Chemical Creativity. By J. A. Berson. Wiley-VCH: Weinheim, 1999, 195 pp, DM 78, softback. ISBN 3-527-29754-5.

"I hope that this book will be read by scientists from a broad range of disciplines and by others interested in the genesis of ideas."

With these words, Professor Berson, a towering contributor to mechanistic organic chemistry, engages the reader in the origin and evolution of several major discoveries in organic chemisty. We immediately encounter familiar terms (Diels-Alder reaction, orbital symmetry rules, the dienone-phenol rearrangement, aromaticity, symmetry in mechanistic rationalization, the S_N2 reaction) and renowned names (titled but also Thiele, Robinson, Oosterhoff, Kenyon, Ruzicka, among others).

Berson's objective? To weave selected tales of discovery, with references patiently collected from many original sources and interviews with notable chemists-witnesses, into a rich tapestry that transmits his strong conviction: that by showing how science *was* done, we will not ignore or fear the next unwelcome observation, appreciate that some of our most cherished theories started on paths of false reasoning, and face our next voyages with more humility. For non-specialists, Berson offers summaries which facilitate appreciation of technical passages; for historians of science, there is a wealth of material which stimulates analysis of the social implications and the dynamics of science; and for organic chemists, this is a legitimate "time-out" read which will resist interruption.

In the first tale, we learn that von Euler had a 2:1 adduct of isoprene and p-quinone in1920, eight years before Diels and Alder, but "turned and walked away" because of another interest (fermentation, Nobel Prize, 1929). Thiele, "the guru of conjugated systems" and the discoverer of fulvene, asked his student Albrecht to make a double fulvene by condensation of cyclopentadiene with p-quionone. The result, *addition* and not *condensation*, did not conform to Thiele's predilection, Berson conjectures. Observation favors the prepared mind but recognition of the discovery is the bottom line – and that was left to Diels and Alder.

The tale of Hueckel and aromaticity theory is an objective analysis of a brilliant scientist, frustrated by lack of recognition, fraught by mental conflict during Hitler times, and vindicated too late. After contributing some of the most significant quantum chemistry papers of this century in the 1930-37 period, why did Hueckel's output come to a full stop? Berson was an observer during the 1950s when Hueckel mathematical theory came head to head with the simpler resonance picture from the charismatic Pauling. He documents the torterous path of the evolution of a new scientific discipline and its human impact to offer the wistful conclusion , a phrase of today , "that it is usually unwise to suppose that you can let your work speak for itself."

The next story, opening with the Woodward citation, "There are no general reactions", uses the dienone-phenol rearrangement as a vehicle to remind us and to teach the young how closely knitted were the fields of synthesis, natural products, and mechanism. Recollect this is 1950 and structure proof is not by NOESY NMR and X-ray. This narrative is one of the synthetic ascent on steroids in the 1940-60 era, of competition for priority to a chemical Mt. Everest, of powerful mechanistic thinking and experiment, of bioactivity as structure proof (!), of being right for the wrong reasons. It bristles with Berson's inexhaustable ability for analytical depth and with intriguing footnotes and citations of and by recognizable chemists.

In the final tale, the longest, Berson brings symmetry, the magic word we state with such conviction in the first organic course, to levels of scientific, aesthetic, cosmological and even psychobiological appreciation. We begin with enolization and forgive Beckmann for not fully understanding diasterioisomerism fifteen years after LeBelvan't Hoff; we flinch as the young Meerwein draws an anti-Bredt intermediate in the norborneol to camphene conversion; we marvel at the author's own intriguing observation of Cope rearrangements of symmetrization without symmetrical intermediates; we are reminded of the Kenyon and Phillips experiment, predating by 12 years the esteemed Hughes study of 1935 found in the current rainbow texts as the definitive evidence for the inversion of configuration in the S_N2 reaction.[1] This topic which, as for many chemists, still elicits excitement and affection for Berson, is a conduit for allowing us to experience the passionate, at times uncivil, exchange of literature reports by the major players, to shake our heads in admiration of the success of these chemists without our experimental tools, and to learn how fruitful ideas surface from wrong original observations.

