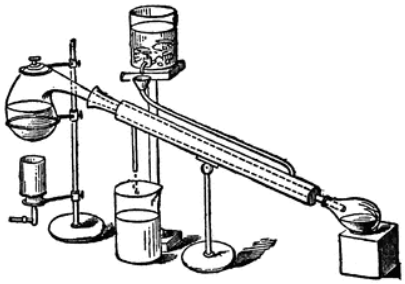
SOUTHWEST RETORT



SIXTY-EIGHTH YEAR **NOVEMBER 2015**

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and Chemistry in this area

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EMPLOYMENT CLEARING HOUSE

Job applicants should send name, email, and phone, along with type of position and geographical area desired; employers may contact job applicants directly. If you have an opening, send your listing, including contact info for your company, to retort@acsdfw.org. Deadlines are the 7th of each month.

JENKEM TECHNOLOGY

The PEG and PEGylation Technology People

Job Title: Sales/Marketing Assistant

Name of Company: JenKem Technology USA Inc.

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To San Antonio

How:

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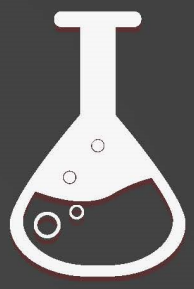
-Video the demo
-Submit to local section by March 1st



Criteria:

-Must be ten minutes or less
-Groups of 1-4 students
-Cost of chemicals must be $30 or less
-Must be doable outside of a fume hood
-Video must include what the demo is about, what chemicals are being used, what is happening in the demo, why the demo works chemically, and what is different about the particular demo (if based off another experiment)
-Goggles and other appropriate safety gear must be worn

Rewards:

-Chemicals paid for (Up to $30)
-Trip to the ACS Regional Convention for winner
-Trophy given to winner from each local section
-ChemMatters article about winners

*One winning group per local section (chosen by April 1),
one overall group winner (Chosen by April 15)

FIFTY YEARS AGO IN THE SOUTHWEST RETORT

Contributed by
E. Thomas Strom

The ACS tour speakers for November are **Dr. Jacob Sacks** of the University of Arkansas and **Dr. S. Z. El-Sayed** of Texas A&M University.

Texas Instruments is expanding its Central Research Laboratories. There will now be four instead of three labs plus an analytical chemistry facility.

Professor William Doering of Yale presented a series of three lectures during a one week visit to the University of Texas. The topics of his lectures were "Bullvalene," "Conjugative Interactions with Double Bonds," and "Thermal Reorganization."

The Dallas-Ft. Worth ACS Section has elected the following officers: Chair, **Russell Walker**; Chair-Elect, **John Banewicz**; Secretary, **John Fitch**; Treasurer, **Morton Prager**; Directors at Large, **William Glaze, Ronald Johnson.** Several members of the Texas Woman's University faculty will be attending the Welch Lectures in Houston Nov. 15-17. They are: **Dr. Robert W. Higgins, Dr. Lyman R. Caswell, Dr. Lewis Sams, Dr. Helen A. Ludeman, Dr. Andrew C. Pronay** and **Dr. William L Mecay. Miss Martha Lynn Hardin** is a new instructor in chemistry at Tarleton State College. **Michael J. Carlo** returns to the Tarleton faculty after one year's leave of absence working on his Ph.D. dissertation. **Mrs. Joy Terry**, Associate Professor of Chemistry, has returned from the University of the Pacific, where she has been doing advanced study in organic chemistry.

Dr. A. E. Dukler has been appointed Chair of the chemical engineering department at the University of Houston. At Rice, Chemistry Professor and President **Kenneth Pitzer** has received the Gilbert Newton Lewis Medal on Oct. 11. The seven past recipients have been **Linus Pauling, J. G. Kirkwood, William Giauque, Joseph E. Meyer, Robert Mulliken, Lars Onsager** and **Henry Eyring. Drs. J. L. Margrave** and **J. L. Franklin** attended the Atlantic City ACS meeting.

