JOC The Journal of Organic Chemistry

pubs.acs.org/joc

Editorial

A Very Short History of the Carbohydrate Division of the American Chemical Society

Cite This: *J. Org. Chem.* 2020, 85, 15778−15779

Read Online

ACCESS | Metrics & More | Article Recommendations

In August 2019, the American Chemical Society Division of Carbohydrate Chemistry (CARB) celebrated its 100th anniversary with a symposium at the ACS National Meeting in San Diego. Coupled with the symposium was an enjoyable reception at the home of a local Division member. None of us could have predicted at the time that a global pandemic would arise to prevent the Division from meeting in person for the foreseeable future. This special issue of *The Journal of Organic Chemistry*, "A New Era of Discovery in Carbohydrate Chemistry", is meant to further commemorate CARB's first century. As part of this commemoration, we detail below a brief history of the Division, which was made easier to assemble due to the recent digitization of the Division's archives since 1946 (Figures 1−4). Soon, a home for this digital resource will make it accessible to the public.

1919 World War I creates a shortage of optical instruments and a call by a group of sugar chemists to create an "American polariscope."[1] This discussion led to the idea of uniting sugar chemists in the US. Because many of the core supporters of the idea were already ACS members, the ***Sugar Section*** was formed at the September ACS meeting in Philadelphia, furthered by William Dodge Horne and supported by Charles A. Browne (right), former head of the New York Sugar Trade Laboratory and then Chief of the Sugar Division of the Bureau of Standards. Browne became the first Chair.

1920 The first formal meeting of the section was held on April 15 in St. Louis. Presentations focused more on analytical chemistry and technology in the first decade, before more papers on the chemistry of sugars joined the mix to take advantage of more discussion time than allowed in larger division programming.

1921 The section is elevated to a division at the New York ACS meeting on September 6 when membership had reached ~160. S. J. Osburn is Chair.

1923 The first of many joint sessions—this one with the Division of Cellulose Chemistry—with other divisions is held at the spring ACS meeting in New Haven.

1937 The name is changed to ***Division of Sugar Chemistry and Technology*** at a meeting in Chapel Hill.

1939 Frederick W. Zerban, a pioneer in sugar chemistry, publishes a history of the division in *Industrial and Engineering News*, which later became *Chemical and Engineering News*.

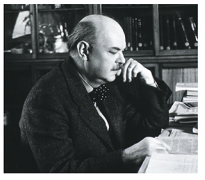
He writes "The Division of Sugar Chemistry and Technology, which has shown its virility from the very start, will undoubtedly play an increasingly important role in the future."[2]

Figure 1. 1919−1939: CARB's first 20 years.

Over its first 100 years, CARB has evolved from an organization focused on sugar chemistry and sugar processing to one largely addressing chemical and biochemical aspects of carbohydrates to, more recently, one that also addresses the biological aspects of carbohydrate science. The Division remains a premier place to present new advances in carbohydrate science across a wide range of research areas and serves as a welcoming place for the increasingly diverse range of scientists and engineers who work in carbohydrate science. As CARB enters its second century, the Division will continue to evolve and to play an important role in the dissemination of carbohydrate-related research in addition to nurturing the careers of its practitioners and building community.

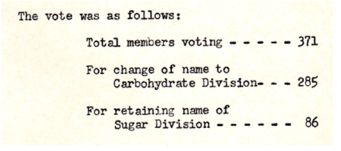
Todd L. Lowary orcid.org/0000-0002-8331-8211
Nicola L. Pohl orcid.org/0000-0001-7747-8983

1946 The Division's archives are started by J. M. D. Brown and the division starts to give out an annual award to "to recognize outstanding contributions to carbohydrate chemistry in education, research, or applications." The first winner is Claude S. Hudson (right), arguably the most prominent carbohydrate chemist in the first half of the 20th century. This award is later named after Hudson. The Division sponsors the publication of the collected works of Claude S. Hudson.



1947 A merger with Cellulose Division to create a new Division of Sugar/Carbohydrate Chemistry and Technology is proposed at the April ACS meeting (but never gains enough enthusiasm in the ensuing decades to go forward).

1952 The ***Division of Carbohydrate Chemistry*** name emerged from the merger controversy (and sent "Sugar Technologists" into a new organization). An attempt to change the name the year before failed to secure the required support.

