

Compounds", *Z. Krist.*, **1925**, *61*, 18-48 (p. 42; German). See also: K. Fajans, "Degrees of Polarity and Mutual Polarization of Ions in the Molecules of Alkali Fluorides, SrO, and BaO", *Structure and Bonding*, **1967**, *3*, 88-105.

35. R. K. Bauer and H. Lew, "Rotational Constants and Electric Dipole Moment of Sodium Fluoride", *Canad. J. Phys.*, **1963**, *41* (9), 1461-1469.

36. L. Pauling, typewritten reminiscences sent to R. E. Holmen, March 1987.

37. K. Fajans, "Deformation of Ions and Molecules Based Upon Refractometric Data", *Z. Physik*, **1928**, *50*, 531-536; and *Z. Elektrochem.*, **1928**, *34*, 502-520. (Both in German)

38. A. E. van Arkel and J. H. de Boer, *Chemische Bindung als Elektrostatische Erscheinung*, Hirzel, Leipzig, 1931. This textbook bears witness to Fajans' impact on European texts of that day; references to his work outnumber those to any other source.

39. K. Fajans and W. Frankenburg, "Influence of Adsorbed Ions on the Photochemical Sensitiveness of Silver Bromide", *Z. Elektrochem.*, **1922**, *28*, 499-505. (German)

40. K. Fajans, H. Fromherz and G. Karagunis, "Influence of Adsorbed Ions on the Absorption of Light by Silver Bromide", *Z. Elektrochem.*, **1927**, *33*, 548-554. (German)

41. K. Fajans and G. Karagunis, "Influence of Heavy Metal Ions on the Light Absorption of Heavy Metal Halides", *Z. Phys. Chem.*, **1929**, *B5*, 385-405. (German)

42. K. Fajans and O. Hassel, "A New Method for Titration of Silver and Halogen Ions with Organic Dyestuff Indicators", *Z. Elektrochem.*, **1923**, *29*, 495-500. (German)

43. K. Fajans and H. Wolff, "The Titration of Silver and Halogen Ions with Organic Dyestuffs as Indicators", *Z. Anorg. Allg. Chem.*, **1924**, *137*, 221-245. (German)

44. For a later review of the status of the subject see: K. Fajans, "Adsorption Indicators in Precipitation Titration", in E. Brennecke, K. Fajans, N. H. Furman, R. Lang, and H. Stamm, Eds., *Newer Methods in Volumetric Analysis*", 4th ed., Enke, Stuttgart, 1956, pp. 313-369. (German) An English translation was published in 1928.

45. A. Braun and P. Hölemann, "Refractometric Investigations. LII. Refraction and Dispersion of Gases and Vapors. 10.", *Z. Phys. Chem.*, **1936**, *B34*, 357-380 (German). See also reference 48.

46. K. Fajans and J. Wüst, *Physikalisch - chemisches Praktikum*, 1929. Translated into English and Russian.

46. See reference 16.

47. K. Fajans, "Refraction and Dispersion of Gases and Vapors. I. General Introduction", *Z. Phys. Chem.*, **1934**, *B24*, 103-154. (Fajans, in later years, frequently referred to his remarks in this paper).

Dr. Reynold E. Holmen, 2225 Lilac Lane, White Bear Lake, MN 55110, is retired from the 3M Company, where he was employed as an organic chemist. He received his Ph.D. degree from the University of Michigan, where he had the stimulating experience of taking several courses from Fajans.

THE HISTORY OF THE DEXTER AWARD

Part IV: The Third Decade

Aaron J. Ihde, University of Wisconsin

The winner of the 1977 award, Modesto Bargalló (1894-1981), was born in Spain and played an important role in science education in Spanish universities. At the close of the Spanish Civil War, he fled Spain and started a new career in Mexico, where he was a faculty member of the National Polytechnic Institute in Mexico City. Although he had been interested in history of chemistry while still in Spain, that interest flowered in Mexico, where he made extensive studies of the history of metallurgy in Colonial Latin America. He published numerous papers on history of chemistry and of metallurgy and was the author of several works on Latin-American metallurgy.



