History of the American Association of Cereal Chemists

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Acknowledgment

This book was made possible in part by a donation from the estate of Betty Sullivan (1902–1999), AACC past president (1943–1944) and longtime AACC member.

Dr. Sullivan was the first female assistant chemist hired by the Russell Miller Milling Co. (RMMC), Minneapolis, in 1922. After postgraduate work in France, she returned to RMMC, obtained her Ph.D. from the University of Minnesota, and eventually became vice president and director of research of RMMC. She was the recipient of many national awards for her contributions to the science of milling and baking, including the AACC's Thomas Burr Osborne Medal.

Preface

Shortly before the AACC's annual meeting in 1998, I received a letter from then-President Okkyung Kim Chung asking me to write a history of the AACC that would be ready for the annual meeting in the year 2000. I agreed to do so, providing that I had assistance from the headquarters staff.

The first AACC history, covering the years 1915–1930, was written by R. Wallace Mitchell on behalf of the History Committee and was published by the association. I used some of this material verbatim; some of it I condensed; and much had to be omitted. The period from 1931 to 1950 was based on minutes from the AACC Executive Committee. The years from 1950 to 1991 were recollections from my 41-year career with the AACC, augmented by minutes from board meetings and input from the 34 living past presidents. The years from 1992 to 2000 were recorded by Steven C. Nelson, the current executive vice president.

At the beginning of this project I asked for assistance from staff and specifically requested the aid of Ann King, who has been an editor with the AACC since 1979. Other staff members worked out the format and graphic details. Since I was no longer living in St. Paul, most of the research had to be carried out by regular mail, fax, and E-mail. Staff electronically scanned the older material and sent it to me on diskettes.

It was not possible to name every person who made a significant contribution to the organization and growth of the association. Those named are representative of the period being recalled. For the most part, I have avoided mentioning staff since the history is about the association and its members and not about the headquarters office. This does not mean that past and present staffs did not make significant contributions to the growth of the AACC over the years. I take this opportunity to thank them for their expertise and loyal support during many difficult times.

The success of any professional association is dependent upon the willingness of the members to give of their time and expertise. The AACC was indeed fortunate in having a group of highly dedicated and enthusiastic individuals during the early days of its existence. They set an example that was followed by generations of willing volunteers. To them, the present membership owes a debt of gratitude.

Raymond Tarleton

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Part I, 1915–1930*

The Early Years

Two Beginnings

In the years immediately preceding the organization of the American Association of Cereal Chemists, the conditions that prevailed in the industry were those of individual mills operating as such in contrast to the conditions that came to exist in the period after World War I, namely, great combinations and strong corporations. But even at that time there were some progressive millers and mill owners who were installing laboratories and hiring chemists to aid them in their work. A few of the Northwest's spring wheat millers had installed laboratories, as had also some of the leading mills of the Southwest.

The actual responsibility for the conception of a chemists' organization cannot be ascribed to any particular individual or group of individuals. About 1914, two groups, one in central Kansas and the other in Kansas City, were discussing this idea. By 1914, there were probably were about 20 mills in the Southwest that employed chemists and had laboratories of one sort or another. The chemists employed were, at that time, young men, most of them taking their first position in the laboratory directly upon leaving college. It was only natural that these young men, being in the same line of work, should meet and talk

*Part I is an edited and abbreviated version of *History of the American Association of Cereal Chemists, 1915–1930*, compiled on behalf of the History Committee by R. Wallace Mitchell, committee chair, and published by The Lund Press, Minneapolis, in 1935. Comments by Raymond Tarleton are in italics, as in Parts II and III of this book.

with one another from time to time. It was in these informal meetings that the idea was first evolved that an association for cereal chemists would be a very good thing. A meeting of these men was held in Wichita to form an organization to aid in solving the common problems of the individuals. This is believed to be the first called meeting that was ever held among any industrial cereal chemists in the Southwest. At this meeting and by subsequent correspondence, the foundations were laid for a meeting to be held on May 8, 1915, for the purpose of organizing an association of cereal chemists. These plans materialized, and on that day, 11 chemists met in Kansas City, MO, and founded the American Association of Cereal Chemists.

Previously, in 1910, there had been organized a society known as the American Society of Milling and Baking Technology (ASMBT). A large portion of the membership of this Society was recruited from the membership of the Association of Official Agricultural Chemists (AOAC). The first meeting of the ASMBT was held in Washington, DC, November 9, 1910, and was in response to a general invitation to "all persons interested in wheat and flour testing." It had been recognized for years that the methods used by chemists and technologists to test wheat and flour were not at all uniform and that the results obtained were not comparable between different laboratories or different operators. To eliminate this confusion and to bring about greater uniformity of methods and results, the ASMBT was organized from among the members of the AOAC who were more especially interested in milling and baking problems.

