

ENGINEERS' FORUM

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Antimatter:
What is it and where
is it taking us?

Also Inside: •Parking •Feild Effects •And Resume

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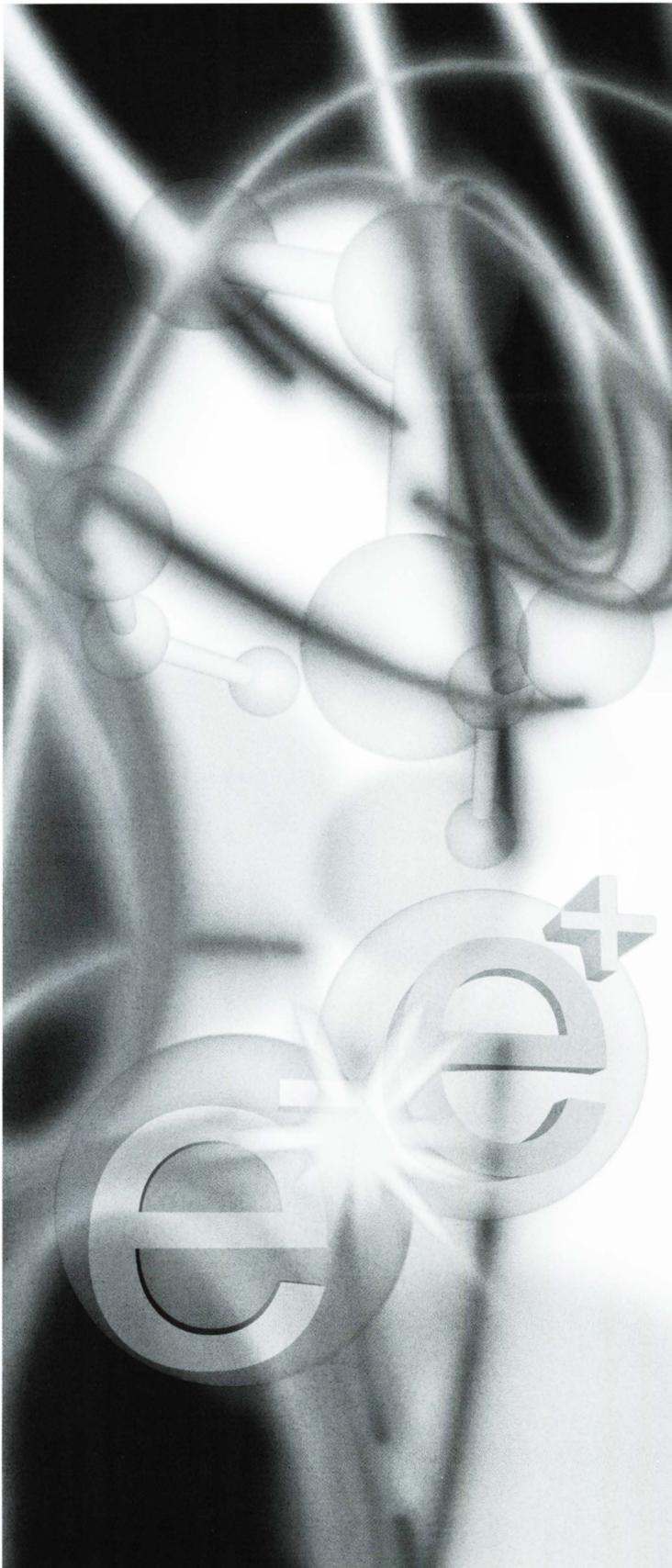
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by Michael Carr



Cool Stuff

Feild Effects

Words: Kate Feild

Images: Thanks to Corbin Motors

I'm sure walking down College Avenue in Blacksburg, you may have passed a little orange three-wheeled "thing" that resembles a sneaker. For a second, you may wonder what it is, whether it runs, and more importantly, why it is parked in the motorcycle parking spot.

That orange "thing" is, in fact, a car. It is called Sparrow I and is manufactured by Corbin Motors, a small start-up company based in California. According to Pamela Denner, who works in promotions for Corbin Motors, all the Sparrow I's that are currently made were produced by-hand in an 80,000 square foot building.

Denner says that the business was founded on a dream by Mike Corbin and was funded initially by his motorcycle business. Tom Corbin, now President and CEO, followed in his father's footsteps with this dream, which was helped along by outside funding.

Tom Corbin had no formal education outside of high school. His dream was made a reality with hard work and dedication of himself and the people he works with. When asked about the nervousness behind creating a product so new and different, Corbin states, "Work and risk taking. No place to be nervous."

So what is so special about this car, and why is it so small? According to a World Trade Organization report, 87% of people drive 18 miles or less to work everyday, and 93% of those people are alone in the car. So why are so many people driving SUVs, which cost a lot of money and give off toxic emissions into the atmosphere? All these commuters could be driving a Sparrow I, which gives off no emissions and costs what is equivalent to about a penny a gallon, and gets what is equivalent to 358.96 mpg.

That sounds good to me, considering that gas prices keep fluctuating.

The reason for such high fuel efficiency is that the Sparrow I doesn't run on gas. It has an electric battery that can run for about 60 minutes before dying. That doesn't seem like a long amount of time, but the Sparrow I is meant to be a second car, used only for short commutes.

When asked about the nervousness behind creating a product so new and different, Corbin states, "Work and risk taking. No place to be nervous."

The battery pack in the Sparrow I consists of 13 – 12-volt batteries wired in a series to create a 156-volt system. This battery pack is connected to a brush motor, which converts the electricity coming from the battery into mechanical energy, which thrusts the vehicle backward and forward. Between the battery and the brush motor is a controller, which regulates the current between the two.

