

Newsletter for Senior Chemists

December 2015

Dear All,



This will be my last report to you as the chair of the ACS Senior Chemists Committee (SCC), having come to the end of my three-year chairmanship which corresponds to the present life of the SCC. The SCC was preceded by the Senior

Chemists Task Force, which was chaired by Eli Pearce, a past ACS president and the driving force behind the establishment of the SCC.

Eli promoted the idea of the SCC as a result of the input from many ACS members when he traveled the U.S. during his three-year presidency succession. He found that the senior demographic was a substantial, and growing, constituency that the ACS was neglecting. The culmination of this effort was the recommendation by the ACS Committee on Committees (ConC) at the 2012 fall ACS National Meeting in Philadelphia that the SCC be constituted as a Joint Board-Council Committee. The Council overwhelmingly approved and with the Board concurring in December, the SCC became official on January 1, 2013.

In the intervening three years, the SCC has progressed through several different stages. Initially the focus was assembling the infrastructure that any successful committee needs: establishing functioning subcommittees, planning symposia, supporting a newsletter and inviting input. As a result of a very widely read newsletter and active reader response, we were able to highlight some of the priorities of this active and involved segment of ACS members. This December, the SCC will hold a retreat that is intended

Senior Chemists Committee:

Mr. George E. Heinze, Chair
donnergeist2@gmail.com

Dr. Raymond P. Anderson
rpanderso@aol.com

Dr. Ronald D. Archer
archer@chem.umass.edu

Dr. Roger F. Bartholomew
rbarthol@stny.rr.com

Dr. Thomas R. Beattie
Beattietr@aol.com

Dr. Dennis Chamot
dennischamot@yahoo.com

Ms. Michaeline F. Chen
mfuchen@verizon.net

Dr. Donald D. Clarke
clarke@fordham.edu

Dr. Catherine E. Costello
cecmsms@bu.edu

Dr. Allen A. Denio
alvaldenio@verizon.net

Ms. Susan R. Fahrenholtz
fahrenholtz@fordham.edu

Dr. Lynn G. Hartshorn
lghartshorn@stthomas.edu

to address and prioritize the concerns that these responses have engendered and the ways that the ACS can productively engage the needs of our senior chemists.

On a personal note, I would like to thank all our members who have engaged with us, as well as the committee members, with whom I have worked over these past three years and who are largely responsible for the successes achieved so far. Another person who has contributed substantially to making the SCC function is our ACS staff liaison, Cheryl Brown. Without Cheryl there would be no organization. Personally, I have been pleased that we were able to follow Eli's vision, particularly since Eli passed away this year knowing that his vision came to fruition. I wish you all the best for many years of successful accomplishments.

George Heinze, Chair
Senior Chemists Committee

REFLECTIONS OF A PAST ACS PRESIDENT

By Marinda Li Wu, 2013 ACS President



Many of us ACS Presidents owe much to great leaders we follow. I wish to thank two ACS Past Presidents who encouraged me to run for President so I could pursue my vision for ACS—Eli Pearce and Ann Nalley. Both have been fantastic mentors and friends.

Imagine my thrill of getting elected as the first Asian American and only the eighth woman to become ACS President in 137 years! I was honored to visit chemistry communities worldwide to spread my message of how we can all be "Partners for Progress and Prosperity."

My priorities as President included: 1) concentrating on members' needs and interests; 2) collaborating to enhance the global chemistry enterprise; 3) communicating the value and benefits of chemistry to society; and 4) celebrating diversity and inclusivity (core values of ACS).

Three ACS Symposium books resulting from my initiatives and presidential symposia are available online at www.pubs.acs.org. The first ACS Symposium

Dr. Richard A. Hermens
richard.hermens@me.com

Dr. Robert S. Moore
moore362@rochester.rr.com

Dr. Edel Wasserman
ez@wasserman1.com

Committee Associates:

Dr. James Chao
chao_j@bellsouth.net

Dr. William H. Daly
chdaly@lsu.edu

Dr. Herbert S. Golinkin
hgolinkin@sbcglobal.net

Mr. Larry C. Grona
lcgrona@aol.com

Dr. Thomas R. Hays
Thomas.hays@retiree.tamuk.edu

Dr. Claude A. Lucchesi
c-lucchesi@northwestern.edu

Dr. Joseph A. Potenza
Potenza@rutchem.rutgers.edu

ConC Liaison:
Dr. Michelle V. Buchanan
buchananmv@ornl.gov

Staff Liaison:
Cheryl Brown
c_brown@acs.org

Contact Us
silvercircle@acs.org

The Newsletter for Senior Chemists is published by the American Chemical Society's Division of Membership & Scientific Advancement.

