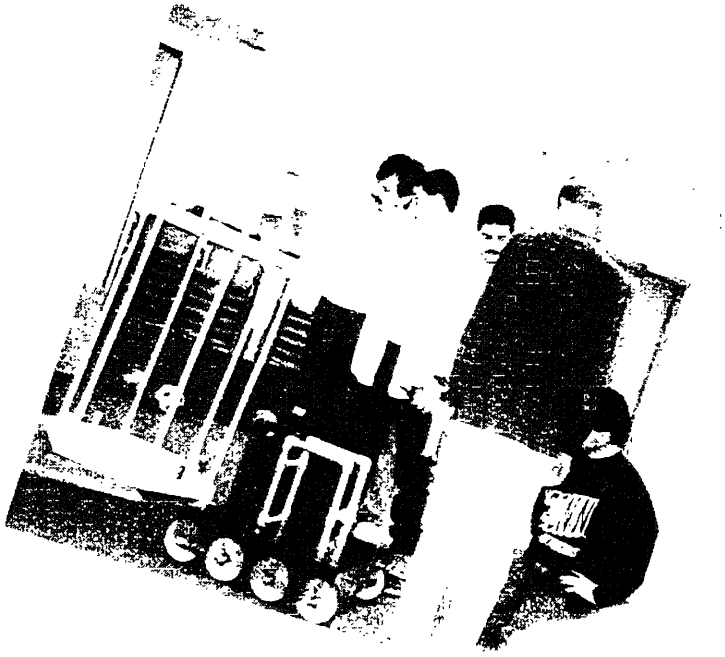
Dave Connery, Parent, Nypro Employee



NEMESIS

(Neophyte Engineers Mechanical Elevation System Involving Students)

Northeast Utilities Company U.S. Coast Guard Academy
New London High School Waterford High School
Hartford, Connecticut



"I learned how to use machines that I never used before. I learned to have patience, but more importantly, I learned to work with others."

LaShanda Brown, Student

U.S. FIRST "is a program that can elevate the minds of young adults today and cause them to think more about their future. I hope next year, the program will continue because it made a difference for me.."

An Huynh, Student

"The U.S. FIRST Competition was one of the most interesting experiences I have ever had. It was great being able to work with other people from start to finish on a project. ...If we competed again we would be highly successful. I am proud to be part of the team.

Zachary Grazen, Student

"The most wonderful aspect about this was how people thought of ways to get the balls up there. There robot designs were not only successful, but were also unique in there ways of going about this task. The fact that I could talk to other teams and learn about their designs and construction, without them thinking of me as a rival, but as a friend, was what I most enjoyed from this experience.

Student

This team of 30 students from two high schools, four teachers, 12 engineers and three technicians were structured by major design categories. The weather had a significant impact on the project for the first three weeks.

The team worked as three separate groups struggling to build the drive, lift, and the retrieval components. The Coast Guard Academy worked directly with three students to design a top for the vehicle to hold a minimum of 6 balls and also have the capability to block the goal.

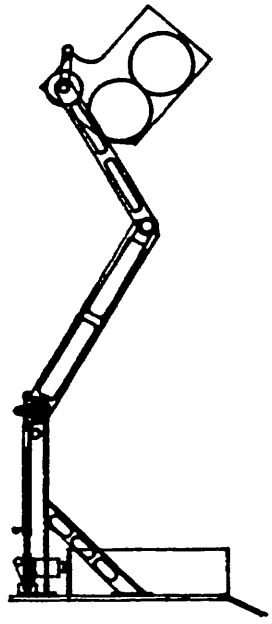
The drive team successfully designed and built a vehicle capable of traveling 15 mph with the lift and top.

The lift team designed a chain drive to lift the vehicle. Due to time constraints, lack of fine tuning prevented lifting more than two balls at a time.

The retrieval team decided on a fork lift design that would give the team the option to lift other vehicles.

When the three sub assemblies were integrated only three days before the shipment deadline, the vehicle was forty pounds over-weight. ...A team decision was made to remove the lift section which weighed forty-five pounds, therefore making it a totally defensive machine.