Inside, you will find one seat, and a dashboard similar to other cars. The dials on the Sparrow I, however, are a little different. It has, of course, a speedometer. It also has an amp meter, which tells you how much current the battery pack is using, and an e-meter that tells you how much battery power is left.

The Sparrow I, of course, comes with all the amenities: two accessory outlets for cell phones, a fan and heater, an AM/FM radio, a CD player, and a digital clock. One odd characteristic about the Sparrow I is that the high beam switch is on the floor!

Plus, the Sparrow I is fun to look at. It has only one door, and is about a quarter of the size of a normal car, which is why you

can park in the motorcycle spot. It weighs only about 1600 pounds, has a height of 57 inches, length of 100 inches, and width of 50 inches. Perfect for the short traveler (like me). It comes in a variety of colors, from boring colors like red and blue to vibrant shades of coral and lilac (which happens to be Denner's preference). Corbin and I share a favorite in the lime green!

The only real downsides of the car are the price (starting at \$14,900) and the break-in schedule. For a second car, it seems like a lot of money, but given how much it can save you in the long run, it may not be such a bad idea. Plus, as Corbin told me, "[This is] our chance to make a positive contribution to the world and give people an opportunity to vote with their pocketbooks for a better form of urban travel."

The Sparrow I also has a break-in schedule during which you can't over exert the battery (i.e., don't press the gas pedal too hard). Which means, alas, no races between the Sparrow I and a Mercury Cougar until it is broken in.

Now for another pro: tax credit. The WINGS Act (Wider

Incentives for Non-Gasoline Small Electric Vehicles Act of 2001) was passed by the House of Representatives and is now being debated in the Senate. This act gives a tax credit for the purchase of a three-wheeled electric car (i.e., a Sparrow I). Saving money for buying a cool car. You have to love it.

Some of you may think that the Sparrow I is for old tree-hugging hippies who want to relive their days at Woodstock and who enjoy being cramped into a small car for 18 miles. But, to tell you the truth, SUVs are a fad. And when that fad dies, you'll be begging for a Sparrow I. However, at the moment there are only 350 Sparrows built and on the road, so act fast!

Corbin is also working on the Sparrow II, which is due out at the end of this year, costs about \$16,900, and has a more spherical design. According to Corbin, about 10,000 Sparrow II's are to be produced each year. Corbin Motors is also working on the Merlin Roadster, which has a Harley Davidson 88-cubic inch, twin cam balanced, fuel injected engine.

E F



No, it is not a sneaker! It's a Sparrow I!!

Jump Starting a Student Organization

Words: Alison Lazarevich

Images: Landon Fraiser

The IEEE is an international, professional organization for Electrical and Computer Engineers. At Virginia Tech, this organization has a student chapter with a newly elected board of students who are hoping to re-energize member involvement. Heading this team is Michael Schenck, the newly elected President of the VT IEEE chapter. The following is an interview with Mr. Schenck conducted on February 27, 2002.

Interviewer: Hello, Mike. Thanks for joining me this evening.

Schenck: Thank you very much for being here and talking with me about the IEEE.

Interviewer: First off, I would like to ask you, "What is the IEEE?"

Schenck: The IEEE, on a non-collegiate level, is the largest professional engineering organization in the world. Around 90% of all formal documents and papers concerning topics in Electrical and Computer Engineering are published and approved through the IEEE. It's basically a forum for the exchange of knowledge in fields relating to Electrical and Computer Engineering. On a collegiate level, the IEEE allows students and faculty to grow together professionally through networking as well as get to know one another socially.

Interviewer: What prompted you to run for IEEE president?

Schenck: Well, I have been at Virginia Tech for a number of years now and I felt frustrated with the lack of organized student activities for Electrical and Computer Engineers, especially as an undergraduate. Another thing that I felt needed to be changed was the condition of the Whittemore EE/CpE student lounge. By running for IEEE president, I felt that I could change these things.

Interviewer: So what are your main goals as the IEEE president? What do you hope to accomplish?

Schenck: My main goal is to re-establish the IEEE as a significant presence in the department. I feel that if all 1300 undergraduates in EE/CpE know more about the IEEE and gain an interest in participating in activities, then we, as a team have accomplished a lot.

Interviewer: When you say "we" to whom are you referring?

Schenck: I am referring to the other IEEE officers. Before the last elections, I found that many people felt as I did about the lack of student involvement in the IEEE and so I encouraged them to run for an IEEE office. Currently, we have thirteen officers and we are looking for one more person to join our team to act as a liaison between ourselves and the local community.

Interviewer: In the three months since your election, what have you and your team of officers accomplished?

Schenck: Our largest accomplishment was the success of our Spring 2002 Kick-Off. The Kick-Off was a spot light on undergraduate research opportunities held in the Hancock Atrium. Several labs within the department including the Center for Power Electronic System (CPES), the Center for Wireless Technology (CWT), Microelectronics, Optoelectronics, and Nanotechnology (MicrON), and the Optical Information Processing Lab (OIP) were invited to showcase their research and bring descriptions of possible undergraduate research openings. The Kick-Off also allowed a lot of students to learn more about the research being conducted within the department. The event, in my mind, was very successful. We had about 300 people, students and faculty, show up that evening. About 175 people stayed for the duration



The IEEE Staff, from left to right; Back row: Rajaraman Parameswaran, Olivia Miller, Caleb Zimmerman, David Miller. Front row: Calloway Cass, Alison Lazarevich, Michael Schenck, Suneeta Kudaravalli, Trey Thomasson.

of the evening and several of the labs found students who were interested in getting involved with their research.