Dr. Joe Dennis, head of the Texas Tech chemistry department, was awarded an honorary Doctor of Science degree by Austin College in Sherman, TX. **Dr. Henry Shine** has been invited to present a review lecture at the Second International Organic Sulfur Symposium to be held in Groningen, Holland, next May

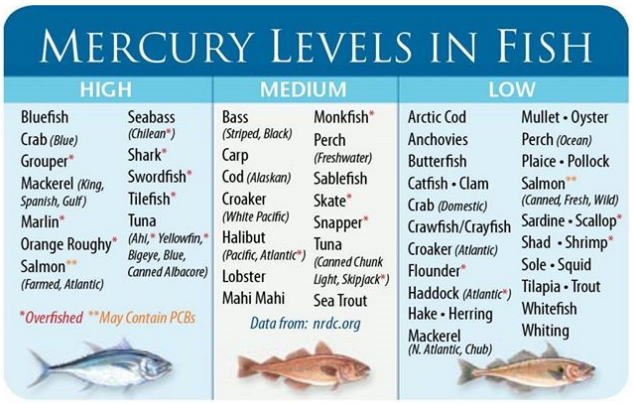
At Baylor, the speaker at the local section ACS meeting was **Dr. Robert S. Hansen** of Iowa State University. A seminar was given by the Baylor faculty by **William S. Pryor** of LSU on the topic "Isotope Effects on the Polymerization of Styrene."

Mercury in Fish

By

John E. Spessard, PhD, PE

In a joint effort in June 2014, the EPA and FDA have issued draft guidelines on the advisability of eating fish because of the mercury content. Please note, these are guidelines and are not enforceable standards. The guidelines recommend that pregnant women avoid four kinds of fish that are associated with high mercury levels. They are tilefish from the Gulf of Mexico, shark, sword fish and king mackerel. The draft report recommends limiting consumption of white albacore tuna to six ounces a week. Commonly eaten fish that are low in mercury include shrimp, cod, salmon, tilapia, canned light tuna and catfish. The mercury is present as methyl mercury. It attacks the thiol group (SH) in the amino acid cysteine. The mercury buildup is because big fish eat smaller fish without excreting mercury and the fish at the top of the food chain and that live the longest accumulate higher mercury levels. The draft report recommends even pregnant women eat more fish that is low in mercury because of important developmental and health benefits. Another recommendation is that pregnant women eat at least 8 ounces and up to 12 ounces of low mercury content fish to support fetal growth and development. My physician has me taking 2.4 grams per day of fish oil. The label claims that this oil has been treated to reduce levels of PCB's, dioxins, furans and mercury. She recommends fish oil because of the beneficial health effects of Omega-3 fatty acids.



Occupational exposures to mercury include gold mining and electronic production. In gold mining, mercury is used to dissolve gold from ore concentrate and the mercury is later removed by distillation. In electronics, mercury is an excellent conductor and uses include switches. Methyl mercury was formerly used as a fungicide and mercury was used in caustic-chlorine cells and also in the production of acetaldehyde. The Mad Hatter in Alice in Wonderland was inspired by hatters

using mercury to remove hair from felt and developing mercury poisoning symptoms. A firsthand experience was as a Graduate Student at Oklahoma State University, I observed a Chemistry Professor who had an operating mercury diffusion vacuum pump break on him. The resulting mercury vapor exposure disabled him. The Professor's tremors and altered gait were very noticeable. It did not occur to me at the time that he did not teach any classes or carry out any research. I did not know him well enough to have any opinion as to his mental state.

An insoluble mercury compound is not a particular hazard. Selenium which is also present in fish reduces or eliminates the mercury effect. Selenium, while toxic in larger amounts, is an essential trace nutrient. Finland, with low background selenium levels, requires that selenium be added to fertilizers. In fish, the mercury to selenium ratio is critical. (I have no guidelines on what is a safe ratio. Neither does an EPA study on the subject.) Mercurous chloride (Hg_2Cl_2) or calomel is the key ingredient in the Weston Standard Cell. This cell is used to calibrate other electrical cells. Calomel had medical uses onto the twentieth century. In the late 1940s, calomel was used in patent medicines. A professor of mine remarked he would never use it because he feared that some small amount could have been oxidized to more soluble mercuric chloride ($HgCl_2$), also known as Corrosive Sublimate.