The beauty of competing though, was evaluating how others solved the problem. We learned how we could have made things lighter by using less rigid components. We look forward to future competitions.



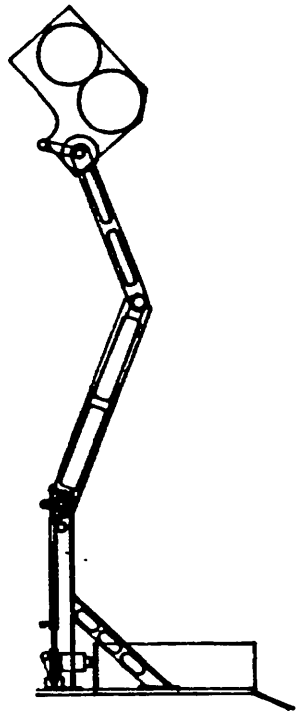
SummaCat

Summa Four Derryfield High School
Manchester, New Hampshire

In December of 1993 we started out as two entities, Summa Four and Derryfield School. Now there is no doubt that certain aspects of our communities are one.

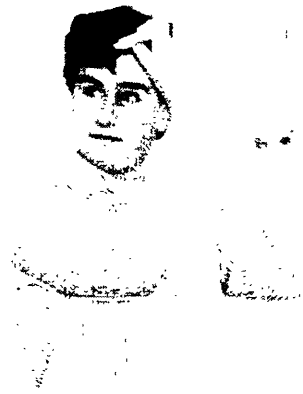
The bond was built from the turning of raw materials into a machine. The strongest bond in our experience is not from bolts, glue, or welds. The strongest bond is from the interchange of ideas and knowledge to accomplish our goal. It was (and is) wonderful and amazing.

Looking back, there are many moments that mark our growth as a team. Brief conversations, work done at home, the crystalization of an idea..., but as a team it began in early December. We met at the offices of Summa Four. Our initial meeting took place in a conference room full of mahogany and stuffed leather furniture... That was the last time this group would be so polarized.



Power Knights

Public Service of New Hampshire West High School
Manchester, New Hampshire



Our team's goal at the outset was to build an effective team—one in which everyone cooperated, showed sportsmanship, took responsibility, and learned project management skills. In this respect, the 'Power Knights' are indeed champions.

