

Biography ✓



ALEXANDER SILVERMAN

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## ALEXANDER SILVERMAN

Alexander Silverman was born on a rainy wash-day, Monday, May 2, 1881, to a dry-goods merchant, Philip Silverman, and his wife, Hannah Schamberg, who was constantly in the business with him. The father's father, Henry, was also a merchant. These two account for Alex's businesslike habits. The mother's father, Alexander Schamberg, was an accomplished violinist, and his mother's sister Nettie played and taught both violin and piano. So we account for Alex's musical interest.

The mother's other sister, Regina, was a teacher of German, which she taught to Alex and his two sisters; she, also, was instrumental in their learning French as children. Hence Alex's command of languages.

It was Aunt Regina who took Alex to William Jacob Holland, chancellor of the old Western University of Pennsylvania (now University of Pittsburgh) in the spring of 1897 to see if he could enter in the fall, though he had spent only one year in Central High School in Pittsburgh. Through special tutoring that summer, he gained admission, enrolling under Francis Clifford Phillips, an international authority on the chemistry of petroleum and natural gas.

Professor Phillips, whom Alex assisted in his senior year, had at times served as a consultant to some of the glass manufacturers in Pittsburgh. When Alex was graduated in 1902 with second honors in science, his professor sent him to the Macbeth-Evans Glass Company in Charleroi; only six other chemists were employed in the American glass industry at that time, so Alex was a "pioneer."

The first problem presented to Alex was the reproduction of alabaster glass; the process of its manufacture had been lost about 1880, although the glass had been made since around 1600. Opal glasses transmitted an orange or fiery light which made illumination with Edison carbon-filament lamps (before the day of the tungsten lamp) too yellow. George A. Macbeth had unearthed some old alabaster glass and had found that it was free from opalescence. He immediately realized its usefulness. As Alex states, "The analysis showed considerable alumina, so I used the hydrated oxide. The glass was horrible. It looked like curdled milk. Knowing that salt vaporized at high temperatures, I added it to the batch and, Eureka! alabaster was reborn. As far as I know, I was the first to introduce alumina as such into a glass batch. Perhaps I was also the first to use salt."

Later, Alex learned that salts dissolved in water, ionized, and precipitated colloids. By analogy, he advanced the theory of dissolved electrolytes acting similarly in glass and accounted for the influence of salt in alabaster melts. Alex also dug up analyses of old LeBlanc soda ash and of pearl ash and found chlorides and sulfates in all of these.

About 1880, the Semet-Solvay or ammonia-soda process for soda-ash manufacture replaced the old LeBlanc method, and the purification of pearl ash improved. Without the contaminating chlorides and sulfates, opal glasses

resulted and the art of making alabaster glass was lost. Alex rediscovered it and, in addition, made improvements and effected economies in silvering, for the Macbeth-Evans Glass Company made enormous quantities of hollow reflectors. At the end of about a year and a half, Alex, who had already received one raise, felt he might have another. When he asked Mr. Macbeth, he was dismissed. It has been said that the Company was "in the red" at the time when alabaster manufacture was revived by Alex, but that in the eight years which followed his dismissal they cleared a million dollars.

Having lost his position with nothing in view but less remunerative steelworks jobs, Alex wanted to desert chemistry for music, for he held a diploma as "teacher of violin," but his father dissuaded him by saying, "Perhaps you do not know enough chemistry. Go and study some more." Following this advice, Alex went to Cornell University for a year. In the fall of 1905, he was appointed instructor in chemistry at the University of Pittsburgh, where he has been teaching ever since.

In 1908, Alex was called into his first consulting service by the Gill Brothers Company of Steubenville, Ohio, which he served for many years. (It was also in 1908 that Alex and Elrose Reizenstein were married.) Alex's work at this Company led to the perfection of a brilliant type of selenium ruby glass for signal lenses. Later, in another consulting capacity, he developed a selenium amber for lead glasses which was the first on the American market and perhaps the first lead selenium amber ever produced. He has produced numerous new effects for his various clients and has served them constantly toward the perfection of their products and the development of unusual glasses to meet special specifications. His forte is the field of opal and alabaster glass, although his collection of small specimens of various glasses produced from time to time would, if properly assembled, yield practically a complete spectrum of color.