Interviewer: And with this success behind you, what are you and your officers' goals for the coming semester and even the coming year?

Schenck: We have a lot of ambitious goals. We have continued the Seminar Series where members of industry come to Tech and talk to our students about a variety of topics from emerging technology to working in the "real world". Another goal is to establish a social night where IEEE members can go to a local establishment, eat with one another, and even get a discount for being IEEE members. At the end of the semester, we would also like to have an awards banquet of some sort that recognizes outstanding researchers and contributors, both student and faculty, within the Bradley Department of Electrical and Computer Engineering.

In the long run, we would like to support more academic activities such as hosting programming or robotics competitions as well as contribute more papers to the surrounding professional chapters of the IEEE so that students can be more exposed to real world tasks and rewards. But, as I said before, the main goal is to get people interested and involved.

Interviewer: And how can a person get involved with IEEE?

Schenck: Interested people should send an email to IEEE@vt.edu or visit us on the web at <http://filebox.vt.edu/org/IEEE/> or in per-

son at 213 Whittemore Hall.

So, the IEEE has some new and enthusiastic leadership. If you are interested in helping out with the IEEE in anyway, whether you want to work on the web site or just come out and get a discount on dinner for being a member of a great student organization, contact the IEEE using the information above. Or come to a meeting and see what the organization is all about.

We at the Engineers' Forum look forward to the great success that this new guard is sure to attain. Be on the look out for great things from the IEEE in the near future.



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Parking, Parking Everywhere...

Words: Sarah Lewis

During Orientation and tours, speakers announce that VA Tech students are offered hunting passes...to hunt for parking spaces. Anyone who has a car on campus knows first hand the lack of spaces available (particularly on the parallel parking spots and the B lot / commuter lot), and the distance to the I-Lot, affectionately referred to as "the cage." According to a presentation done by Steve Mouras of the Office of Transportation, some of the main problems include a decline in physical parking spaces due to new buildings, both academic and administrative, increased growth in the need for these spaces, and more clashes between pedestrians and vehicular traffic. To address these problems and others, several measures were implemented.

Throughout the Fall 2001 semester, parking facilities were surveyed and studied by researchers for the purpose of gathering information about traffic flow and average parking lot usage around campus. Additionally the roads and intersections located around and through campus were also studied and evaluated for "level of service." Also, a peak traffic flow time was found for morning and evening of 7:30 – 8:30 a.m., and 4:30 – 5:30 p.m. The results of these studies resulted in the basis of the current Parking and Transportation Master Plan from 2002 until 2008. Because of new building sites and the loss of precious parking space currently available, several alterations to the present parking and driving conditions were addressed. Also, the poor traffic/pedestrian circulation of some areas also required attention. This information was then analyzed and used to create the Virginia Polytechnic Institute and State University Parking and Transportation Master Plan in January of 2002. According to this master plan, several changes will be put into effect in the next six

years, taking into account several key issues affecting campus life.

The new building sites, though a welcome addition for most, involve some drawbacks. One drawback is the loss of parking spaces from an already limited supply. Without alterations to current conditions, and the building projects on schedule, an increase of 556 in parking demand will be felt during peak parking periods. Also, a net decrease of 1,148 parking spaces will be lost due to these new buildings and additions. One alteration, the New Engineering Facility, next to Whittemore Hall, now named Durham Hall, will be divided into two separate phases. Phase 1, to be completed in 2004, will result in a total of 70 lost spaces and an increased demand of 97 spaces during peak times. Additionally, Phase 2, to be completed by 2006, will also result in a loss of 70 parking spaces and a gain of 65 in demand. Of the total spaces lost, most of the spaces will be within lots used primarily by faculty and staff.

Of the 22 intersections studied during the peak morning, noon and evening hours, 23% in the morning, 4 out of 5 at noon, and 45% in the evening received a "failing rate." Additionally, West Campus Drive functioned on a "poor level of service during both peak times", and high traffic volume and speed on Washington Street, during the evening peak, caused "heavy delays."

Another consideration that must be taken into account is the consequences of "campus urbanization." One of the key differences between VA Tech's campus and that of another school is our rural setting. It is important to consider the "general desire to maintain the existing character of the campus and the quality of

the pedestrian environment.” Additionally, “enhanced transit, bikepaths, and pedestrianways” would be needed to maintain the current standard. Also, the financial burden must also be considered; someone or something must offset the cost of any improvement made.

The final solution devised requires the construction of a maximum of six parking decks over about half of the B-Lot. One of these decks would contain the “transit center” where a passenger could easily board a bus for almost any destination with comfort. Also, the parking decks “could provide direct connection on level grade via pedestrian bridges from the upper parking structure levels to the elevated central campus.” Another parking “structure” is planned for the I-Lot “adjacent to the Bio-Medical

Of the 22 intersections studied during the peak morning, noon and evening hours, 23% in the morning, 4 out of 5 at noon, and 45% in the evening received a “failing rate.”