The first meeting of the ASMBT was largely taken up with a general discussion of the most important problems in this line of work. Some of the topics discussed were the need for an improved experimental flour mill for milling small samples of wheat and proper equipment of the same, preparation of wheat for rolls, invisible loss in milling, the basis for computing flour yields, equipment for testing laboratories, methods and formulae used in baking and other tests, and method of reporting results. Plans were made to send out samples of representative types of wheat and flour for milling, baking, and chemical analysis to all laboratories that would cooperate, the work to be done according to a tentative set of methods and the results reported to the secretary.

By November 1916, the paid membership was between 60 and 70, made up of operative millers, bakers, and chemists in flour mills, bakeries, baking powder factories, and industrial institutions, as well as in experiment stations and government departments both in the United States and Canada. In 1918, two joint meetings of committees of the ASMBT and the AACC were held, one in New York and the other in Chicago, both having been called by a representative of the U.S. Food Administration to consider ways and means of wheat conservation. In 1919, the ASMBT organized an employment bureau or clearing house, primarily to assist the returned soldier to obtain a suitable position; and, at the request of the Federal Board for Vocational Education, the ASMBT prepared one of the board's so-called "opportunity monographs on milling and baking," the purpose of which was "to assist the men disabled in service and who are entitled to re-education to make an intelligent choice of the vocation they desire to take training for."

Many of the problems taken up by the ASMBT during its 10 years of existence related in general to four main subjects, namely, milling, baking, analytical methods, and baking powder work.

In 1922, this organization, realizing that greater good could be accomplished along the lines of milling and baking by having one large society, voted to unite with the AACC under the name of the American Association of Cereal Chemists. At the time of amalgamating with the AACC, January 1, 1923, the society numbered 56 members, 22 of whom had previously joined the AACC.

It was indeed fortunate that the two societies found it desirable to unite. Each had served to develop ideas and a plan of organization suited to its membership and in so doing it gained the interest and support of many individuals. When the time came to unite, each society had enlisted the genuine interest of its members, and that interest was strong enough to hold them in the larger organization, where many more lines of endeavor must necessarily be cultivated in order to provide expression for the more varied interests of the diverse membership.

FORMATION OF THE AACC

A record of the life of a society such as the AACC may very well begin by presenting, if possible, the sentiment and motives of those who were

responsible for its inception. Fortunately for this history of the AACC, we have an editorial that appeared in the first issue of the society's publication. It was headed "The Reason"—

THE REASON

On the 8th day of May, 1915, in Kansas City, Mo., a few chemists that were interested in cereal work met, to form an organization for the advancement of the science as applied to cereal analysis. They were all operators in laboratories in which the work was principally the control of flour milling operations.

In the course of their experience, each one had been faced with the question: "Why can't you chemists agree on your reports?" It must be acknowledged that there are grounds for such queries, and that, though they are explainable to the satisfaction of the chemist, it does not eliminate the fact that it lowers the value of a chemical analysis in the eyes of the baker, jobber or miller.

Each member present was there because he felt the need of associating with other chemists interested in the same lines of work, with whom he could exchange ideas and discuss the various methods as practiced by others.

All realized that, if by means of discussion and investigation the best practicable method of procedure for each determination could be established, then standard methods could be outlined, and with that done, uniformity of results would follow.

This, then, is the object of the association which has taken onto itself the title of "THE AMERICAN ASSOCIATION OF CEREAL CHEMISTS." To carefully consider methods of procedure and practice in cereal analysis by means of research and open discussion, and to draw conclusions which are representative of the convictions of the operators who are members. It is the desire to adopt methods which are as free of any scientific objections as possible, but at the same time lend themselves to the best advantage under the conditions that exist in the ordinary "control" or "commercial" laboratory. It is realized that there are many objections to be met each time that a standard method is adopted. There will be special reasons why certain points in any

method should be done slightly differently by different operators. All points that have a bearing on the results gotten by any method must be carefully considered and then the method that is the most scientifically exact and at the same time practicable, selected as the standard.

Every earnest chemist who is seeking to give his employer value received, will see in this movement an opportunity to increase his efficiency by joining with the members and giving and receiving in the efforts to achieve more uniform results. Flour and cereal chemistry has in the past never seen any concerted efforts put forth for its benefit and now when the start has been made it would be a great boon to all if the interested ones would come forward and join in the united membership in the interest of a worthy cause.

