Evolution of Lab at NeoCon 2024

At NeoCon 2024, Formaspace is presenting the Future of Lab. Take a look at the evolution of laboratory science in the 19th and 20th Centuries.

At NeoCon, Formaspace will introduce an all-new expanded RGX furniture line that offers a unified, coherent design language that is shared seamlessly across laboratory (off-carpet) and office/hospitality zones (on-carpet) within the same organization.

AUSTIN, TEXAS, UNITED STATES, June 6, 2024 /EINPresswire.com/ -- At NeoCon 2024, Formaspace is presenting the Future of Lab.

To better understand the laboratory of the future, let's take a retrospective look at the evolution of laboratory science in the 19th and 20th Centuries.

American And European Laboratory Design Before World War One

American ingenuity in the 19th and early 20th Centuries brought us revolutionary advances in communication (the telegraph network, telephone, phonograph, motion pictures), transportation (the intercontinental railway, first airplane, affordable automobiles), and electric appliances (the incandescent light bulb, vacuum cleaner) just to name a few.

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> *Formaspace*

The famous American laboratories of the period were typically privately funded and often located in rustic buildings or converted garages or horse stables. Most were typically constructed of wood or brick, with exposed brick or wood beadboard wall surfaces, large wooden sash windows, and rough-sawn floorboards equipped with basic free-standing wood furniture.

Interestingly, many of the seminal experiments of the period relied on what we might today call a "makerspace" type laboratory; lab scientists regularly used machine tools to craft unique custom equipment for their experiments, for example, using glassblowing techniques to create

individual vacuum vessels.

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An example is the Cavendish Laboratory at Cambridge University in the UK, where in 1917, New Zealander Ernest Rutherford was the first to split the atom and identify the neutron. Despite its prominent role in physics discoveries, the Cavendish Lab remained a hodge-podge of cramped lab quarters and building additions typical of urban Victorian architecture in Britain.

In contrast, Germany constructed numerous modern, purpose-built scientific research institutions, including The Prussian Academy of Sciences and Humboldt University in Berlin. The goal was to advance the field of German science, to train young scientists, and to recruit the world's best talent, including Albert Einstein, whom physicist Max Planck personally recruited in 1914 from Switzerland to join the Kaiser Wilhelm Gesellschaft (KWG) institute (shown above) in Dahlem, a wealthy, leafy enclave of Berlin.

Some German laboratories were built according to the Kirkbride Plan (a 19th-century American innovation in hospital and mental asylum design) that incorporated long, narrow 'batwing' corridors spreading out from the center to improve crossflow ventilation and access to natural light.

This focus on ventilation and natural light would become a laboratory design theme once again in the 21st Century.

The German investment in science led to a big economic payoff, particularly in the field of organic chemistry. By the end of the 19th century, Germany was an industrial powerhouse, profiting from innovations introduced by BASF (color dyes), Bayer (phenacetin and later aspirin and heroin), Fardverke Hoxt (analgesics Antipyrene and Amidopyrene, the first synthetically produced drugs), Hooks (novocaine), and Merck (the alkaloids oxycodone and morphine).

Several successful German companies established American operations, including the pharmaceutical manufacturer Merck (1891 in Boston and Rahway, New Jersey) and the chemical producer Rohm and Haas (1917 in Philadelphia). Both companies were nationalized by the US government during World War One, which helped kick-start today's domestic chemical and pharmaceutical industry hubs in Boston, New Jersey, and Philadelphia.

Laboratory Design In The Interwar Period

World War One led to the death of millions and toppled the European Ancien Régime in the process, ushering in today's modern world. The Spanish Influenza pandemic (1918-1920), which killed over half a million Americans here at home and as many as 60 million worldwide, aggravated the wartime suffering.

The Spanish Flu pandemic also greatly influenced architecture and design after the war, leading to the adoption of a new “Sanitary” design aesthetic. A growing awareness of germ theory spurred a rapid shift away from Victorian design elements (characterized by porous wood paneling, decorative wallpaper, knickknack collectibles, multi-layered fabric curtains, and Persian carpets), all of which were suspected of harboring dreaded influenza germs.

In their place, buildings adopted features such as gleaming white porcelain tiled floors (often with matching white tiled walls), stainless steel worksurfaces, nickel-plated (later chrome) plumbing fixtures, seamless porcelain or stone sinks, bright bare bulb electric lighting, and generous use of white paint to highlight any unwanted dirt and germs.

The new “fresh air” sanitary movement promoted the idea of keeping windows open even during which, which necessitated larger steam boilers in colder climates to compensate for the loss of heat during winters.

Modern laboratory designs from the interwar period adopted these new sanitary features, such as easy-to-clean seamless linoleum floors and built-in wood cabinets (typically painted in a sanitary white), though metal casework cabinets with gleaming white porcelain surfaces and black trim were also common. Worksurfaces were now often constructed of chemical-resistant materials, such as stainless steel, or the ubiquitous fire-resistant black countertops, which in those days were made of asbestos cement (phased out by the early 1980s due to health concerns). Unlike today’s modern open lab layouts, floorplans of the era were typically very compartmentalized, with small individual rooms dedicated to single functions, separated by doors.

Much of American laboratory research focused on innovations in manufacturing (primarily consumer goods), including the mass production of automobiles, airplanes, light bulbs, radio vacuum tubes, shatterproof Pyrex® glass cookware, and early cathode ray tubes. Chemical companies introduced new materials, including silicone, neoprene, advanced polymers, nylon, and Teflon during the interwar years.

Read more...

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