

# ENGINEERS' FORUM



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Why does  
**w a t e r**  
always taste  
**b e t t e r** when  
it's in a  
**b o t t l e ?**

Also Inside: •E-week •Feild's Effect •And Photo Frenzy!

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# ENGINEERS' FORUM

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*Bottled water more appealing then from the tap?  
Photo by Landon Fraser*

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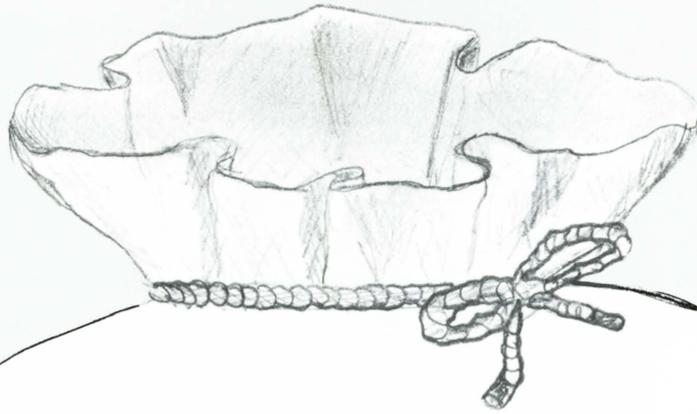
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### ***E-Mail Bag***

A man in a hot air balloon realized he was lost. He reduced altitude and spotted a woman below. He descended a bit more and shouted, "Excuse me, can you help me? I promised a friend I would meet him an hour ago, but I don't know where I am."

The woman below replied, "You're in a hot air balloon hovering approximately 30 feet above the ground. You're between 40 and 41 degrees north latitude and between 59 and 60 degrees west longitude."

"You must be an engineer," said the balloonist.

"I am," replied the woman, "How did you know?" "Well," answered the balloonist, "everything you told me is, technically correct, but I've no idea what to make of your information, and the fact is I'm still lost. Frankly, you've not been much help at all. If anything, you've delayed my trip." The woman below responded, "You must be in Management."

"I am," replied the balloonist, "but how did you know?"

"Well," said the woman, "you don't know where you are or where you're going. You have risen to where you are - due to a large quantity of hot air. You made a promise which you've no idea how to keep, and you expect people beneath you to solve your problems. The fact is you are in exactly the same position you were in before we met, but now, somehow, it's my fault."

## Events

# E-week Goodness

Words: Heather Schaeffer & Michael Carr

Well it is that time of year again, Engineers' Week is right around the corner. All around the country engineering colleges are taking a week to celebrate being an Engineer. This year will have all the usual fun and hijinks of E-weeks past, but you can expect to find some new events to participate in. Under the careful guidance of its SEC coordinators it looks like this could be the best E-week yet.

Listed below are some of the interesting events in which any and all engineers and engineering associations can participate.

### Cheap Lunch

Cheap Lunch is an opportunity for all students at Virginia Tech to take a break from campus food without breaking the bank. For \$2 (or \$1 if you wear/show your E-Week T-shirt) each person receives 2 slices of pizza, a drink and choice of desserts. The lunch will run in Hancock Hall and there will also be a trivia game going on while you eat, with many chances to win prizes. Tickets will be sold a week before the event. The three societies with the highest amounts participating will be awarded points.

### Duct-Tape Competition

This activity is the most highly anticipated event of the week. Each team, consisting of a maximum of 7 people, plus the tape, that enters will be given a roll of duct tape and allotted five minutes to tape a person to a window. The window-hanging that stays up the longest wins. Prizes will be awarded to the top three teams, along with points. Refreshments will be served to all participating and attending to cheer the teams on.

### Karaoke

Hopefully you all know what karaoke is, but if you don't, come and find out at BW3s! Of course there will be refreshments, and points awarded for the societies with the most participation. There will also be door prizes, and individual prizes for those outstanding karaoke singers!

### Monte Carlo Night

Monte Carlo night is a night full of Vegas-style gambling, where you don't run the risk of losing all your money! Activities will include Black Jack, Roulette Wheel, Craps and much, much more! Prizes will be awarded for those with the highest points scores. Of course there will be refreshments and points will again be awarded for the top three participating societies.