book "Vision 2025: How to Succeed in the Global Chemistry Enterprise" details the final report and recommendations from my Presidential Task Force. Perspectives are also shared by U.S. leaders of academia, industry, government, and small business, as well as by presidents of chemical societies representing Europe, Asia, Africa, and the Americas. Unemployment for chemists was at a record high when I ran for ACS President. That's one of the reasons I decided to run after long serving as an ACS Career Consultant.

The second ACS Symposium book covers "Careers, Entrepreneurship, and Diversity: Challenges and Opportunities in the Global Chemistry Enterprise." The third ACS Symposium book on "Jobs, Collaborations, and Women Leaders of the Global Chemistry Enterprise" includes a chapter on the "Supply and Demand of Chemists in the U.S." It also features inspiring stories from 16 pioneering women from around the world.

During my three years in the presidential succession, I authored ten C&EN ACS Comments on diverse topics ranging from "Turning Challenges into Opportunities" to "Promoting World Peace through Science Diplomacy." Over the years, I have written 27 ACS Comments to help our members thrive and grow professionally. My Comment on how we can all become better "Ambassadors for Science, Technology & Education in the 21st Century" (C&EN, 2007) described my early vision. It's wonderful to see another vision on "Chemistry Ambassadors Go Global" (C&EN, 2010) become a reality now—thanks to partnering efforts of the International Activities Committee and Committee on Public Relations and Communications.

As ACS President, I strived to serve all members, domestic and international. It is indeed heartwarming to see wonderful lifelong friendships and relationships established around the world. Growth of ACS international chapters has almost doubled. Much credit is due to the efforts of ACS International Activities.

Thanks again to many who worked together to support my presidential theme of how we can all be "Partners for Progress and Prosperity! (P3)" It is fabulous to see all 2015 Regional Meetings and also International Activities participate in recognizing excellent collaborations and partnerships with P3 Awards this year. See www.acs.org/regionalawards for more details.

Does your Local Section have a Senior Chemists Group?

By Roger Bartholomew

Roger Bartholomew is a member of SCC who is responsible for contacts with senior groups in Local Sections. He is a member of the Corning Local Section. He has a B.Sc. (1958) and PhD (1961), both from Imperial College, University of London. He spent two years as a Post Doc at the National Research Council, Ottawa, Canada (1961-1963). He joined Corning Glass Works, now Corning Incorporated, in 1963 and retired in 1999. He is a 50-year ACS member and a Fellow of the ACS, and has been the Corning section councilor for 40 years (1976-2015).

In its two years of existence, the Senior Chemists Committee (SCC) has sought to encourage local sections to form Senior Chemists groups. At the National level, about one in four members is over the age of 60 years, so presumably your local section has similar demographics. Some of these members will still be gainfully employed, with the majority being retired. How to engage such members in their section's activities and maintain their continued interest in ACS matters? To this end, the SCC has been providing Mini Grants to local sections in the past two years to encourage programs aimed solely for the senior chemists. In 2014, \$6,560 in Mini Grants was awarded to seventeen different sections, while in 2015 another \$3,800 was awarded to ten sections. These awards varied from \$300 to \$500 each. This program is being extended for another year. The focus of these Mini Grants is to encourage groups to provide innovative programming aimed at local section senior members.

At the Boston National ACS meeting in August, two new ChemLuminary awards, sponsored by the SCC, were awarded. The recipient of the "Best Ongoing Senior Activity in a Local Section that Benefits the Community, Local Schools, or Legislative Government" was the St. Louis Local Section; and the second award for the "Most Innovative Activity in a Local Section for Senior Chemists" went to the Toledo Local Section.

Local sections that reported having a Senior Chemists group in their 2014 Annual Report are listed below: The Chemical Society of Washington, Cincinnati, Columbus, Corning, Delaware, Detroit, Idaho, Illinois Heartland, Maryland, Minnesota, New York, North Carolina, North Jersey, Northeastern, Northern Oklahoma, Orange County, Philadelphia, Portland, San Diego, Southern California, Tampa Bay and Western New York. If you are a member of any of these sections and are interested in being involved, please get in touch with the section's chair for any further information. If your section does not have a Senior Chemists group, then see if other like-minded members are interested in getting together.

