THE ERA OF PLASTICS.....p. 5



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FIFTY YEARS AGO IN THE SOUTHWEST RETORT

The ACS January tour speaker is **Dr. Ernest Yeager** of Western Reserve University. His three lecture topics are "Chemical Applications for Ultrasonic Waves," "Fuel Cells," and "Fundamental Applications for Ultrasonic Waves in Chemistry."

A large number of chemists attended the December ACS Southwestern Regional Meeting held in Baton Rouge Dec. 4-6. The winner of the Southwestern Regional Award was **Dr. Paul Delahay** of LSU.

Dr. William Mecay and four Texas Woman's University (TWU) students, Connie Marquez, Dixie Miller, Annette Taylor and Mary Nell Williams, attended the meeting of the Texas Academy of Science in Austin. Dec. 10-12. Dr. Melvin Newman of Ohio State gave the Welch Lecture at TWU Jan. 25 on the topic "Optical Activity Due to Intramolecular Overcrowding." This talk dealt with the synthesis and resolution of hexahelicene. TWU has received an NSF grant of \$47,400 to conduct a six-week summer institute in science mathematics for fifty women teachers from junior and senior high schools.

Dr. Robert Mulliken of the University of Chicago gave a seminar at the University of Texas (*now UT-Austin*) on Nov. 14 on "Hyperconjugation" prior to his attending the Welch Conference Nov. 16-18 in Houston. UT faculty attending the conference were **Drs. Frederick Matsen** (Discus-

sion Leader), James E. Boggs, Pete D. Gardner, Lewis F. Hatch, L. O. Morgan, Stanley H. Simonsen, and Leon Slutsky. Chairman Dr. Norman Hackerman lectured on Nov. 5-6 on corrosion of metals to a University of California adult education course

The Marrs McLean Science Center at Trinity University in San Antonio opened Dec. 8. **Dr. John R. Heller**, Director of the National Cancer Institute gave the dedicatory address.

Baylor faculty attending the Welch Conference were **Drs. James L. McAtee, Jr.** and **Albert G. Pinkus**. Those attending the Southwest Regional Meeting were staff members **Drs. Charles E. Reeder, T. J. Bond,** and **Leone Cockerell** plus graduate student **Herman C. Custard** (former Editor of The Southwest Retort and former Chairman of the D-FW ACS Section).

The University of Arkansas ACS Section hosts former member **Dr. Davis B. Richardson** as speaker at the February section meeting. Richardson from Shell in Houston, who received his Ph.D. from Arkansas in 1956, will speak on "The Coming of Age of Methylene." The section has completed a highly successful annual membership drive, which has increased the ranks by 50%.



Southwest Retort

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Retort

SIXTY-SECOND YEAR

January 2010

THE ERA OF PLASTICS

by E. Thomas Strom

Mr. McGuire: I want to say one word to you. Just one word

Benjamin: Yes, sir.

Mr. McGuire: Are you listening?

Benjamin: Yes, I am. Mr. McGuire: Plastics.

Benjamin: How do you mean that, sir?

Mr. McGuire: There's a great future in plastics. Think about it. From the 1967 movie, "The Graduate," Screen play by Calder

Willingham and Buck Henry

This famous scene in which recent college graduate Benjamin, played by Dustin Hoffman, receives career advice from guests at a party in Benjamin's honor has always resonated with me. I believe the screen writers intended the audience to believe that Benjamin was being tempted to sell out for mere financial success, but it always seemed to me that McGuire gave good advice. How long have these plastic materials, which environmentalists are now teaching us to loathe, been around? It turns out that we are very near a centennial, depending on where one

wants to start counting. The discovery of the first completely synthetic polymer, Bakelite, is usually given as 1907, but the commercial development of the product really began with discoverer Leo Baekeland filing the patent in 1909 and the establishment of General Bakelite Corp. in 1910. Bakelite, a condensation polymer formed by the reaction of formaldehyde and phenol catalyzed with base at high temperature and pressure, can be considered the first synthetic plastic and the material that initiated the age of plastics. Plastics are solid polymers that can be molded or shaped. Fibers, adhesives, and elastomers are polymers as well, but they are not considered plastics.

Therefore, we can say that the plastics age began with Leo Baekeland, a Belgian-born chemist who settled in America in 1889. In 1893 he developed a photographic paper he called Velox. Six years later his Velox company was bought out by Kodak Corp. for one million dollars. Back in 1899 one million dollars was considered big money (I still think it is), so Baekeland was independently wealthy. Not content to rest on his laurels, he began the work that culminated in the invention of Bakelite. Eventually in 1939 Union Carbide bought out General Bakelite Corp., and Baekeland retired from business and research. He died in 1944 at the age of 80.