It is the earnest desire that millers and mill owners will understand the object of this organization. STANDARDS is a word that has recently come into bad repute with many millers. We hope that such persons will not let the word deter them from reading the purpose and the ends to be accomplished by our body.

There is no intention of comparing milling methods or telling others the little things about our particular mill that puts it ahead of the other fellow. We will leave that to the millers themselves. The fact is that there are in almost all cases several ways to get the analytical data that makes the laboratory valuable. Because of the different methods there is a greater liability of apparent discrepancies in the work of different operators working under different conditions. Then again there is a grievous lack of system in the manner of reporting the data. For instance, three laboratories might get the same loaf volume, and yet their reports would be utterly dissimilar, due to the fact that one reported in percentage, the second in cubic inches, and the third in cubic centimeters. Uniformity in this matter will only come through some such agency as our organization proposes to be.

Another thing: We wish to assure the mill owners that there is nothing of the character of a "UNION" in this movement. This is a movement for the good of the profession in that it will increase the efficiency of the individual and in so doing, increase his value

to the employer. A wage scale is the last thing that the ambitious operator would care to have to contend with.

The call for the first annual convention of the AACC to be held in Kansas City on May 8, 1915, was signed by H. E. Weaver and C. J. Patterson. In answer to this call, 11 milling chemists responded. They were: H. E. Weaver, Larabee Flour Mills Co., Hutchinson, KS; E. G. Wahlin, Oklahoma Laboratories, Oklahoma City, OK; A. R. Sasse, Southwestern Milling Co., Kansas City, KS; J. M. Hogan, Kansas Flour Mills Co., Kansas City, KS; C. J. Patterson, Ismert-Hincke Milling Co., Kansas City, KS; C. G. Buck, Ismert-Hincke Milling Co., Kansas City, KS; P. M. Patterson, Wm. Kelly Milling Co., Monarch Milling Co., and Hutchinson Milling Co., Hutchinson, KS; R. A. Lusk, Rea-Patterson Milling Co., Coffeyville, KS; R. Wallace Mitchell, Kansas Milling Co., Wichita, KS; A. A. Jones, El Reno Mill & Elevator Co., Canadian Milling Co., El Reno, OK; and A. W. Estabrook, Estabrook Laboratories, Kansas City, MO.

The founders

Besides effecting the organization of this society, these charter members evidenced the soundness of their ideas by writing into the constitution the aims, purposes, and ideals, which continued to remain a true expression of the society through the years to follow.

However, it is interesting to note that membership at that time was limited to "male persons"!

Conditions in the milling industry in 1914 recall the fact that there were few mill laboratories in the Southwest. Short tempering of wheat was general and little understood except in the large mills. Flour bleaching was quite generally practiced but was limited to the use of nitrogen oxides. Alsop electric bleach seemed to be quite generally used for this purpose. Considerable discussion among millers and writers regarding the merits of bleaching was in evidence during this period. Wheat was chewed to determine its quality. Washed glutens were standard determinations among millers and flour buyers, and the miller's wife was the "test-baker" whose verdict decided the quality of his flour. Twelve hours per day for each mill shift was standard practice. Patent,

straight, clear, and low-grade with occasional cut-straight, were the principal divisions of the flour streams. Six or seven grades of flour were almost exclusively used or made. In later years, the number of grades was greatly increased in common practice.

The first nine presidents, who got the association off to a good start.

Prior to 1915, most mills operated on a milling mixture of wheat, the character of which was governed by the manager's "wheat sense," the price policy, and the weather. The advent of the laboratory brought to bear many others factors in wheat selection and introduced scientific methods of wheat evaluation for flour manufacture. The problem of wheat selection became more involved, but a much higher degree of certainty as to quality was attained. Commercial laboratories were called upon to aid in effecting plant control by weekly or semiweekly analysis of flour products. With the introduction of laboratories in the milling plants and the consequent closer control, new problems of concern to the chemist as well as the manager came up. The technique of cereal analysis was not closely standardized, methods of analysis varied, and, to an even greater extent, the reporting of laboratory results varied. Much confusion in the trade naturally resulted. Such conditions pointed the way and emphasized the need for an organization of chemists to standardize laboratory operations and reports.

