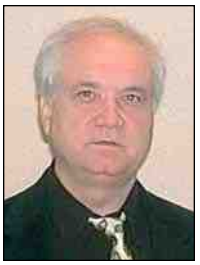

Advice & Counsel

Frank Altmayer, MSF, AESF Fellow
AESF Foundation Technical Education Director
Scientific Control Labs, Inc.
3158 Kolin Ave., Chicago, IL 60623-4889
E-mail: altmayer@sbcglobal.net

Industry Stalwarts: Arthur H. DuRose and Dr. Abner Brenner

Dear Readers:
2009 marks the 100th anniversary of AESF Foundation [formerly American Electroplaters & Surface Finishers Society (AESF) and previous to that American Electroplaters Society (AES) and previous to that the National Electroplaters Society (NES)].

In making a historical journey through the history of this magnificent organization, I have come across articles providing a rare glimpse into the backgrounds of some of the individuals in our industry that had a major impact on how things were done or why.

I will make an attempt at covering some of these individuals in the next few articles, using text previously printed in past issues of *Plating* or *Plating & Surface Finishing* magazine.

Readers are urged to submit names and information for inclusion in future articles.

These individuals will be covered in no particular intended order. In some cases, I am assuming, based on apparent age that the individuals are no longer with us. Forgive me and let me know if you are still out there.

I continue this series with:

Arthur H. DuRose

Mr. DuRose worked a large part of his career in product development for The Harshaw Chemical Company. He was born in Flint, Michigan in 1912 and received his early schooling in that city. He went to Graceland Junior College in Lamoni, Iowa, where he was President of the Engineers' Club and from which he graduated with high honors, receiving the cup awarded to the outstanding engineering student. Following graduation from Graceland, Mr. DuRose enrolled at Michigan State College. There he became interested in electro- and colloid chemistry under Dr. D. T. Ewing and was elected a member of Tau Beta Pi, the National honorary engineering society. He worked on two thesis problems - the manufacture of alcohol from sawdust and the properties of photovoltaic cells - and graduated in 1934 with a Bachelor of Science degree in Engineering.

Mr. DuRose's first employment was by Chevrolet-Flint on the tin plating of pistons and chromium plating of tools, dies and gauges. He then moved to Cincinnati to continue his studies with the aid of a graduate assistantship. His studies there and his thesis on electrolytic preparation of percarbonates led to a Master of Science degree in 1937.

Following a year at Chevrolet-Flint, Mr. DuRose joined The Harshaw Chemical Company of Cleveland. During World War II, he worked on secret Manhattan District projects, for which there are no details. During the latter part of the war he was associated with a War Metallurgy Committee for evaluating and stimulating the use of lead deposits, and this developed into an active interest in ASTM and AES, serving as chairman of ASTM Committee B-8 (thickness measurement) and AES Research Project Committee No. 7 (Methods for Testing Thickness of Electrodeposits). In addition to AES and ASTM, Mr. DuRose was a member of the American Chemical Society, The Electrochemical Society and the American Society for Quality Control. He also served as President of the Cleveland Branch.

Mr. DuRose held a number of patents on chemical manufacture, alloy and nickel plating, and wrote/presented numerous papers about leveling, buffing and impact/purification of nickel plating solutions. He also held several patents on nickel-iron and tin-lead alloy plating. His most "famous" invention was the development of leveling agents initially based upon coumarin, which revolutionized the decorative nickel plating industry. The process incorporating coumarin was called the "Perflow Process." It allowed for the deposition of smooth, easily buffed nickel, improving productivity on nickel-chromium plated objects such as automobile bumpers tremendously.

Mr. DuRose was the 1969 recipient of the AES Scientific Achievement Award, and delivered the 11th William Blum Memorial Lecture at the 57th Annual Convention in Montréal in 1970. His subject: "Contributions from U.S. Supply Houses to Plating Science and Technology."

He was married to his wife, Helen Doran, and had three children, Dick, Barbara and Betty.

Dr. Abner Brenner

Dr. Brenner was born in Kansas City, Mo., on August 5, 1908, and received his early schooling in that city.