### Olympics

Olympics is the culminating event of the week that challenges participants with physical and mental challenges. The morning will begin with breakfast to start everyone off with a boost of energy. Teams will then rotate between various activities including the tug-of-war, balloon stomp, mouse pad throw and others.

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### Penny Wars

Penny Wars is a daily competition between the departments to see who can raise the most money, or have the least negative amount at the end of the week. A jar will be set up for each department, at the table in Randolph during the entire E-Week. Pennies are worth positive points, and silver change, along with dollars, are negative points. Each day, a sign will be posted with the current totals, so that everyone can know who is in the lead. The department who wins this event will get to donate the proceeds to their charity of choice.

### Pie a Professor

This is your chance to get back at those people who work so hard at making our life a living hell for the 4, 5 or maybe 6 years we are here! For only \$1 you will have the opportunity to throw a pie at a variety of professors from the engineering department. Points will again be awarded for the society who throws the most pies.

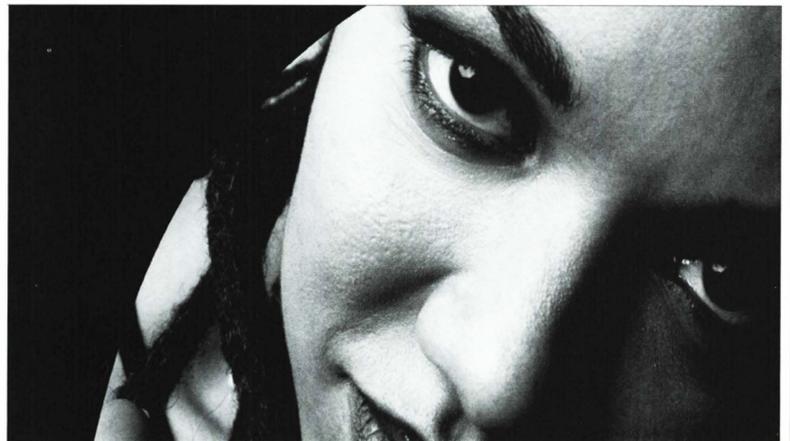
### Awards Luncheon

Celebrate the end of E-Week by attending our awards luncheon, immediately following the Olympics. This lunch is FREE and will be open to all engineering students. During this time we will give out the Outstanding Society Award, and announce the Olympic Medallists.

Well, I know that it all sounds like a bunch of fun to me. I know that I can picture at least a couple of professors that I would like to pie. But until then I will be saving my pennies and tuning my voice in the hopes of bring a little added pride to my fellow engineers. Looking forward to seeing you all there. Hurrah for Engineers.



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## **Feild Effects**

Words: Kate Feild

Images: Landon Fraser

### » The forbidden fruit

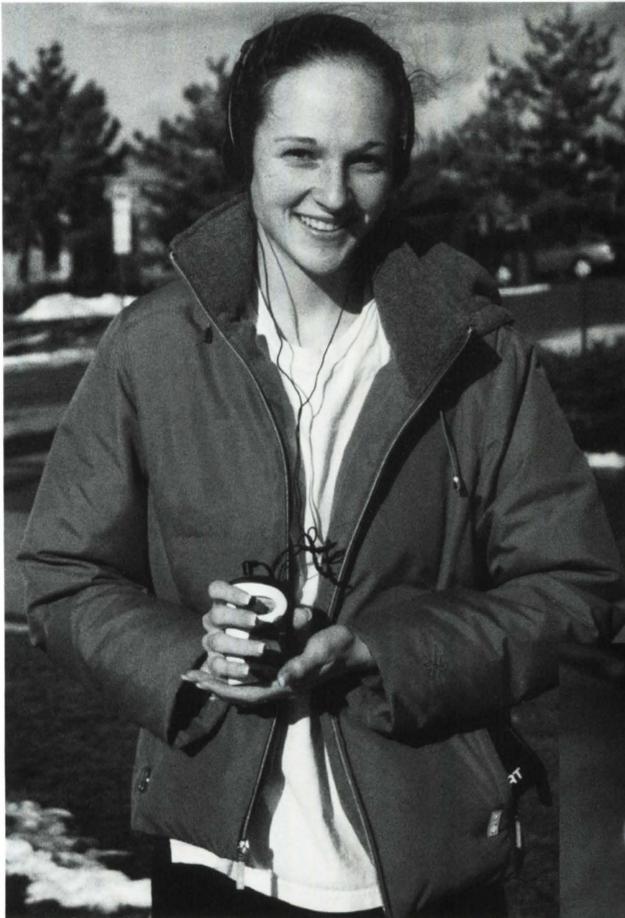
With all the controversy over Napster and file sharing these days, it's a wonder that people don't question who is profiting from all this. Music companies complain that they are losing so much money because people are buying less CDs now and sharing more files. Whether this is true or not, one can speculate...