With the business of formulating the constitution cared for, the meeting plunged into the work that had prompted organization. Methods of analysis came up for consideration, and primary importance was given to acidity, relation of quality of gluten to bread, moisture determination, ash determination, and the determination of gluten in flour. The meeting took up the problems that had prompted the organization, and vigorous general discussion resulted in a decision to concentrate efforts for developing uniform and standard methods of analysis. In this, as in subsequent meetings, general and free discussions were allowed at all times. It may be related that the ideas of the members were often fixed and generally tenaciously defended even to the point of heated dispute.

The outcome of this first convention was an organization that functioned actively from its inception. There was a unity of purpose in collaborative effort in the field of cereal research and stimulation for the development of routine methods suitable for cereal control laboratories. While the convention was called for the purpose of organization, it also adopted a constitution, elected officers, and appointed committees. This first meeting was so generally enthusiastic that everyone returned to his work greatly fortified and imbued with determination to carry on in his chosen field to the end that the entire industry might profit. In the

evening, the formation of the organization was celebrated by a dinner at the Coates House.

One of the final decisions at this founding meeting was to set a date for the next meeting. Arrangements were made for a meeting in Wichita, February 4 and 5, 1916.

The February 1916 meetings were held in the Kansas Club rooms and were attended by 13 chemists. Of the 10 who had attended at Kansas City, eight were present at Wichita. Six new names had been added to the roster, and of these six, three were present in person. It was quite evident that the interest of the first meeting was being continued over the intervening time, and the work accomplished seemed to promise that the aims of the association were possible of attainment. One interesting feature of this meeting was that, for the first time, official action was taken on a problem that had been brought up for action. That consisted of the adoption of a moisture determination vessel of definite specifications. Of further interest is the fact that, as late as 1929, these specifications had not been changed. Another sign of progress on the right road was the adoption of a resolution to use the term "protein" instead of "gluten" in expressing the nitrogen content of wheat and flour. For years, the trade had been using the term "gluten" and were so sold on and accustomed to this word that the association did not wish to go on record as trying to make the use of the new term mandatory. Thus, this record was put in the form of a resolution and was not adopted as a standard practice. However, since the association recognized that the term "protein" was the only true, scientific, and technical explanation or designation of the nitrogenous bodies in flour, they wished to be put definitely on record as favoring this more scientific term.

The earnestness of the members at this meeting is further evidenced by fact that seven methods of analysis were advanced to the point where members agreed to make standard methods of moisture, acidity, water-soluble solids, protein in flour, reducing sugars, ash, and the manner of reporting loaf volume. Also, they agreed on tentative methods covering protein of wheat, water-soluble solids, reducing sugars, acidity, and reducing sugars as crystallized maltose. They also agreed on a method for determination of crude fiber, a color scale for bread comparison, and a bread formula.

Once again, this second meeting closed with a spirit of enthusiasm and satisfaction among all members of the society. More than ever they were convinced that the aims and ideals of the association were attainable and that, in spite of the great divergence of opinion relative to methods and procedure, ultimately the best among the various methods would be selected and would prevail and that the profession would attain a dignity that would command the respect of the entire industry.

It was quite evident that the milling industry was taking kindly to the idea of scientific control; more laboratories were established and more chemists hired for the industry. This definitely brought about an increase in the membership of the association, and the first year closed with a membership of approximately 35. Part of this interest was directly traceable to the inauguration of the *Journal of the American Association of Cereal Chemists*, which was launched in October 1915. This journal was distributed to all of the flour mills in the winter wheat area, as well as to a number in the spring wheat area. It immediately generated interest among mill owners and managers.

The first AACC journal

The *Journal* was a goal of the members. The society wished to have a means of spreading the gospel of standardization of methods, and it willingly appointed an editor but had no funds to support such an endeavor. Several members accepted the responsibility of selling enough advertising space to pay the cost of publication. The first issue of the *Journal* contained 18 pages, including three pages of advertising—one page for Hulling Machine Co. of Dayton, OH, and a double page for the Provident Chemical Works, St. Louis, MO. A thousand copies were printed. It was mailed to mill managers and mill chemists in all parts of the country. Subsequent issues appeared at six-month intervals, and for several years the work was carried on without financial support from the society.

The cooperation of mill management/ownership was most crucial at the beginning of the AACC's life. Especially supportive were Theodore Ismert, Fred Larabee, and Henry Lassen of Ismert-Hincke Milling Co., Kansas City, KS. These men supplied much of the laboratory equipment that was needed for the new test methods, which otherwise would not have been installed in the ordinary mill laboratory. In addition, they were instrumental in convincing fellow mill managers/owners in the Millers'