If you read reference works on Baekeland, you will learn that there is no available biography. That is not strictly true. A master's thesis on Baekeland was written by Carl Kaufmann around 1968 at the University of Delaware. The title was "Grand Duke, Wizard, and Bohemian, A Biographical Profile of Leo Hendrik Baekeland." The thesis is about 200 pages in length and has pictures and accurate chemical descriptions. However, Kaufmann, a writer, copyrighted the thesis. Consequently, it is very difficult to obtain, as the University of Delaware will not make a copy for you. I had to get a copy through the Library of Congress, and I was only able to use it in the UTA Library; I could not remove it from the library premises.

If I have piqued your interest in learning more about Baekeland, I am here to tell you that you can learn much more at this Spring's San Francisco ACS meeting. There will be a symposium on Bakelite and its successor plastics on Monday, Mar. 22. Carl Kaufmann is in his '80's, but he will give the first paper in the symposium on "Leo H. Baekeland: Father of the Plastics Industry." This will be followed by a paper from Baekeland's great grandson, Hugh Karraker, titled "Portrait of Leo H. Baekeland." which will include family pictures and memorabilia. The symposium will have ten other papers that take the story of plastics to the present day, covering such topics as polystyrene, polyethylene, and tissue conducting polymers, engineering.

Chemistry has a fascinating history, and polymer chemistry is an important part of that history. Plastic polymer products have played an important role in improving the lot of the general public. If you attend the March San Francisco ACS meeting, please come to the Baekeland Symposium to learn more about these fascinating materials.

AROUND-the-AREA

University of Arkansas

Frank Millett and Bill Durham received an NIH grant for more than a half million dollars for "Electron-Transfer Proteins." With this competitive renewal, the grant has been continuously funded since 1973.

The International Journal of Mass Spectrometry has published a special issue in honor of Distinguished Professor Charles Wilkins on the occasion of his 70th birthday. Refer to Vol. 287, Issues 1-3, pp. 1-134, 15 Oct. 2009. Julie Stenken has coedited a book on In Vivo Glucose Sensing with David A Cummingham of Abbott Laboratories.

Peter Pulay and Tomasz Janowski attended the 18th Conference on Current Trends in Computational Chemistry held at Jackson State University. Bob Gawley attended the Atlantis Project Director's Conference in Boston. Surash Kumar, Frank Millet, and graduate student Lindsay Rutherford attended the 2009 Southeast IDeA regional meeting in Charleston, S.C. Matt McIntosh and lab members David Clav. Sefat Alwarsh, Silvana Dormi, John Hutchison, Juilette Rivero, Stefan Ruider and Maha Shrestha all attended the Welch Conference held in Houston Oct. 26-27.

Wichita Falls-Duncan

Section officers for 2010 are: Chair, **Dr. Ann Nalley**, Cameron University; Chair-Elect, **Dr. Jeremy Holtsclaw**, Halliburton Energy Services; Secretary, **Ms. Rebecca Eden**, Cameron University; Treasurer, **Dr. Jianguo Shao**, Midwestern University; Councilor, **Dr. Keith Vitense**, Cameron University; and Alternate Councilor (also Immediate Past Chair) **Dr. P. K. Das**, Cameron University. **Mr. Tom Dealy** of Halliburton Energy Services will serve as an associate on the ACS

Committees on Technician Affairs and Minority Affairs.

Heart o' Texas

Baylor University. Nathan S. Lewis, George L. Argyros Professor of Chemistry at Cal Tech is the Gooch-Stephens Lecturer. His Jan. 21st lecture is on "Where in the World Will Our Energy Come From?" His Jan. 22nd lecture is on "Sunlight-Driven Hydrogen Formation by Membrane-Supported Photoelectrochemical Water Splitting." Lecturer Dr. Bruce Hodson and wife Keri are the proud parents of daughter Alexandria Isobel McCall Hodson born Dec. 8, 2009.

Dallas-Fort Worth

In Memoriam, Dr. Paul Ricca. Chemical entrepreneur Dr. Paul Ricca died Oct. 30 two days after



being struck with an aneurysm. His son Peter, current President of Ricca Chemical Co., states that "His last day was a great day of golf,

followed by dinner with his wife of almost 49 years, watching the Yankees lose, and a game of poker with his friends. He wished his friends a good night, walked away from the table, and an unknown aneurysm burst. Never aware, never in pain, never regained consciousness." I think many of us would wish for that kind of passing. A rosary and funeral mass were held at Saint Maria Goretti Church

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Paul Ricca was born Brooklyn, NY on April 25, 1939. He graduated with honors from Islip High School and attended Syracuse University, where he met his future wife Mary Ann Flood. They were married Jan. 28, 1961. Upon graduating with a chemistry degree, he went to graduate school at Purdue, receiving a Ph.D. in analytical chemistry in 1965. After serving two years in the army as an officer, he joined LTV Aerospace in 1967. In 1971 he became Vice President and Director of Laboratories at Anderson Laboratories in Fort Worth. In July 1975 he started his successful enterprise, Ricca Laboratories in Arlington. from which he retired in 1998.

