The ACS Division of Agricultural and Food Chemistry

A Historical Review

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The roots of the American Chemical Society were laid by some 70-odd chemists who met in 1874 in Northumberland, Pa., Priestley's home in America, to honor the centenary of the discovery of oxygen. Organization of the Society was effected two years later. Considerable opposition existed, largely because of apprehension that there were not enough members of this profession in America for such an organization. The Society was reorganized in convention at Newport, R. I., in 1890, which is the date from which its general meetings are consecutively numbered.

Beginning with the Newport meeting when some 40 members of the Society assembled to listen to 17 papers, and ending with the 31st convention in 1904, no attempt was made to separate papers into fields of similar interest. Among the few papers read at each meeting, there were always some with agricultural and food interest.

The programs reflected interest in attempts then being made to have Congress give the nation its first pure food and drug act. Edgar F. Smith in his address as President of the Society (1895) distinguished between the chemistry of agriculture and the chemistry of foods and their adulteration; H. W. Wiley, both before and after his presidency (1893) discussed methods for the analysis of carbohydrate foods; Winton described a technique for the detection of coal-tar dyes; Parsons outlined a simple test for distinguishing oleomargarine from butter. Other subjects in this area of interest were discussed.

Following the general session at the 1904 winter meeting of the Society, held jointly with Section C of the American Association for the Advancement of Science, the Society met in sections, of which there were four. Under W. F. Mason's chairmanship, papers were read before the Section of Agricultural, Sanitary, and Physiological Chemistry. That group became the Section on Agricultural and Sanitary Chemistry in 1905, and the Section on Agricultural, Sanitary, and Food Chemistry in 1907. Successors to the chairmanship were J. H. Long, 1905; H. W. Wiley, 1905; E. B. Verhees, 1906; L. L. Van Slyke, 1906; F. T. Shutt, 1907; W. D. Bigelow, 1907; A. L. Winton, 1908; and H. J. Wheeler, 1908.

On December 30, 1908, H. J. Wheeler, as chairman of a committee of 10, presented to the council, meeting then in Baltimore, a request for the formation of a Division of Agricultural and Food Chemistry. Authorization having been granted, organization was effected the next day with the election of the following officers for 1909: W. D. Bigelow, chairman; C. A. Brone, vice chairman; W. B. D. Penniman, secretary; and four others to form an executive committee. Life began "at forty" for the Division of Agricultural and Food Chemistry, since it was the fortieth official meeting of the American Chemical Society at which the Division first officially met. Officers of the Division since its origin are given in Table I.

The Division was quite active in its field until the mid-1920's, but then it almost collapsed. In 1927 it considered closing shop and consolidating with the Division of Biological Chemistry. However, several dynamic members stepped forward and started a program to revise the organization. H. A. Schuette writes of this critical period as follows: "Action was taken at the Detroit meeting (1927) with the view of consolidating the Division with the Biological Chemistry Division. A committee which was requested to confer with the officers of both divisions on the advisability of effecting such a coalition reported adversely at the next meeting. Although it was conceded that papers have frequently appeared on the programs of each of these divisions which might, with equal propriety, belong to the other, it was deemed to be in the best interests of these two groups if they were to continue in separate existence. It was felt also that the field of work covered by the Division is too wide to be of sustaining interest to those members who are interested solely in biological chemistry.

"A special effort was made then to reorganize the Division; the pages of the *News Edition* were used in issuing a call for active sustaining members, dues were collected and turned back in the form of mimeographed abstracts, and life began anew. The Division, like several others, has found the circulation of abstracts of papers among its sustaining members in advance of the meeting a helpful stimulus to the maintenance of interest in its programs. The practice was born of necessity because it appeared that the Division had about reached the end of its existence because of lack of interest. An excellent symposium of 42 papers on insecticides, organized and presided over by R. C. Roark at the St. Louis meeting (1928), was the answer to the challenge of the further existence of the division. It appears to have been riding the crest of the waves ever since, and bids fair to do so in spite of the fact that some college and university departments of agricultural chemistry, to meet whose needs it was organized . . . . ., have seen fit to change their names to that of biochemistry."

