

# Cars And Chemistry

BY TOM AND RAY MAGLIOZZI

**Dear Tom and Ray:**  
I've heard that each gallon of gas burned by a car releases about 20 pounds of CO<sub>2</sub> into the atmosphere. I'm not a chemist, but even allowing for some creative reactions and recombinations going on, how does combusting about six and a half pounds of fuel turn into 20 pounds of CO<sub>2</sub>? I can't quite get the math to add up. What am I missing?  
—Mike

**TOM:** You're missing the oxygen, Mike. The ideal air-to-fuel ratio in a car is 14.7-to-1. So to combust a pound of fuel, you need to combine it with almost 15 pounds of air.

**RAY:** That means in order to combust a gallon of gasoline—which weighs about six and a half pounds—you'd combine it with almost 100 pounds of air! So, you can see quickly how you can end up with 20 pounds of a single byproduct.

**TOM:** During combustion, a bunch of the carbon molecules (C) in the gasoline attach to two oxygen molecules (O) from the air, and come out the tailpipe as



CLICK & CLACK

CO<sub>2</sub>. And CO<sub>2</sub>—one carbon and two oxygen molecules—weighs about three times as much as the carbon molecule you started with.

**RAY:** Burning gasoline is a complex equation. You end up with all kinds of byproducts, including CO<sub>2</sub>, H<sub>2</sub>O, H<sub>2</sub>O, Cinemas, Floma, etc. But the way you get 20 pounds of CO<sub>2</sub> from six and a half pounds of gas is by combining the gas with a heap of oxygen during the combustion process.

Got a question about cars? Write to Click and Clack in care of this newspaper, or e-mail them by visiting the Car Talk Web site at [www.cartalk.com](http://www.cartalk.com).

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# Techno Trivia: A New Geek Order

BY TOBIN BARNES

No one could ever count to a trillion. A human's life span isn't long enough.

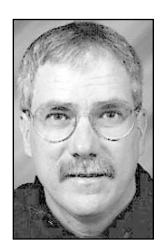
I learned that from a free application called "Awesome Facts" that I have on my iPod Touch. Applications are little specific programs you can download to smart phones, iPods, and iPads.

I talked about the new iPad last time. Through intricate and somewhat disturbingly convoluted reasoning, I said iPads are first going to make humanity obese and then later make us into nothing but brains without bodies.

My arguments almost made sense. Nevertheless, I suppose I'll be getting an iPad or one of its derivatives someday. That technology is the future. But I'm in no hurry. And that has nothing to do with my fears of becoming fat or turning into a bodiless brain, although either would give anyone pause about welcoming the "brave new world."

No, I'm in no hurry because I already have an iPod Touch, and from everything I've learned, the iPad is mostly just a bigger iPod Touch: same touch technology, same Internet access, and same music and reading potential, as well as many of the same types of applications, only everything's bigger.

No doubt, bigger can be better, but I'll wait for the second or third generation improvements and meanwhile put up with



Barnes

I probably wouldn't have ever run into that stuff about counting to a trillion without my "Awesome Facts" application. It's neat.

All I have to do is "touch" the application and up comes an awesome fact...and I mean awesome! That may not turn a lot of people on, but admittedly, an awesome fact can give me a little bit of a rush, kinda like an ice cream freeze.

If you know anything about me, you know I'm a trivia nut—not that it's ever done anything for me other than to remind others of my strikingly nerdy similarity to Cliff Clavin.

And my only justification for such indulgence might be a paraphrase of the Rolling Stones: "It's only trivia, but I like it."

Actually, trivia in many ways is just knowledge that other people think is unimportant, but we trivia buffs know better.

For example, "Awesome Facts" told me that "One in ten Americans don't know that the Sun is a star." Now some dumb clucks think knowing the sun is a star is trivia, but

we know it's essential knowledge, right? And furthermore, knowing that one in ten Americans is a dumb cluck gives me a little jolt of "Hey, I'm not a dumb cluck!"

Now here's another awesome fact: "Technically speaking, crystal glass is actually a liquid that flows very slowly"—so slowly that you won't notice it in your lifetime. Now that's a slow flow.

Yeah, stuff like that just gets my motor running. Wow.

And sometimes I run into an awesome fact that confirms what I suspected before, and that, too, can be gratifying.

For example, "It is possible to lead a cow upstairs but not downstairs."

With that, I now know that one of my old man's stories is true. He used to tell me about the time he and some friends led a cow up to the top of this wooden tower. It was meant to be a prank. The tower, which no longer exists, was on the college campus of my hometown.

Sure enough, they couldn't get the cow back down the steps. They had to kill it up on that tower and butcher it there. Yeah, pretty much of a mess.

Admittedly, I was often unsure whether my dad's stories were true.