The harmful effects of eating normal amounts of mercury-containing fish are debatable. The American College of Obstetricians and Gynecologists note that the overall effect of eating fish is likely to improve personal health rather than damage it. The College does suggest limiting (but not abolishing) fish consumption by pregnant women. The EPA concluded that eating up to 12 ounces of fish per week (two meals) is beneficial. People living in the Seychelles Islands eat fish in 12 to 14 meals per week. The Seychelles Child Development Study traced more than 700 mother-child pairs for nine years. The study found no neurological problems in the children resulting from both prenatal and postnatal exposure.

There have been studies that conclude certain ethnic groups are more susceptible to mercury. This is possible. Native Americans are more susceptible to alcohol than are Caucasians. A study on children of the Faroe Islands near Great Britain showed neurological problems caused by mothers eating pilot whale meat during pregnancy. However, this and similar studies consider only mercury levels and performance. They assume there are no other relevant variables. This can be misleading:
Obvious fact: More ice cream is eaten in the summer than winterl
Obvious fact: More people drown in the summer than in the winter
"Obvious conclusion": Eating ice cream is directly linked to drowning

...And Another Thing…

by Denise L. Merkle, PhD

And The Winner Is

11/12/15

Raise your hand if you know of someone who strives for recognition. If you're a science professional, your colleague, Dr. Awardo, is likely to be extremely competent, however competence is not the driver. Praise is required and advancement is the goal. *And there's nothing wrong with that*. Dr. Awardo knows that formal acknowledgement of accomplishments can do more to promote success than almost anything else. How different would Galileo's experiences have been, if he'd been beatified for his heliocentric views?

Fortunately, the American Chemical Society has an app for that. OK. Maybe not a sainthood app, and maybe not a phone app, and maybe an online nomination form is not really an app, but there are more ways than you ever considered to honor those who are important to science. More than sixty Nationally supported awards,[1] and many more sponsored by Local Sections, Divisions and Regions are in existence at this very moment. It is possible to reward excellence in all aspects of chemistry, chemical engineering, education, industry, eco-friendliness, flurochemistry, chromatography—anything. No matter how a dedicated professional has contributed to the world, there's an award to acknowledge it —an established, credible way to say, Well Done! Bravo! Congratulations! Awesome! Thank You!

Surely, everyone in the local section is conversant with the origins of the ACS DFW Local Sections' annual Doherty and Schulz Awards, so their backgrounds won't be listed here, but did you know that the recipients of both of these awards are the Local Section's nominees for Regional Awards, and that the Regional awardees may then be eligible for National Awards? The Schulz, for example, is the first step toward the Regional Teaching Award, which can lead to the James Bryant Conant Award in High School Chemistry Teaching.[2] This is recognition of high school education at its very finest, and its impact on a career should not be minimized.

Often, it seems, the Life in Science slides by and the idea of Awards squelches along in the background, in an uneasy miasma of fear of self-promotion or being a jerk, occasionally overlaid with the swamp gas of unworthiness. However, formal recognition exists for a reason. Seeking an Award is only egotistical if the award-

ee is standing on the foreheads of others to receive it.

It is also true that, in the midst of compiling an application packet, the Nominator's effort can simulate hauling on hip waders and slogging through a swamp, but emerging from the mire into the knowledge that the exertion expended to honor a friend or colleague for dedicated effort was beyond worthwhile is a reward in itself—a localized, personal award that everyone should experience (once, at least).

"What is the point of all this?" you ask. The point is, every day everyone encounters annoyances, grievances, and incompetent people. Every. Single. Day. Focus on ways to promote and express gratitude to those who do a good job, help your projects succeed, or make the world a better place —literally. Ponder those amazingly long lists of awards —and nominate someone. The Awards Committees may not agree with you, but maybe they will. Support the ACS - even the people in it. Dr. Awardo might thank you.