One of the great accomplishments of the Division to add virility has been the creation of subdivisions. In 1936 members with interests in microbiology attempted to organize a fermentation group. Adequate support was not received and the idea lay dormant for 10 years. World War II gave impetus to the production of fermentation chemicals and pharmaceuticals, and brought close association of industrial, academic, and government fermentation chemists. In 1946 at an organization meeting in Chicago, 75 chemists voted to form a fermentation section. The officers of the Division of Agricultural and Food Chemistry were asked to accept the group as a section or subdivision. The Council approved the subdivision organizational structure proposed by the Division, and the Fermentation Subdivision was given official birth in 1946. The steering committee active in the organization of the Fermentation Subdivision was A. F. Langlykke, R. D. Coghill, C. N. Frey, W. H. Peterson, C. S. Boruff (temporary chairman), and J. M. Van Lanen (secretary). From 1946 to the fall meeting in 1958, when the parent division celebrated its 50th anniversary, 17 symposia had been organized and presented by this subdivision in addition to many excellent general programs. Officers of the subdivision

(*Continued on page 546*)

Symposia Presented Before the Division of Agricultural and Food Chemistry

1936 Chemistry and Technology of Wine[a]
Vitamins[b,c]
Chemistry and Technology of Soybeans[a]
Meat and Meat Products[a,b,c]
Food Processing and Preservation[b]
Vitamins[b,c]

1937 Flavors in Foods and Food Products
Vitamin B Complex[b,c]
Chemistry and Metabolism of Fats[b,c]
Vitamins[b,c]
Are Patents on Medicinal Discoveries and on Foods in the Public Interest?

1938 Vitamins[b,c]
Nutritive Value of Foods for Domestic Animals[b]
Industrial Utilization of Agricultural Products[a,b]
Vitamins[b,c]
American Patent Practice and Procedure[b,c]

1939 New Federal Food, Drug and Cosmetic Act[b,c]
Industrial Utilization of Dairy Products[b]
Vitamins and Nutrition[b]
Plant Hormones
Nitrogen-Free Extract of Foods & Feeding Stuffs
Vitamins and Nutrition[b,c]

1940 Utilization of Agricultural Wastes
Sterols and Lipoids[b]
Animal Nutrition
Liebig[d,e]
Vitamins[b,c]
Fruits and Fruit Products

1941 Nutritional Restoration and Fortification of Foods[b]
Molecular Structure of Fats and Oils[b]
New Analytical Tools for Biological and Food Research[b,c]

1942 Trace Elements in Nutrition[b]
Methods for the Preservation of Foodstuffs and Their Application in the War Effort
Methods for the Preservation of Foods—Their Wartime Aspects

1943 Fats and Methods of Fat Stabilization
Stephen M. Babcock Memorial

1944 Carbohydrates for Industry[f]
Biological Value of Proteins
Harvey W. Wiley Memorial (Food Quality and Flavor)

1946 Nonenzymatic Browning in Foodstuffs
Food Supplies and Nutrition Conditions in War-Torn Countries
The Relation of Soil Fertility to the Nutritive Value of Food Crops
Vitamin Requirements of Laboratory Animals

1947 Changes Occurring in Foods During Storage
Insecticides in Food Production
Biochemistry of Milk[b]

1948 Food Quality and Control
Food Technology[a]
Antibiotics
Metalloporphyrins and Heme Proteins[b]
Flavonoid Pigments ("Vitamin P")

1949 Vitamin B_{12} and Related Factors[b]

1950 Agricultural Applications of Petroleum Products[g]
Functional Chemicals in Processed Foods
Industrial Microbiology[a,o]
Metabolic Actions of Vitamin B_{12}[b,o]

1951 Chemical Engineering Aspects of Food Technology[a]
Methods of Analysis for Micro Quantities of Pesticides[h,p]
Vitamin B_{12}[o]
Microbial Metabolism[o]
Chemistry of Meat and Other Products of the Meat Packing Industry
Chemistry of Tobacco
Current Status of Pesticides[p]

1952 Feeds and Feeding of Fur-Bearing Animals
Malting and Brewing Technology[o]
Bioengineering[a,o]
Significance of Pesticide Residues[p]
Formulation and Action of Herbicides[p]
Literature Resources of the Food Industries[i]
Microbial Polysaccharides[f,o]
Natural Plant Hydrocolloids[j]
Special Dietary Foods