Science precinct;” and finally, “a composite parking structure is proposed at Main Street adjacent to downtown Blacksburg.” This would serve to benefit both the University and the town of Blacksburg. It would also require “additional stops at perimeter parking areas” by the bus system in order to make the system desirable to users. “The proposed Duck Pond Road extension could be utilized to make the overall route more direct.” Also, passengers should not wait more than seven to ten minutes for this service; and possibly incorporate GPS into the system, so passengers know where a bus is at any given time, or can plan their trips more effectively on the new route. The new lot additions will have a financial impact to users as well. The current parking permit price averaging \$60.00 will increase over the next four years to \$170.00 (still below the average of “comparable universities.” Also, the redesigned lots will be on a tiered system. It will be divided into five levels. The first and most expensive (\$180.00/space) will be “individually reserved spaces and spaces reserved for department use.” Tier 2 will be “Structured Parking and Parking Close to the Central Campus.” These spaces will average in cost around \$90.00. Tier 3 is “Residential Parking” averaging in cost to be about \$75.00. Tier 4 includes the “General Surface Lots” at about \$48.00; and finally, tier 5 includes the “Perimeter Parking Lots” (these will be serviced by a shuttle bus)

and will be the least expensive averaging around \$30.00. With this tiered system, the individual people can choose which option fits their needs the best, with the exception of residential students who are in Tier 3.

The Master Plan also includes extending several roads (Washington St., University City Blvd.) and retiming some lights, and widening the lanes and putting in a median and/or enhancing the pedestrian walkways along side, on Washington St. and West Campus Drive. Also, more bike racks are to be placed by building entrances in conjunction with a new bike repair shop at the new main bus stop in B-Lot order to make bike travel more appealing.

This plan relies on several alterations to the present system in order to accommodate for cost, public approval, and several other factors. Currently, parking citations account for over half of the income generated by parking. One alteration is to create a more stable source of income by switching from relying heavily on tickets to depending on permit sales. Also, the planned construction itself is designed to fit the architectural style of the current campus atmosphere. Finally, one idea that would both create revenue and increase community support of the plan is to make the parking lot by Shultz Dining Center available to the community at non-peak times and public events.

Hayes, Seay, Mattern and Mattern, Inc. in association with Carl Walker, Inc., Hill Studio, P.C., and Intermodal Engineering, P.C. created this Master Plan. Through careful study and planning, they developed clear and reasonable solutions. Their goal of finding a better system for parking and traffic flow to offset the losses caused by new building sites and poor roadways was needed to help faculty, visitors, staff, and students alike to more easily move from place to place.



Antimatter

What

Antimatter: What in the world is it? To some it may sound like a fabricated idea purely for use in science fiction. Others may know that it exists but may still not be quite sure of antimatter's true definition. Whatever the position, everyone may one day realize the role antimatter could play in changing society and possibly the world as we know it. But the question remains, how can something with the potential to be so important go relatively unnoticed?

A partial explanation for the lack of knowledge about antimatter lies in our schooling. All throughout lower levels of general science we only hear, "matter, matter, matter." By the time antimatter enters into our vocabulary, over a decade has passed since we learned of matter. The very essence of the word threatens our apparent knowledge; knowledge that has taken numerous years for us to formulate.

Antimatter is not taught in elementary school because our world is made almost entirely of matter. Our first definition of matter was, "something that simply takes up space". Our original definition immediately makes the word antimatter appear to go against everything we have learned. Anti, a prefix meaning opposite or against, seems awkward and out of place when used in front of the word "matter". The opposite of taking up space would be not taking up space. With this definition applied, antimatter would not exist. Antimatter does exist and it exists in a very important fashion. The anti prefix used in the word antimatter denotes that antimatter simply behaves in an opposite fashion of matter. With the exception of mass, all the properties of anti-

matter are opposite of those for matter.

The word antimatter was first coined in 1928 by the British physicist Paul Dirac. In formulating a theory for the motion of electrons in electric and magnetic fields, a theory which included the effects of Einstein's special theory of relativity, Dirac predicted that the electron must have an "antiparticle," having the same mass as the electron but opposite electrical charge. In 1932, Carl Anderson first observed this antiparticle experimentally and it was named the "positron." The positron was, therefore, the first discovered antimatter particle.

Antimatter and matter seem very similar in nature with the main difference being their opposite electric charges. Each proton has an antiproton. Each quark has an antiquark. In general terms, for all matter there must be antimatter. The problem with antimatter lies in the fact that it is not readily present in our world in significant amounts available for research. Before Dirac's and Anderson's discoveries, antimatter was not even thought to exist.

Once antimatter's existence was established, antiprotons and other antiparticles could be created in scientific experiments around the world, prompting further research. In fact, research on antimatter is being done by individuals right here on the Virginia

er:

is it and where is it taking us?

Tech campus. One such individual is physics Professor Leo Pillonen.

The goal of Dr. Pillonen's research is to disprove the standard model theory, which describes the interaction of all particles. "We want to see evidence that theory fails...at least some times." He went on to say that the standard model, "already predicts that we'll see a difference...what we want to see is a difference that the theory doesn't predict." The model referred to has stood for over 25 years. A change to the theory would be revolutionary. The mere idea that we do not know for certain how everything behaves in our world shows we are still in the early stages of antimatter research.

Research is being done all around the world because a number of unknowns still exist surrounding antimatter. All the possible uses of antimatter are not yet known. The lack of knowledge currently surrounding antimatter leads one to think that antimatter has the potential of becoming a vital part of our world.

With antimatter being so similar to matter it is mind boggling why it is not taught more in school. In fact, we can be very thankful for antimatter behaving the way it did at the time of the big bang, or we wouldn't be here. Today our world consists of matter. As far as we know, other galaxies are built in the same fash-

ion. The reason lies in what happened during the creation of the universe. Some theories suggest that during the big bang equal parts of antimatter and matter were formed. If this were the case, nothing should exist today.

Since antimatter and matter are complete opposites, annihilation occurs when they encounter each other. Both parts are destroyed with all mass being converted into energy. Therefore, if equal parts were formed during the big bang, all we would have is massive amounts of light. Obviously, we are living in a matter filled world right now. Therefore, complete annihilation did not occur.