Local sections that were awarded a Mini Grant in 2015 but did not report a Senior Chemists group in 2014 include: California, Mid Hudson, Nebraska, Ole Miss, Puerto Rico, Rochester, San Gorgonio, Toledo, and Wilson Dam. It is hoped that these grants will motivate interest in forming a Senior Chemists group in those sections.

Many sections honor 50-year and 60-year members at a monthly meeting. An excellent idea is to have those honored to spend a few minutes to discuss their careers. Large sections have many 50-year and 60-year honorees, so they tend to hold separate meeting for those occasions. Other events at which senior members are involved are in STEM programs aimed at K-12 students, or inviting middle and high school students from underserved areas into an industrial lab for hands on activities. The North Carolina section received a Local Section Innovative Project Grant (IPG) for a program to implement collaboration between the Younger Chemists and the SCC groups for mentoring of newly minted chemists in the section. Touring local area laboratories, museums or planetariums also appear to be popular and very stimulating. Some sections have been able to hold senior group breakfasts or lunches throughout the year for both scientific discussion as well as social gatherings. The Delaware "ChemVets" group has been meeting for

many years for monthly lunches in the DuPont cafeteria. The use of senior members in a Section Speakers Bureau could be used to educate students about the importance of chemistry in their lives.

So how can you get started if you do not already have a Senior Chemists group in your local section? First step is to contact your local section's chair to get their support and possible contact information with like-minded people. Then make an announcement at a section monthly meeting, or in the monthly newsletter so retired members are aware of such an effort and outline the vision. The size of the section and its resources will influence what can be achieved, but even small sections can be successful in providing resources to local schools, or meet for breakfast now and then.

If you need additional information you can contact me by email at rbarthol@stny.rr.com, or the SCC staff liaison, Cheryl Brown at c_brown@acs.org. An example of how a seniors group got started in the Portland Local section follows.

Portland Section Silver Chemists: How We Got Started

By Warren Ford, Chair (warren.ford@okstate.edu)

Warren Ford retired in 2010 as Regents Professor from Oklahoma State University, after 32 years of research and teaching organic and polymer chemistry. He is now an adjunct professor at Portland State University, and Alternate Councilor and Chair of the Silver Chemists Committee for the Portland Local Section. He describes how the Silver Chemists got started in the Portland Section.

The Portland Local Section meets monthly September through May usually for a buffet dinner and a talk. In 2012, a survey revealed that there are some members age 50+ who do not attend evening meetings and would appreciate daytime ACS activities. However, there was no consensus about what kind of activities. Suggestions ranged from technical talks to informal discussions over coffee to golf. In late 2013, a small group of senior members met just to get acquainted and find common interests for future activities. In 2014 and 2015, we have had 6 meetings each year usually starting at 1:00-2:00 p.m. sometimes after lunch at a restaurant. Grants from the ACS Senior Chemists Committee have supported such lunches. Other times there has been an optional no host lunch. Here are some of the programs:

- Tour of the Washington State Patrol Crime Laboratory in Vancouver, WA
- A talk on beekeeping and a visit to a backyard beekeeping facility
- Tour of the Oregon State University Food Innovation Center in Portland
- Tour of Shimadzu USA Manufacturing in Canby, OR
- Visit a class and talk with the Director of the Saturday Academy (which offers K-12 students enrichment classes in STEM subjects taught by local professionals)
- Presentations by a member on the Safety for the Rainbow Demonstration
- Presentation by a member on Preservation of Historical Structures from Corrosion
- Presentations of memoirs of F. Albert Cotton and of Henry Taube by their former students and postdocs who are Silver Chemists members

Attendance at the meetings has ranged from 4 to 20. The Silver Chemists meetings are serving a significantly different group of section members from those who attend evening meetings. Other local sections may want to reach out in their own ways to previously underserved members.

Amazing Alfred!

By Al Denio



Al Denio is a member of the Senior Chemists Committee. He completed a PhD in Physical Chemistry at the University of New Hampshire, and then moved to Wilmington, Delaware, to work for DuPont in the textile fibers department. Later he taught at what is now the University of Wisconsin–Eau Claire for 32 years. After retirement, Al and his wife moved back to Delaware (where the winters are milder) and he taught for a while at the University of Delaware. He writes frequently for this Newsletter, often about famous chemists, and volunteers with the Delaware Local Section

Senior Chemists group, called the “ChemVets”.