Modesto Bargalló

George Kauffman (b. 1930), recipient of the 1978 award, was born in Philadelphia and educated at the Universities of Pennsylvania and Florida. He developed a deep interest in coordination compounds, aroused at Penn by a professor who had worked with Alfred Werner at Zürich. Kauffman became a member of the chemistry faculty at California State University in Fresno in 1956 and has taught courses in general and inorganic chemistry, as well as history of chemistry. His interest in the latter subject developed early in his career and came to fruition during a research leave in Zürich where he studied the papers of Werner. He has edited three collections of classical papers in coordination theory and has chaired two symposia on teaching history of chemistry, one of which was published in book form. He has also published a biography of Werner and a symposium volume on the Werner Centennial



George Kauffman

which he organized.

The 1979 award was given to Joseph Needham (b. 1900), the son of a London physician, who abandoned the study of medicine after graduating from Cambridge and turned to biochemistry. He studied in the laboratory of F. G. Hopkins at Cambridge and became a Fellow of Caius College upon appointment to the university faculty. Parallel with a distinguished biochemical career, he had a curiosity about the interrelations between science, religion, and society. He has published or edited numerous works reflecting his interests. He is now best known as the author of the multivolume work *Science and Civilization in China*. Three parts of Volume 5, dealing with chemistry and chemical technology in China, are



Joseph Needham

now in print.

The recipient of the 1980 award, Maurice Daumas (b. 1910), was born in France, where he studied chemical engineering. In 1947 he began his long tenure at the National Museum of Arts and Commerce, where he has contributed extensively to the history of scientific apparatus. His best known works are *Les Instruments Scientifique aux XVIIe et XVIIIe Siecles* (1953); *Lavoisier, Théoreticien et Experimentateur* (1955), *l'Encyclopédie de la Pléiade: Histoire de la Science* (editor, 1957), and *Histoire Générale des Techniques* (editor, 5 volumes).

The 25th Dexter Award was given to Cyril Stanley Smith (b. 1903) in 1981. A native of Birmingham, England, Smith came to the United States in 1924, after completing his B.S. at the University of Birmingham, in order to study metallurgy at MIT. From 1927 - 1942 he was a research metallurgist with American Brass Company. During World War II he was a



Maurice Daumas

Division Leader in charge of metallurgy at Los Alamos, where his group worked on the metallurgy of plutonium. Following the war, he became Director of the Institute for the Study of Metals at University of Chicago. He returned to MIT in 1961 as Institute Professor and became Emeritus in 1969. Smith developed an early interest in the history of metals, but found the subject very poorly developed. This caused him to investigate the early works in the field and, ultimately, to bring about translation of the classical works of Biringuccio, Ercker, Reaumur, Theophilus, and other early authors. He has not only contributed to the opening of the classical literature but has also effectively applied metallurgical knowledge to the interpretation of archeological and artistic problems relating to metals.

John H. Wotiz (b. 1919), winner of the 1982 award, was born in Ostrava, Czechoslovakia. After studying briefly at the Czech Polytechnicum of Prague, Wotiz came to the United

States, finishing his B.S. in chemistry at Furman University in 1941 and his Ph.D. at Ohio State in 1948. An active organic chemist his entire academic career, Wotiz's major contributions to history of chemistry center on his role in helping to establish the Center for History of Chemistry in Philadelphia and his organization of the European History of Chemistry Tour, which he has conducted since 1971.

Arnold Thackray (b. 1939), winner of the 1983 award, was born in England, where he read chemistry at Bristol University and worked as a chemical engineer before turning to the history of science (Ph.D. Cambridge). His interests lie in the historiography of science, and in understanding technology, medicine, and science as elements of modern culture. His interests in European intellectual history, the American chemical and chemical engineering community within a context of quantitative history and policy concerns, and the development of the history and sociology of science as a field of scholarly



John Wotiz

The winner of the 1984 award, Maurice Crosland (b. 1931), studied chemistry at the University of London, before turning to the history of science, receiving his Ph.D. in history of chemistry in 1959. In 1963 he was appointed lecturer in the history of science at the University of Leeds and in 1974 he became Professor of the History of Science at the University of Kent at Canterbury. He has served as honorary editor of the *British Journal for the History of Science*, as President of the British Society for the History of Science, and is a member of the International Academy of the History of Science. Besides numerous papers, he is author of *Historical Studies in the Language of Chemistry* (1962), *The Society of Arcueil* (1967), *Gay-Lussac, Scientist and Bourgeois* (1978), and *The Science of Matter* (1971).