Other theories say an asymmetry between matter and antimatter parts existed at the time of the big bang with a surplus of matter. According to that particular theory, the extra matter, as little as one part in a 100 million, is responsible for our world today. Whatever the reason, we have matter in our world today and antimatter takes a back seat. Antimatter was present at one time but is now gone from the world as we know it. Does that mean we should simply ignore antimatter and only bring it up for entertainment purposes in science fiction? Antimatter can be much more valuable than entertainment.

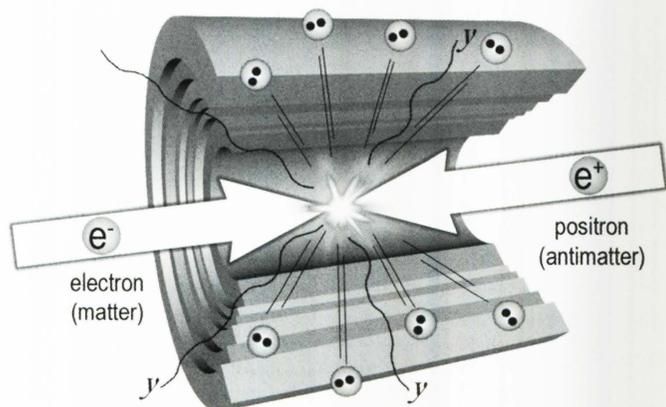
The annihilation aspect of antimatter and matter provides the basis for all possible uses. As said before, when anti-

matter and matter collide, all mass is converted into energy. Energy can be used in numerous settings; consequently, the idea of creating energy from matter and antimatter could be extremely helpful to our society. Science fiction has already capitalized on spaceships and robots powered by antimatter but fiction could possibly become reality.

Any vehicle in outer space is going to need some source of fuel to attain a certain velocity. Currently, NASA's space shuttles are driven and maneuvered by propulsion with hydrogen and oxygen serving as the source of fuel. Since the collision of antimatter and matter results in all mass being converted into energy, this process is a far more efficient method than the chemical reaction of hydrogen and oxygen. A matter-antimatter collision will release about 10 billion times the energy of the chemical reaction of hydrogen and oxygen. The massive potential amounts of energy that could be obtained from such a collision have led to the start of plans for antimatter spacecraft. NASA may be no more than a few decades away from developing such a spacecraft.

Although antimatter spacecraft would be a better method of space travel, numerous problems exist before they can become a reality. One problem lies in the fact that antimatter and matter can not be in the presence of each other without annihilation occurring. Because of this, antimatter cannot simply be dropped into a canister made of matter. Furthermore, antimatter cannot be placed in a canister made of antimatter and then set down on matter either. Thus, designs for spacecraft have to address this particular issue. Using magnetic fields is one way in which a premature collision could be prevented.

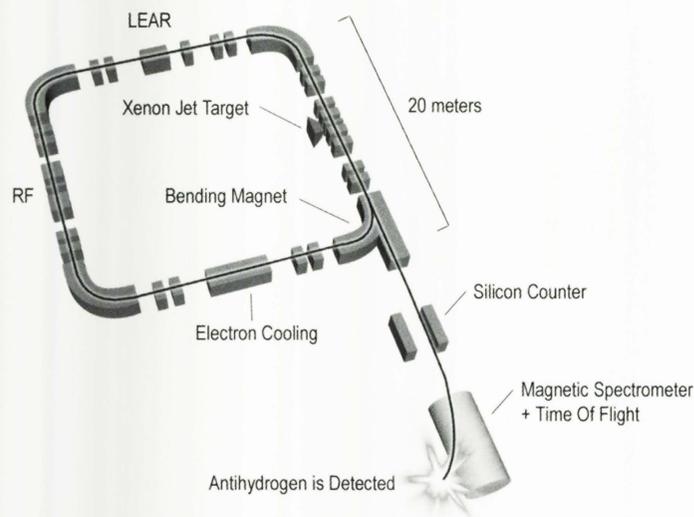
In one design of an antimatter spacecraft engine, the engine consists of three main components. The first, and most important, is a system of magnetic storage rings. In the design, storage rings with magnetic fields can move the antimatter around so that it does not come in contact with matter until necessary. The second aspect of the engine is the feed system. When antimatter is needed, it is released and is free to come in contact with



electron meets positron *poof*

matter and thus release energy. The third and final aspect is a magnetic rocket nozzle thruster. The thruster's purpose is to direct the resulting energy through a nozzle in order to achieve the desired motion of the spacecraft.

The idea of the antimatter drive spacecraft seems like a novel one, but further problems exist beyond antimatter storage. The spaceship drive would be extremely efficient; capable of taking a one-month manned voyage to Mars on just 14 nanograms of antiprotons. However, making the spacecraft would be a problem in itself. Finding enough fuel for the spacecraft is another problem, if not a more significant one.



particle collider producing antihydrogen

Currently, antimatter has not been found in abundance anywhere in our world. Instead, it has only been created in high-energy particle colliders. One such particle collider exists at the European Organization for Nuclear Research (CERN). Although antimatter can be produced at CERN, it is not produced in any abundance. All the antimatter produced at CERN in a year would only be enough to light a 100 watt light bulb for three seconds, hardly enough to fuel a space mission to Mars. The task of readily creating antimatter is one of the challenges that will be a top priority in the coming years.

Antimatter's uses can go far beyond space travel. To those who argue space travel is simply a waste of money, another use of antimatter may seem like a more noble idea. Cancer is a disease in society today affecting millions of individuals. Antimatter may some day help in the curing of cancer. Currently, antimatter is already being used in medical imaging. Eventually, it could become more useful in the treating of disease.

