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The Newsletter for Senior Chemists

Summer Issue - July 2020

Moving Forward, Sharing Journeys, Enjoying Chemistry and Planning for Fall 2020



Senior Chemists Moving Forward with the New World

When we published the Spring 2020 Senior Chemists Newsletter in March, we had no idea of what we would experience this year. I traveled to Seattle, WA in February to be inducted as a Fellow of the AAAS, with no thought that this would be my last flight for a very extended period.

The response of our senior chemist community to the challenge of COVID-19 has been exceptional. The preparation of this newsletter, the awards to local sections, the conversations on the "Seniors on the Move" platform, meetings of subcommittees and the full committee, are all testaments to the resilience of senior chemists. This group will be meeting on August 17 using Zoom to continue advancing our strategic plan. For more information on recent activities of the Senior Chemists Committee, I invite you to read my Comment in the June 22 issue of *Chemical and Engineering News*, entitled "<u>The new world for senior chemists</u>."

The Editorial team always finds fascinating articles that I know you will enjoy. This Newsletter continues the great tradition of providing information about how chemists are being active in retirement. We hope you like the new cleaner layout that ACS has chosen to improve readability and consistency of all ACS newsletters.

I want to encourage all senior chemists to engage with the other challenge before us – removing racism and racial injustice. This has reached a crisis level and requires us all to listen and be prepared to act. The American Chemical Society has partnered with AAAS and other sister societies to support <u>#ShutDownSTEM</u> on June 10, a grassroots movement that aims to "transition to a lifelong commitment of actions to eradicate anti-Black racism in academia and STEM." We can all be part of the solution by standing up and speaking up as part of the anti-racist community. You can find more information through ACS and AAAS and other groups holding listening sessions and discussions.

Stay safe! Arlene A. Garrison - Chair, ACS Senior Chemists Committee



Online Panel Discussion to Address Systemic Racism Moderated by ACS President Luis Echegoyen

The ACS Senior Chemists Committee (SCC), in collaboration with ACS Webinars, hosted a webinar on July 9 to address systemic racism and its impact on ACS members and others in the chemistry community, including academia, government, and industry. SCC developed this free webinar to give the guest panelists and participants an opportunity to identify specific actions to encourage engagement by minority chemists and diversify the chemical enterprise and ACS. ACS President Luis Echegoyen moderated the session that included panelists: Dr. Isiah Warner, Vice President for Strategic Initiatives at Louisiana State University, Dr. Dabney Dixon, Director of STEM Educational Initiatives at Georgia State University, Dr. Lucenia Dunn, first elected female Mayor for the City of Tuskegee, AL in 2000 and Founder and President/CEO of the Tuskegee Macon County Community Foundation, Inc., and Dr. Denise Barnes who served as Head of the Established Program to Stimulate Competitive Research at the National Science Foundation. Participation for the discussion was strong with more than 300 attendees "live" – many asked questions and shared thoughts for action. If you were unable to participate, a recording of the event can be <u>accessed here</u>. If you have any questions or further ideas you would like to share, please send an email to <u>seniorchemists@acs.org</u>.





Dr. Luis Echegoyen

Dr. Dabney Dixon

Dr. Isiah Warner

Dr. Lucenia Dunn

Dr. Denise Barnes

Senior Chemists Career Stories & Amazing Journeys

People with Unique Abilities, Part 2 by Mona Minkara and Submitted by Amie Norton, Chemists with Disabilities Committee



Macular Degeneration and cone-rod dystrophy slowly took Mona Minkara's vision. By the age of seven she was blind. Mona faced multiple challenges in life starting when a prestigious eye specialist told her mother that it was not worth spending money on her education. But Mona had her heart set on becoming a scientist.

Determined to make her dream a reality, Mona attended Wellesley College, where she double-majored in Chemistry and Middle Eastern Studies. With the help of a National Science Foundation Research Experiences for Undergraduate Award, Mona was introduced to chemical research for which she developed a passion. She received three additional awards from the National Science Foundation. Her scholastic and scholarly success led to Mona being selected as her graduation Commencement Speaker. Mona shared her inspirational story, reflected on those who helped her, and her realization that the prestigious specialist was the person with limited vision. The idea that "Vision is More than Sight" became the motivation for Mona's career.