INsighter

Published for the Employees of Public Service of New Hampshire

March 11, 1994 • Vol. VIII - No. 5

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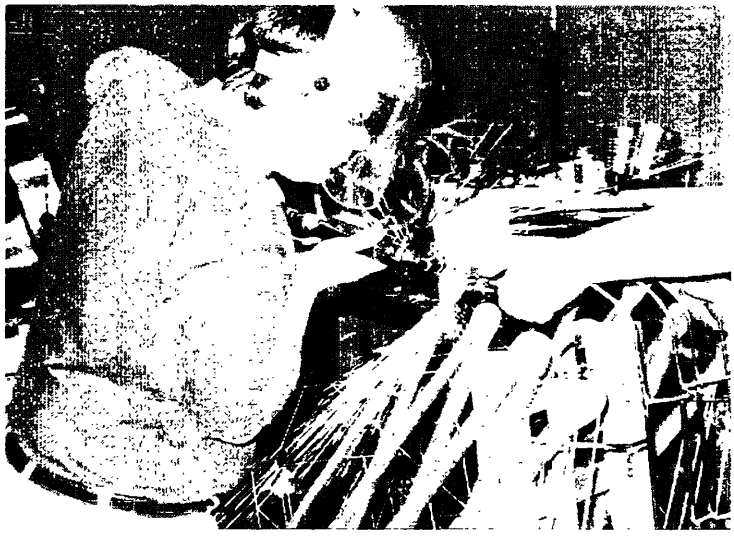
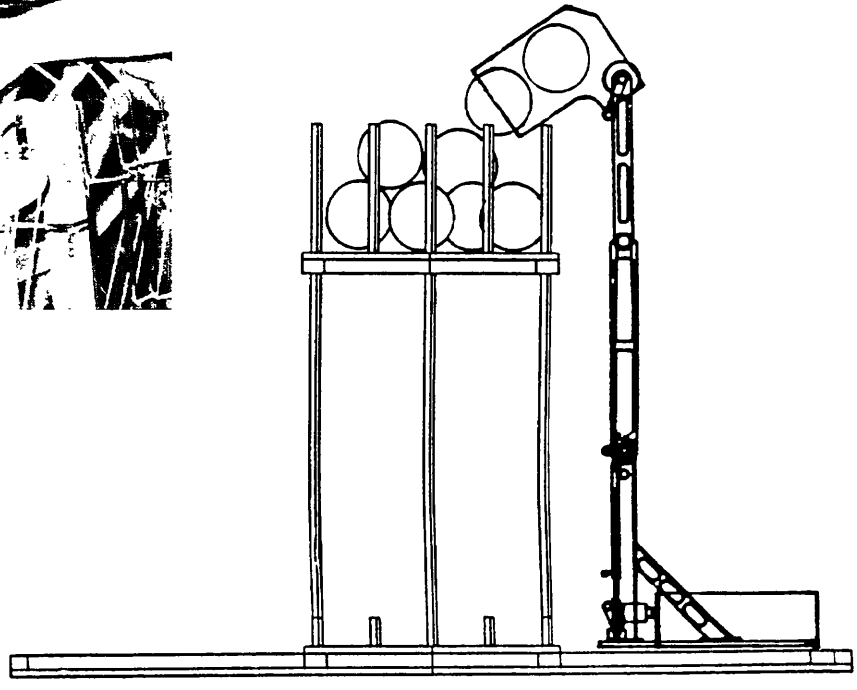
"We feel it is essential that we nurture mutually beneficial partnerships in the communities where we do business."





PSNH

People

A publication for PSNH employees and retirees.

Around The Circuit

MARCH 1994

"We had a very respectable showing for a first-year team," said Jeff Lander, PSNH production administrator-environmental/results. "Our team just kept improving with every match. We hadn't had much practice on carpeting and hadn't anticipated the effect of the rug's traction on our vehicle. But, bit by bit, we solved the mechanical problems that slowed us down."

The PSNH/West vehicle's overall design, with its roller ball pick-up mechanism and scissor-jack design for lifting the ball basket up to the tower's opening, was not particularly unique. It was very strong however, and was the only vehicle that could hold and [illegible] 12 balls at once and d[illegible] upper [illegible] at picking up balls, it was able to climb over obstacles very easily, and its ball basket could be placed right in the upper goal to prevent other teams from scoring. This last feature was responsible for one of the team's victories.

Although this year's competition is over, the PSNH/West team are looking forward to an exhibition match in April with other teams from the area and may include GE Air/Central High, Freudenberg-NOK/Memorial High and Summa Four/Derryfield School.

The exhibition is only one of the ways students can practice for another U.S. FIRST competition. Lander says he sees opportunities to work with teachers in including some of the important concepts, such as acceleration and force, into their math and science curricula.

"The most important goal of U.S. FIRST is to get the message out to as many people as possible that science and technology are fun and interesting, in order to help ensure an adequate supply of technically skilled people for the future," Lander says.

"It's a great experience for the students, but it is also valuable for PSNH and the employees who participated. For young New Hampshire people to look at PSNH in a different way, to have close interaction with employees and actually come into our facilities and see what we do, is extremely important."