Radiation is currently used in cancer treatment to kill cancerous tumors. Many scientists feel substituting antimatter for

Antimatter: Continued on Pg.13.

E-Mail Bag

The Top 10 Things Engineering School Will Not Teach You

10. There are at least 10 types of capacitors.
9. Theory tells you how a circuit works, not why it does not work.
8. Not everything works according to the specs in the data book.
7. Anything practical you learn will be obsolete before you use it, except the complex math, which you will never use.
6. Never try to fix the hardware with software.
5. Engineering is like having an 8 a.m. class and a late afternoon lab every day for the rest of your life.
4. Overtime pay? What overtime pay?
3. Managers, not engineers, rule the world.
2. If you like junk food, caffeine and all-nighters, go into software.
1. Dilbert is a documentary.

A tourist walked into a pet shop and was looking at the animals on display. While he was there, another customer walked in and said to the shopkeeper, "I'll have an AutoCAD monkey please."

The shopkeeper nodded, went over to a cage at the side of the shop and took out a monkey. He fitted a collar and leash, handed it to the customer, saying, "That'll be \$5000."

The customer paid and walked out with his monkey.

Startled, the tourist went over to the shopkeeper and said, "That was a very expensive monkey. Most of them are only few hundred dollars. Why did that one cost so much?"

The Shopkeeper answered, "Ah, that monkey can draw in AutoCAD - very fast, clear layouts, no mistakes, well worth the money."

The tourist looked at a monkey in another cage. "That one's even more expensive! \$10, 000! What does it do? Oh, that one's a Design monkey; it can design systems, layout projects, mark-up drawings, write specifications, some even calculate. All the really useful stuff," said the shopkeeper.

The tourist looked around for a little longer and saw a third monkey in its own cage. The price tag around its neck read \$50,000.

He gasped to the shopkeeper, "That one costs more than all the others put together! What on earth does it do?"

The shopkeeper replied, "Well, I haven't actually seen it do anything, but it says it's an Engineer."

Student Tips

Resume Fraud

Words: Patrick Hummel

Recently, I began searching for a summer internship. As I prepared my résumé, I read a tip in a career planning guide that said, "When writing a résumé, maximize the truth but never lie." I have always thought this went without saying. However, I discovered this is not the case. A fair percentage of job hunters lie on their résumé. What are the chances an employer will discover if a person has stretched the truth a little here and there on their résumé? Fairly good, because employers' background checks aren't as simple as they used to be. Companies are now hiring outside firms to conduct extensive background checks on everyone they hire. Once a job hunter signs a waiver stating that it is alright for an employer to confirm that they are being totally honest, the employer has the potential to find out more about an individual than they may know about themselves. What happens if it is discovered that a prospective employee has lied? Well, for one, they don't get a 401(k) plan.

The effects of lying on your résumé can be best seen by looking at famous cases of résumé fraud. For instance, take the case of George O' Leary. Mr. O' Leary was forced to resign a few days after being named the football coach of Notre Dame for including some outrageous lies on his résumé. O' Leary claimed he had a master's degree from New York University, yet he had only completed a few hours towards a master's degree. He also claimed he had lettered three years on the football team at University of New Hampshire when, in actuality, he hadn't even played in one game. These inaccuracies by George O' Leary cost him both his job at Notre Dame and national humiliation. If he hadn't lied, he still would have gotten to where he was before the incident because of his coaching ability.

In another famous case of résumé tweaking, a former chief executive of Sunbeam Corporation, Albert J. Dunlap, failed to include

two companies he had worked for in his résumé. Dunlap was fired from the two companies and was sued by those companies for accounting fraud. However, Dunlap was able to become the chief executive of Sunbeam Corporation years after those events. When he was fired from Sunbeam in 1998 and charged with similar fraudulent actions, Sunbeam discovered his past employment.

However, there have been instances where someone who lied on their résumé has kept their job. In the case of San Francisco Police Chief Fred Lau, Lau stated on his résumé that he was a San Francisco State University (SFSU) alumnus, but he had not completed his bachelor's degree. Yet, Lau remains police chief and has since graduated from SFSU. Lau's other qualifications were outstanding, and the Mayor of San Francisco believed it was just a misunderstanding.

In order to prevent hiring a deceitful employee, companies are now hiring outside help to do extensive background checks on all employees they hire. One Internet-based company that performs these checks is called HireRight. Unlike the old approach to checking a job applicant's background (i.e. calling their previous employers, making sure they attended their respective college, etc.) companies such as HireRight do sophisticated and extensive background checks. Some of the screens on job applicants are: a trace on their social security number, a check for any criminal records, verification of all their credentials, a review of their credit history, even an examination of their driving record. Of course, an employer has to ask a prospective employee to sign a consent form that says that they understand what checks to which they may be subject.

Even if a job seeker's background checks out okay and matches what is on their résumé, an employer may check to see if they really have the skills they claim. Services like ReviewNet test

prospective employees' skills with online tests. An employer can determine if a job applicant has average or above average skills easily using timed online tests.

As in the cases of Lau, O' Leary, and Dunlap, the areas people tend to lie the most on their résumé are on their employment history, educational background, and accomplishments. According to HireRight, 30% of people looking for a job embellish their accomplishments, 33% change the dates of their previous employment, and 10% lie about their background significantly. Some job hunters also lie to employers about their previous

“When writing a résumé, maximize the truth but never lie.”

salary in hopes to get a better one.