Today Mona is a Tenure-Track Assistant Professor of Bioengineering at Northeastern University of Boston. Her research focuses on using computer simulations for the molecular-level interactions of ecigarette components on the protein and lipid molecules of the pulmonary surfactant system. This system is vital to breathing as it lowers the surface tension of water inside the lungs for easier expansion. Mona's goal is to help understand the effects of vaping on lung function and health, resulting in improved treatments and drug delivery methods.

Out of more than 100 applicants this year, Mona was awarded one of the three Holman Prizes by "<u>LightHouse for the Blind and Visually Impaired</u>" (a San Francisco non-profit organization). Her website "Planes Trains and Canes", and associated YouTube episodes in which she shares her experience as an independent, blind world traveler was published in January 2020 (see planestrainsandcanes.com). Photo taken by Ruby Wallau.



Vocation and Avocation: An Ideal Synergy by J. Ernest Simpson, SCC Member

In addition to refereeing high school basketball games for 55 years, I taught organic chemistry at California State Polytechnic University (Cal Poly Pomona) in Pomona, CA for 40 years and have 32 years of experience of giving "Wine Chemistry" talks to many of the local sections of the ACS. I acknowledge with pride my 78 years of life-long learning through chemistry, the ACS, wine, and basketball!

My dad, who died just before I was born, had been an All-American college basketball player and a chemistry major and my interests clearly reflected his.

I lost my mom when I was 18, before either she or I really recognized my developing goals. At the University of New Mexico (UNM), I earned my BS, MS, and PhD degrees in organic chemistry between 1959 and 1967 while watching some great UNM basketball at "The Pit". My basketball refereeing career developed during this period, and I began my involvement with the Football-Citrus Basketball Officials Association in 1967, continuing to work for them for the next 48 years.

While a faculty member at Cal Poly Pomona, I mentored hundreds of students who went on to officiating careers. Over the years, I was able to raise more than \$100,000 in endowed Simpson scholarships, including a women's basketball officiating scholarship. I also initiated an award-winning Cooperative Education Program that helped place more than 2,000 Cal Poly Pomona students in major-related paid internships.

Through years of hard and consistent work (and much self-education), I was recognized in both fields. In 2012, I was named an ACS Fellow, and in 2013 I was selected as one of 83 basketball officials to enter the inaugural Hall of Fame (classes 1949 – 2013) of the California Foothill-Citrus Basketball Officials Association. In the meantime, I serve as an ACS Councilor, starting in 2010. In 2019, I became Chair of the San Gorgonio ACS local section. Chemistry and basketball again are intertwined.

So, we have the perfect setup of vocation versus avocation. Organic chemistry professor versus basketball referee. Wine educator versus basketball education for players, coaches and fans. Laboratory skills versus conflict resolution, learning people skills and handling stress. IUPAC rules of nomenclature versus basketball rules. Teamwork with colleagues and university administrators versus teamwork on the court. Improving yourself in the laboratory and classroom versus improving yourself on and off the court. Having half a glass of wine versus being half right on calls. Learning that some of your students are going to earn Cs's, D's or even F's versus learning that you can't please players and fans all the time and every time.

My vocation and my avocation have always had so much in common. There has always been so much to be learned from one that is applicable to the other. My career thus illustrates the wonderful balance and synergism of vocation and avocation between two seemingly disparate fields of activity: chemistry and basketball.

W. H. Nichols (1852-1930) – 19th Century Entrepreneur and Benefactor by Peter W. R. Corfield, Chemistry Department, Fordham University

The New York Section of the ACS annually honors a chemist with the W. H. Nichols Distinguished Scientist Award, the oldest ACS National Award. In studying Nichols' career, I was especially fascinated by the fact that Nichols started a company to manufacture sulfuric acid in 1870, at the early age of nineteen, just after graduating from New York University. I wondered – why chemical manufacturing, rather than a more gentlemanly profession, and why messy, dangerous sulfuric acid?