I assume that every senior chemist knows about Dr. Alfred Bader, the co-founder of the Aldrich Chemical Company of Milwaukee. He turned 90 recently. Unfortunately, his health problems no longer permit him to attend our ACS national meetings.

As a former member of the Chemistry Department at the University of Wisconsin-Eau Claire (UWEC), I was lucky to become acquainted with this chemical genius. He would visit our campus, a four-hour drive from Milwaukee, with his wife Isabel. On one of these visits, he gave a chemistry lecture to our students and faculty. Then he gave a talk in our School of Business, followed by a lecture in our Art Department. Alfred is a man of many talents!

One year he agreed to loan some of his art collection to UWEC for an exhibit in our Art Department Gallery. I drove to his home in Milwaukee with three colleagues from our Art Department and they discussed possible paintings for the exhibit. Then we drove to his corporate offices to see more of his collection. Alfred also made a significant donation for a nice catalog for the exhibit. This event was a stellar attraction at the university and earned rave reviews.

My wife, Val, and I had inherited an old oil painting which was in need of repair and cleaning. I was not sure if this was worth the expense. I asked Alfred to examine it and give us his advice. On his next visit, he came to our home and recommended that it indeed was worth the investment. He even told us who should repair and clean the painting in Minneapolis. He also recommended a different company in Saint Paul to clean the ornate frame. We took his advice and now enjoy a beautiful painting of fruit done by George Claire, a British artist during the 19th century.

Alfred has been a major supporter of ACS as well as of many colleges and universities. Art has been a passion in his life, and many Aldrich Chemical Company catalogs had covers with paintings from his collection. He would then have nice unframed prints prepared to hand out to customers and to chemists attending ACS meetings. His generous support also extends to the Chemical Heritage Foundation in Philadelphia. The March 16, 2015 issue of *C&E News* (page 35) lists the new Alfred & Isabel Bader Scholars. The Baders have long been supporters of Project Seed.

How lucky we are that his native of Austria came to the U.S. by way of England and Canada. His life in Milwaukee has indeed been fruitful for us all!

Driving old British Sports Cars on Tours and Rallies

Another article in our series of the different and fascinating activities of senior chemists

By Robert A. Yokley



In 2008, Robert Yokley retired from Syngenta (formerly Ciba-Geigy) in Greensboro, NC where he had managed a mass spectrometry and method development group. He continued working part-time until July 2013. He has a B.S. degree in chemistry from Middle Tennessee State University in Murfreesboro and obtained a PhD in chemistry from the University of Tennessee in Knoxville under the direction of professors Gleb Mamantov and Earl Wehry. He is currently a Councilor for the Central North Carolina Local Section, Chair of the Local Section Silver Circle Group, and a member of the Committee on Nomenclature, Terminology, and Symbols. He and his wife, Phyllis, live part-time in

North Carolina and part-time in New Jersey.

What does one do after retirement? Although I have several hobbies (tennis, travel, hiking, fine dining, cooking, etc.) the longest-standing and most continuous has been driving old British sports cars on tours and rallies. I purchased my first British, two-seater convertible (blue Austin-Healey Sprite) at age 19 when these cars (Austin-Healeys, MGs and Triumphs) were still new. This first car led to the later purchase of an Austin-Healey 3000, and a MGB, as well as a Triumph TR-3 and TR-6.



Tours are simply drives along scenic routes such as the Blue Ridge Parkway. These are usually done on warm days or weekends so the drivers and navigators can lower the convertible tops, feel the wind, and better enjoy the unobstructed view. The route instructions are straightforward so all participants can arrive at the same location. Tours often include visiting interesting sites, scenic vistas, overnight stays at B&B's, and stopping for meals at exotic dining locations.