Trivia has finally given me closure.

**Tobin Barnes, a high school English teacher, gets his skewed viewpoints of life from staring too much at Crow Peak, which looms above his home a few miles outside Spearfish.**

## SCHOLASTICS

### 2010 YANKTON COLLEGE SCHOLARSHIPS ANNOUNCED

The Yankton College Board of Trustees and the YC Scholarship Committee are proud to announce the names of the 2010 Yankton College Scholarships. The four graduating seniors are: Emily Gass, Yankton, the Carl & Cle Youngworth Scholarship; Elizabeth Fiedler, Yankton, the Bennett-Walter Scholarship; Rebecca Titus, Savanna, IL, the Brown-Daniels Scholarship and Matthew Gottschalk, Maple Plain, MN, the Rivola Family Scholarship. Alfred Burnett '84, New York City, NY, a post-graduate student, will receive the Brink Scholarship to pursue his Masters. These deserving students will receive \$1,000 to assist in the cost of their tuition at an accredited college or university for the 2010-2011 academic year.

In addition, there are two other Yankton College scholarships awarded to graduating seniors selected by Yankton High School, who met the criteria established by the donors. The 2010 recipients are: Tyler Frick, the Donald B. Ward Scholarship at \$1000 and Ethelin Cammock, the Harry Speece Scholarship at \$500.

For further information call the Yankton College office at (605) 665-3661.

### SDSU ANNOUNCES GRADUATES

**BROOKINGS** - South Dakota State University's spring commencement was held Saturday, May 8 in First Arena on campus. Morning ceremonies were held for undergraduate students with a separate afternoon ceremony for graduate students.

A total of 1,406 students completed requirements for graduation and took part in two separate ceremonies.

The names of honor graduates are marked with an asterisk (\*) to designate graduation with Cum Laude, two asterisks (\*\*) to designate Magna Cum Laude, and three asterisks (\*\*\*) to designate Summa Cum Laude.

Area graduates listed by degree included:

**Associate of Science in Agriculture & Biological Sciences:** John Paul Andersen, Viborg

**Bachelor of Arts in Arts and Sciences:** \*\*Brandon John Haynes, Scotland

**Bachelor of Science in Agriculture & Biological Sciences:** \*\*Jim Albert Jansen, Fordyce; Jenea Marie Heimes, Hartington; Derek E. Foxhoven, Wymot; Jenna E. Corlog, Avon; Matthew Lee Petersen, Centerville; Alex Daniel Boese, Freeman; \*Brian Todd Bye, Gayville; \*\*Sara Lynn Pepper, Geddes; Amanda Jane Cole, Geddes; Nicole Marie Rasmussen, Hurley; Jessie Kay Stockland, Irene; Andrew John Trudeau, Jefferson; Tyler Clifford Miller, Olivet; \*Colin Nash Nachtigal, Platte; Jennifer Linsey Nachtigal, Platte; Joseph Michael Kronaizl, Tabor; Jason D Kokes, Tabor; Tiffany Joy Mehlfah, Tripp; Brandon Michael Tycz, Tyndall; Chad Warren Regnier, Vermillion; Kelli Ann Morrison, Wakonda; \*\*Jessica Marie Howell, Yankton

### Bachelor of Science in Arts and Sciences:

Rebecca Sue Romkema, Avon; Brian James Oliver, Avon; Kristian Danse Eilendorf, Hurley; \*\*Jessica Jo Walder, Lake Andes; \*\*Natalie Ann Weber, Parkston; \*\*Heather Lynn Turnis, Platte; Megan Marie Turnis, Platte; Jaclyn Rae Bentzen, Tabor; Tiffany Joy Mehlfah, Tripp; Grayson Alan Pinner, Wagner; \*\*Heather Marie McDonald, Yankton

### Bachelor of Science in Education & Human Sciences:

Darcie Ann Beler, Freeman; \*Nikki Jo Reiff, Parkston

### Bachelor of Science in Engineering:

John Paul Schweitzer, Freeman; \*\*Ryan Jeffrey Murtha, Parkston; Shawn Louis Carsten, Platte; Briana Marie Wirth, Viborg

### Bachelor of Science in General Studies:

Keri Anne Hansen, Centerville

### Bachelor of Science in Nursing:

\*\*Amy Jo Schultz, Avon; Brenda Marie Taylor, Avon; Lindy Lenae Hotchkiss, Freeman; \*Tami Renae Nielsen, Irene; Danielle Marie DeBarberie, Vermillion; Kristi Elizabeth Domelan, Wagner; Holly Georgiana Jensen, Wakonda; \*\*Staci Lynn Metz, Yankton

### Bachelor of Science in Pharmacy:

\*\*Lisa Ann Becker, Yankton; Emily Jo Smith, Yankton

### Doctor of Pharmacy in Graduate School:

Ryan Michael Prouty, Freeman; Justin Michael Manning, Vermillion; Molly Lynn Branaugh, Yankton

### Master of Science in Graduate School:

Daniel Thomas Ostrem, Centerville; Lisa Ann Lee, Hurley; Ashley Marie Werning, Parkston; Lynette Lee Melby, Vermillion; Kara Suzanne Likness, Yankton

### CHADRON STATE COLLEGE GRADUATES ANNOUNCED

**CHADRON, Neb.** — A total of 311 graduates earned degrees from Chadron State College during spring commencement exercises held Saturday, May 8.