As the heroes of organic chemistry march through these pages, we acquire insight into the origin of the past Century's major discoveries, we are privy to dissection of ideas in search of acceptance, and we are tantalized to ask "where are the important problems today?" There is excitement, adventure, and challenge, and there is much to learn, in this gem of a book which compels a reread.

[1] Explicitly stated in vintage organic texts, e.g. Roberts, J.D.; Caserio, M.C. Modern Organic Chemistry, Benjamin, NY, 1967, p 232 but absent in the recent popular first-year organic texts.

Victor Snieckus, Queen's University, Kingston, Canada

Article Identifier:
1437-210X,E,2000,0,11,1635,1636,ftx,en;B11100SS

Current Trends in Organic Synthesis. Edited by Carlo Scolastico and Francesco Nicotra. Kluwer Academic/Plenum Publishers: Dordrecht, 1999. 372 pp, $ 99.50. ISBN 0-306-46130-7.

Based on the lectures of the XII International Conference on Organic Synthesis, held in Venice from June 28 to July 2, 1998, this book provides an extensive overview of the rapid growth in the synthetic chemistry.

The book is divided into six parts. The first part collects the plenary lectures of the conference.The topics covered include Chiral Relay Auxiliaries, Asymmetric Catalysis with Chiral Lewis Bases, Use of Molecular Workbenches and Platform in Organic Synthesis, From D-Camphor to the Taxanes, Non-Covalent Synthesis of Organic Nanostructure, Recent Advances in the Synthesis of Carbohydrate Mimics, Some New Aspects of Asymmetric Catalysis, and Designer Lewis Acids for Selective Organic Synthesis.

The second part consists of the four lectures of a mini-symposium on combinatorial chemistry. It starts with a short introduction to this new technology, followed by its application for identification of protease inhibitors. Further lectures deal with the polymer-supported synthesis and the automation of a synthetic process in combinatorial techniques. While the explosive growth of combinatorial chemistry makes comprehensive documentation difficult, this mini-symposium highlights the increasingly important role of the combinatorial technique in synthetic organic and medicinal chemistry.

The third and fourth parts dealing with New Synthetic Methods and Stereoselective Synthesis, are especially interesting for the preparative organic chemists. These parts have a very broad and diverse range of coverage, discussing, among others, electrophilic amination, atropisomer-selective synthesis of chiral biaryls, Lewis acid controlled radical reactions, and large scale catalytic asymmetric hydrogenation. They cover topics at the forefront of synthetic organic chemistry.

The fifth part of the book, entitled Metal-Mediated Synthesis, focuses on the asymmetric hydrogenation with chiral Ru(II) catalysts, the stereocontrolled addition of organometallic reagents to aldehydes and imines, synthesis of polyenes, Pd-catalyzed allene cyclization and benzannulation via enynes, and catalytic tandem addition route to γ,δ-unsaturated carbonyls.

The final part is entitled Target Oriented Synthesis. This also covers a wide spectrum of synthetic topics. The subjects addressed include the chemistry and biology of antibiotic *Caliculin C*, synthesis of cytotoxic marine macrolides, preparation of heterocyclic antitumor compounds (benzophenanthridines, licorines, dynemicins and ellipticines), synthesis of immunodepressant prodigiosius, etc.

This is a very valuable part of the book, showing how the theory is applied in practice, and how the synthetic methods are used to solve the stereocontrolled synthesis of biologically active compounds.

In summary, my overall assesment of this book is highly favorable. I am sure that organic and medicinal chemists interested in the synthesis, properties and biological effects of the organic compounds and the general trends in organic synthesis would derive considerable benefit from reading it. This book also provides an excellent source of informations to people wishing to learn more about this rapidly growing branch of chemistry.

Lajos Novak, Budapest, Hungary

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1437-210X,E,2000,0,11,1635,1636,ftx,en;B21100SS