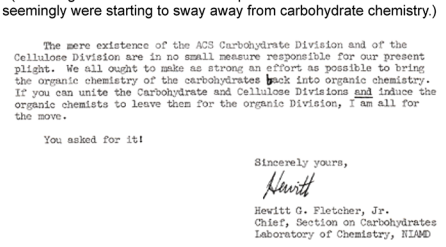

The vote was as follows:

Total members voting - - - - - 371

For change of name to Carbohydrate Division- - - 285

For retaining name of Sugar Division - - - - - - 86

1963 The merger between the divisions is revisited. Hewitt J. Fletcher, Jr.—chief of the section on carbohydrates at the National Institutes of Health—suggests that such a merger only makes sense if it also induces the organic chemists in those divisions to leave and join the organic division! (He also grumbled that the editorial policies of *The Journal of Organic Chemistry* seemingly were starting to sway away from carbohydrate chemistry.)


The mere existence of the ACS Carbohydrate Division and of the Cellulose Division are in no small measure responsible for our present plight. We all ought to make as strong an effort as possible to bring the organic chemistry of the carbohydrates back into organic chemistry. If you can unite the Carbohydrate and Cellulose Divisions and induce the organic chemists to leave them for the organic Division, I am all for the move.

You asked for it!

Sincerely yours,

Hewitt

Hewitt G. Fletcher, Jr.
Chief, Section on Carbohydrates
Laboratory of Chemistry, NIAMD

Figure 2. 1940−1963: Years of growth and growing pains.

Special Issue: A New Era of Discovery in Carbohydrate Chemistry

Published: December 18, 2020

https://dx.doi.org/10.1021/acs.joc.0c02753
J. Org. Chem. 2020, 85, 15778−15779

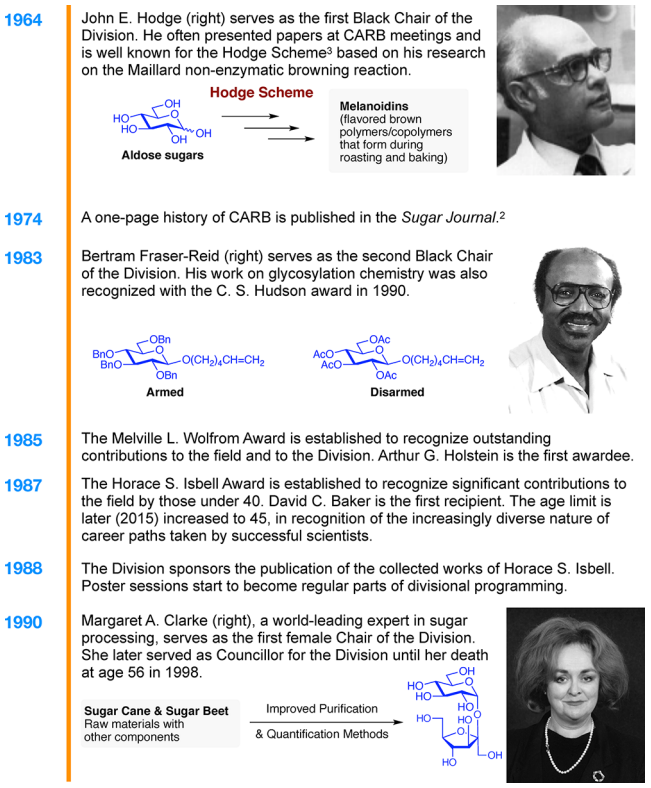


Figure 3. 1964−1990: Increasing diversity in leadership and new awards to recognize a broader range of scientists.

