

THE RECIPIENTS OF THE DEXTER AND SIDNEY M. EDELSTEIN AWARDS: BIOGRAPHIES OF MEN AND WOMEN OF THE HISTORY OF CHEMISTRY—AN ENJOYABLE JOURNEY THROUGH HISTORY

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Abstract

Between September 2004 and August 2005, the biographies of the first 45 Dexter Awardees and four Sidney M. Edelstein Awardees were written by Dr. Tom Perfetti on behalf of the Division of the History of Chemistry of the American Chemical Society (HIST). Dr. Perfetti was a member of a team of people committed to preparing the biographies of all the Dexter and Sidney M. Edelstein Award recipients. That team consisted of Drs. Jeffrey I. Seeman, James Bohning, Anthony Travis and Vera Mainz. This paper will attempt to convey the special experience that I had in speaking with, dealing with, and getting to know the giants of this field—and then, with their help, to memorialize their lives via biographical sketches. I hope to provide readers with the approach that this amateur historian used, along with the valued help of Seeman and Bohning, to accomplish the goal of preparing numerous such sketches. I believe that other individuals or organizations may have similar interests or missions and that the approach described here can be generalized and used by others (with modifications) to highlight important individuals in different areas.

Introduction

In September of 2004, I was approached by Dr. Jeffrey I. Seeman (then Chair-elect of the Division of the History of Chemistry (HIST) of the American Chemical Society (ACS)) to consider the task of preparing the bi-

ographies of the Dexter and Sidney M. Edelstein Award winners. Seeman was and is a personal friend and knew that I was very interested in the history of chemistry, although I have no formal education or experience in that field other than reading a lot of history of chemistry. Unaware that there were nearly 50 award winners, I accepted the invitation to begin preparing the biographies of the most recent winners (initially five). The original Dexter Award (1956-2001, later continued by the Sidney M. Edelstein Award (2002-2009) and the HIST Award (2013-present)) was begun in 1956. The 50th award of the series was to be given at the fall 2006 ACS National Meeting in San Francisco. The ultimate objective of the project was to prepare biographies of all the Dexter and Sidney M. Edelstein Award winners for the HIST website to commemorate the Golden Anniversary of this prestigious award. Originally, I believed the project that I accepted (initially five biographies) could be completed in a few weeks. I soon understood that the undertaking would take much longer. The journey to complete the biographies was perhaps one of the most challenging and yet enjoyable experience I have undertaken in my career. The research path was long and difficult but the individuals that I met and befriended along the way were the energy that kept the project on schedule and that led to its early completion, in a little under one year. This small note will describe the approach to the project, the history of the award, my journey, individuals I met along the way, and some personal reflections on what this effort meant to me.

At the outset, I cannot fail to acknowledge the tremendous help, wisdom and direction that was provided by Dr. James Bohning. At the time Bohning was HIST's historian and archivist. This work could not have been completed without his steadfast help, his enduring patience for his "apprentice," and his careful guidance.

The Charge of the Project

In October of 2004, I began to research the most recent Dexter and Edelstein Award winners (Drs. Joseph B. Lambert, David Knight, John Parascandola, William Smeaton and Alan Rocke). I wrote to Seeman and explained that I was having difficulty in researching the literature and developing adequate biographical information on the awardees. We discussed the situation and it was proposed that I attempt to personally contact the awardees and enter into a dialogue to learn about each individual. This was very appealing to me and so I contacted past HIST committee members and used the internet to find addresses and phone numbers to talk to the awardees. The approach that was decided upon was to contact each awardee, introduce myself and explain the purpose of our mission, ask for a picture and obtain a signed copyright authorization, ask for biographical information, and prepare a draft write-up containing the material above. The awardee would review a draft biography and make suggested revisions. A revised biography would be sent back to the awardee. This process of review and revision would continue until the awardee approved the biography. When the awardee approved the biography, editing would begin. Bohning and Anthony Travis edited all of the biographies. Finally, the edited biographies would be sent to Dr. Vera Mainz to be placed in special webpages (**Dexter Award (1956-2001)** and **Sidney M. Edelstein Award (2002-)**) previously prepared on the HIST Divisional Awards website. Although the Divisional Awards webpage already existed it lacked any information about the award recipients. One of Seeman's charges as Chair-elect was to correct that deficiency. It was the responsibility of Bohning, Travis, Mainz and me to jointly to make this happen.