1953 Evaluation of Food Quality Through Physico-Chemical Methods
Dehydrated Foods
Fermentation in Food Technology[o]
Systemic Insecticides[p]
Use of Sugars and Other Carbohydrates in the Food Industry[f]
Agricultural Chemicals[k]
Formulation of Pesticides[p]
Problems of Deterioration in Food Fats
Developments in the Chemistry of Fats and Oils
Technology of Food Packaging Materials
Rodenticides[p]
Fermentation Process Control[o]
Nontherapeutic Uses for Antibiotics[o]

1954 Formulation of Pesticides[p]
Mechanical and Engineering Aspects of Pesticide Application[a,p]
Radiation Sterilization of Foods and Pharmaceuticals[c]
Paper Chromatography of Biologically Active Fermentation Products[h,o]
Chemical Aspects of Flavor and Odor Perception
Pesticides in Tropical Agriculture[p]

1955 Literature of Agricultural Chemicals[i]
Dairy Products and By-Products
Cereals
Metabolism of Pesticides in Plants, Mammals, and Insects[p]
Improvements in Fermentation Equipment and Processes[a,o]
Carbohydrate Metabolism[f]
Rumen Function[f]

1956 Relation of Environment to Nutritive Quality of Crops
Food and Agriculture with H_2O-Plus
Radiation Sterilization
Relationships Between Molecular Structure and Biological Activity of Pesticides[p]
Physical Functions of Hydrocolloids[j]
Fermentation Process and Equipment Design[o]
Microbial Transformations of Steroids[o]

1957 Trace Elements in Human, Plant and Animal Nutrition
Methods for Analysis of Pesticide Residues[h,p]
Chemistry in the Citrus Fruit Industry[a]
Future Utilization of Agricultural Commodities
Chemistry and Physiological Actions of Gibberellins[b]
Radiotracer Techniques in Pesticide Studies[p]
Fermentation Process and Equipment Design[o]
Nonclinical Uses of Antibiotics[o]

1958 Food Additives
Food Science and the Future
Fermentation Kinetics and Continuous Processes[o]
Control of Physiological Processes in Plants by Chemicals[p]
Microbial Enzymes[o]
First 50 years of First Five Div.-Golden Anniversary[a,d,e,l,m]
Deleterious Compounds in Foods and Feeds

[a] Jointly with the Division of Industrial and Engineering Chemistry.
[b] Jointly with the Division of Biological Chemistry.
[c] Jointly with the Division of Medicinal Chemistry.
[d] Jointly with the Division of Fertilizer and Soil Chemistry.
[e] Jointly with the Division of History of Chemistry.
[f] Jointly with the Division of Carbohydrate Chemistry (or its predecessors).
[g] Jointly with the Division of Petroleum Chemistry.
[h] Jointly with the Division of Analytical Chemistry.
[i] Jointly with the Division of Chemical Literature.
[j] Jointly with the Division of Colloid Chemistry.
[k] Jointly with the Division of Chemical Marketing and Economics.
[l] Jointly with the Division of Organic Chemistry.
[m] Jointly with the Division of Physical Chemistry.
[n] Jointly with the Division of Cellulose Chemistry
[o] Sponsored by the Fermentation Subdivision.
[p] Sponsored by the Pesticides Subdivision

since its organization are listed in Table II.

Largely through the efforts of J. L. St. John, the Subdivision on Economic Poisons was approved in 1950. The name was changed to the Pesticides Subdivision in 1951. Fifteen symposia had been organized and presented through 1958, in addition to many excellent programs of general interest. In the "Advances in Chemistry Series" for complete publication of symposia in book form, the first symposium on economic poisons presented by the Pesticides Subdivision was selected for the honor of appearing as number one, under the title "Agricultural Control Chemicals." Officers of this subdivision since its organization are shown in Table III.

The formation of subdivisions within the Division has given every evidence of being mutually beneficial. Specific areas of science have been promoted by the encouragement of "families" with specific interests to get together formally for the exchange of scientific information. It is of interest that at least one chairman from each of the subdivisions has gone on to be chairman of the parent Division.