Either way, however, there are many who benefit. Manufacturers such as Rio, Sony, and Philips create these neat little gadgets called MP3 players. These players do exactly what they claim to do: play MP3s (also called Moving Picture Experts Group Audio Layer-3), which are digital music files.

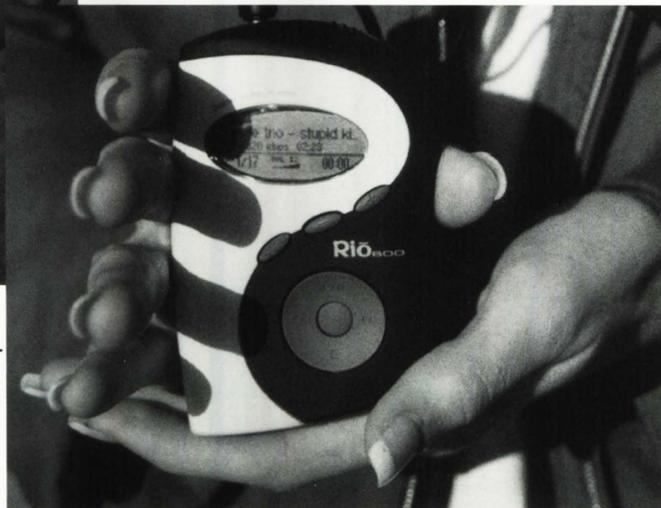
They seem innocent enough. Take your favorite CD, put it on your computer, and then just upload it to the MP3 player. I can see the pros in this. First, you can create your own playlists, and you don't have to worry about those pesky CDs scratching anymore.

However, spending up to two hundred dollars on a little gadget, when you could have spent a mere twenty dollars at Kmart for a Diskman doesn't seem like a wise decision.

So, who is buying these MP3 players? Most people I know have at least one pilfered MP3 lying around in a dusty corner of hard drive space somewhere. (I'll plead the 5th on this one, however.) With all the fuss over people stealing music, music companies are turning a blind eye to manufacturers who create little players which tempt even the most saintly of us to download an entire CD of music for free to make up for the two hundred dollars we just blew on the player itself.



*Now you too can listen to John Tesh without needing to bring the CD with you!*





*Weird Al Yankovich? And you are going to try and tell me that was a good investment??*

## » The trouble with technology

Quite a few years ago, as some of you may or may not remember, laser disks came out. My grade school, which happened to be a poor, Catholic school, spent thousands of dollars putting these “marvels of the future” into every classroom the summer before I became an eighth-grader. Some of you are saying, “Laser disk? What’s that?”

When DVDs came into the mainstream market in March of 1997, laser disks were all but forgotten. I, of course, took this into consideration and scoffed whole-heartedly at these mini-laser disks. I proudly stated that DVDs were a phase and that no one would care about them in a year or two.

Oh the joys of being young and ignorant.

When my family bought a DVD player this Christmas, I knew that I would have to learn to love them. However, don’t count videocassettes out yet.

After all, one of the first things I learned about DVDs is that they enjoy freezing mid-movie. Perhaps this is just my bad luck, however. Second, I am notorious for having scratches on my CDs, and DVDs are no different. And anyway, I like the squiggly lines and horrible sound that occurs after the tape in a videocassette has been worn thin.

However, these disks of polycarbonate and aluminum, that can hold an average of 7.5 miles of data per layer, do seem to produce a better quality of movie. I’ve also noticed, however, that sometimes the sound and picture don’t quite mesh together.