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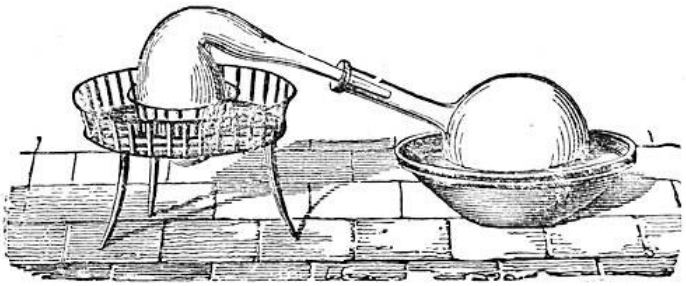

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From the ACS Press Room

Wildflowers on farms — not just crops — can expose bees to neonicotinoids

Neonicotinoid Residues in Wildflowers, a Potential Route of Chronic Exposure for Bees

Environmental Science & Technology

Since bee colonies started declining at alarming rates over the past few decades, some scientists have identified a group of pesticides called neonicotinoids that are commonly used on crops as a potential contributor. Now one team reports in ACS' journal *Environmental Science & Technology* that bees could be getting an unexpected dose of neonicotinoids from wildflowers on farms. Their results suggest past studies may have underestimated the bees' exposure to these compounds.

Scientists trying to close in on the causes of bee declines have identified a mix of pressures that could be to blame. Loss of habitats, and contact with parasites and neonicotinoids all have been cited as possible factors. Past research on neonicotinoids has focused mainly on bees' exposure through crops treated with the pesticides. But because several flowering plants grow naturally on farms, and farmers often sow wildflowers near fields to attract pollinators, Cristina

Botías and colleagues suspected that they could be a missing piece of the puzzle.

The researchers analyzed pollen samples from plants growing in areas close to arable fields and from beehives on five farms in the U.K. They found that pollen from wildflowers growing in these locations often contains neonicotinoid residues. In addition, 97 percent of neonicotinoids in the pollen that bees brought back to honey bee hives was from wildflowers, which were not directly treated with the pesticides. They say that neonicotinoids are likely leaching through the soil and being taken up by the nearby wildflowers. The team says their results suggest that exposure is likely to be higher and more prolonged than currently recognized.

The authors acknowledge funding from the U.K. Department for Environment, Food & Rural Affairs and the Biotechnology and Biological Sciences Research Council (U.K.).

Join us for Our Winter Event!

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December 10, 2015
7:30pm – 10:30pm
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2015 Chemistry Connections: National Chemistry Week in DFW Report

Chemistry Colors Our World

October 20-24, 2015

Chemistry Connections by the Numbers:

Number of volunteers:	**195**
Exhibits attendance:	**2288**
School group attendance:	**987**
Homeschool Afternoon attendance:	**~180**
Total Attendance:	**3275**

Program Support

The **Alcon Foundation** and **The Morris Foundation** were sponsors of Chemistry Connections 2015 through the **Fort Worth Museum of Science and History**. Additionally, **ZS Pharma** and the **American Chemical Society** provided funding through the student organizations.

Volunteer support was offered by the following universities, colleges, corporations and high school organizations.

Alcon

Texas Christian University

Texas Wesleyan University

Texas Woman's University

Southern Methodist University

University of North Texas

University of Dallas

University of Texas at Dallas

Eastfield College

Tarrant County College NW

Birdville High School

Fort Worth Country Day School

Lamar High School

Southwest Christian School

Special Events

School field trips—October 20-23: Serving school children is the backbone of Chemistry Connections. This year we worked with 987 students from 17 different campuses. While some campuses were from large districts in the immediate area (Fort Worth, Coppell and Lewisville), rural area schools were present as well (West, Blackwell, Roanoke and Argyle). We had private schools from Arlington, Richardson and Weatherford. The group travelling the farthest distance was a middle school group of students from Jalisco, Mexico.

Homeschool Afternoon—October 22: We offered a late afternoon time slot to homeschool educators that included all Chemistry Connections activities. Approximately 180 educators and students participated in this event.

Educator Day—October 24: This year we prototyped Educator Day, an opportunity for educators to receive free resources for their classroom and pick up great matter and chemistry ideas for their classroom. The event was advertised on the flyer and website. Eleven educators participated.