- Audrey Lund

Soccer Stalker

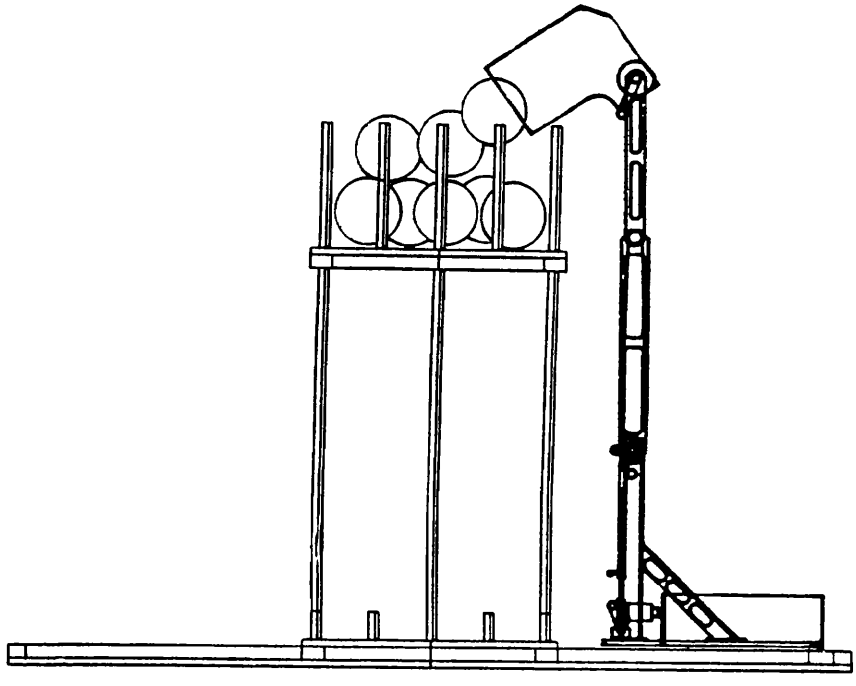
Lockheed Sanders, Inc. Nashua High School
Nashua, New Hampshire

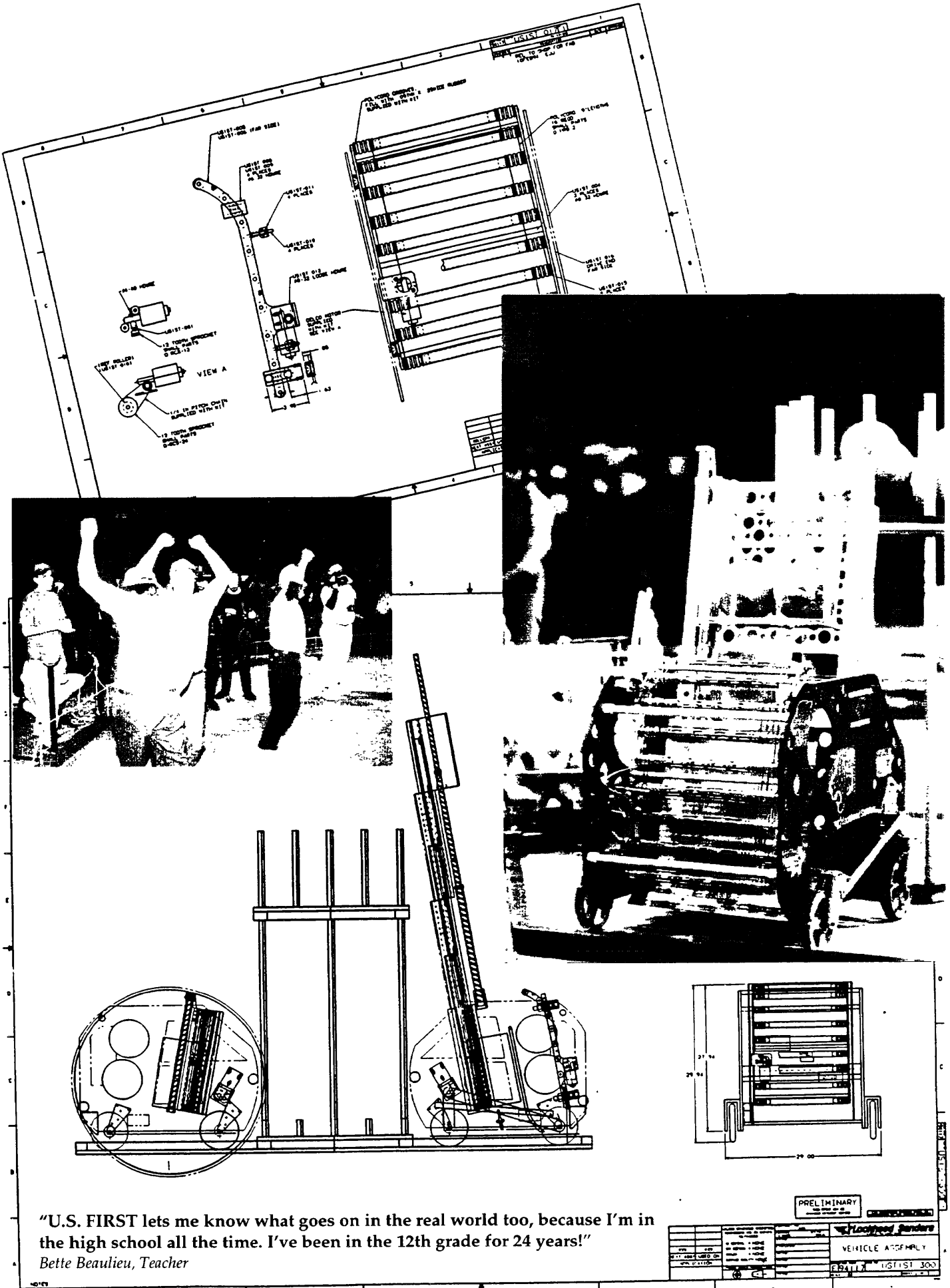
"What we have allowed the students is a taste of reality. Not only do they have a voice on the team, they also get dirty. They have to do just what the 'Sanders' people do. They get to see what it's really like to prepare for a design review, to answer questions of our executive review panel rather than tell the review panel what they feel like telling them.