I don’t dislike DVDs; I’m just distrustful of them. They tend to be more expensive and the extras never quite live up to how they are advertised. Sure, they hold more information, but if the movie is bad, is it worth paying ten bucks more for three hours of commentary on pure crap?

Why does water

bottle

I have always wondered why people are willing to pay so much for bottled water when they could pour a glass from their tap for practically free. Bottled water sales have tripled over the past decade. Over half of America drinks one of 700 different bottled water brands. There is even bottled water for Hokies. According to a survey done by the American Water Works Association Research Foundation, the main reasons people drink bottled water are that they are concerned about tap water safety or use it as a substitute for other beverages. If that is true, how safe is bottled water, really? Is it any purer than water from your tap? Why has the bottled water market exploded over the past decade?

The main difference between bottled water and other beverages is purity. Bottled water has either been through a sophisticated filtration process, taken from a natural spring, or both. Reverse osmosis is one of the best and most interesting methods for purifying water used by many bottled water manufacturers.

Osmosis is a natural occurrence in which a solvent passes through a semi-permeable membrane from a low solute concentration (clean water) into a higher solute concentration (dirty water) in order to equalize the concentrations on both sides of the membrane. In reverse osmosis, water flows from the higher

solute concentration to the lower solute concentration, i.e. the water flow is reversed. However, in order to reverse the flow of water, pressure must be applied to the side of higher solute concentration. When this is done, the semi-permeable membrane is able to filter out bacteria, salts, proteins, and other particles whose molecular weight is greater than a few hundred daltons. Also, if a contaminant carries a large charge, it, too, will not be able to pass through the membrane. Reverse osmosis is a slow process and takes a lot of pressure, but it is one of the finest filtration methods known. Distillation, carbon filtration, micron filtration are other widely used methods for purifying water. In distillation water is boiled till it becomes a vapor so that contaminants are left behind, and then the vapor is cooled so that it can be bottled. Carbon filtration is a process that uses activated carbon to absorb organic matter from water. It successfully

always taste **better** when it's in a

**ER?**

removes chlorine and other chemicals from contaminated water.

The need for a safe alternative to tap water is a necessity for some. For example, I live in a small town in New Jersey, and I know three people on my block who have cancer. All have lived in the same neighborhood for over 30 years, and they suspect they have all gotten the disease from the drinking water. In the five years I have lived in the neighborhood, there have been two incidents the town has sent me and my family a letter telling us, as they have to do under law, that our drinking water wasn't up EPA's standards and contained harmful bacteria. They suggested to us to boil our water before drinking or to get our drinking water from the local well. However, months later, when the water from our local supplies was tested again, we were told that the well water was also contaminated. Also, there have been repeated cases, that are still ongoing, where the tap

water comes out dirt brown certain times during the month; our local water company informs us that their filtration system needs to be flushed and we shouldn't use the water at this time. There are many U.S. cities, such as mine, that have repeated EPA drinking water violations every year. Instances like these are why some communities do need to buy bottled water.

According to John Heilprin, a reporter for the Associated Press, millions of Americans are drinking contaminated tap water. Heilprin reports that, in a study released by the Environmental Working Group (EWG) and Public Interest Research Groups on January 8 of this year, "Americans have been drinking tap water contaminated with chemical byproducts from chlorine that are far more than what studies suggest may be safe for pregnant women." Heilprin states that Jane Houlihan, EWG's research director, advises pregnant women to "...reduce their exposure to

potential risks through simple measures such as home filters and purchasing bottled water.” However, how do bottled water consumers know if their water is any safer or purer from the water that comes from their tap?

Bottled water is regulated on three levels. Once bottled water is taken from its source (e.g. underground spring, well, or municipal supplies), it has to meet standards on the national, state, and industry level. On the national level, the Food and Drug Administration (FDA) regulates bottled water as food product.