Since many of the earliest awardees were deceased, it was often necessary to find living family members and relatives to work with on the awardee's biography. This was often a difficult assignment. Fortunately, for most of the early awardees (where no living relatives could be found) obituaries, memorial, tributes, biographies, autobiographies and other biographical information were often available. Dr. Aaron Ihde had also prepared both a booklet of biographies and had written several articles on

the first 25 Dexter Award winners (1, 2). These sources of information became invaluable references. Additionally, many previous Dexter and Edelstein awardees generously offered their time to help research fellow awardees for the purpose of updating their biographies.

The History of the Awards

The Dexter Award was established in 1956 by Dr. Sidney M. Edelstein and was sponsored by the Dexter Chemical Corporation (1956-1999), and by the Sidney & Mildred Edelstein Foundation (2000-2001). The Dexter Chemical Corporation was founded by Edelstein in 1946. Edelstein (1912-1994) earned his B.S. in chemistry from the Massachusetts Institute of Technology (MIT). While at MIT, he was introduced to cellulose chemistry and the history of science, fields that he pursued throughout his life. Edelstein also collected books on the history of textiles, dyestuffs, and color chemistry (3, 4). He was an extremely active HIST member, serving as Secretary/Treasurer from 1948-1965. His book collection is housed at the Edelstein Center at the Hebrew University in Jerusalem (5). Edelstein's contributions to the history of chemistry were commemorated by the Dexter Award in the History of Chemistry, presented by HIST between 1956 till 2001 and the Sydney M. Edelstein Award between 2002-2009; the Edelstein Prize (previously the Dexter Prize), given by the Society for the History of Technology; and the Sidney M. Edelstein International Fellowship and Studentship in the History of the Chemical Sciences and Technologies at the Sidney M. Edelstein Center for the History and Philosophy of Science, Technology and Medicine at the Hebrew University of Jerusalem. The Sidney M. Edelstein Award was sponsored by Ruth Edelstein Barish and family and was administered by HIST. It honored the memory of her father. Today, this award is called the HIST Award for Outstanding Achievement in the History of Chemistry (6).

The HIST Award is international in scope, and it is presented annually at the Fall National ACS meeting. It continues a tradition started in 1956 with the first Dexter Award. This award is sponsored by and administered by the Division of the History of Chemistry (HIST). Its purpose is to recognize an outstanding career of contributions to the history of chemistry. Previous winners of the Dexter and Edelstein Awards include chemists and historians from the United States, the United Kingdom, Germany, France, Mexico, Canada, The Netherlands, and Hungary. To date there have been 53 recipients of the Dexter and Edelstein Awards (Table 1), plus 6 recipients of the HIST Award (Table 2).

Table 1. Recipients of the Dexter and Sidney M. Edelstein Awards 1956-2009.

Year	Recipient	Span	Birthplace	Nationality
2009	Trevor H. Levere	1944-	England	Canadian
2008	Sir John Shipley Rowlinson	1926-2018	England	British
2007	Anthony S. Travis	1943-	England	Israel
2006	Peter J. T. Morris	1956-	England	British
2005	William Jensen	1948-	Wisconsin	American
2004	Joseph B. Lambert	1940-	Illinois	American
2003	David Knight	1936-2018	England	British
2002	John Parascandola	1941-	New York	American
2001	William Smeaton	1925-2001	Scotland	British
2000	Alan Rocke	1948-	Illinois	American
1999	Mary Jo Nye	1944-	Tennessee	American
1998	Seymour (Sy) Mauskopf	1938-	Ohio	American
1997	Bernadette Bensaude-Vincent	1949-	France	French
1996	Keith Laidler	1916-2003	England	Canadian
1995	William Brock	1936-	England	British
1994	Frederic L. Holmes	1932-2003	Ohio	American
1993	Joseph S. Fruton	1912-2007	Poland	American
1992	John T. Stock	1911-2005	England	American
1991	Owen Hannaway	1939-2005	Scotland	American
1990	Colin A. Russell	1928-2013	England	British
1989	D. Stanley Tarbell	1913-1999	New Hampshire	American
1988	Lutz F. Haber	1921-2004	Germany	British
1987	Allen Debus	1926-2009	Illinois	American
1986	Robert Anderson	1944-	England	British
1985	Robert Multhauf	1919-2004	South Dakota	American
1984	Maurice Crosland	1931-	England	British
1983	Arnold Thackray	1939-	England	American
1982	John H. Wotiz	1919-2001	Czechoslovakia	American
1981	Cyril Stanley Smith	1903-1992	England	American
1980	Maurice Daumas	1910-1984	France	French
1979	Joseph Needham	1900-1995	England	British
1978	George Kauffman	1930-	Pennsylvania	American
1977	Modesto Bargalló	1894-1981	Spain	Mexican
1976	Trevor I. Williams	1921-1996	England	British
1975	Jan W. van Spronsen	1928-2010	The Netherlands	Dutch
1974	No Award			
1973	Bernard Jaffe	1896-1986	New York	American
1972	Henry Guerlac	1910-1982	New York	American
1971	Wyndham D. Miles	1916-2011	Pennsylvania	American