Fred Delmer, Engineer

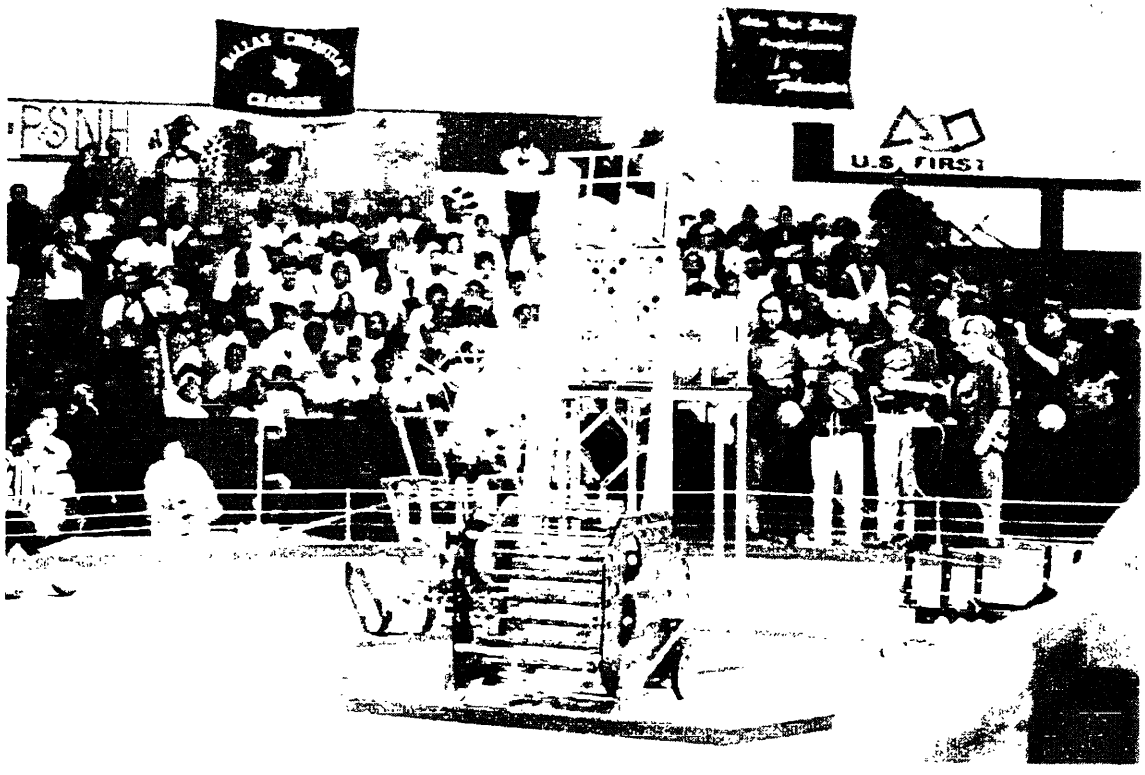
"This prepares you for the future."
Vikas Sood, Student