The FDA's requirements for bottled water safety are based on the Environmental Protection Agency's standards for tap water. The FDA requires bottled water to have labels identifying the type; some examples are mineral, purified, and spring, each of which must meet the FDA's definition. The FDA also tests bottled water manufacturers facilities. Bottled water facilities must meet current Good Manufacturing Practices (GMPs); bottled water must be manufactured, stored, and transported cleanly and safely. Finally, the FDA tests bottled water for its Standard of Quality (SOQ). Bottled water is tested for pesticides, bacteria, and other contaminants. Bottled water must also meet state requirements. Every state must either have the same requirements as the FDA or create their own standards that match or surpass the FDA's regulations. If the bottled water supplier is a member of the International Bottled Water Association (IBWA), it must meet their regulations. The IBWA has very stringent standards for bottled water safety and purity. Members must follow the IBWA Model Code; this code includes daily testing

of coliform bacteria, quarterly testing of bromide and chloride, and an annual unannounced plant inspection.

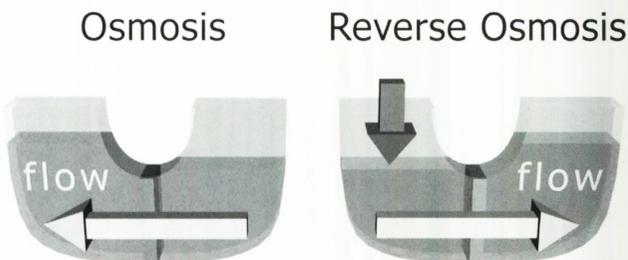
However, there are some critics that believe bottled water standards aren't as strict as they seem. This is because the FDA doesn't regulate bottled water sold and packaged within the same state, and many believe state enforcement is lacking. The

Natural Resources Defense Council believes a number of changes should be made regarding bottled water regulation. Among them, bottled water suppliers should be required to

release important information about their product as city tap water suppliers already do, and the federal government should oversee state bottled water regulatory programs.

Most bottled water comes from municipal supplies and has been through a rigorous filtration process; therefore, even if bottled water weren't regulated at all, it would still be safer and cleaner than tap water. Sure bottled water might not be as pure as marketers make their products out to be, but I believe it is still better than what you are getting from your tap. Yet, it is up to the con-

***The expiration date on bottled water acts as a lot number and is used for stock rotation reasons. It does not mean bottled water will taste funny or go bad after the expiration date.***



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sumer to decide if they are willing to pay substantially more for the same water from their tap that has been filtrated. In some places across America there is a need for bottled water because of safety reasons. This is main reason for the recent bottled water craze.



Words: Patrick Hummel  
Images: Brian McGill

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## Lifestyle

# Bandwidth Bonanza

Words: Michael Carr

Every time Fall semester rolls around at Tech a handful of things always occur. People begin planning Spring break events. There are the inevitable back-to-class parties all over town. Perhaps maybe even a little class work too. After that people usually begin to think: "Where the heck am I going to live next year?" Followed quickly by much panicking because they have no place to live. Be you a Freshman or a sixth year Senior it is something that everyone needs to consider.

When people decide to move off campus there are a plethora of things to consider. Who am I going to live with? Will it be close to a BT stop? Does the renters association allow us to have kegs on the balcony? There are these and many more personally important questions to ask. But there is one question which many forget to ask or don't seriously consider.

How am I going to connect to the Internet?

Anyone who lives on campus takes the internet mostly for granted. With blazing speeds and always-on capability why shouldn't they? To those living off campus it has often become a hassle in thanks mostly to a crappy connection, if one at all.

Everyday life at tech has come to depend on some amount of connectivity. Internet research and online classes are becoming a mainstay now that Tech's Blackboard 5 ([www.learn.vt.edu](http://www.learn.vt.edu)) has integrated with our classes. On top of that we all have our own personal online hobbies, be it downloading various digital media or playing games. Every student physically NEEDS to have a connection these days.

Now, unless you feel that the occasional trip to the Math Emporium will alleviate your needs you probably want to have your on connection. When considering this there are five or six main avenues that will solve your problem: Dial-up, DSL, Cable, Satellite, or a T1/T3 connection.

Getting a Dial-up connection is the easiest and cheapest of all the connection opportunities. Buying a modem is relatively inexpensive, ranging in cost from \$10 - \$40 for the basic unit. Nowadays you will likely get a 56.6 kb/s modem, V.90 or otherwise. The operating speeds generally reside between 40-50 kb/s, you will rarely reach the full 56 kb/s. Phone line quality in the area is relatively good so you should not be limited any more than that. Service options for your modem are very broad. Cost varies per provider but the Virginia Tech Modem Pool ([www.cns.vt.edu](http://www.cns.vt.edu)) is above par and will only run you for \$9.90 a month.