Nichols' reflections in 1918 explained that his interest in constructing the lead chambers used in manufacturing sulfuric acid was piqued by a French engineer and sustained by his abilities and success. He constructed lead chamber plants at the Laurel Hill, Long Island site and his sale of sulfuric acid took off rapidly. Chemical manufacturing of fertilizers, and of consumer products such as glass and soap, had grown rapidly during the 19th Century; these processes and others created increased demand for sulfuric acid. Indeed, the production of sulfuric acid in the 1870s increased ten-fold. Nichols expanded his product line in due course and produced a variety of base chemicals, as well as pure copper. He astutely responded to the fast-changing technology and economics at the end of the 19th Century by merging his small companies with others to form the General Chemical Company (1899), and by utilizing the new Contact Process that produced purer sulfuric acid. After World War I (WWI), he presided as Board Chairman of the Allied Chemical Company, formed by a merger of five companies.

In 1876, the young Nichols had been among a small group of chemists who were founding members of the ACS. Nichols generously founded the Nichols Award (1902) and donated \$1,000 to the New York Section to pay for an annual gold medal to honor outstanding research. It was another 25 years before ACS established its Priestley Medal, so Nichols seems again to have been prescient! In addition, Nichols was a major benefactor of New York University. His generosity extended to his own workers, as shown by his distribution of \$1,500,000 in bonuses based upon profits in 1916.

In 1918, he became ACS president, after earlier presidencies of Chemical Industry (1904) and of the International Congress of Applied Chemistry (1912). His reputation led to service as Chair of the Chemical Council for Defense during WWI.

Nichols died in 1930 and left more than half of his fortune to charity. A very impressive person indeed!



A Very Interdisciplinary Course and Experience by R. Stephen Berry from The University of Chicago

Motivated by national concern about the environment in 1968, a law professor, a biologist, and I, a chemist, at The University of Chicago, began a course on environmental management. After two years, economist George Tolley replaced the others. He and I taught that course well into the 1970's.

Then, in 2011, George Tolley and I began a course on Energy and Energy Policy. Concerns about human-caused changes in climate had been evident primarily in studies by climate scientists, not in sources seen by the general public. We structured the course from its outset to be rather unconventional, and we kept to that structure through the last time we gave it, in 2018. The "home" of the course was a College program called "Big Problems" but almost immediately it was cross-listed in Economics, Public Policy, Physical Sciences, Environmental and Urban Studies, and Conceptual and Historical Studies of Science. From the outset, we wanted to have a broad mix of students from many different disciplines, although we were aware that we could expect Economics majors to dominate—and they did, every year. However there were always enough students from other fields, especially from natural sciences and environmental studies, that we could successfully apply what we always saw as a very important requirement.

We required the students to work in teams of three to five, or occasionally even six students. Each team was required to prepare a paper. The topic could be chosen from a list prepared by George Tolley and myself, or if it was proposed independently by the students on a team, it would be acceptable if approved by Tolley or myself. But every team had to be interdisciplinary! One of the tacit goals of the course was the students' learning to talk and work across disciplinary lines; the economists and the scientists had to learn to put together the ideas and information from their different fields. The other major requirement of the teams was simply that the papers had to be of professional (and therefore publishable) quality. Fortunately, there were always enough students from fields other than economics that all the teams were indeed interdisciplinary.

The course was unconventional in that there were no quizzes or examinations, and no homework apart from the team papers. Midway through the term, each team would give a progress report to the class. Then, in the final two two-hour sessions at the end of the term, each team would give a final summary report to the class, normally just after submitting their team paper.

In fact, some of the papers have been published! Both George Tolley and I were already emeritus when we first gave the course on Energy and Energy Policy!

My Journey by Son Nguyen, SCC Member and Vietnam Native

This was written by Son as a new member introduction to the Senior Chemists Committee, Spring 2020





To Professor Roylston Filby, my thesis advisor at Washington State University and the late Heino Nitsche at Lawrence Berkeley National Laboratory/University of California, Berkeley. Always remember those spring days in New York City.

> Coming from a distant land To study a foreign discipline Knew only few elementary words "Perciò, non capito le lezione di Medicina" Drawing circles on notebook

Vietnamese, Sciences, Law are mine Italian, Medicine, boring from my sight I want to rebel To study subjects that I love Sciences are my passion

Law is my liking However, Medicine I had to study To make my parents happy Fortuitously, the war was over Presented me the opportunity To study Chemistry "Negli Stati Uniti" Don't ask me how I graduated Just studied and took it easy No rushing to get any job Loved working in the lab everyday

Then I attended the first ACS National Meeting in New York City My professor chaired a session He simply asked – "would you do a presentation?" After the talk, there was more talk Got job interview just off the podium

This is the story of my life How I got opportunity to go to the States Studied chemistry and was happy Inadvertently, inconceivably got a job The only one of my professional career life Didn't finish my medicine degree in Italy However still use the skills set Applied in work and personal life.