He was a long time member of ACS, and he played a prominent role in arrangements for ACS national meetings held in Dallas and southwest regional ACS meetings held in Fort Worth. He supported the local section by hosting social hours at meetings. He was also a member of Alpha Chi Sigma professional chem.istry fraternity, Phi Lambda Upsilon honorary chemistry fraternity, Sigma Chi honorary research fraternity, and Scabbard and Blade honorary military fraternity. He enjoyed traveling and had visited all 50 states. He also enjoyed playing racquetball, golf, and cards.

Paul was preceded in death by his daughter Ann Marie. He is survived by his wife Mary Ann, sons Bernard Paul and Peter John, and grandchildren Martina Elise, Dominic Paul, and Joseph Luis. He leaves behind memories of a good friend who enjoyed life and accomplished much.

<u>SMU</u>. In July, SMU welcomed **Dr. Elfi Kraka** as the new Chair of Chemistry. Dr. Kraka worked five years in the pharmaceutical industry before receiving her Ph.D. in theoretical chemistry. Previously she worked at the University of Göteborg and then at the University of the Pacific. At SMU she will focus on computerassisted drug design, reaction dynamics and reaction mechanisms, and catalysis.

Another new faculty member is Dr. Dieter Cremer. He is a theoretical and computational chemist who received his training with Nobel Laureate John Pople at Carnegie Mellon University. After being Heisenberg Professor at the University of Cologne, he became scientific director of the Theoretical Chemistry Group of the University of Göteborg. His research focuses on the development and programming of quantum chemical methods, chemistry of the polluted atmosphere, reaction mechanisms, materials science, and nanotechnology described in more than 300 peer-reviewed publications.

Dietmar Seyferth, founding editor of *Organometallics* and Robert T. Haslam and Bradley Dewey Professor Emeritus at MIT, will speak at SMU at 4 p.m. on Wednesday, Feb. 24, in Room 158 Fondren Science Bldg.

<u>TCU</u>. **Jeff Coffer** gave an invited talk at the UTA Materials Science and Engineering Symposium in December and a seminar at Flinders University in Adelaide, Australia in November. **Ben Janesko**

gave an invited seminar at the KITP Conference held in November at UC-Santa Barbara

<u>Tarleton State University</u>. The TSU Student Affiliate Chapter was a semifinalist in the ACS Chemvention competition.

METROPLEX FEBRUARY SEMINAR SCHEDULE

Spring seminar schedules are still being developed. Here are the ones we know about.

UT-Arlington. Feb. 5, Michael Mayer, Texas Tech, "Fastenating Molecules." Feb. 10 (Note change of day.), Ian Jardine, Thermo Scientific, "The Impact of High Performance Proteomics Mass Spectrometry on Biology Research." Feb. 12, Alex Deiters, North Carolina State, "Small Molecules and Light as Tools for the Regulation of Biological Processes." Feb. 19, Thomas Cundari, UNT, "Fun with Metals---Modeling of Transition Metal Chemistry in Catalysis and Advanced Metals." Feb. 26, Mark Mehn, University of Wyoming, "Bioinspired Iron and Manganese Oxidation Catalysts." Mar. 5, Malika Jeffries-El, Iowa State, "Design and Synthesis of Conjugated Polymers Based on Benzobisazoles." Seminars are normally at 2:30 p.m. in Room 114, Baker Chemical Research Bldg.

<u>SMU</u>. Feb. 5, Darrin Bellert, Baylor, TBA. Feb. 17, Gary Molander, University of Pennsylvania, TBA. Feb. 19, Ned Porter, Vanderbilt, TBA. Feb. 24, Dietmar Seyferth, MIT, TBA. Feb. 26, Eric Anslyn, UT-Austin, TBA. **Mar. 5**, Paul Cook, University of Oklahoma, TBA. Friday seminars are usually at 3 p.m. in Room 152 Fondren Science Bldg.