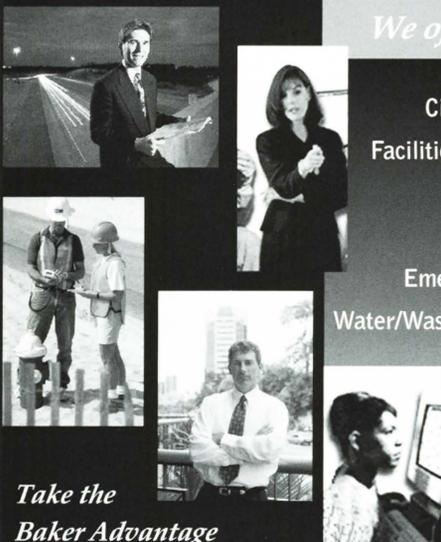
For the rest of us who need a little more Oomph! from our connection there are a few possibilities. Digital Subscriber Line or more commonly known as DSL is currently one of the more popular solutions. Originally known as Integrated Services Digital Network (ISDN), DSL has many incarnations that meet our purposes, collectively known as xDSL. Whatever it may be called there are only a few things you need to know. DSL uses a copper phone line to transmit data. Often times it will be possible to use your existing phone line, without ever interrupting your regular phone use. Throughput on a DSL connection can vary between 128 kb/s to a blazing 8 Mb/s. Most service providers will limit your throughput to something just over 128 kb/s. For those who will be serving or playing online games another good thing to note is that your ping will tend to be very low. Even better news is that most of us already have an Ethernet card, which will give you all the functionality to hook up DSL. DSL service costs vary with the provider and installation can sometimes be a hassle.

Speaking of getting some bang out of your buck, don't forget Cable modems. Cable modems are the fastest growing consumer broadband technology on the market. Almost three million cable modems have been installed to date in North America. Cable

companies have been investing huge sums to upgrade their infrastructure to meet demand. In the last year, Adelphia has wired the entire Blacksburg area for two-way Cable Internet to meet demand for reliable high-speed internet access. And it is speedy at that, boasting throughput of over 1Mbp/s. It can accomplish such high speeds by sending and receiving data through unused channels on the cable coming out of your house. Unfortunately your cable line is shared by a group of people and could lead to diminished speeds and pings. However, Adelphia claims that this will not occur on their system due to the large amount of channel space they have available. As for equipment, you shouldn't need to purchase anything new; cable companies usually lease out cable modems in order to minimize hardware incompatibilities. A cable modem set up will usually run you about \$40 a month for the broadband service, TV is extra.

Then there was satellite. Satellite connections are admittedly very fast, being up to ten times faster than dial-up and you can get connected anywhere in the U.S. But, and it's a big but, there are a lot of applications that it will not work well with. First off, there are no Macs, Linux or Unix boxes allowed. Any real-time application will sputter and die, as will the web page that you're hosting. It is good for minimal home usage, email, surfing, etc. On top of all that there is some further bad news: the price. It costs roughly \$70 a month with a +\$700 instillation and equipment fee. Overall, rather steep unless you can't get access any other way. Glory to the T1/T3 connection. All right, so it would be more than a bit excessive, but I can dream. Seriously though, this option is really about an Ethernet connection. If you live in almost any major apartment complex, or hope to, this is an option. Most of the complexes have at least a few building wired, if not all of them. For the most part, Ethernet is great. It runs just like campus with great speeds and low pings. Except many of the systems around are a little over taxed at the moment. The biggest problem with having an Ethernet connection is the occasional system slow down and the random backhoe outages. In turn you will usually get 128 kb/s or better at a minimal cost. Currently, the going rate is about \$250 a year and for your convenience many realtors will work it into your monthly rent.

Well then, what is the best connection to go with? I have no idea. Its too personal to say what is the best for everyone. In the least I hope that this helps you in your house hunting.