Following studies at the University of Missouri, Columbia, Mo., from which he received his B.A. degree in 1929 and the University of Wisconsin, Madison, Wis., which granted him his M.S. degree in 1930, he entered government service with the National Bureau of Standards,

Washington, DC. Except for a period between 1933 and 1935, when he worked in the Bureau's branch laboratory in California, he was Chemist and Assistant Chief of the Electrodeposition Section, National Bureau of Standards. His continued studies, first at Johns Hopkins University, Baltimore, Md., 1931-1933, and later at the University of Maryland, College Park, Md., led to his Ph.D. degree from the latter institution, in 1939.

Dr. Brenner's many researches in electrodeposition cover a wide range of subjects: alloy deposition, cathode films, electroless plating and methods of measuring thickness of plated coatings, to mention only a few major topics. He also served as project director of Research Project No. 9 of the American Electroplaters' Society, which dealt with physical properties of electrodeposited metals, a field to which he contributed many papers. In 1963, he published the definitive two-volume *Electrodeposition of Alloys*, which today remains an indispensable resource.

Dr. Brenner's published reports, found mainly in the *Journal of Research of the National Bureau of Standards* and in the publications of the American Electroplaters' Society and the Electrochemical Society, in many cases have become standard references.

Dr. Brenner was a prolific inventor, particularly in the field of deposit quality measuring devices. His two most famous inventions were the Magne-Gage for thickness measurement and his Spiral Contractometer for stress measurement. Both of these devices are still in use to some degree today some 60+ years later.

Dr. Brenner's great store of humor which flavored the presentation of his papers made him a popular AES speaker. He also was an effective leader of the Baltimore-Washington Branch of the American Electroplaters' Society, serving in several capacities, including that of President.

Several honors were bestowed upon Dr. Brenner. They included membership in the honorary societies Phi Beta Kappa and Sigma Xi, two Proctor Awards of the American Electroplaters' Society, with G. Riddell in 1946 and with S. Senderoff in 1948 and the Award for Meritorious Service of the U. S. Department of Commerce, in 1948.

In 1961, he was named the recipient of the AES Scientific Achievement Award, and delivered the 4th William Blum Memorial Lecture at the 49th Annual Convention in Milwaukee the following year. His subject: "The Speed of Processes Involved in Electroplating: Movement of Solute, Attainment of the Steady State and Formation of Metal."

Dr. Brenner, along with Grace Riddell is credited with the invention and development of electroless nickel plating. The two researchers were investigating the possibility of electroplating nickel-phosphorus alloys using a formulation that included sodium hypophosphite as the source of the phosphorus. Following deposition of test panels, they discovered that their solution was plating at an efficiency far exceeding 100% (a violation of Faraday's Law). Upon further investigation, Brenner and Riddell found that a rectifier was not required for nickel-phosphorus deposition from this solution, and electroless plating was born.

More next month. ***P&SF***

AESF Foundation Research Program

The AESF Research Program began in 1919 when Dr. William Blum asked the Society to help fund research efforts of the National Bureau of Standards (now the National Institute of Science and Technology). This initial request paved the way for the expansion of the AESF Research Program in 1944 to support universities and colleges, industrial companies, and independent research centers and laboratories. This program will continue to expand and thrive under the direction of the AESF Foundation.

In the past, the AESF Research Program has awarded grants for the following projects:

- University of South Carolina, "Development of New Process for Plating Thin Films of Zn-Ni-P-X, etc."
- Pennsylvania State University, "Development of Environmentally Friendly Corrosion Prevention Deposit on Steel"
- University of Cincinnati, "Improved Silane Film Performance by Electrodeposition"
- McGill University, "Effect of Material Characteristics and Surface Processing Variables on Hydrogen Embrittlement of Steel Fasteners" (part of a 3-year research project)
- University of South Carolina, "Development of Ni Based High Wear Resistance Composite Coatings"

The AESF Foundation's goals are to encourage and support activities that help progress the science and technology of the surface finishing industry. Pertinent R&D activities, conducted or sponsored by the industry, universities and government agencies can provide new resources and the Foundation is seeking projects to fund that will help to achieve its goals.

To contribute to the AESF Foundation and the Research Program CLICK HERE.