The Founding of the Lehigh Valley Local Section by Ned D. Heindel and Roger A. Egolf (In recognition of the section's 125th Anniversary)

When the American Chemical Society was founded in 1876, it was primarily a New York organization, and its officers were required to live in the New York area. The driving force behind the Society was Columbia University chemist Charles Chandler; and the first president was John W. Draper of New York University School of Medicine.



Local Sections were not authorized until 1890, and the first, Rhode Island, was formed in 1891. Lehigh Valley was soon chartered as the fifth Section, in December 1893. Of the fifteen chemists who came to the Chemical Laboratory (now Chandler Hall) at Lehigh University on February 15, 1894 for the organizing meeting of the Lehigh Valley ACS Local Section, some were academic, some industrial, some both – only two were organic chemists.

Edward Hart, the first PhD graduate of Johns Hopkins (1879, with Ira Remsen), was Professor of Chemistry at Lafayette College; the editor and publisher of the Journal of the American Chemical Society; and a partner with his former students John Townsend (J. T.) Baker and George Adamson in the Baker and Adamson Chemical Company. Hart was a close friend of then ACS President Harvey Wiley. William Schober, another Remsen PhD and Lehigh University Professor, synthesized new dyestuffs.

Other attendees were inorganic/analytical chemists. Albert H. Welles, a coal chemist, taught part-time at Lafayette; as did Bethlehem Iron chemist Albert Ladd Colby at Lehigh. Porter W. Shimer, a Lafayette PhD graduate, worked for Thomas Iron, and later consulted for Bethlehem Iron. Trail Green, a chemist-physician retired from Lafayette, was skilled in medicinal chemicals. Joseph W. Richards, Lehigh's first PhD graduate, had worked for the copper refining industry, but then returned to teach metallurgical chemistry at Lehigh. Richards later founded the Electrochemical Society.

Edward Hart served as temporary Chair and Albert H. Welles as temporary Secretary as the first meeting opened. The election of Officers was then held immediately. William H. Chandler, brother of ACS founder Charles Chandler and head of the chemistry department at Lehigh, was elected the Section's first president, Welles the first Secretary, and Colby, the first Treasurer. Clemens Jones was elected as the fourth member of the executive committee. The other attendees at this initial meeting were Messrs. Sohun, Spanutius, Buck, Brinker, Hunsicker, and Fuehs.

No lectures were given at that initial meeting, but at Lafayette College on April 5th 1894, four were presented: "The Demand for the Technical Chemists" by William Chandler, "Phospho-hydrocyanic Acid" by William Schober, "The Constitution of Portland Cement" by George Scholl," and "Resistance Board for Electrolytic Work" by Edward Hart. This second meeting was significant, also, for the approval of the Lehigh Valley Section's Constitution, still used today.

Senior Chemists 2020 Fall National Virtual Meeting Events-Come Join Us!



The ACS Senior Chemists Committee (SCC) is looking forward to your participation in a number of events that have been planned for your engagement. If you've attended the Senior Chemists Breakfast or have participated in the Networking with Chemistry Professionals events during previous national meetings, we encourage you to join us again. The following is a schedule of virtual events and programming.

Senior Chemists Committee Open Meeting - Monday, August 17 from 1:00-3:00 p.m.

ACS National Meeting Virtual Expo - Visit the Senior Chemists, meet and interact with exhibitors, make connections, and discover new technological developments in our industry. The virtual expo will be ongoing throughout the national meeting from August 17-20 and will consist of On-Demand Oral Technical Presentations, Posters On-Demand, and an Expo featuring interactive ACS Booth and Store. More information on the Expo can be found at www.acs.org.

Planning for Retirement Symposium sponsored by the ACS Division on Professional Relations; cosponsored by SCC and the Division on Small Chemical Businesses - Wednesday, August 19 from 1:00-3:00 p.m. and 4:00-5:40 p.m.