Best Sportsmanship Award



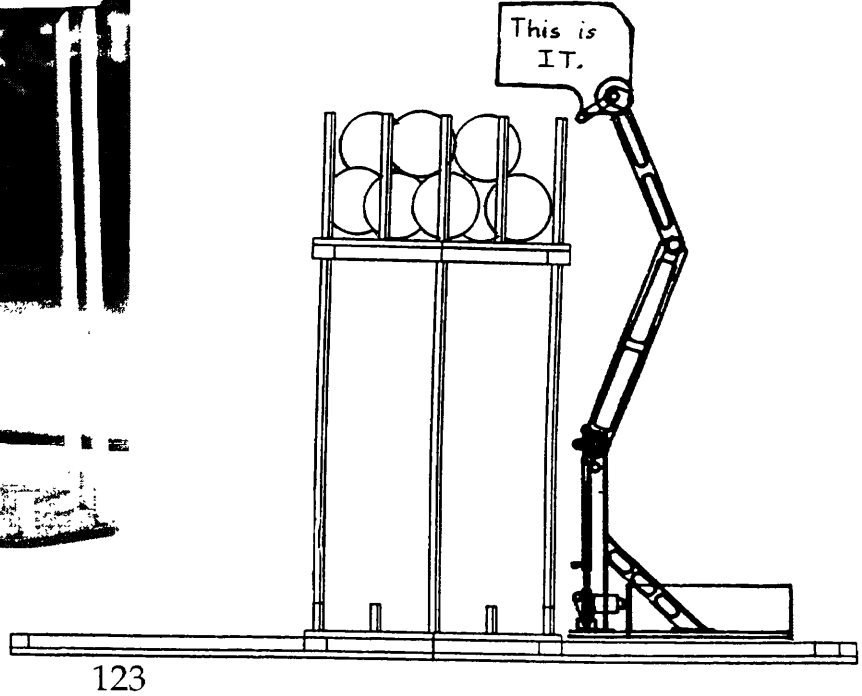


"U.S. FIRST lets me know what goes on in the real world too, because I'm in the high school all the time. I've been in the 12th grade for 24 years!"
Bette Beaulieu, Teacher



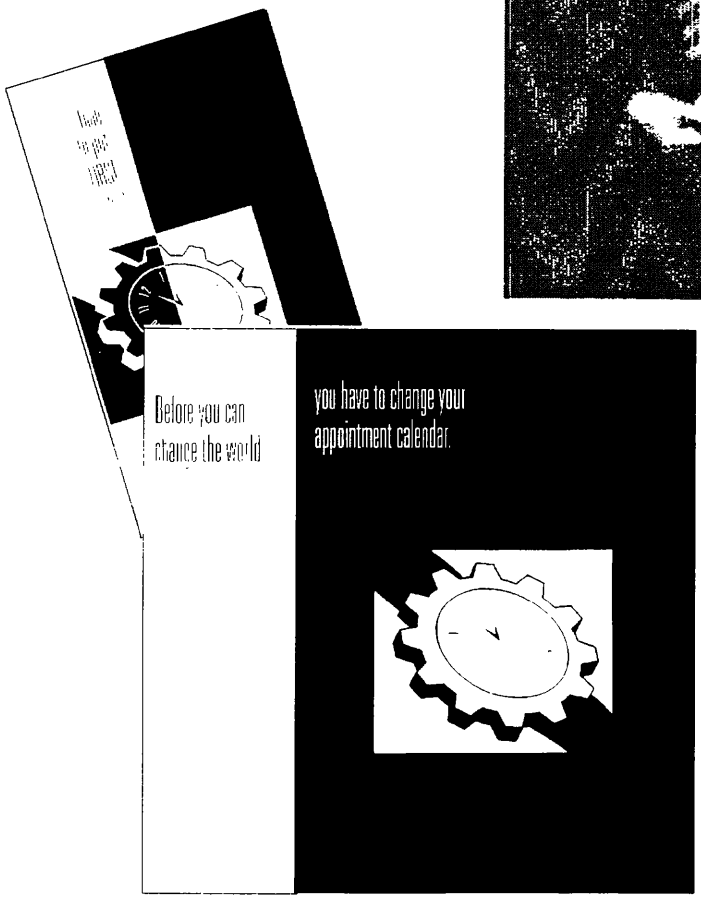
"The students experience how people work together, how they don't work together, the pressures of time and stress. It really reflects what happens in the real world."
Dan Velasco, Engineer