The consequences of lying on a résumé are fairly obvious; if an employer discovers you have lied on your résumé, in all likelihood, you will be fired immediately or never offered a job in the first place. Not only do you burn your bridges and make it harder on yourself to find another job, but you may also be sued. Employers sometimes sue former employees who lied on their résumé for the time and money spent to recruit, interview, and hire them.

Learn from others' mistakes, and don't stretch the truth when writing your résumé. Employers are on the lookout for deceitful job hunters, and have the tools to discover any kind of lie on your résumé. If a company thinks you are a good match for them, most are willing to compensate you for any education you need to gain the skills that are lacking. People respect honesty; so, for the 30% of you out there who lied on your résumé, go back and fix it.

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Antimatter: Continued from Pg.13.

X-rays will yield more success in killing the tumors. The effectiveness once again comes down to the extreme amounts of energy generated in a particle-antiparticle collision. Of course, whether or not the energy can be focused into one area will determine the success or failure of antimatter treatment of cancer. We will most likely see antimatter used in medical treatment before space travel is fueled by antimatter.

Space travel and cancer treatment are only two possible uses of antimatter. Numerous others exist. Without increased knowledge of antimatter some uses may go unrealized. Although antimatter is still a relatively new aspect of science, it needs to be taken seriously. Just because our world is made entirely of matter doesn't mean that we need to forget about our antimatter friend. For all we know, an entire antimatter world may exist somewhere in the universe with antimatter people to match. We certainly don't know everything yet about our universe and when we do discover new ideas, such as antimatter, we need to grasp them for all they are worth. Antimatter may soon become a vital part of our matter filled world, but only if we know what it is.

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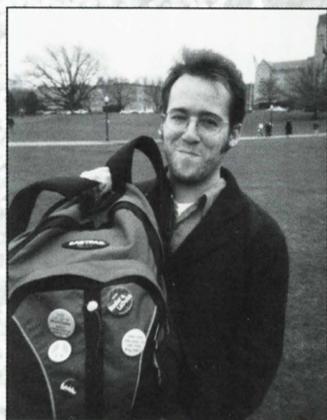
This space intentionally left blank because you weren't here to submit anything for it.

What could you have put here? A witty editorial, an insightful thought, or that perfect picture which would have won the acclaim of thousands? Too bad. Try our next issue by contacting forum@vt.edu or 231-7738. Because a blank page is a terrible thing to waste.

What's on that Backpack?

photo spread

Making its debut last issue, the photo spread features Virginia Tech students. This issue's theme is things on backpacks. We spied people with interesting buttons, pins, keychains, and beyond. Look for us around campus, you could be in our next issue!



Claude Cundiff

Math, Senior

*What is on your backpack?
buttons*

*He uses them as a way to
express himself.*



Amanda Kelly

Computer Science,
Sophomore

*What is on your backpack?
Marvin the Martian and
other keychains*

*She likes Marvin and the
one keychain has a Bible
quote she loves*



Lewis Buterakos

Professor, Vector Geometry
and Multivariable Calculus

*What is on your backpack?
binder clips*

*He needed some place to
put them after handing
back stacks of papers to his
students*



Jackie Flynn

Computer Science,
Freshman

*What is on your backpack?
keychains, pom pom*

*When she went to Europe,
everyone in her group had
to put a pom pom on their
bag*



Colleen Stock

Theater Major, Senior

*What is on your backpack?
keychains, small stuffed
animal*

*The karate monkey makes
a really cool noise.*



Cory Bigler

Architecture, Sophomore

*What is on your backpack?
hippo pin*

*Her friends and her share a
stuffed hippo and they
alternate months with the
hippo. The pin is a symbol
of that*



Carrie Carson

Works with Culinary
Services

*What is on your backpack?
keychain, button, ribbons*

*The rainbow and MADD rib-
bons she keeps because
they are causes she sup-
ports*

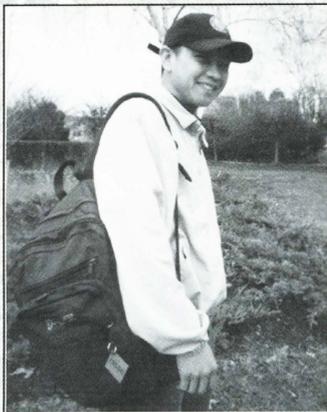


Greg Sellas

Architecture, Sophomore

*What is on your backpack?
tons of buttons, pins and
patches*

*They are from bands and
types of music that he likes.*



Rey Delossantos

Turf Management, Senior

*What is on your backpack?
keychain*

*It is from his high school
chemistry class*



Summer Roland

Psychology, senior

*What is on your backpack?
mushroom patch*

*The one mushroom remind-
ed her of her friend danc-
ing.*

Letter-from-the-Editor

Stress or Overstress?

Words: Michael Carr

Are you stressed? There is a good chance that a large number of our readers are stressed. Well, to some degree anyway. Anything that you consider disruptive or upsetting that could effect your physical health is in fact stress, on a mental or emotional basis. This makes all stress sound like an awful thing, but you must consider that there are different kinds of stress.

Some stress is very positive. It can challenge us in ways that will eventually allow us to grow and become stronger than before. Exams are based on this principle. Students are put under pressure and become stressed. As such we are then forced to learn the material in order to succeed and to remove the stress. Repeat the process over and over. Eventually the student either learns the required material or drops out and finds something for which they are better suited. In either case it is advantageous to all the parties involved.

This conclusion is true so long as the amounts of stress remain at constructive levels. When the challenge becomes too much there is a possibility of overstress.