Year	Recipient	Span	Birthplace	Nationality
1970	Ferenc Szabadváry	1923-2006	Hungary	Hungarian
1969	Walter Pagel	1898-1983	Germany	British
1968	Aaron J. Ihde	1909-2000	Wisconsin	American
1967	Mary Elvira Weeks	1892-1975	Wisconsin	American
1966	Earle R. Caley	1900-1983	Ohio	American
1965	Martin Levey	1913-1970	Pennsylvania	American
1964	Eduard Farber	1892-1969	Austria-Hungary	American
1963	Douglas McKie	1896-1967	Scotland	British
1962	Henry M. Leicester	1906-1965	California	American
1961	James R. Partington	1886-1965	England	British
1960	Denis Duveen	1910-1996	England	American
1959	John Read	1884-1963	England	British
1958	Eva Armstrong	1877-1962	Florida	American
1957	Williams Haynes	1886-1970	Michigan	American
1956	Ralph E. Oesper	1886-1977	Ohio	American

Table 2. Recipients of the HIST Award for Outstanding Achievement in the History of Chemistry (2012- Present).

Year	Recipient	Span	Birthplace	Nationality
2018	David E. Lewis	1951-	Australia	American
2017	Jeffrey I. Seeman	1946-	New Jersey	American
2016	Ursula Klein	1952-	Germany	German
2015	Christoph Meinel	1949-	Germany	German
2014	Ernst Homburg	1952-	The Netherlands	Dutch
2013	William R. Newman	1955-	Illinois	American

In his 1982 summary of the silver anniversary of the Dexter award, Ihde provided some observations and statistics on the recipients (2). Table 1 includes most of the information from Ihde's summary of the first 25 winners (1956-1981) and additional entries on the last 28 Dexter and Edelstein awardees (1982-2009). In his summary, Ihde noted that, among the first 25 awardees, 40% were foreign nationals and that 20% were émigrés from England, Germany and Spain. He also noted that it is difficult to win the prize at an early age (only 36% of the recipients were under 60) and that the prize appears to encourage longevity (only two recipients died before the age of 70). Of the last 28 Dexter and Edelstein Award recipients, 36% were foreign nationals and 28% were émigrés from England, Germany, Scotland, Poland and

Czechoslovakia. Considering the Dexter and Edelstein recipients between 1982-2009, 36% were under 60. The average age of the first 25 Dexter recipients at the time of the award was 66 and the average age of the last 28 recipients at the time of the award was 63. At the 25th Anniversary of the Dexter Award, 15 of the 25 recipients were still working in the field. Of the last 28 Dexter and Edelstein Award recipients 20 were actively working (as of 2009). Today, 15 Dexter and Edelstein awardees are alive and well. The average age of these recipients is 77 (ranging from 63-89 years). The average age at the time of death for all Dexter and Edelstein Award recipients was 82 years. Ihde's observation on longevity is still true today. The similarities in the data from the first 25 years of the award to the next 28 years is remarkable.

Considering the six recipients of the HIST Award (2012-present), there is only one foreign national and one émigré, from Australia. The average age of the recipients was 65 (ranging from 58-71). All of the recent HIST Award recipients are alive and continue to work in the field.

The Journey

In mid-September 2004, I began to make inquiries to the past chairpersons of the Dexter and Edelstein Award Committees and conducted internet searches to research the most recent Edelstein awardees. I had never written a biography, so I searched for biographies of famous people to determine what types of information would be appropriate to include. Most of the biographies that I reviewed were frankly, very dry and boring. There was fact after fact but very little life and excitement in the subject matter. This was not the type of biography that I wanted to describe my life and I did not believe that the awardees would appreciate not highlighting the fun and enjoyment that they had in their lives.

Originally, I was asked to only do the biographies of the most recent five Dexter and Edelstein recipients. By October, I had collected my thoughts and had developed a plan. The approach was to try to enter into a personal dialogue with each of the recipients and to work with them to jointly develop a proper biography that was acceptable to them in tone, depth, and subject matter. I originally believed that the total effort would take only several weeks. How long could it possibly take to prepare five biographies?