National Chemistry Week Photos

Photos by Bradford Lowe Photography

Photos by Bradford Lowe Photography

DFW SECTION OF THE ACS

Schulz Award Winner

Janice Pyles

Ms. Janice Pyles of Burleson High School was the recipient of the Schulz Award at the DFW ACS Local Section meeting on Tuesday, November 17, 2015.

Ms. Pyles has been teaching chemistry at the high school level since 1988. She currently serves as the pre-AP/AP chemistry teacher at Burleson High School. Additionally, she is very active in helping college students become excellent science teachers. In her career, she has held positions as: Math, Science, and Engineering Academy Coordinator, Science Department Chair, District Academic Standard Committee, District Educational Improvement Committee, District Curriculum Committee, and Associated Chemistry Teachers of Texas, Treasurer.

Janice has a B.S. in Biology with a minor in Chemistry from the University of North Texas and an M.A.I.S. with emphasis in Chemistry and Physics from the University of Texas at Arlington. She was the Burleson I.S.D. Teacher of the Year in 2005-2006 and a recipient of Weatherford College's Jack Harvey Fellowship Award for Exemplary Teaching in 2014-2015.

Ms. Pyles provided a lecture titled "A Twist on Le Châtelier's Principle: Balancing Rigor and Relevance in the High School Chemistry Classroom."

Janice Pyles is presented the Schulz Award from DFW Section Chair Steven Twaddle

From the ACS Press Room

Parabens and their byproducts found in dolphins and other marine mammals

Elevated Accumulation of Parabens and their Metabolites in Marine Mammals from the United States Coastal Waters

Environmental Science & Technology

The common cosmetic and drug preservatives known as parabens are in thousands of products — and, at low levels, in the vast majority of Americans. But recent studies have shown that the compounds might have unwanted health effects. Now scientists report for the first time that the antimicrobials are also showing up in the tissues of marine mammals, including dolphins, sea otters and polar bears. Their results appear in ACS' journal *Environmental Science & Technology*.

Manufacturers have been adding parabens to some lotions, makeup, foods and pharmaceuticals since the 1950s. They prevent bacterial growth and extend products' shelf-lives. But research has shown that parabens and their byproducts can act like estrogen in animals. Although the potential effects on humans aren't clear, an analysis by the Centers for Disease Control and Prevention found that most people whom they tested had detectable levels of parabens in their urine. And humans aren't the only ones getting exposed. As products containing these preservatives wash into the sewage system, they can be released into the environment. Kurunthachalam Kannan and colleagues wanted to find out whether marine animals were accumulating parabens in their bodies, too.

The researchers analyzed 121 tissue samples from eight species of marine mammals from the coastal waters of Florida, California, Washington and Alaska. They detected methyl paraben in many of the samples. A metabolite of methyl paraben called 4-HB (4-hydroxybenzoic acid) was in every sample. The levels ranged from trace amounts of methyl paraben in polar bears to tens of thousands of nanograms of 4-HB per gram of tissue in some dolphins and sea otters. The metabolite also occurs naturally in plants, but the scientists say the positive correlation between methyl paraben and 4-HB in samples suggests they come from synthetic sources. They add that further research is needed to determine what potential health risks these substances might pose to marine animals.

From the ACS Press Room

Hybrid solar cell converts both light and heat from sun's rays into electricity

Photothermally-Activated Pyroelectric Polymer Films for Harvesting of Solar Heat with a Hybrid Energy Cell Structure

