

General Papers and Tutorial, Fall National ACS Meeting 2024

Art and inspiration: Edouard Benedictus and the invention of laminated safety glass

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The invention of laminated safety glass is attributed to the French chemist and artist Edouard Benedictus (1878-1930), who developed the innovation after inspiration struck in the form of a fortuitous laboratory accident. As a result, he went on to develop what became known as Triplex safety glass. Licensed first to the English Triplex Safety Glass Company in 1912, with later US production carried out by Libbey-Owens-Ford and Du Pont, Triplex glass was first applied to automobile applications in 1929 by the Ford Motor Co, after which British applications followed in 1932. While the story of his fateful lab accident can be found in a wide variety of sources, the details often change with each telling, becoming more legend than historical event. A summary of our current knowledge of Benedictus will be presented, along with a historical analysis of the lab incident as communicated by Benedictus himself. The development of Triplex glass and how it related to other similar efforts of the time will also be discussed.

Solving Mysteries with Chemistry: History of Forensic Chemistry Symposium, Fall National ACS Meeting 2024

Drug analysis in the early years of the Pure Food and Drug Act of 1906

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The passage of the Pure Food and Drug Act of 1906 marked the beginning of the earliest federal drug regulation in the United States. In addition to prohibiting misbranding and adulteration, the new law listed ten drugs that were required to appear on product labels. These included alcohol, morphine, opium, heroin, and cocaine, among others. Guidelines published soon after the passage of the Act indicated that analyses to monitor drug contents would follow those specified by the Association of Official Agricultural Chemists and the U.S. Pharmacopoeia. Enforcement of the new drug regulations was the task of the Bureau of Chemistry's Drug Laboratory, headed by Lyman F. Kebler, who was known for his exacting analytical methodology and leadership in setting standards of chemical analysis. These early forensic analyses were mainly aimed at uncovering fraud and fakery. One area of concern was patent medicine headache remedies because of concerns about the harmful effects of the early synthetic analgesics acetanilide, phenacetin, and antipyrine (phenazone). Acetanilide was on the list of drugs that were required to appear on the product label under the new law and phenacetin was a related drug considered to be a derivative of acetanilide. Also of interest in the early years was caffeine; although it was not one of the drugs required to appear on product labels, it drew attention because of its habit-forming nature and widespread use in popular beverages. This led to a lawsuit brought against Coca Cola, which was an important milestone in the enforcement of the Pure Food and Drug Act. These early experiences in drug analysis and regulation were key to the development of high-quality analytical methods and chemical standards that would become cornerstones of forensic analysis of the later 20th century.