There was a process to accomplish the goal of creating the biographies, however the “process” was not a formalized set of questions that I asked each subject. It was an informal conversation where we got to know one another and became comfortable discussing our lives. I would introduce myself, explain what I was trying to do, ask the subject if they would assist me, explain why this was important, and confess that I had not done this before and that I really needed their assistance. The conversations were never the same and were never dull. But at the end of the initial conversations (there were usually two or three) I believe that all my questions and requests were transmitted and found acceptable. For each subject there were two important items that we had to discuss. The first was obtaining a signed Model Photo Copyright Release Form and the second was a photo of the subject. Each biography would have a picture of the recipient. Some of the photos are formal; others were

less serious and showed a special side of the recipient. Normally this was straightforward, but occasionally there were issues. Some of the recipients were deceased and authorized family members needed to be found. For some of the early recipients, photos were difficult to obtain. Eventually, with diligence and perseverance all the i's were dotted and all the t's were crossed.

My first subject was Dr. Joseph Lambert, the 2004 Edelstein Award recipient. After introductions, we began the “process.” Within a few days, I had received his photo and the signed Model Copyright Release Form. His biography was revised several times and finally approved within a week or two. I was feeling very good; four more to do. I then contacted Dr. David Knight in England and asked for his help in developing his biography for the HIST webpage of Edelstein recipients. He agreed and we had several very enjoyable dialogues over the coming weeks. Knight's biography was different from Lambert's but both were approved by the recipients and so I continued. It suddenly occurred to me that each recipient's biography might be slightly different. Not in terms of the presentation of each recipients' achievements but in the style of the biographies. And then, I thought, variety is good. I found out over the coming months that each awardee was very unique in personality, approach to life and their areas of expertise for which they received this prestigious award. I then worked with Dr. John Parascondola (after I was able to find him!), who had just retired for the government and Dr. Alan Rocke. Again, both of these individuals were extremely enjoyable to work with and their approved biographies were completed in several weeks. It was now early November and my initial estimates of the time necessary to complete the first five biographies were way off. I had been in contact with Seeman several times during the last weeks and he seemed pleased with my progress on the project and the quality of the biographies that were completed, although I was not totally convinced of either. The last of the first five initial biographies to be completed was for Dr. William Smeaton. Smeaton was awarded the last Dexter Award in 2001 posthumously. After conducting a thorough search of the internet and finding a considerable amount of information on him, I was stymied in that I could find no one to review or approve the draft of the biography that I had prepared. My draft of Smeaton's life and accomplishments also seemed flat. I contacted Seeman and he referred me to Dr. William Brock in England. He believed that he and Smeaton were colleagues. I contacted Brock, not realizing that he too was a Dexter awardee and asked for his help. (At this time, I had not reviewed the full list of all the Dexter awardees.) Brock was able to get me

into contact with Smeaton's widow, Dr. Jacky Smeaton. She was extremely gracious and helpful during the next few weeks in developing a proper biography of her late husband. She was able to add the insight and uniqueness that was missing in the original draft that I had prepared.

Like all journeys, getting started can be difficult and challenging. This exciting journey was no exception and I was starting to learn some valuable lessons. One important lesson was to have courage in the face of naiveté. Others were to search for useful resources; start small and grow; learn, modify and adapt your plans. Then, I realized that these are basically some of the same rules used for chemical research!

In mid-December, with my initial assignment completed, I reported back to Seeman and sent him the first five completed and approved biographies. He was pleased and asked if I would be interested in doing a few more (the next ten); I agreed.

In retrospect, I think he also had a plan that involved getting me more deeply involved in the biography program. He has this way of drawing people in, to do things that they would normally not get involved in.

My next approach was to break these next ten biographies into two groups of five and to contact the members of each set at the same time. I had found that there was a lot of "down time" in corresponding with each recipient one at a time. This approach turned out to speed things up considerably, although compiling and managing the correspondence of multiple biographies was a challenge.

During the early part of 2005, I realized that I had made many friends. I was working and corresponding with many of the previous awardees on a routine basis and with their help and the help of their colleagues, the biographies were being completed in record time. By March I had completed the next ten biographies (1999-1990). All the Edelstein and Dexter biographies from 1990-2004 were now completed. I learned another valuable lesson—collaboration can make "short work" of large efforts.

In April, I talked with Seeman to see if I could continue my work to compile the Dexter biographies up to 1981. By this time in the project I was totally involved. He, knowing my work ethic, had capitalized on my "all in" approach. He was more than happy to let me continue the project.

He agreed to the next set of biographies (of course) and I decided to use the same approach of breaking the biographies into two sets of four each for this next set of biographies. Several of the awardees in this set were deceased. But like the work I had done with Jacky Smeaton, I was very fortunate to contact family members that were extremely helpful in filling in the missing pieces of history that I was unable to find and to add life to the original drafts that I had compiled. By early June all the biographies from 1982-2004 were completed.