Rallies vary widely and include Gimmick (scored according to specific rules created by the organizers and information you discover when on the correct route), Fox & Hound (in which the team must find "route markers" to identify the correct route), Time Speed Distance (TSD), Pro Rallies, and others. The goal of the popular TSD rally is not to travel the course as fast as possible but to stay on the prescribed route and finish in the exact amount of time (the perfect time) as computed from the assigned speeds and exact distances measured before the event by the rally master. Route instructions are provided but, unlike those in a tour, these instructions may require deciphering clues. Nevertheless, adequate information is available to determine the correct route. The exact speed is specified for each portion of the course. For example, the team may be instructed to begin driving at 35 mph but that might change to 42 mph or another speed after traveling a specific distance which is not known in advance. When the speed is changed the team then knows the time and distance it took them to get to that point. Thus, they can calculate how fast or how slow they are traveling compared to the true speed. Thus the team needs to adjust their speed as needed and stay on course to finish in the prescribed time. Sometimes, checkpoints are included at unspecified locations to determine the time for a team during that particular portion of the course. At the finish, penalty points are assigned based on the time it took the team to finish the rally. One penalty point is assigned for each second too slow and two penalty points are assigned for each second fast compared with the perfect time. Thus, cars that finish the course too fast are penalized more than those that are too slow. The lowest score wins. Some teams use calibrated odometers and stopwatches so they can frequently perform calculations to determine how close they are to the correct time. Some teams rally by "seat of the pants". This means we guess at the correct speed and focus on the scenery. This approach does work sometimes because my 14

year old grandson (Bryan Robert) and I took 5th place at the Inaugural Yadkin Valley Invitational Rally this past May.

Pro rallies are true racing events and the teams travel at maximum speed on closed roads. This European style of rallying requires helmets, fire suits, roll cages, and other safety equipment. Maybe that will be my next endeavor?

For me, driving my Triumph TR-6 and listening to its exhaust note, seeing other old British sports cars on the road, exploring new areas, passing beautiful scenery, feeling the wind in my hair (some might question this aspect), and spending time with my wife are all elements of a wonderful day. Cheers!

Thoughts from a Collector

By Stuart Cohen



Stuart Cohen obtained his B.Sc in Chemistry and his PhD in Inorganic/Organometallic Chemistry from Queen Mary College, University of London, England. After a move to the U.S. for a Post Doc at Virginia Polytechnic Institute, he worked in industry for many years including positions with Leeds and Northrup, GE Plastics, ICI Polyurethanes and Ticona, MI. He was retired in 2003, and since August 2005, he has been a professor of Chemistry and Physics at Horry-Georgetown Technical College, Myrtle Beach, S.C. He writes about his hobby and collections.

Collections have been my passion from childhood days in London, England (late 1940's-1950's). Then it was stamps and coins and I still have them. They let me develop an excellent knowledge of geography. I knew almost every country in the world and its capital, something most of our younger generations sorely lack.

After coming to the U.S. in 1968, I continued collecting stamps from the UK sent by my mother. More commemorative stamps were being issued by the postal service. Also I purchased UK proof coin sets from the Royal Mint so my collection grew rapidly.

Later, my tastes changed. When visiting Branson, Missouri, in the early 1970's, I purchased a pewter figurine issued by Ricker-Bartlett mint in Estes Park, Colorado. I joined their Collectors Society and bought almost all their new issues. Then I discovered the Danbury and Franklin mints and got carried away, subscribing to their series of old cars, planes, U.S. presidents, revolutionary figures, etc. Some people use collectibles as investments, but this shouldn't be the main driving force. Most of my 500+ pieces of pewter are valued a lot less than their cost.

During the period above, I made several trips to England and bought pieces of Wedgwood pottery. I preferred green to the more traditional blue pieces. With eBay, I could bid on numerous offerings of Wedgwood and pewter figurines so both collections grew immensely. I also expanded my collection of UK proof coin sets via eBay. Bidding on this site became quite addictive.

The above collections have stagnated. My passion (other than chemistry) is theatre and this collecting has remained constant. Having grown up close to London's West End, I attended live theatre productions at an early age. I collected programs from almost every production I saw; plays, operas, ballets, symphonies, concerts, etc. These number over 1,200 now. Looking back, I saw aspiring actors/actresses who are now very well known, e.g. Judi Dench in the late 1960's, in two Shakespearean plays at London's Old Vic in two very small roles.

My collecting avidity doesn't end there. For almost 13 years while in Michigan, I attended numerous productions at the Stratford Festival in Ontario, Canada. From 1953, at its start, until the early 1980's they issued postcards of scenes from their productions, first in black and white and then in color. Thanks to eBay, my collection now numbers over 220, in polypropylene sleeves, in binders arranged by year. I discovered British theatre did something similar from the late 1800's until the early 1900's. Again, eBay let me build a collection of postcards showing period actors in their performance costumes. My love of Shakespeare started with his plays (600+) and then extended to other productions (1,000+).