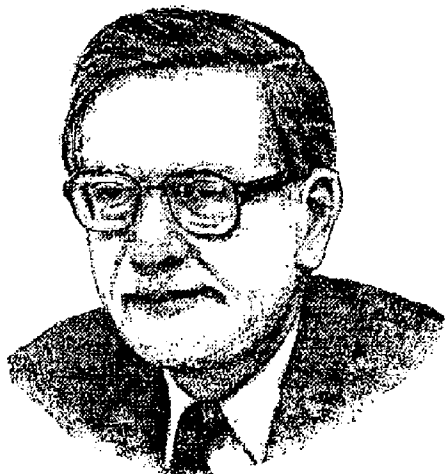


Cyril Stanley Smith

endeavor, have resulted in over 40 papers and six books, including *Atoms and Powers: An Essay on Newtonian Matter-Theory and the Development of Chemistry* (1970), *John Dalton: Critical Assessments of his Life and Science* (1972), *Gentlemen of Science: Early Years of the British Association of Science* (1981, with J. B. Morrell), and *Chemistry in America, 1876-1976: Historical Indicators* (1985, with J. L. Sturchio, P. T. Carroll, and R. F. Bud). He was the founding Chairman of the Department of History and Sociology of Science at the University of Pennsylvania (where he now holds the position of Joseph Priestley Professor), edited *Isis* from 1978 to 1985, and is currently editor of *Osiris*. Active in numerous professional societies, he was President of the Society for Social Studies of Science and is now the Treasurer of the American Council of Learned Societies. He has been the Director of the Beckman Center for the History of Chemistry since its inception in 1982.



Arnold Thackray



Maurice Crosland

Robert Multhauf (b. 1919), winner of the 1985 award, was born in Sioux Falls, South Dakota. After taking a B.S. degree in chemical technology, he worked for several years as a chemist and chemical engineer in industry and for the U.S. army. In 1948 he returned to school, eventually receiving an M.S. and Ph.D. in history from the University of California-Berkeley. Dr. Multhauf has served as Head Curator of the Department of Science and Technology of the U.S. National Museum, as Director of the Museum of History and Technology of the Smithsonian Institution, and as editor of *Isis*. His book-length contributions include *The Origins of Chemistry* (1967), *Neptune's Gift: A History of Common Salt* (1978) and *The History of Chemical Technology: An Annotated Bibliography* (1984).



Robert Multhauf

The 1986 award was given to Robert Anderson (b. 1944). Born in London and educated at Oxford as a physical chemist through the doctorate degree, Dr. Anderson became Assistant Keeper of the Department of Technology of the Royal Scottish Museum in Edinburgh in 1970 and Director in 1984. He has also served as Assistant Keeper and Keeper of the Department of Chemistry of the Science Museum of London and as Deputy Keeper of the Wellcome Museum of the History of Medicine. His contributions to the history of chemistry rest largely on his contributions to its preservation in the context of the science museum. Among his many books and catalogs, *The Playfair Collection and the Teaching of Chemistry at the University of Edinburgh* (1978) and his *A Bibliography of Joseph Black* (with G. Fyffe) are of interest to historians of chemistry.



Robert Anderson

The overall statistics for the third decade of the award show a continuation of the trends observed for the second decade, with the recipients becoming progressively younger and the number functioning as professional historians of science gradually increasing. Four of the recipients for this decade were over 70 when they received the award, whereas three were in their 40's. Although all of the recipients received degrees in either chemistry or chemical engineering through at least the B.S. level, over half functioned professionally as historians of science, rather than as chemists, for most of their careers.

Starting with the 1987 award to Allen Debus, short biographical sketches and portraits of the winners can be found in the *Divisional Newsletter* or in earlier issues of the *Bulletin*.

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