I was not completely aware of what Bohning's total role was in the biography project. However, I knew that once I had prepared the biographies, he and others at HIST were to review and edit them. Additionally, they were to archive all the data I was collecting. Theirs was obviously a huge job. Regardless, I was committed to finishing my part of the project.

Finally, I approached Seeman to see if I could complete the last 25 biographies. He agreed. Prior to 1981, biographies of the previous Dexter recipients had been compiled by Ihde (1). I began to review and update the biographies of the first 25 Dexter recipients (1956-1981) in June. As fifteen of the recipients were still publishing and very active in the field after Ihde published their biographies in 1981, a considerable amount of work was necessary to update many of their biographies. Indeed, four of the original recipients were alive and I was able to correspond with several of them (Drs. George Kauffman, Jan van Spronsen, Wyndham Miles, and Ferenc Szabadváry) and enlist their help in developing updated biographies for the early Dexter recipients. Today, of this cohort, only Kauffman is still alive. By August all of the first 25 Dexter recipient biographies were updated.

After the first few biographies were completed, the work of editing began. During 2004 and 2005 I sent draft biographies to HIST for review and editing. Initially, this work was done just by Bohning, but soon Travis joined the effort and worked diligently reviewing and developing rules for the biographies so that they were all grammatically consistent. Together, Bohning and Travis edited all of the 49 biographies that I prepared with the recipients. After the initial editing, I made the suggested changes to the biographies and returned the revised biographies to Bohning to do the final editing to prepare the biographies in pdf format for the webpages. For several of the edits I had to correspond with the recipient or the family to have the changes approved. The other member of the team was Mainz, who had skillfully constructed the webpages for the biographies. This job

had to be completed long before any of the biographies were ready to be placed on the webpages. Her work as the webmaster was masterful and extraordinary.

During the preparation of the biographies over 1 gigabyte of information was collected in 259 folders comprising a total of 3075 files. These electronic records contain biographical information on all the award recipients, letters and memos, email messages collected during the project, journal articles, articles from newspapers and periodicals, copyrighted photographs and illustrations, etc. Additionally, five boxes of paper correspondence, books, and signed copyright forms were collected. All of these records (electronic and paper) were sent to HIST and saved for archiving. The intent was to create a permanent home for the information at the Chemical Heritage Foundation, now the Science History Institute (SHI), which holds the HIST archives.

After my involvement was completed, Bohning started the long and arduous task of archiving all of the materials that were collected. The hard work of archiving biographical material on HIST award recipients continues today under the guidance of HIST's historian Dr. Gary Patterson and HIST's Archivist, Dr. John Sharkey, who succeeded Bohning. Dr. James J. (Jim) Bohning died in 2011 at the age of 77. Dr. Ned D. Heindel published a dedication to Jim in the HIST Newsletter in 2012 (7). It is a fitting tribute to his hard work and dedication to HIST.

This paper will not present summaries of the 49 Dexter and Sidney M. Edelstein biographies. The full biographies can be found in the HIST website under Divisional Awards (6).

From the beginning of this project we had a philosophy that the biographies are never completely finished. We realized that our attempts were as good as possible but that from time to time new information would surface and improvements would be made to the biographies. Our intent was that make these webpages "living" sites. Before the first biography was entered onto the HIST webpages for the Dexter and Edelstein recipients two such incidents occurred. In December of 2004, after several wonderful talks with Dr. John Stock, we were able to complete his biography. Shortly after that Stock fell ill and on February 6, 2005, he died. I will always remember this very kind and brilliant gentleman. He was indeed a very self-effacing and modest person who loved giving talks at HIST meetings. Stock was awarded a Certificate of Appreciation in 2001 for his numerous presentations in HIST symposia over many years (8). The biography of Stock on the HIST webpage was changed

immediately to reflect his passing. The last biography to be completed was that of Szabadváry. It was prepared but was not formally approved by Szabadváry. Although I had been in contact with him several times, suddenly I could not reach him. After several months of failed attempts to correspond with him, his colleagues or family members, I was finally able to locate his daughter. Szabadváry reviewed his biography with the help of his daughter; finally, it was completed. The HIST webpages for the biographies of the Dexter and Edelstein Award recipients are intended to be working documents that will hopefully change and improve with time.

Personal Reflections

During the preparation of the Dexter and Edelstein biographies I was struck by several things: 1) the unassuming nature of the recipients; 2) their excitement and personal energy in discussing the history of science; 3) their desire for others to understand and enjoy the history of science; 4) the diversity of their backgrounds and yet their common purpose of researching, publishing and educating individuals in the history of science; and 5) their great willingness to help in completing this project.

