



# AMERICAN INSTITUTE OF THE HISTORY OF PHARMACY

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This slide presentation was compiled and produced by Robert McCarthy, Ph.D., Professor and Dean *Emeritus* at the University of Connecticut School of Pharmacy for his class “The History of American Pharmacy.” Prof. McCarthy created this version of the slide talk for his class in the Spring of 2016.

This slide presentation was downloaded from the *Teaching the History of Pharmacy* section of the website of the American Institute of the History of Pharmacy (<https://aihp.org/historical-resources/teaching-the-history-of-pharmacy/>) where a copy of the syllabus (.pdf) for Prof. McCarthy’s class is also available.

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# American Pharmaceutical Industry

PHRX 4001W-002

The History of American Pharmacy

Spring 2016

# Early Pharmaceutical Industry

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- The American Pharmaceutical industry was really born out of necessity during the American Revolution, when manufactured drugs were unavailable from Great Britain.
- Andrew Craigie, a Boston apothecary, was appointed to serve the Continental Army as Apothecary General; he developed a plan to establish a laboratory and storehouse for the production of drugs for medicine chests at Carlisle, Pennsylvania, the first large-scale manufacturing of drugs in the United States.

# Early Pharmaceutical Industry

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- After the American Revolution. Philadelphia became the center of the fledgling American Pharmaceutical Industry.
- 1786: The Marshall brothers began manufacturing ammonium chloride and Glauber's salt (decahydrate of sodium sulfate; used as a laxative).

# Early Pharmaceutical Industry

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- Although there were many patent drug makers prior to the 1850s, there were only a few American manufacturers producing drugs that pharmacists used in medication compounding.
- 1818: Farr & Kunzi (later named Powers & Weightman)
  - One of only two U.S. manufacturers to produce quinine sulfate in 1822, only two years after it was isolated from cinchona bark by two pharmacists in Paris.

# Early Pharmaceutical Industry

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- 1822: Rosengarten & Sons
  - Also produced quinine sulfate
  - Manufactured morphine salts in 1832
  - Produced mercurials and strychnine in 1843
  - Manufactured codeine in 1836
- 1905: Powers & Weightman merged with Rosengarten & Sons
- 1927: Merck & Company acquired the Powers-Weightman-Rosengarten Company

# Early Pharmaceutical Industry

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- 1855: Frederick Stearns began manufacturing packaged medicinals at his Detroit pharmacy.
- 1856: William Warner (PA) began producing packaged medicines; later, he established a manufacturing plant that became the most successful manufacturer of sugar-coated tablets.

# Early Pharmaceutical Industry

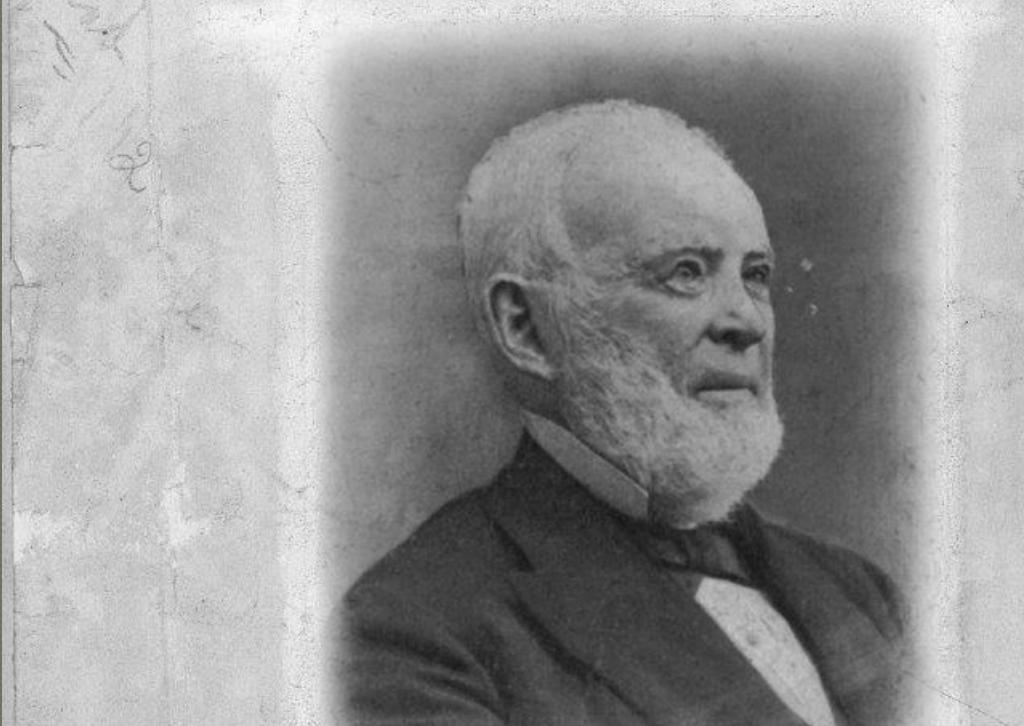
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- Edward R. Squibb, who had apprenticed in a pharmacy, served in the U.S. Navy as assistant director of its pharmaceutical lab; after leaving the Navy, in 1858, he established E.R. Squibb, which began by producing “chemically pure ether and chloroform.”