Future Heroes of Chemistry! Funding New Ventures and Chemical Angels Symposium sponsored by the Division on Business Development & Management; co-sponsored by SCC and the Multidisciplinary Program Planning Group - This symposium is ON DEMAND only.

Sustainable Green Chemistry: Bench to Market Symposium sponsored by the ACS Division on Small Chemical Businesses; co-sponsored by SCC - Monday, Tuesday, and Wednesday, August 17-19 from 1:00-3:00 p.m. and 4:00-6:00 p.m.

Senior Chemists Coffee Social Hour on the Impact of COVID-19 (formerly SCC Breakfast) - Tuesday, August 25 at 1:00 p.m.

Senior Chemists & Younger Chemists Virtual Networking Event with Chemistry Professionals and Undergraduates - Sunday, August 30 from 2:00-3:30 p.m.

All times noted are in the Eastern Time Zone. More details about these events will be promoted via national meeting communications. If you have any questions, please send an email to seniorchemists@acs.org. We hope you join us.

How Effective are Cloth Masks Against Coronavirus?

The U.S. Centers for Disease Control and Prevention is recommending that the general public wear cloth face masks to help decrease everyone's chances of getting COVID-19. So how does the new coronavirus spread? And can a cloth face mask help stop it? We contacted some experts to find out and to learn which materials work best if you're making your own: https://youtu.be/knCseXki4gE.



Reactions is a video series produced by the American Chemical Society and PBS Digital Studios. Subscribe to Reactions at http://bit.ly/ACSReactions and follow us on Twitter @ACSReactions. Other interesting videos for chemists can be found in the series.

As shared in the SCC *C&EN* Comment in June, ACS senior chemists have been resilient during this time of crisis.Connecting and staying engaged is very important and many have learned new technologies that will help in this effort. Please continue to stay safe and remember to "keep smiling under your masks!"

During the pandemic, outdoor activities have also increased a great deal, including bird-watching.



Enjoying Everyday with Chemistry

Chemistry is for the birds-Article 10 by Dwight Chasar

In previous discussions I talked about the pigments based upon melanins, carotenes, and porphyrins that contribute to the various colors in birds. More recent research has shown that other chemical structures also contribute to specific bird body parts or specific species. It has been shown that chemical variations on pterins (I) and purines (II) contribute to yellow, orange and red in some bird irises. They can differ in oxidation states around the ring atoms and have various organic groups attached about the parent ring structure. These compounds are deposited into chromatophores in the avian iris in the crystalline form and thus serve as reflective platelets. When both structures are deposited together, they brighten the colors. Examples are the yellow irises of owls and the red irises of pigeons.



A more recent discovery has been of a new class of pigments called psittacofulvins (III) which contribute to the yellows, oranges and reds of the feathers of South American parrots like the scarlet macaw. They absorb light maximally at shorter wavelengths than do the carotenoids. It appears that these compounds are made directly at the feather from fatty acids which means that the fatty acid needs to be reduced to form the aldehyde functional group and oxidized to form the complete conjugated double bond structure. The chemical name is derived from the scientific taxonomic family name for parrots—Psittacidae.



"The CHI Model of Functional Consciousness" by Dr. Armand F. Lewis -ACS member for and currently an Adjunct Professor, Bioengineering Department, College of Engineering, University of Massachusetts

I witnessed a very broad spectrum of human behavioral function in my 64 years as a physical chemist in industry and academia. I encountered a great variety of human personalities, talents, levels of intelligence, and human attitude and this allowed me to develop some novel aspects of human behavior which relate to the field of humankind's functional consciousness. These led me to ask myself the question "Would it be possible for me to publish a scientific paper that is completely outside my professional field (>100 scientific publications and >20 US patents in the fields of polymer physics and materials chemistry)?"

My grandson, Kyle A. Lewis, is a recent BS graduate in a field of behavioral science. After reading my first manuscript draft he decided to collaborate with me to co-author a paper. Our first submission was promptly rejected. However, we learned from this experience and were able to fine-tune the manuscript such that it was quickly accepted when submitted to another journal¹.

I required assistance to provide the paper with a proper perspective and applicable behavioral science jargon. However, I achieved my goal in that I now have a scientific publication outside my chosen professional field. I am sure this is not a unique accomplishment but it is still personally satisfying. I hope this story will inspire other Senior Chemists who may share career experiences that lie beyond their realm of chemistry. With age comes wisdom. Why not share this wisdom with others?