During the preparation of the biographies I was able to talk or correspond (by mail) with well over half of the recipients or their family members. During our conversations, the recipients were always appreciative. Most of the award recipients asked one or two curious questions that seemed odd to me, e.g., *Why are you doing this for me?* and *Are you sure anyone will be interested in my biography?* I was always taken aback when this happened. I'd explain that they were recipients of the Dexter or Edelstein Award. I'd say they were famous. The most common response I heard was a chuckle. None of the recipients had ever seen me, they took my word that I was from the ACS, and without the slightest bit of reluctance they offered personal information about their likes and dislikes in food and wine and information on their sons and daughters; advice on coping with life's joys and sorrows; and the wish that I should come to visit them and learn more about the history of science.

Sometimes (not very often) one talks with someone who exudes wisdom. This was the case I encountered most often when I had chemistry discussions with the recipients. One example was a conversation I had with Stock. At the time he was in his 90s but was still mentally sharp; he would come to work at the University of Connecticut, where he had an office. He couldn't drive but was chauffeured to work most days. I would leave a

Table 3. Three-Question Summary

Question 1. What do you consider to be your major contribution to the history of science and why?	
Lambert (2004)	... [M]y “contributions to the history of chemistry are ... different from all previous award winners” ... as ... “I represent the Archaeological Chemistry subdivision of HIST [a subdivision which did not exist prior to 1966]. We have dealt with chemistry before history, that is, before the written record, as derived instead from archaeological excavations. My group’s study [is concerned with] the relationship between ancient diet and bone chemistry ... Alternatively, it [a major contribution] could be my book, <i>Traces of the Past</i> , which is widely used in courses and by the general public as a source on chemistry before history.”
Parascandola (2002)	“I believe that my major contribution to the history of science has been to conduct and publish pioneering research in the history of modern pharmaceutical sciences such as pharmacology and medicinal chemistry. These fields had previously received relatively little attention from historians.”
Bensaude-Vincent (1997)	[My major contribution to date has been] “my book, <i>Éloge du Mixte</i> ... It allowed me 1) to combine the history and the philosophy of chemistry, 2) at the same time to deal with very concrete matters such as the stuff our tennis rackets are made of. It’s really a balanced combination of philosophical views with issues familiar to a wide audience because they concern our daily life. My second favorite book [and contribution] <i>Faut-il avoir peur de la chimie?</i> is about chemistry, its public image, its epistemological specificity, its metaphysical implications. It’s really an attempt at a philosophy of chemistry in a historical perspective.”
Brock (1995)	“You ask me what I think my major contribution to the history of science (HS) has been. It’s not for me to say, but I guess it would be (a) to have stimulated major interest in scientific periodicals, and (b) to have written a history of chemistry in a different and fresh way for the end of the twentieth century.”
Debus (1987)	“My major contribution to the history of science has been to show that the Scientific Revolution is more complex than the progression from Copernicus to Newton that I was taught as a graduate student. In particular I have tried to show that debates over chemistry and chemical medicine in the 16th and 17th centuries played a very important role in the development of a new science.”
Kauffman (1978)	“My numerous articles and books on the history of coordination chemistry, which until then had been neglected. I also used items from the history of chemistry routinely in my lectures and laboratories.”

Question 2. Why is scholarly work in the history of science (HS) important?	
Lambert (2004)	“Again, I look at the field as an experimental science, as we carry out the analysis of ancient materials. It is important because chemical analysis can provide archaeologists with information that cannot be obtained by traditional methods of archaeology.”
Parascandola (2002)	“I believe that scholarly work in the history of science is important because it helps us to acquire a perspective on how science has developed over time, to develop a better understanding of how science works, to learn more about the human side of scientists (such as their motivations and convictions), and to recognize the impact of science and technology on society. Although we cannot predict the future from the past, knowing where we have come from at least helps us to have a clearer understanding of our current situation.”
Bensaude-Vincent (1997)	“History of science seems to me vital for regulating the advancements of science. Understanding scientific research as a multi-dimensional endeavor embedded in a cultural context and with societal and cultural impacts.”
Brock (1995)	“I think HS is important because, like the rest of history, we can only understand where we are as a society and which of several alternative directions to take as a society if we know about the past.”