The Division presented 144 symposia through the fall meeting 1958. As a record of progress, a Diamond Jubilee History was prepared by F. C. Blanck and published in 1951 (*Ind. Eng. Chem.*, page 564). Also included were surveys of progress in Nutrition, by E. V. McCollum; Insecticides and Herbicides, by H. L. Haller; Rodenticides, by J. C. Ward; Herbicides, by P. W. Zimmerman and A. E. Hitchcock; Fermentation, by C. S. Boruff and J. M. Van Lanen; and a brief historical review of the Division by J. H. Nair. R. C. Newton's excellent account of progress in agricultural and food chemistry over the past 50 years, given at the Golden Anniversary Meeting in Chicago in 1958, is an excellent memento to the efforts of the Division and its members. The record of progress and contributions to mankind by agricultural and food chemists is a challenge to all segments of the chemical profession.

The next 50 years, characterized by rapid increase in population, will bring challenges and many staggering problems. The ingenuity of the scientists of our profession will be America's greatest asset in the extraction of more and better food, fiber, and enjoyment from our natural resources.

Acknowledgment

Appreciation is given to Dr. H. A. Schuette for his assistance in the preparation of this history of the Division of Agricultural and Food Chemistry.

Table I. Officers of the Division of Agricultural and Food Chemistry

(1909–58)

Year	*Chairman*	*Secretary*
1909	W. D. Bigelow	W. B. D. Penniman
1910	C. D. Woods	C. E. Curry
1911	H. E. Barnard	C. E. Curry
1912–1913	H. E. Barnard	Glen F. Mason
1914–1915	F. W. Robinson	Glen F. Mason
1916	L. M. Tolman	Glen F. Mason
1917	T. J. Bryan	Glen F. Mason
1918	T. J. Bryan	F. T. Flanders
1919	W. D. Richardson	T. J. Bryan
1920–1921	C. E. Coates	T. J. Bryan
1922	T. J. Bryan	C. S. Brinton
1923	H. A. Noyes	C. S. Brinton
1924–1925	C. H. Bailey	C. S. Brinton
1926–1927	E. F. Kohman	C. S. Brinton
1928–1929	F. C. Blanck	H. A. Schuette
1930	R. C. Roark	H. A. Schuette
1931	J. S. McHargue	J. H. Nair
1932–1933	H. A. Schuette	J. H. Nair
1934	D. K. Tressler	J. H. Nair
1935	D. K. Tressler	H. R. Kraybill
1936	J. H. Nair	H. R. Kraybill
1937–1938	H. R. Kraybill	G. A. Fitzgerald
1939	R. C. Newton	G. A. Fitzgerald
1940	C. N. Frey	E. H. Harvey
1941	G. A. Fitzgerald	C. R. Fellers
1942–1943	E. H. Harvey	R. H. Lueck
1944–1946	N. B. Guerrant	P. Logue
1947	B. L. Oser	L. E. Clifcorn
1948	P. M. Logue	L. E. Clifcorn
1949	C. R. Fellers	A. N. Prater
1950	L. E. Clifcorn	A. N. Prater
1951	B. E. Proctor	A. N. Prater
1952	A. F. Langlykke	Louis B. Howard
1953	A. N. Prater	D. M. Doty
1954	C. S. Boruff	D. M. Doty
1955	W. O. Lundberg	F. M. Strong
1956	A. L. Elder	F. M. Strong
1957	D. M. Doty	F. M. Strong
1958	H. L. Haller	John H. Nair III

Table II. Officers of the Fermentation Subdivision

(1946–58)

YEAR	CHAIRMAN	SECRETARY
1946–1950	C. S. Boruff	J. M. Van Lanen
1951	W. H. Peterson	" " "
1952	R. D. Coghill	" " "
1953	L. A. Underkofler	J. C. Sylvester
1954	J. M. Van Lanen	" " "
1955	Marvin Johnson	" " "
1956	R. J. Allgeier	" " "
1957	Nestor Bohonos	" " "
1958	Elmer L. Gaden, Jr.	" " "

Table III. Officers of the Pesticides Subdivision

(1950–58)

YEAR	CHAIRMAN	SECRETARY
1950	J. L. St. John	L. G. Cox
1951	" " " "	" " "
1952	H. L. Haller	" " "
1953	F. A. Gunther	J. L. St. John
1954	L. G. Cox	" " "
1955	L. W. Hazleton	Hobart O. Thomas
1956	J. A. Noone	" " "
1957	Wendell F. Phillips	" " "
1958	D. A. Greenwood	Irwin Hornstein