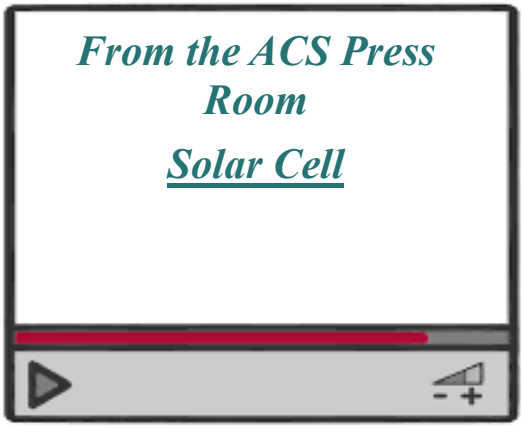
ACS Nano

Scientists have developed a new hybrid, solar-energy system that harnesses the full spectrum of the sun's radiation by pairing a photovoltaic cell with polymer films. The films convert the light that goes unused by the solar cell into heat and then converts the heat into electricity. They report on their device, which produces a voltage more than five times higher than other hybrid systems, in the journal *ACS Nano.*

Solar cells today are getting better at converting sunlight to electricity, but commercial panels still harvest only part of the radiation they're exposed to. Scientists are working to change this using various methods. One approach is to hybridize solar cells with different materials to capture more of the sun's energy. Eunkyoung Kim and colleagues turned to a clear, conductive polymer known as PEDOT to try to accomplish this.

The researchers layered a dye-sensitized solar cell on top of a PEDOT film, which heats up in response to light. Below that, they added a pyroelectric thin film and a thermoelectric device, both of which convert heat into electricity. The efficiency of all components working together was more than 20 percent higher than the solar cell alone. With that boost, the system could operate an LED lamp and an electrochromic display.

The authors acknowledge funding from the National Research Foundation of Korea, the Pioneer Research Center Program and the Active Polymer Center for Pattern Integration.



From the ACS Press Room

A potential downside to the beaver's comeback

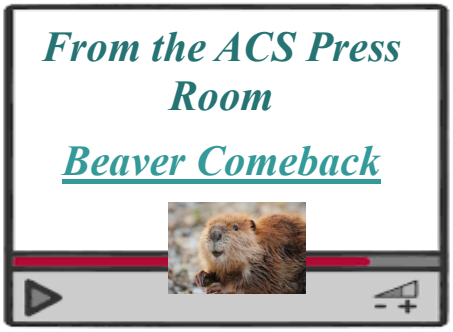
Impact of Beaver Pond Colonization History on Methylmercury Concentrations in Surface Water

Environmental Science & Technology

The Eurasian beaver was brought back from near extinction and now thrives across Europe. But this conservation success story may have had at least one unintended and potentially harmful consequence. Scientists report in ACS' journal *Environmental Science & Technology* that when beavers build new dams where no previous beaver colonies existed, downstream levels of toxic methylmercury rise, at least temporarily.

In the 19th century, beaver fur was in high demand, and hunters helped supply it. The animals' numbers plummeted to as few as 1,200 in Europe, with no reported sightings in Sweden after the 1870s. Conservation measures allowed beaver populations to rebound. In Sweden alone, there are now about 130,000 — and many new dams. While the structures are marvels of natural construction, they also change the chemistry of the water they're in. They affect the sediments, water flow, oxygen content and temperature, creating conditions that help convert mercury into methylmercury. A few studies have suggested dams can boost levels of this form of mercury, which can cause developmental and neurological problems in animals and people. Oded Lavnoni, Frauke Ecke, and colleagues wanted to take a closer look.

Over a two-year period, the researchers tested the water upstream and downstream of 12 dams. They found that methylmercury levels downstream of newly made dams were up to 3.5 times higher than in the upstream water. But dams that beavers reconstructed on abandoned beaver systems didn't appear to affect methylmercury concentrations. The results suggest that protecting older dams could help reduce levels of methylmercury in areas colonized by the animals. The authors acknowledge funding from the Swedish Research Council Formas.