"Some of the Sanders Engineers are Nashua High School graduates, and we are awfully proud of them to begin with, but it makes us happy that they came back to the high school to contribute. This is total education at work."
Ronald Jean, Principal, Nashua H.S.

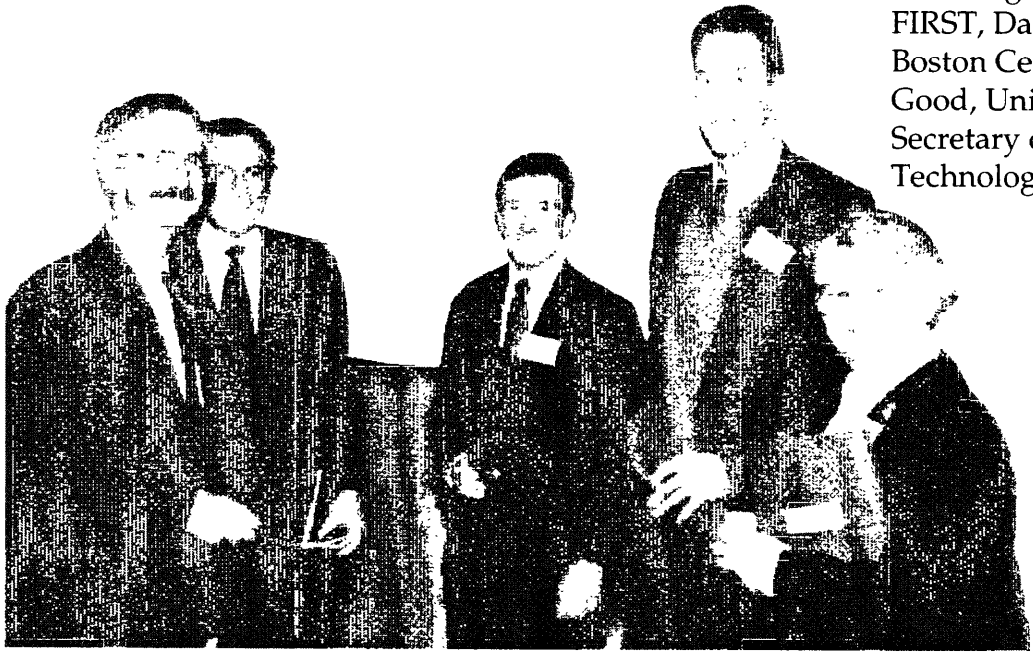


VIP Reception

L-R Raymond Schwedhelm, Executive Vice President, First NH Bank, Stephen Merrill, Governor of New Hampshire, Carroll A. Campbell Jr., Governor of South Carolina.