I have spent thousands of dollars over the years on collectibles. Often I wonder if this money could have been used better elsewhere, e.g., larger houses, more expensive cars or vacations. But we all have our different priorities in life and I have no regrets.

Science Activities with Children

By Eric Erickson



Eric Erickson earned his BS in Chemistry from Oregon State University and his PhD in Analytical Chemistry from Michigan State University. He served the Mojave Desert Section of the ACS as treasurer, chair, and alternate counselor. In 2013 Eric retired as a senior research chemist for the Navy and moved to the Oregon coast. For more than 30 years he has volunteered in a wide variety of STEM activities.

School districts, Boys and Girls clubs, Boy Scouts, Girl Scouts, and 4H clubs have active Science, Technology, Engineering, Arts, and Math (STEAM) programs that are usually in need of volunteers to help drive them. Having been active in these programs during my career, I intended to continue to volunteer after retirement. My employer had a liberal policy when it came to use of laboratory supplies, and also helped with the hazardous materials collection for such community activities. When I retired I moved away from the lab and no longer have access to this kind of help. In my new community, I oversee hands-on science activities at the elementary school and tutor math and science at the high schools. Both are after-school activities. The lack of lab access has impacted what experiments I can bring into the schools, but an array of experiments on the internet has proved a useful starting point.

First, a word of caution. Each organization has constraints in place to protect the kids. These vary from organization to organization and range from background checks on individuals to banning certain chemicals and foods from the facility. Check on what the requirements are before spending time and money preparing an experiment. It is also useful to ensure that additional adults are available to assist with managing large groups of children.

I usually begin the year's activities with a simple set of experiments designed to get the kids to differentiate between observations and expectations. I begin with a variant of the edible candle (http://www.e-missions.net/elabs/?/scimagic_lessonplans/). This demonstration is followed with an experiment where the students use their powers of sight and smell to identify various solids (flour, sugar, salt, baking soda, cinnamon, pepper, and ground cloves) and liquids (water, vinegar, dilute ammonia, lemon juice, lemon-lime soda, and a cola). With a large group of students, these two activities take about an hour.

Among the student's favorite experiments over the last couple of years are:

- Oobleck (<http://chemistry.about.com/od/chemistryhowtoguide/ht/oobleck.htm>)
- Slime (<http://chemistry.about.com/cs/howtos/ht/slime.htm>)

- Acid/base indicator (<http://www.thesciencehouse.org/k-12-educators/countertop-chemistry/cabbage-juice-indicator-experiment-22.php>) Boiling the water extracts more of the indicator, but I find that agitating a shredded leaf with a minimal amount of water in a baggie until the water turns color also works and gives the students an opportunity to participate in the activity.
- Glue (<http://www.science-sparks.com/2012/02/06/make-glue-from-milk/>)
- Aerodynamics (<http://www.funpaperairplanes.com/> and <http://www.paperhelicopterexperiment.com/>)
- Ice cream (<http://teachnet.com/lessonplans/science/plastic-bag-ice-cream-recipe/>)
- Mobius strip (http://mathforum.org/sum95/math_and/moebius/moebius.html)
- Optical illusions (<http://kids.niehs.nih.gov/games/illusions/>)
- Batteries (<http://www.instructables.com/id/how-to-make-a-battery-with-quarters/>)
- Paper chromatography (<http://www.scienceprojectlab.com/paper-chromatography-experiment.html>)
- Inks and dyes (http://www.ehow.com/how_4450791_make-ink.html?ref=Track2&utm_source=ask)

I am always on the lookout for fun new hands-on science activities. If you have any questions or suggestions feel free to contact me at grandpa.eric@gmail.com.

Editor's note—we would be interested in featuring examples of these kinds of science activities that do not need labs and special equipment in future Newsletters, so please contact us with your ideas.

Chemistry is for the Birds-4

By Dwight Chasar

In this continuing series of articles on how the central science of chemistry has permeated the avian biology world, I address some topics of organohalogen compounds and birds.



No doubt, through Carson's "Silent Spring" (1962), newspapers, journals, and many other venues, almost everyone is aware of the controversy on the use of DDT as an insecticide and some role in the precipitous loss in populations of North American (NA) raptors, e.g., bald eagle, peregrine falcon, osprey, and the like. While I don't intend to address any controversy here, I just want to bring to the readers' attention a few elements of work that involve organohalogen compounds associated with birds.