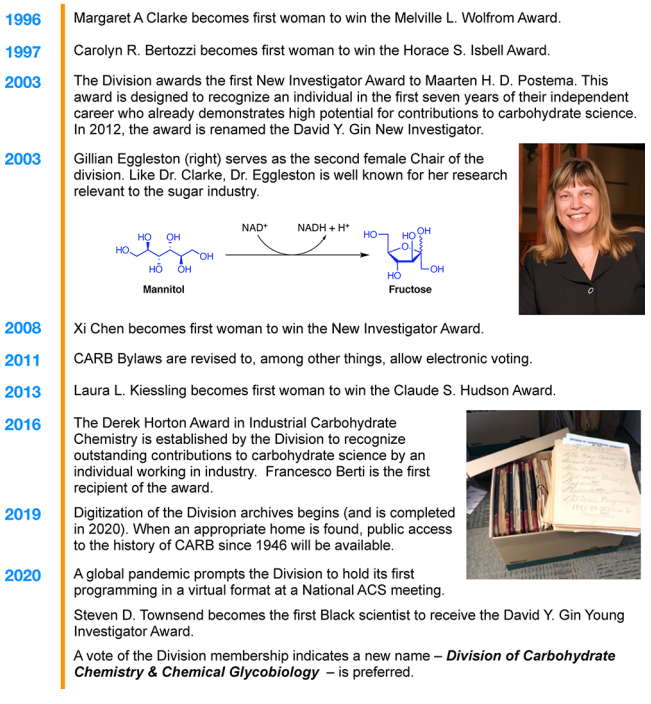


Figure 4. 1991−2020: New awards, female colleagues gain more visibility, a pandemic and perhaps another name change.

AUTHOR INFORMATION

Complete contact information is available at:
https://pubs.acs.org/10.1021/acs.joc.0c02753

Notes

Views expressed in this editorial are those of the authors and not necessarily the views of the ACS.

ACKNOWLEDGMENTS

We thank John Vercellottti for helpful insights. N.L.P. is thankful to the U.S. National Institutes of Health (5U01 GM116248-04) and the National Science Foundation (CHE-1955936) for their current support of her lab's carbohydrate chemistry work. T.L.L. thanks NSERC, the Canadian Glycomics Network and Academia Sinica for support of his lab's research. We also acknowledge U.S FDA, Science History Institute, U.S. National Library of Medicine, African American Registry, and Blackpast.org as sources of historic photographs; we thank Elsevier for permission to use the Margaret Clarke photo (Margaret A. Clarke 1942−1998. *Adv. Carb. Chem. Biochem.* **2000**, *55*, 22−33).

REFERENCES

(1) Zerban, Z. W. The Division of Sugar Chemistry and Technology. *Ind. Eng. Chem., News Ed.* **1939**, *17*, 119−121.
(2) Meade, G. P. *Sugar J.* November **1975**, 6.
(3) Hodge, J. E. Dehydrated Foods, Chemistry of Browning Reactions in Model Systems. *J. Agric. Food Chem.* **1953**, *1*, 928−943.

BIOGRAPHIES

Todd Lowary received his B.A. in Chemistry from the University of Montana and his Ph.D. in Organic Chemistry from the University of Alberta. Postdoctoral appointments were at the University of Alberta and the Carlsberg Laboratory (Denmark). In 1996, he started a position in the Department of Chemistry at The Ohio State University as an Assistant Professor and in 2002 was promoted to Associate Professor with tenure. He returned to the University of Alberta in 2003, where he is the R. U. Lemieux Professor of Carbohydrate Chemistry. In 2019, he became a Distinguished Research Fellow and Director of the Institute of Biological Chemistry at Academia Sinica in Taipei, Taiwan. Research interests are in carbohydrate chemistry and biochemistry, in particular as these fields relate to microbial glycans. For several years he was on the Executive Committee of the ACS Division of Carbohydrate Chemistry.

Nicola Pohl received her B.A. in English and religion in 1991 from Harvard College, where she carried out undergraduate research in gas-phase ion chemistry. After helping set up the laboratories of Professor Laura Kiessling at the University of Wisconsin—Madison, she earned her Ph.D. in Chemistry there in 1997 before moving to Stanford University as an NIH Postdoctoral Fellow in the laboratories of Professor Chaitan Khosla in the Department of Chemical Engineering. She started her independent career in 2000 at Iowa State University and has been at Indiana University, Bloomington, since 2012 as the Joan and Marvin Carmack Chair in Bioorganic Chemistry. Her research interests include the development of new synthetic and instrumental methods for the automation of glycan synthesis and analysis with collaborations in immunology, glycomaterials, and vaccine design. In 2013, she served as the third female Chair of the ACS Carbohydrate Division.

https://dx.doi.org/10.1021/acs.joc.0c02753
J. Org. Chem. 2020, 85, 15778−15779