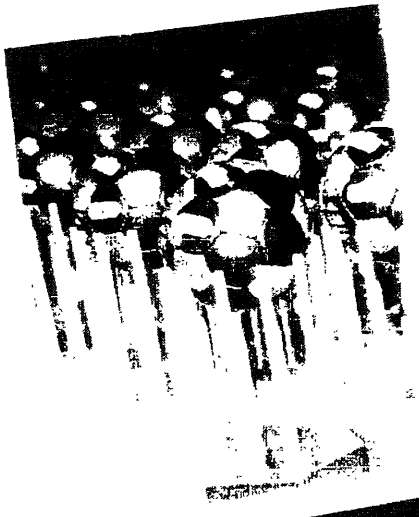


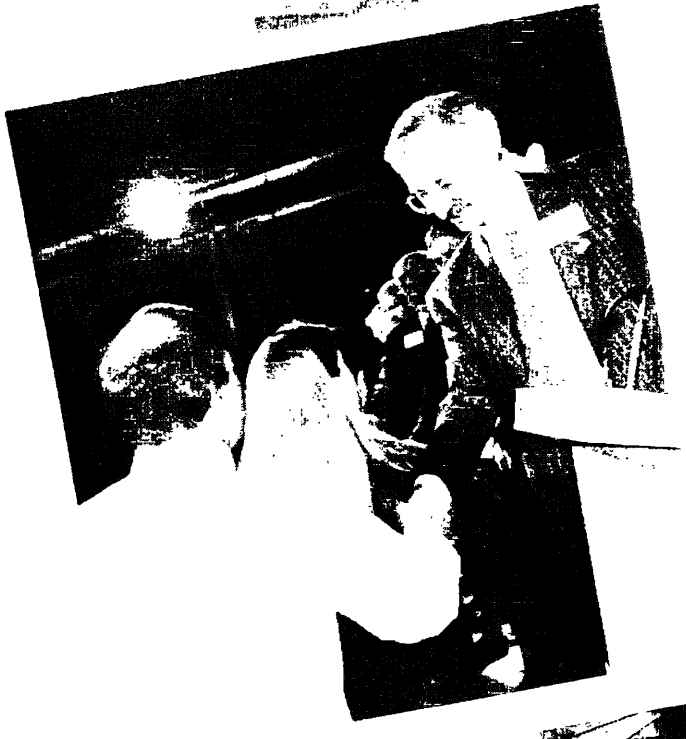
L-R Woodie Flowers, Professor of Teaching Innovation, MIT, Paul Allaire, Chairman and CEO, Xerox Corporation, Chairman, Council on Competitiveness, Donald Reed, President and CEO, NYNEX New England, Chairman, U.S. FIRST, Dave Cowan, former Boston Celtic, Dr. Mary Lowe Good, United States Under Secretary of Commerce for Technology



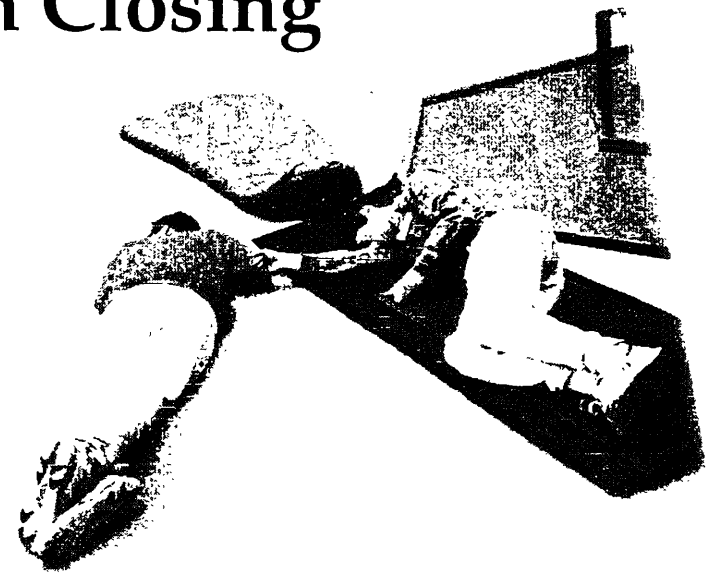
Awards

Celebration





In Closing



"We have already made new friends, worked side by side and depended upon each other. The finished product won't show a real picture of (all) team's commitment. The pages of this presentation can only freeze minutes of time already spent.

The true commitment to teamwork is in the hearts of each contributor for this competition. You can't always see it, but (all) certainly have felt it.

See you at the (NEXT) competition.
The Team (NYPRO/CHS)