Debus (1987)	“Science is an essential part of the world we live in. We cannot understand where we are today without a knowledge of the history of science.”
Kauffman (1978)	“In contrast to the situation in the humanities, where students are expected to steep themselves in the classics, the average science major, on graduating, has little, if any, knowledge of the history of his or her chosen discipline. Although we take this state-of-affairs for granted today, it has not always been the case. Johann Wolfgang von Goethe (1749-1832), himself an amateur scientist, declared, ‘Die Geschichte der Wissenschaften ist die Wissenschaft selbst. [The history of science is the science itself.]’ [We have a responsibility to educate our students and to remain] ... interested and active in studying the history of chemistry.”

Question 3. Why did you select studies in the history of science as a career?	
Lambert (2004)	“I felt that the exploration of new analytical methods could provide information about human history and culture that previous methods could not. In addition, I did it explicitly because it provided a subject I could communicate to the general public. My research in the traditional areas of organic and organometallic chemistry were much more difficult to communicate.”
Parascandola (2002)	“I was a chemistry major as an undergraduate and went to the University of Wisconsin-Madison for graduate studies in biochemistry. As my graduate career progressed, I found myself developing more and more of an interest in the history of science and decided to audit a course in the history of chemistry taught by Professor Aaron J. Ihde. I was hooked on the subject and decided that my future was in the library rather than the laboratory. So, I completed an M.S. in biochemistry and switched to the history of science for my Ph.D. program.”
Bensaude-Vincent (1997)	“As a philosopher I was attracted in the variety of matter theories since Ancient Greece. Among them the views developed by chemists through their laboratory practices seemed to me much more interesting than the mechanical views developed by physicists.”
Brock (1995)	“When I graduated in 1956 I recall that I had three alternatives: (1)... switch to biochemistry (as several of my [colleagues of that] year did successfully); (2) ... train to be a professional actor at RADA (I was a keen amateur actor at school and as a student—that may have helped my lecturing style!); or (3) ...take up a scholarship that Leicester was offering to study HS. Since I had learned that I was not a lab chemist (1) was out; and (2) was out because there was no financing offered and I was nearly 23 years of age. HS (3) won out because I’d become so interested in the history of chemistry, and because Leicester offered me money to study it! After one year of graduate study at Leicester, I was fortunate enough to be offered an academic post. If I had not been, I guess I would have ended up as a chemistry teacher somewhere.”
Debus (1987)	“I have a degree in chemistry and worked for five years as a research chemist. In the course of that work I became increasingly more interested in the history of the science and finally left to re-enter graduate work in that field at Harvard in 1956.”
Kauffman (1978)	“I received a classical education and have always been interested in the human dimension of science, which is sadly neglected in the usual chemistry courses (as C. P. Snow has pointed out in his book, <i>The Two Cultures</i>). Thus, I am able to satisfy my Apollonian and Dionysian interests.”

message at his office and he would always return my call very promptly. Even though he was ill, this biography we were doing was important to him. He wanted to get it just right. When we conversed, it was like I was talking to my grandfather. He was a calm and humble man with great wisdom. He had probably forgotten more chemistry than I would ever learn. When I'd ask a question, I always got an encyclopedic response. Usually about 15 or 20 minutes into the reply John would stop and ask, "Are you sure I'm addressing your question?" His advice was well thought out, precise and very precious to me. It is always sad to see such a giant in the field pass, but we are fortunate in that he was prodigious in his writings. All we need to do is read.

The awardees I talked with knew more "real chemistry" than I could ever imagine. I am from a family of chemists. I have been around chemists my entire life. My father and all of my uncles are chemists, my older brother is a chemist, his wife is a chemist, my wife is a chemist, and my son is a chemist. So, what is "real chemistry?" I think "real chemistry" is understanding how all the little factoids of book work, that we all learned in school, relate to one another. It provides the big picture, the perspective and excitement to understanding the basis of science. Perhaps, really understanding the history of science gives you this quality. I'm not sure. Common traits that make these recipients of the Dexter, Edelstein and HIST Awards so unique are their strong desire to know "real science" and the excitement that they bring to the learning process. Needless to say, these men and women who are scholars in the history of chemistry are truly chemical researchers.

Although the recipients all had similar commonalities in their drive and attitude, they also had diverse backgrounds. As Ihde noted, most of the first 25 award winners were professors of chemistry, but several (36%) were employed in industry, government, medicine, publishing, museums and secondary education (2). This diversity is also true for the last 34 awardees. Most of the recent awardees are university professors of chemistry, history of science (or chemistry), or the philosophy of science. Several were professors of economics or medicine. Others were employed in government, industry, or museums. Many have held multiple positions in education and government during their careers.

An example of the diversity of the recipients can be seen in their response to three questions that were asked of them during this project. The three questions posed are as follows:

- What do you consider to be your major contribution to history of science and why?
- Why is scholarly work in the history of science important?
- Why did you select studies in the history of science as a career?