Dichlorodiphenyltrichloroethane (DDT) (<http://en.wikipedia.org/wiki/DDT>) was synthesized in 1874 but it was the Swiss scientist Paul Muller who found in 1939 that DDT is a potent insecticide and he subsequently received the Nobel Prize in Physiology and Medicine in 1948 for that discovery. With DDT's widespread use in North America as an insecticide, it was discovered that DDT bio-accumulates in birds at the top of the food chain and it was implicated in the population drop of raptors through the 1960s into the 70s. When DDT was banned in 1972, NA saw an improvement in raptor populations in the decades following. Seeing bald eagles or peregrine falcons here in NE Ohio has become somewhat of a common occurrence more recently.

Scientists found that it was not really DDT that was so detrimental to the birds but its degradation product DDE, (dichlorodiphenyldichloroethylene)

(<http://en.wikipedia.org/wiki/Dichlorodiphenyldichloroethylene>),

that resulted from dehydrochlorination of the DDT during metabolism. DDE is fat soluble and accumulates in the bird's fatty tissues. The DDE was detrimental not so much as poisoning the birds but contributed to shell thinning of the eggs that the birds laid. The thin eggshells could not support the weight of these larger birds

and consequently broke. One finding was that anything less than 1-3 ppm in the eggs has no effect on thinning.

Eggshells consist of about 95% calcium carbonate crystals with a protein matrix for stabilization. A 2001 report proposed that DDE is released into the bird's bloodstream and while in the uterus, DDE inhibits the enzymes carbonic anhydrase and calcium ATP-ase. This disruption causes partial blockage of the layering of calcium and carbonate on the eggshell, resulting in thinning.

Polychlorinated biphenyls (PCBs), used in electrical transformers as well as many other applications, have also received bad press for any number of reasons. A bird study in Canada has shown that since the reduction in use of PCBs since the early 1970s, Herring Gulls around Lake Erie have experienced a decrease in PCBs in their eggs by up to 75%. This might help explain the huge population increase in these gulls in the last 30 years, as witnessed during the winter at East 72nd Street in Cleveland.

In a more recent report (*Chemical and Engineering News*, October 20, page 52, 2008), scientists have now found that perfluorooctane sulfonate (PFOS) is a dominant pollutant of 11 perfluorinated compounds (PFCs) tested in waterbird (egrets and night herons) eggs of South China. PFCs are widely used in consumer products and are known to be toxic to birds.

Viewing halogenated compounds from a different perspective, it has been reported that more than 3200 naturally occurring organohalogen compounds are known. Many are produced by marine organisms, bacteria, fungi and plants. Several of these have been found in the eggs of ocean seabirds like albatross, puffin, gull, petrel and auklets and the structures subsequently identified by independent synthesis <http://www.rsc.org/Publishing/Journals/CC/article.asp?doi=a906655a> (*Chemical Communications*, November 7, 1999). Two of these were brominated and chlorinated 1,1'-dimethyl-2,2'-bipyrrroles.

Go to <http://images.google.com> to search for photos of the birds discussed in this article.

Speed Networking at the ACS National Meeting

By Tom Beattie, SCC Vice Chair, and the organizer for the Speed Networking Event, where professional chemists interact with a rotating group of undergraduates.

As we have done at each of the recent national ACS meetings, many members of SCC and other seniors participated in a Monday afternoon speed networking event. While originally envisioned to provide advice for undergraduate attendees, its popularity and success have attracted interest in doing the same kind of meeting with graduate students. Thus, after some discussion, we experimented with having graduate students join us at the Boston event.



As anticipated by some, the questions and needs of the two student groups were different, and the general feeling from the professionals was that advising mixed undergraduate and graduate student groups was probably not optimally beneficial. So, we are exploring options on how to extend the networking service to the graduate student community in a separate format, possibly a separate event at a different time.

Results from the distributed questionnaires again indicated a high level of satisfaction among the undergraduates with a preferred timing of 10-12 minutes for each encounter. Look for notice of another speed networking event at the next national ACS meeting in San Diego, and come join us on Monday afternoon, if you are in the area.

If you are interested in participating, questions may be sent to Tom Beattie at beattietr@aol.com.