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Frank

Computer Science

*Who were you talking to?*  
Mom

*What item would you want  
on a desert island?*  
my orange hat



Dave

Business

*Who were you talking to?*  
friends, to make plans for the  
night

*What item would you want  
on a desert island?*  
a woman



Carolyn

Computer Science

*Who were you talking to?*  
friend, Kate

*What item would you want  
on a desert island?*  
toilet paper



Justin

Biology

*Who were you talking to?*  
Mom

*What item would you want  
on a desert island?*  
ex-girlfriend

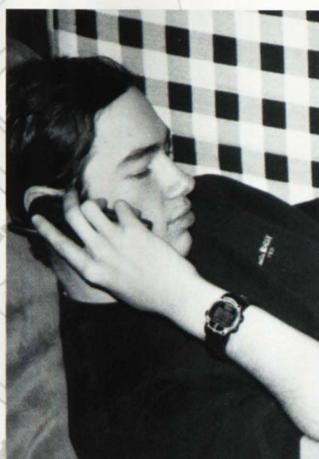


Jeremy

Computer Science

*Who were you talking to?*  
girlfriend

*What item would you want  
on a desert island?*  
girlfriend



Mitch

Computer Engineering

*Who were you talking to?*  
friend, Julie, from back home

*What item would you want  
on a desert island?*  
zippo lighter

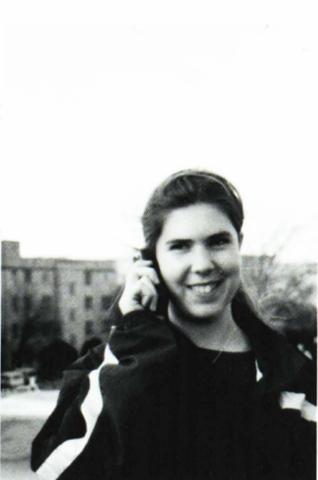


Mary / Jen

Computer Science / BIT

*Who were you talking to?*  
Jen / Mary

*What item would you want  
on a desert island?*  
Boyfriend, Kyle /  
Boyfriend, Brad



Landon

Computer Science

*Who were you talking to?*  
Ben

*What item would you want  
on a desert island?*  
a chick-o-stick, cause they  
rock!!!



Kate

Computer Science

*Who were you talking to?*  
Boyfriend, Jason

*What item would you want  
on a desert island?*  
an issue of he Engineers'  
Forum!



Now then, this nice young lady was talking to her fiance when we caught up with her. Next time you see her give her your best.

Go out and find her and all the other people you have seen here. Introduce yourself and get to know those people who make up our great University.

# Wireless Around Campus

*Letter From the Editor*  
**Future Wary**

Words: Michael Carr

Well here we are in the year 2002, and all that I want to know is: Where is my flying car? Or for that matter why hasn't man walked on mars yet? I can remember when these were touted by every news media source known.

Rather, today we are confronted with new technologies that came about with little to no fanfare before their success. Nanotechnology, cloning and a host of other technologies grab the headlines in today's newspapers. Outside of the respective fields some of the biggest breakthroughs in science were considered nothing more than science fiction, at best. It goes to show that no one can be sure of where exactly technology will take us in the future. Thus cementing the importance of engineers from here to eternity.

Protecting mankind from technology run amuck and science for only the sake of science. Engineers are an instrumental component in providing for the well being of our fellow man. We have the ability to design, build, and maintain any device we dream of. However our most important skill is comprises all of these things and more.

Ethics.

Something each and every one of us will come face to face with sometime in our future careers. A choice to do what is right over what may be cheaper or more expedient because we

know it is intrinsically wrong. The ability to do what is right in the face of all other things is the hardest challenge awaiting us out there.

During your tenure at Tech course and lectures on ethics will be crammed down your throat each and every semester. Some of you have probably heard more about ethics than you ever wanted to. I'm here to tell you not to block it out. Pick your head up off the desk and listen. Professor's harp on it and so shall I.

Ask almost any engineering professor for a story about poor engineering ethics. Stories of space shuttles exploding, bridges collapsing and others too horrendous to mention will be the norm. When engineers fail the people get hurt or worse. The occasions are rare, but still too common for anyone's comfort.

In everyday life, people take their safety, their very lives for granted because of the strength of engineers before us.

I only hope that we future engineers can live up to this standard, set before we were even born.

**EF**

*Michael Carr*

Editor-in-Chief

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Leonardo da Vinci  
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(eager beaver)

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