Following are the students from the area who graduated:

Christina Reynoldson, O'Neill, Neb., Bachelor of Science in Education in secondary English education

Ashley Johnson, Crofton, Neb., Bachelor of Arts in art

Kenneth Schumacher, Plainview, Neb., Bachelor of Arts in business

### KOEHLER SDSU DISTINGUISHED SENIOR UNDERGRADUATE

Emily Koehler, daughter of Craig and Sara Jessen of Gayville, recently received the Distinguished Senior Undergraduate in Chemistry Award from the American Chemical Society.

She was nominated by Dr. Matthew L. Miller, Professor of Chemistry at South Dakota State University.

Emily was nominated for her contributions to the field of chemistry throughout her undergraduate career. She tutored chemistry with the Winthrode Student Success center and was involved in the National Science Teacher's Association Student Chapter. She currently works as a

Formulation Chemist at Urethane Soy Systems in Volga. Emily will be teaching high school science in De Smet in the fall.

### MABEE EARNS HONOR AT NORTHWESTERN COLLEGE

**ORANGE CITY, Iowa** — Leah Mabee was among 61 students receiving honors for the 2009-10 academic year at Northwestern College.

Leah is a sophomore from Yankton majoring in biology health professions. She received an award from Sigma Tau.

### PHI ETA SIGMA INDUCTS NEW MEMBERS

**JOPLIN, Mo.** — The Missouri Southern State University Chapter of Phi Eta Sigma, a national first year student honor society, inducted 85 new members on Thursday, April 15.

Three first year students were also awarded the 2009-2010 "Emerging Leader" award.

"Emerging Leaders" are students who have shown excellence in academics and campus engagement.

Matthew Doerr of Yankton was inducted.



Doerr

### 11 INDUCTED INTO NATIONAL HONOR MEDICAL SOCIETY

**VERMILION** — The South Dakota chapter of the Alpha Omega Alpha inducted eight students, one faculty member, one alumnus and one resident at an induction banquet in Sioux Falls on May 6. Alpha Omega Alpha is the only national honor medical society in the world.

Area students from the Class of 2010 inducted were: Carrissa Pietz of Yankton.

In addition to students, the chapter elects up to one faculty, one alumnus and one resident each spring. Charles Kopriva, M.D., was the alumnus elected. He is a 1963 graduate of the Sanford School of Medicine of the University of South Dakota. Paul Bunker, Ph.D., dean of medical student affairs for the Sanford School of Medicine, was the faculty member elected. The resident elected was Elizabeth Wheatley, M.D., a second-year family medicine resident in the Sioux Falls Family Medicine Residency Program.

### KNOFF AWARDED SCHOLARSHIP AT SDSU

**BROOKINGS** — Ashley Knoff of Yankton was awarded the Susan Wilder Scholarship in Family and Consumer Sciences and the Florence Jarman Scholarship in Education and Human Sciences for the 2010-2011 academic year at South Dakota State University.

Knoff is a sophomore at SDSU, where she is active in cheerleading and intramurals. She is the daughter of David and Jozette Knoff of Yankton and is a 2009 graduate of the Yankton High School.

### STUDENTS AND FACULTY REPRESENT MOUNT MARTY AT STATE SDAS MEETING

The South Dakota Academy of Science (SDAS) conducted their 95th annual meeting recently in Spearfish, SD. Biology and Chemistry students Kelly Schilling of Wessington, Jordan Foss of Pickstown, and David DeWitt of Yankton presented posters based on undergraduate research projects that they had conducted under the direction of MMC faculty members Dr. Will McFoy and Dr. Chun Wu. The students' posters competed against student posters from institutions across the state.

Dr. Uriel Buitrago-Suarez, a biology professor at Mount Marty College presented his paper titled Comparative Anatomy and Evolution of the Shovel-nosed Catfish Group Sorubim (Bleeker). Dr. Krisma DeWitt, Mount Marty chemistry professor, presided over the meeting as the SDAS president and also presented during the Science Education in the 21st Century Symposium.