OLLI at Duke is Seeking Senior Chemists

OLLI (The Osher Lifelong Learning Institute) at Duke University <http://www.learnmore.duke.edu/olli/> offers non-credit classes in a wide variety of subjects to more than 1900 adult (mostly retired) learners. OLLI is always looking for teachers for their many courses. The normal length of a course is 10 lectures in the Fall and Winter terms, and 6 lectures in the Spring term. Normally classes meet for 1½ hours. Teachers are paid \$300 for a 10-lecture class, or \$150 for a 6-lecture class. Many OLLI teachers teach for free. There are no exams at OLLI—just learning for the fun of it. There have recently been classes on Einstein and the Quantum, Organic Chemistry and Radioactivity. If you would like more information about joining the community of learners and teachers, please contact Phil Carl at pCarl@bellsouth.net.

ACS Fellows Award

All senior chemists are invited to submit the names of current or former colleagues suitable for consideration for the ACS Fellows Award, together with the required documentation. Details of this award and the documentation required can be found on the ACS Website at www.acs.org/fellows

The selection of ACS Fellows is based on documented excellence and leadership in both of two areas: (1) science, the profession, education, and/or management, and (2) volunteer service in the ACS community. Nomination documents must address both of these areas. Nominations may come from **an individual, a local section, a division or a national committee**. If you have questions, the SCC Fellows coordinator is Dr. Donald Clarke at Clarke@fordham.edu.

Technical Recordings Available from Fall National ACS Meeting

ACS members have special viewing privileges to the technical recordings from the Boston National Meeting held in August 2015. Based on the meeting theme of *Innovation From Discovery to Application*, over 300 oral presentations were captured at the meeting, including Plenary Sessions from Paula Hammond (*Tailored Drug Release Surfaces for Regenerative Medicine and Targeted Nanotherapies*), Pat Brown (*Replacing the World's Most Destructive Industry*), and Karen Wooley (*Targeted Applications as Inspirations to Develop Strategies Toward Functionally-Sophisticated Nanoscopic Macromolecules With Diverse Composition, Structures, and Properties*). Also included from Boston are Kavli Lectures from George Whiteside (*Problems, Puzzles, and Inevitabilities in Research*) and William Dichtel (*The Spectacular Properties of Porous Polymers*). See these and all the new releases from Boston at www.presentations.acs.org. Also available are recordings from the two prior national meetings in Denver and San Francisco as well as content from the July 2015 ACS Green Chemistry & Engineering Conference.

Your Help is Needed with SCC Newsletter

Lynn Hartshorn, Newsletter Editor

We hope that you enjoyed reading this Newsletter. As always, we would be glad to hear from you about what kind of articles you would like to see in future Newsletters. Other senior chemists wrote most of the articles, and we encourage you to submit articles that you have written for possible inclusion in the Newsletter. Please send them to me (lghartshorn@stthomas.edu), or to Cheryl Brown (c_brown@acs.org), the SCC Staff Liaison. Submitted articles should be in a Doc or DocX format, with a maximum of 500 words. Photos are welcome and should be sent as pdf or a JPeg file. Submissions are edited. If you do not have an article, but you have an idea for one, let us know and we will help! Thank you.

Mission Statement

The Senior Chemists Committee was established January 1, 2013 as a Joint Board-Council Committee and consists of 16 members and 7 associate members. The Committee will serve two constituencies within the ACS: (1) seniors who are still active either as full time or part time employees, consultants, or those who still wish to stay closely connected to the ACS and its spectrum of activities; and (2) younger members and students who have questions about a chemistry based career or who have started careers but are looking for guidance in how to progress. Their mission is:

1. To share with ACS members of all ages a rich variety of personal experiences and expertise gained over many years of professional service;
2. To foster interest and participation in the science of chemistry through community outreach, especially in grades K-12;
3. To act as science advisers/ambassadors for the purpose of cultural exchange at home and abroad;
4. To provide senior ACS members with challenging, diverse, and enjoyable professional experiences that enable them to contribute to the cultural experiences of their communities; and
5. To recommend policies that address issues of interest to senior chemists.

American Chemical Society | 1155 Sixteenth Street, NW | Washington, DC 20036
Copyright © 2015 [American Chemical Society](#) All rights reserved.

You are receiving this email because you are an ACS member
To ensure that you continue to receive our emails, please add us to your address book or safe list.
[Email Management](#) | [Unsubscribe](#)