



Introduction to Durable Press

By Keith Beck

“Textiles and the Chemical Industry: A Marriage,” by Herman B. Goldstein, represents many of the wonderful characteristics of AATCC and is an excellent example of the significant technical contributions reported in *American Dyestuff Reporter* and *Textile Chemist and Colorist* over the past 100 years. The author has been described as a genius and was instrumental in the early development of dimethyloldihydroxyethyleneurea (DMDHEU), the crosslinking agent that has dominated the wrinkle-free cotton market for almost 60 years.

Because of his fondness for AATCC, Herman, and his wife Myrtle, established in their name the AATCC Student Paper Competition. For his extraordinary contributions to textile chemistry, Herman Goldstein was awarded the Olney Medal in 1973. The noted paper is from his Olney address. In it, he gives a first-hand history of the development of durable press finishing, from the late 1920's, the days of urea-formaldehyde resins, through the early 1960s when DMDHEU became the dominant cellulose crosslinker.

Even though the term resin finishing is commonly used today, it is not entirely accurate as current durable finishing agents are crosslinkers and do not react with themselves. The early urea-formaldehyde and melamine-formaldehyde finishes were true resins which reacted to form 3-D network polymers inside the fibers. Problems with those finishes, as summarized by Goldstein, led to the development of DMDHEU and other crosslinkers. In addition, his work led to the development of post-curing of garments, which had been treated with DMDHEU and a catalyst.

In his address, he describes the “marriage” of the chemical and textile industries, including several other major technical developments which have benefited the textile world. No one can predict the future, but it is clear that DMDHEU will continue to be a major force in durable press finishing for many years to come. While non-formaldehyde-based finishes, e.g., DMUG (dimethyldihydroxyethyleneurea) and polycarboxylic acids have found some traction in wrinkle-free finishing, they still cannot compete with DMDHEU on price and performance.

Hopefully, a few minutes with this article will give the reader a sense of the accomplishments of one of the giants in our industry and an appreciation for the importance of early developments in durable press finishing.

Goldstein, Herman B., *Textile Chemist & Colorist*, October 1973, Vol. 5, No. 10, pp 21-26.
Available to members at www.aatcc.org/pubs/adr/centennial-celebrations