Overstress is a very real problem and should be taken seriously. Depression and anxiety are some symptoms of overstress. Symptoms such as these are potentially destructive to the life of those who exhibit them. These symptoms are often called disorders because of their seriousness and in turn can lead to more serious problems. Alcoholism, compulsive gambling, insomnia and Hypochondriasis all are methods of dealing with too much stress. However none of these solutions solve the problem; they merely act as pick-me-ups or put-me-downs.

Dealing with overstress is a very difficult proposition. Most people can innately deal with small levels of anxiety through some kind of exertion, physical or otherwise. Removing tension is incredibly important in preventing overstress.

Unfortunately, large amounts of stress are another matter. We are not taught to deal with huge quantities of stress. Most

people will never have to deal with continuous high stress levels for but a short span in their lives. In most cases, people come out of these circumstances unscathed. But that small number of people who are harmed is intolerable. Some the world's most promising people have been destroyed by overstress.

In order to prevent any more such losses we should all learn about stress and stress management. To help students learn about and cope with stress, the Schiffert Health Center offers guides to and counseling for stress through the Wellness Resource Center. Go in and find out more so that you are better prepared for the future. Contact them at 231-3070 or at Wellness.resource.center@vt.edu.

For those of you out there who may feel overstressed, there are many things you can do to return to normal. First of all reduce your stress load. Slow down your life a little. Reduce your social and work schedules to manageable levels. Second, rest your mind. Exercise, read, and listen to music, anything to put yourself at ease. Lastly, if nothing works, visit a doctor. Overstress can be conquered with the correct approach.

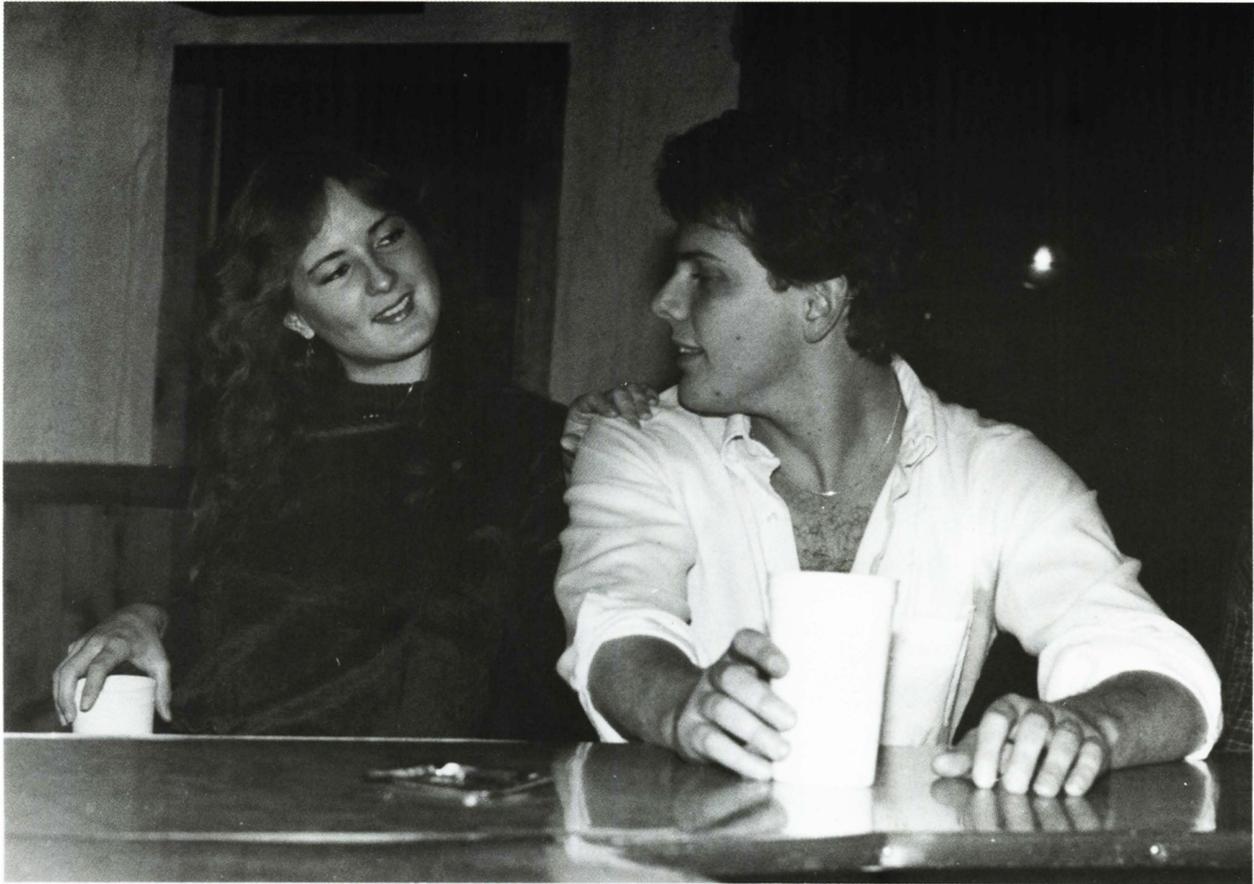
In the coming weeks and semesters, stress will increase across campus for many reasons. Be it exams or something more serious; don't let it get to you.

This article is dedicated to Dean Stephenson of the College of Engineering, who stepped down as dean this semester due to a stress related ailment. My staff and I send our deepest regards and well wishes to him so that he may recover fully in the near future. All I can say now is that we shall carry on and endeavor to do him proud.

Thank you Dean Stephenson, you will be sorely missed. Get well soon.

Michael Carr

Editor-in-Chief



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