Table 3 lists the questions and answers provided by several of the award recipients.

I believe the responses in Table 3 illustrate many points of similarity and difference that I have mentioned above.

Each of the six awardees is from a different field of activity. However, they all believe that their major contribution to the history of science is tied to their publications. Communication of their ideas is the one thing that ties all of the awardees together.

When asked "Why is scholarly work in the history of science (HS) important?" the overwhelming response was that scholarly work contributes to a better understanding of the past and the world around us. Knowledge and experience from the past can provide us with the ability to make better informed decisions as to the direction our society should take.

Finally, when asked "Why did you select studies in the history of science as a career?" the six awardees illustrated their diversity. All of the awardees' reasons for choosing their career were somewhat different. For each individual, the decision appeared to be a struggle (to different extents and for different reasons). In the end, each awardee chose a path (career) that they enjoyed and that they believed they could make a valuable contribution to society.

In conclusion, let me state again that the journey to complete the biographies was perhaps one of the most challenging and yet enjoyable experiences I have undertaken in my career. Doing something new and out of the ordinary can be stimulating and frightening. The main challenge for me was overcoming my fears of failing to do the tasks that were needed (writing biographies) in an adequate manner. I had no training in this area of work. Secondly, the idea of just "cold calling" someone to ask for their help to prepare their own biography was never my strong suit. However, after the first few emails and calls, I got over that fear and I started to enjoy the work, and most importantly the conversations with the award recipients. With the help of the recipients my first fear of writing an adequate biography was also greatly

diminished as the recipients were actively directing the work. Each biography was only deemed completed when the award recipients approved the finished product. This project was very different from the work that I had been involved with in industry for 27 years. However, I began to enjoy writing. Shortly after I completed this project for HIST, I began to work with a dear colleague Dr. Alan Rodgman on an epic book. The book, *The Chemical Components of Tobacco and Tobacco Smoke* (9), took three years to write. It is a compendium of tobacco and tobacco smoke chemicals and a history of the work that was done by thousands of chemists to unravel and understand the complexity of the tobacco plant. So, I thank HIST for allowing me to do this work. Hopefully, others will enjoy reading the biographies as much as I had the enjoyment of compiling them.

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References and Notes

1. A. J. Ihde, A Quarter Century of Dexter Awards, 1981, unpublished manuscript. Copy in the University of Pennsylvania Library, QD21. Q8 1981a; an abridged version of the first 25 Dexter Award winners can be found in *Bulletin of the History of Chemistry*, Volumes 1-4 (1988-1989) under the title "The History of the Dexter Award:" "Part I: Origins," **1988**, *1*, 13-14; "Part II: The First Decade," **1988**, *2*, 11-14; "Part III: The Second Decade," **1989**, *3*, 11-15; "Part IV: The Third Decade," **1989**, *4*, 23-26.
2. A. J. Ihde, "Dexter Award: Silver Anniversary," *Isis*, **1982**, *73*(2), 268-270.
3. M. Ron, "The Sidney M. Edelstein Collection in the History of Chemistry and Chemical Technology," *Technol. Cult.*, **1978**, *19*(3), 491-494
4. A. Thackray, "Eloge: Sidney M. Edelstein, 22 January 1912-18 September 1994," *Isis*, **1995**, *86*(2), 285-288.
5. Hebrew University of Jerusalem, Sidney M. Edelstein Center for the History and Philosophy of Science, Technology and Medicine, About, <http://edelstein.huji.ac.il/about> (accessed May 16, 2019).
6. American Chemical Society Division of the History of Chemistry, Divisional Awards, <http://acshist.scs.illinois.edu/awards/index.php> (accessed May 16, 2019). It should be noted that biographical materials on awardees are now compiled as part of the award procedures.
7. N. D. Heindel, "HIST Remembers James J. Bohning," American Chemical Society Division of the History of Chemistry Newsletter, 243rd ACS National Meeting, San Diego, CA, March 25-29, 2012. Available online at <http://acshist.scs.illinois.edu/roster/officerbios/BohningJamesJ.pdf> (accessed May 16, 2019).
8. Certificate of Appreciation to John T. Stock, April 2, 2001, at the Spring National ACS Meeting, San Diego, CA, http://acshist.scs.illinois.edu/awards/STOC_HIST_Certificate_of_Appreciation.pdf (accessed May 16, 2019).
9. A. Rodgman and T. A. Perfetti, *The Chemical Components of Tobacco and Tobacco Smoke*, CRC Press, Boca Raton, FL, 2008.

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