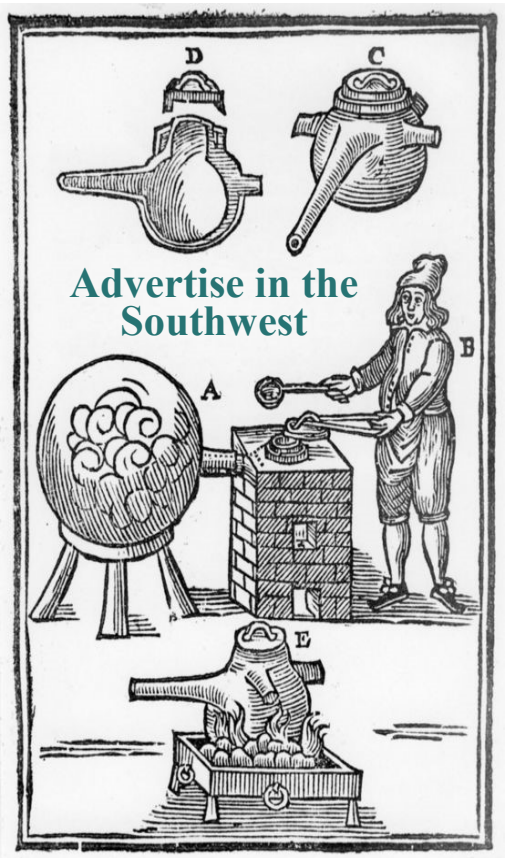


om/presspacs/2015/acs-presspac-october-28-2015/a-potential-downside-to-the-beavers-comeback-video.html

Around the Area

UT Arlington

Associate Professor **Dr. Brad Pierce** has been invited to serve on the Editorial Board of the *Journal of Biological Chemistry*.



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FIVE QUESTIONS FOR…

Our interviewee for November 2015 is William F. Carroll, Ph.D. In January 2013, while Vice President of Industry Issues for Occidental Chemical Corporation, Dr. Carroll participated in one of the first '5 Questions' columns. Now that he has retired, Dr. Carroll has kindly agreed to be interviewed again, and share his insights into his distinguished career in chemistry, his 2005 ACS Presidency, and his many volunteer activities in the sciences. Dr. Carroll chaired the ACS Board of Directors and served the American Chemical Society on numerous task forces and committees, including the *International Activities* (Chair); *Executive Compensation*; *Executive*; and *Public Relations and Public Affairs* Committees. Currently, Dr. Carroll is a Director on the Board of the ACS.

1. *You recently retired from OxyChem. What aspect of your career in chemistry will you miss most?*

The people. Because of the wide diversity of issues I covered for OxyChem, our trade associations, and ACS I got to know scientists and policy people in a number of disciplines from around the world. Some I would only see in a UN context; some were more regular contacts, but all really good friends.

Of course, they haven't disappeared and neither have I, so I can still stay in touch, but it's not the same as being able to be with them in person and work on important stuff.

And about those issues—everything from combustion science and toxicology, to risk management to recycling—it would be hard to have had a better, more challenging, more engaging career.

2. *Retired people tend to be even busier than they were when they were working full time. Which activities will you focus on in the latest iteration of your career?*

You mean other than sitting in my sweat pants eating Pringles and watching Dr. Oz? Probably three. I'd like to stay involved with some chemical trade associations as a consultant, if they'll have me. This is where you find out what you're really worth, if people will pay for what you were doing as a quasi-volunteer before. Also, I still have two more years on the ACS Board, and a pretty fair involvement as a Career Consultant and Tour Speaker. I'd like to expand my work in those areas, especially the Career Consultant part. I already work with Indiana, where I'm an Adjunct Faculty member, and UNT. Finally, there's the popular music history research which I talked about at the May Section meeting. I have one journal article published and the book is out—see www.ranking-the-70s.com —and I have a lot more ideas.

Add to that a little more golf, relearning bridge and the normal maintenance. Busier in retirement than before? I hope so. We'll see. I don't just want to be busy, though, I want to accomplish something, too.

3. *Your volunteerism with the ACS took you to very high positions in governance. In your 2013 5Q interview, you emphasized the importance of the career and education-enhancing resources that ACS provides to members. Are there other significant ACS contributions into which being President and Director gave you insight, which you might not have known as a regular ACS member?*

People who come to the Board are—to a person—amazed at the breadth and depth of ACS activities. When you write your statement running for the office you try to come up with some great new program for the Society to do. I did. In virtually every case, we're doing it already or found that it just doesn't work. Doesn't mean we can't improve, but we do a lot of stuff that most members have no idea we do.