In summary: the subject of consciousness spans the fields of philosophy, psychiatry, behavioral science, neuroscience, and even quantum physics. Amidst this diversity, a foundational model for consciousness, based on the behavioral functionality of humankind, is proposed and is described in terms of three human brain-mind-body activities: (1) Creative thought/action (Creaton), (2) Human body operational/physical action (Humanoid), and (3) Task Implementation; Goal focused operations (Impler). In this CHI model of functional consciousness, a conscious person is defined as one who is alive and engaged in a mental, physical, or mental/physical human activity.

The Humanoid function (H), humankind's most basic, serves as the body's means of physically performing a given task whether it is a natural or practiced task. The Impler (I) level of consciousness closely follows with mind/body coordination to physically carry out a goal-focused task. Much of humankind's awake-functional operations involve a combined I/H mode. The Creaton (C) mode describes a person's brain/mind function when it is either forced. deliberately encounters, or confronts a completely new situation. It functions to conceive and develop answers to never before addressed events of human experience or technical query.

Humankind rarely functions in a 'pure' C, H, or I mode but in a continuum wherein all three modes are fluidly and simultaneously operating. Only when the mind reaches for answers to questions or searches for solutions to unsolved problems do humans rely solely on their C talents/abilities. A CHI profile diagram changes with a person's experience, training, education, age, and to changes within the intimated confines of humankind's daily functional moments.

¹Armand F. Lewis and Kyle A. Lewis "The CHI Model of Functional Consciousness", Journal of Consciousness Exploration and Research, December 2018, Volume 9, Issue 9, pp 788-808.

Enjoying Retirement and Making Your Will

A Great Way to Spend Retirement by Lol Barton, Member of SCC and the St. Louis ACS Local Section

I spent my career teaching inorganic and general chemistry and did research in borane and metallaborane cluster chemistry on the Chemistry faculty at a new university, the <u>University of Missouri-St</u> <u>Louis (UMSL</u>). My career involved students, teaching, advising them on academics, and supervising their research.

I also began to focus on outreach to the local chemical industry and our alumni. This effort was supported when I took over as editor of our alumni magazine, <u>THE UMSL CHEMIST</u>. Working with alumni has had excellent results. They are very generous to the chemistry department, and everyone benefits.



Not long before my retirement, two alums and I established the UMSL Chemistry Alumni Council, and we are now an Affiliate Group of the UMSL Alumni Association. Our goal is to connect with alumni, and improve networking with local industry and the public. We established a LinkedIn Group and have had several successful reunions honoring current and retired faculty and the UMSL golden jubilee. Other events involve career advice, networking, and a new activity in which we discussed how to reach folks who are "science deniers." I also advise undergraduates, maintain the website, and the graduate brochure, and organize our two signature external lectures. Best of all, this schedule allows me to play golf three or four times a week. I recommend this to anyone.

Want to create a will, but don't know where to start?



According to Google Trends, Americans are researching "creating a will" more than ever before. If you are among those seeking that kind of advice right now, you can find it in the following resource: <u>http://legacyplanning.acs.org/wills-and-living-trusts</u>. At this site, you can download a free copy of "A Guide to Making Your Will," and also learn how you can include ACS in your estate plans in as little as one sentence. This type of donation to ACS helps ensure that we carry out our mission for years to come. For more information, please contact Mary Bet Dobson, CAP® at 202-872-6210 or PlannedGifts@acs.org.

Share Your Thoughts by Lynn Hartshorn, SCC Editor

We hope you have enjoyed reading this Newsletter. We welcome your comments and suggestions. As always, we need articles from our readers! The Newsletter would not be possible without the help of our readers. We publish a wide variety of articles: examples include chemistry, senior activities and retirement, trips to unusual destinations and interesting museums, the history of science, volunteer activities, etc. If you have an idea but are not sure if it would be a suitable article, send an email with your suggestion to: SeniorChemists@acs.org.

The maximum length is 500 words, but shorter articles are welcome. Please submit your articles and ideas to the email address above, in the form of a Doc or DocX. Photos and images are very welcome, please submit them in JPEG or PDF formats.

Thanks and as I said before, we look forward to hearing from YOU.

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