During the annual meeting, Dr. Chun Wu, chemistry professor, was elected to the position of Second Vice-President of SDAS and Dr. Uriel Buitrago-Suarez joins the Executive Board of SDAS as a Member-at-Large. Also attending the meeting as a past president was Dr. James Sorenson, biology professor.

### GEHL COMPANY ANNOUNCES 2010 SCHOLARSHIP WINNERS

Gehl Company announced that Gehl Foundation awarded two \$20,000 collegiate scholarships for the academic year beginning in the fall of 2010.

Graduating senior Max A. Brudvig of Cedarburg, Wisconsin, son of Gehl Company employee David Brudvig, and graduating senior Megan Vogt of Pierce, Nebraska, daughter of Gehl Company employee Gale Vogt, are the recipients of the scholarships for 2010.

Recipients are eligible to receive \$5,000 per year for each of four years during their collegiate career. Satisfactory scholastic performance and continuous full-time enrollment are required to maintain eligibility in the program.



Vogt

### KATHOL AWARDED SCHOLARSHIP AT SDSU

**BROOKINGS** — Maria Kathol of Yankton was awarded the Richard F. Kneip Scholarship in Economics for the 2010-2011 academic year at South Dakota State University.

Kathol, the daughter of Earl and LuAnn Kathol of Yankton, is majoring in economics - business specialization at SDSU, where she is active in the Economics Club (secretary), Collegiate Entrepreneurs' Organization and College Against Cancer.

### YHS BANDS RECEIVE SUPERIOR AT REGIONS

Yankton High School Bands recently participated in the Region I Large Group contest held at

Vermillion High School.

The YHS Wind Ensemble under the direction of Ted Powell received their 17th straight superior and the combined Red and Black concert Bands under the direction of Todd Carr received an excellent rating.

### FIRST NATIONAL BANK SOUTH DAKOTA AWARDS SCHOLARSHIP

First National Bank South Dakota is pleased to announce that Sara Holec has been selected as the recipient of a \$1,000 scholarship recently awarded by the bank and the South Dakota Bankers Foundation.

"Sara was selected for her incredible involvement in school and community activities while demonstrating superior academic achievement," said Gary Dybsetter, Yankton Market President. "When reading her application, several from our scholarship committee commented on how impressed they were with her academic standing despite filling her days with so many other activities."

Holec has been involved with many activities at school and in the community, including volleyball, band, USD Math Competition, Quiz Bowl Team, student council and volunteering her time for many community service projects and events.

Holec is a graduating senior from Bon Homme High School and plans to attend the University of South Dakota this fall majoring in pre-medicine. She is the daughter of Robin and Diane Holec.

### WELLENSTEIN GRADUATES FROM MTI

Vincent Von Wellenstein graduated from Mitchell Technical Institute on Friday, May 7th, 2010, in Mitchell, SD and received his Associate of Applied Science and Utilities Technology Degree. Vincent was awarded the Spirit of MTI award at graduation. 22 Spirit of MTI awards were given to one student graduating from each program. The Spirit of MTI award is a faculty selected award



Holec



Von Wellenstein

that goes to a student who has demonstrated all of the personal character traits and spirit in a student at the Mitchell Technical Institute and in industry who best represents the Spirit of MTI.

### GULLIKSON GRADUATES FROM SOUTHWEST MINNESOTA STATE

Tegan M. Gullikson of Hawarden, Iowa, graduated Summa Cum Laude from Southwest Minnesota State University on May 8 with a degree in marketing. She has accepted a position with UniPro Corporation of Atlanta, Georgia.

Jim and Donna Gullikson of Hawarden are her parents and Jean and Robert Gullikson of Yankton are her grandparents.

### HUBER NAMED AS STUDENT OF EXCELLENCE

The United States Achievement Academy announced that Spencer Huber from Yankton has been recognized by the United States Achievement Academy as a student of excellence in honor roll and leadership. This is a prestigious honor few students can hope to attain. The Academy recognizes fewer than 10 percent of all American students.

Spencer Huber, who attends Sacred Heart Middle School, was nominated for this award by Rebecca Peterson, a teacher at the school. Spencer will appear in the United States Achievement Academy's official yearbook which is published nationally.

Huber is the son of Todd and Lisa Huber of Yankton. His grandparents are Doris Wermers of Sioux Falls and Harold and Sylvia Huber of Emery.

### SALONEN TO RECEIVE CELEBRATION OF EXCELLENCE

**SIOUX CITY, Iowa** — Morningside College has awarded Kayla Salonen of Yankton the following Celebration of Excellence awards: Morningside Alumni Grant, Athletic Grant, Dean's Scholarship Award.

Salonen has been accepted for admission to Morningside for the fall 2010 semester.



Salonen

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**Senior Fitness Day**  
Wednesday, May 26th  
All day event, at locations throughout Yankton.  
Full schedule of events will be printed next week.  
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