Texas Christian University. Feb. 2, Ted Molinski, UC-San Diego, "Marine Natural Products: From the Extreme to the Enigmatic." Feb. 4, John Wood, Colorado State, "Bridged Polycyclic Natural Products: Inspirational Targets for Total Synthesis." Feb. 9, Jerzy Klosin, Dow Chemical Co., TBA. Feb. 11, Alexander Deiters, North Carolina State, TBA. Feb. 16, Gary Molander, TBA. Feb. 17-18, Cecil H. and Ida Green Honors Chair Professorship Lectures, Ned Porter, Vanderbilt, TBA. Feb. 23, Thomas Cundari, UNT, TBA. Feb. 25, Phillippe Fauchet, University of Rochester, TBA. Seminars are normally at 11 a.m., Lecture Hall 4, Sid Richardson Science Bldg.

UT-Southwestern - Biochemistry. Feb. 4, Richard Losick, Harvard, "Birth and Death of a Bacterium Community." Feb. 11, Ann Stock, University of Medicine and Dentistry of New Jersey and Rutgers. "Regulating Response Regulators." Feb. 18, Brian Crane, Cornell, "Structure and Mechanism of Circadian Clock Light Sensors." Feb. 25, Brian Stoltz, Cal Tech, "Complex Natural Products as a Driving Force for Discovery in Organic Chemistry." Mar. 4, Michael Botchan, UC-Berkeley, "Switching from G1 to S Phase Activation of the MCM Helicase." Seminars are normally 12 noon in Biochemistry Lecture Hall L4.176.

FEBRUARY D-FW ACS MEETING THURSDAY, FEBRUARY 25, 2010 STAGE WEST

821 W. VICKERY, FORT WORTH 76104

"COPENHAGEN" by Michael Frayn with an Introduction by Dr. Nelson E. Claytor

of Fresnel Technologies, Inc.

n'' presents what might have been said in conver

"Copenhagen" presents what might have been said in conversations among Nobel Laureates Werner Heisenberg and Niels Bohr, and Bohr's spouse, Margrethe Bohr. Heisenberg, an important theoretical physicist and head of Germany's quest for nuclear weaponry, requested – and had – a meeting with Bohr, his colleague and friend. Although the actual subject of their discussion remains unknown, it is generally accepted that their meeting in Copenhagen in September 1941 (mere months before the US entry into WWII) was pivotal to Germany's failure to develop the atomic bomb. "Copenhagen", speculates on the interplay of the characters during the initial meeting, a subsequent meeting in 1947, and a conversation that, scintillatingly, occurs after their deaths.

Social (Sponsored by Fresnel Technologies, Inc.) & Dinner: 6:00 - 7:00 pm Introduction to the History and Science behind "Copenhagen": 7:00 p.m. Nelson E. Claytor, Ph.D. Atomic Physicist and President of FTI

Play: 7:30 - ~9:30p.m. Ol' Vic Theater, Stage West

Pricing: Meal Options: www.stagewest.org/thursday-night-ol-vic

Dinner + Play: \$32; Play Only: \$20; Dinner Only: \$12 (for those with season tix) Cash or Check at the Door; Social is Included in All Options;

<u>Reservations</u>: info@acsdfw.org. **Deadline is Tues. Feb. 16**th. more info: www.acsdfw.org or Dr. Denise Merkle (817) 921-0029. Seating is Finite. Fill in your orbital early! Members are responsible for reservations made but not kept. <u>Directions (from www.stagewest.org):</u>

- From I-30 heading East: Exit Lancaster and go east, turn right onto Jennings, turn right onto Vickery.
- From I-30 heading West: Exit Lancaster and go west, turn left onto Jennings, turn right onto Vickery
- From 35W heading North: Exit Lancaster, go west, turn left onto Jennings, turn right onto Vickery
- From 35W heading South (coming in from 121): Exit to I30 West, exit Henderson and turn right, turn right on Lancaster, turn right on Jennings, turn right on Vickery.

UPCOMING: *March* 30th Speaker ACS Past President William F. Carroll, Ph.D.; *April* 17th, Meeting in Miniature! Prepare to Present! or Judge!

UTA'S SCHUG IS 2010 ELI LILLY AWARDEE



UT-Arlington Assistant Professor **Dr. Kevin Schug** has been named the lone recipient of the 2010 Eli Lilly Young Analytical Scientist Award. This honor comes with a \$50,000 unrestricted grant, and opportunity to renew the grant for a second year, and a lifetime opportunity to collaborate with Eli Lilly scientists. There are no recommendations for this highly selective award. The

judges independently review available literature and select a pool of about a dozen candidates. The award recognizes a young researcher who is doing work of relevance to the pharmaceutical industry.

Schug joined the UTA faculty in 2005. He received his undergraduate training at the College of William and Mary and his Ph.D. degree from Virginia Tech. He also had a two year post-doc at the University of Vienna. He is currently the holder of an NSF Career Award for 2009-2014. He attributes winning this award to the stimulating environment at UTA and to excellent students helping in his research.