### Honors and Awards

In 1930, the University of Pittsburgh conferred on Alexander Silverman the honorary degree of Doctor of Science.

It was also in 1930 that Professor Silverman completed twenty-five years of service at the University of Pittsburgh. On that occasion, several hundred faculty members, alumni, and friends, among them leaders in the fields of chemistry and ceramics, attended the alumni anniversary dinner held in his honor. At this time, a portrait of Professor Silverman, painted by Ellis M. Silvette, was presented to the University. The portrait presentation address was made by the late William Jacob Holland, then director of the Carnegie Museum (and the chancellor of the University of Pittsburgh when Alexander Silverman was a student there).

In 1936, the honorary degree of Doctor of Science was conferred on Professor Silverman by Alfred University.

**Patents**

"Illuminator for Microscopes," U. S. 1,267,287, May 21, 1918; U. S. 1,311,185 and U. S. 1,311,186, July 29, 1919.

"Illuminator for Optical Instruments," U. S. 1,444,400, Feb. 6, 1923.

"Illuminator for Microscopes," Ger. 381,073, cl. 42h 14, Sept. 15, 1923; Ital. 168,105, Dec. 17, 1918; Fr. 489,304, Sept. 13, 1918; Brit. 125,187, April 9, 1919; Japan 68,576, June 14, 1926; Can. 185,283, July 2, 1918.

(With R. H. Johnson), "Improvement in Recording Device," U. S. 1,351,071, Aug. 31, 1920.

(With C. J. Engelder and Manuel Blumer), "Method of Making Catalysts," U. S. 1,909,133, May 16, 1933.

"Coloring Agents for Glass Batches and Method of Employing Same," U. S. 1,983,151, Dec. 4, 1934.

"Coloring Agents for Glass," Span. 138,962, Sept. 12, 1935; Holl. 40,742, April 16, 1937; Fr. 792,417, Dec. 31, 1935; Belg. 410,452, Aug. 31, 1935; Brit. 459,886, Jan. 18, 1937; Port. 18,355, July 17, 1935; Ger. 668,860, cl. 32b 2, July 18, 1935; Czech. 62,988, May 15, 1938.

**International Meetings and Foreign Lectures**

Professor Silverman is recognized internationally as an authority on the chemistry of glass. He has lectured or presented papers in Belgium, France, Spain, Italy, and Germany. He has also represented the United States at the following international meetings:

1930, Liège, Belgium. U. S. delegate and delegate of The American Ceramic Society to the International Meeting of Industrial Chemistry; also delegate of the National Research Council and National Academy of Sciences to the X Conference of the International Union of Chemistry.

1934, Madrid, Spain. U. S. delegate and delegate of

The American Ceramic Society to the IX International Congress of Chemistry; also councillor from the National Research Council and National Academy of Sciences to the XI Conference of the International Union of Chemistry.

1936, Lucerne, Switzerland. U. S. delegate of the National Academy of Sciences and National Research Council to the XII Conference of the International Union of Chemistry.

1938, Rome, Italy. U. S. delegate and delegate of The American Ceramic Society to the X International Congress of Chemistry; also councillor from the National Research Council and National Academy of Sciences to the XIII Conference of the International Union of Chemistry.

**Membership in Scientific Societies, Clubs, and Fraternities**

American Chemical Society, American Ceramic Society: Fellow; vice-president, 1931; Trustee, 1932; representative on Division of Chemistry and Chemical Technology, National Research Council, since 1939; Chairman, Committee on Honorary Membership since 1938; Chairman, Committee on Education, 1940; Electrochemical Society, American Association for Advancement of Science (Fellow), American Institute of Chemists (Fellow), American Association of University Professors, American Institute of Chemical Engineers, Pennsylvania Academy of Science, Society of Glass Technology (England) (Fellow), Society for Protection of Science and Learning (England), Institute of Ceramic Engineers, Association Scientifique et Technique de Ceramique (France), Pennsylvania Chemical Society, Chemists' Club of New York City, Authors' Club of Pittsburgh, Sigma Xi, Phi Lambda Upsilon, Omicron Delta Kappa, and Pi Lambda Phi (Honorary Member).