I think the thing that is least appreciated is the contribution to membership made by Publications and CAS. Our gross dues revenue is about $100/member (some pay reduced or no dues), which, times 158,000 members is about $15 million. But our membership activities cost north of $30 million, and that doesn't count multi-million dollar allocations to Divisions and Local Sections, Chemical and Engineering News, and the Public Affairs work we do on behalf of science in DC. You would not recognize ACS membership if Pubs and CAS weren't there.

The other thing that's pretty special is how much you can accomplish with a cohort of volunteers in Divisions and Local Sections. Not to suggest for a moment that it's not tough and that there are no problems—there are. But probably 85% of our membership has no idea that Divisions and Local Sections—as volunteer organizations—even exist. And yet with the thin edge of that wedge we put on national and regional meetings, National Chemistry Week and a raft of other activities for the good of the discipline and for the good of Society. Pretty special, indeed.

4. *What advice would you give to ACS members who wish to increase their involvement in ACS? Do you feel your dedication was worth the effort?*

Fun fact. For my first 25 years in ACS I was a mailbox member.—took some journals, voted in elections, went to a couple of national meetings. But other than paying dues, that was about it. And yet, it was enough for me in those days. I was proud to be a member of my professional society, but I had all the involvement I wanted tied up in other areas.

I got into governance and volunteer activities the same way most people do: someone asked me. The whole story is too long to tell, but at a happenstance breakfast meeting at Indiana in 1999 an industry colleague asked me if I wanted to "get more involved" in ACS, and I did.

Now to be fair, I've been blessed to hold the two best jobs the Society has to offer, President and Board Chair, so it's easy for me to say it was worth it. But at the same time, the career counseling, visiting and speaking at universities and local sections and a million other activities over about as many hours have given me more, by far, than I ever gave. And just like in question 1, it gets back to the people. Some of my very best friends are people I've worked with in ACS, both members and staff.

As to getting more involved, pick something you like—division or local section—and do it. Do it for the networking or just the satisfaction. And for the rest of us, pick someone you like and ask them to help.

5. *The ubiquitous 5th Question about your science hero was answered in your last 5Q interview, so this one will not be a repeat. This 5th question is: Of all the incredible innovations, inventions and discoveries that the world sees every day, which one will yield the most benefit —and why?*

Can't I answer the science hero question again? I worry about some of the modern miracles we do have. What happens when the entire state of Nebraska is covered with server farms holding nothing but pictures of food?

Allow me to show my lack of depth. I've always felt that garbage was simply raw material in an energetically unfavorable state. And nothing was impossible if you had an infinite, inexpensive, minimally polluting source of energy. And that hasn't been invented yet. Of the "renewable" resources we have now, whether bio-based or even photoelectrics, none are wildly positive on a life cycle basis. Get two more orders of magnitude lower impact for the same benefit and maybe we've got something. Similarly, 57% of everything we burn for fuel ends up as waste heat accomplishing nothing. Thermoelectrics harvesting electricity from hot water or low pressure steam could be a big help. But those haven't really been invented yet, either, at least not in low-cost, abundant forms. So I guess my answer really is photosynthesis. All we have to do is tweak it a little.

Thank you, Dr. Carroll, for your interesting remarks and your years of service to chemists and the ACS! Interviewees for 2016 are needed. To participate, contact retort@acsdfw.org.

From the editor

We had a couple of interesting events in the DFW section in October. Congratulations to Janice Pyles of Burleson High School, the 2015 Schulz awardee. As usual, National Chemistry Week was a roaring success. Coordinated by Kayla Green of TCU, hosted by the Fort Worth Museum of Science and History, NCW had a total attendance of over 3000, with 195 volunteers from all the area colleges and some high schools.

The news short on methylmercury and beavers/beaver dams was really intriguing: what conclusion can be drawn from the downstream production of methylmercury from active dams? I look forward to hearing more about this particular matter. Bees and neonicotinoids were one of the first topics covered in the e-Retort, back in 2010; now we find out that these pesticides are not only sprayed on for pest control but carried by non-crop wildflower pollen, and then carried back to the beehive.

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Best regards,
Connie