## OBITUARY.

### *DR. EDWARD R. SQUIBB.*

A MAN whose service to medicine was unique has just died at the age of eighty-one years. Dr. Edward R. Squibb was a graduate of the Jef-



DR. EDWARD R. SQUIBB.

Source: American Pharmacists Association

# Early Pharmaceutical Industry

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- There were concerns in the 1850s about the growth of pharmaceutical manufacturers, who were taking preparing and dispensing away from community pharmacies; also, concerns that these manufacturers were not pharmacists and therefore not qualified to be manufacturing pharmaceuticals.

# Early Pharmaceutical Industry

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- The American pharmaceutical industry changed significantly during the Civil War as a result of the demands of the military.
- Some of the tensions between APhA, representing practicing pharmacists, and the pharmaceutical industry began to abate; in fact, several industry leaders assumed leadership roles within APhA.

# Patent Medicines

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- First began to appear in the 19<sup>th</sup> century
- Became popular as an alternative to “heroic” measures employed by physicians
- Were widely available in all types of stores
- Many were of little benefit and contained only alcohol, water, and flavoring
- Sales were greatly enhanced by advertising and personal testimonies

# Early Companies

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- The names of the company's founder gave credibility to the products
- “Ethical” pharmaceutical company
- Sharp & Dohme (1860; later MS&D)
- Burroughs Wellcome & Company (1863)
- Eli Lilly & Company (1876)
- Lloyd (1870; later part of Hoechst Pharmaceuticals)

# Early Companies

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- McKesson & Robbins (1853; later a drug wholesaler)
- Parke, Davis & Company (1866)
- W.H. Schieffelin & Company (1865)
- Seabury & Johnson (1885)
- Smith, Kline, and Company (1875)
- John Wyeth & Brother (1860)

A PARTIAL VIEW OF THE FINISHING DEPARTMENT



PARKE, DAVIS & CO., DETROIT, MICH.

Source: American Pharmacists Association

## Pharmaceutical Company Founding Dates

Frederick Stearns & Company	1855
William R. Warner & Co.	1856
E. R. Squibb & Sons	1858
Reed & Carnrick	1860
Wyeth	1860
Sharp & Dohme	1860
Burroughs Bros Manufacturing Company	1863
Parke, Davis & Company	1866
Lloyd Brothers	1870
Chilcott Laboratories	1875
Eli Lilly & Company	1876
Lambert Company	1884
Norwich Eaton	1885
Johnson & Johnson	1885
Upjohn Company	1886
Armour Pharmaceuticals	1886
Bristol-Myers	1887
Merck (U.S.)	1887
Abbott Laboratories	1888
C. D. Searle	1888
Becton Dickinson	1897

Source: American Institute of the History  
of Pharmacy

# Research & Development

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- ◉ Until the early 20<sup>th</sup> century, pharmaceutical companies were primarily manufacturers, not focused on research & development.
- ◉ WWI led many American manufacturers, including Lilly, Merck, Parke-Davis, & Squibb to develop their own research facilities, though most cutting edge research was still conducted in Europe.

# Research & Development

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- After WWI, companies began early research efforts, primarily, at the start, to validate quality, purity, and assay.
- The advent of WWII led the to first partnership among government, corporate, and academic institutions, which laid the foundation for what became known as “big pharma.”

## Research & Development

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- With the advent of WWII, international supplies of some products were not available, such as quinine, requiring American manufacturers to develop a source of these drugs.
- Manufacturers worked with the U.S. government in the development of drugs and biologicals needed for the war effort.

# Research & Development

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- ◉ Penicillin was one of the most important drugs developed during the war; ten U.S. pharmaceutical companies teamed in research & development efforts.
- ◉ The immediate post-war period saw the development of additional antibiotics and the first antihistamine (Benadryl by Parke-Davis).

# Pharmaceutical Industry in the Post WWII Era

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- 1960-1980: A period of industry maturation; oral contraceptives, nonsteroidals, anti-inflammatories, cephalosporins, anxiolytics developed
- Post 1980: globalization, biotechnology & “blockbuster” drugs
- Recent years: Absence of targets

# Pharmaceutical Industry in the Post WWII Era

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## ● Biotechnology

- New companies: Genentec (1976), Biogen (1978), Amgen (1980), Immunex (1981)
- Some companies brought their products from discovery to marketing, others licensed existing pharmaceutical companies to bring their products to market.

# Pharmaceutical Industry in the Post WWII Era

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## ● Mergers & Acquisitions

- Have occurred for decades, but have accelerated significantly in recent years
  - GlaxoSmithKline—previously Glaxo, Beecham, Smith, Kline, and French, Burroughs Wellcome, SmithKline Beecham, Glaxo Wellcome
- Most mergers were horizontal, but the 1990s saw the acquisition of PBMs (vertical; Lilly acquired PCS); most of the mergers did not last long and the pharmaceutical companies divested within a few short years.

# Pharmaceutical Industry Associations

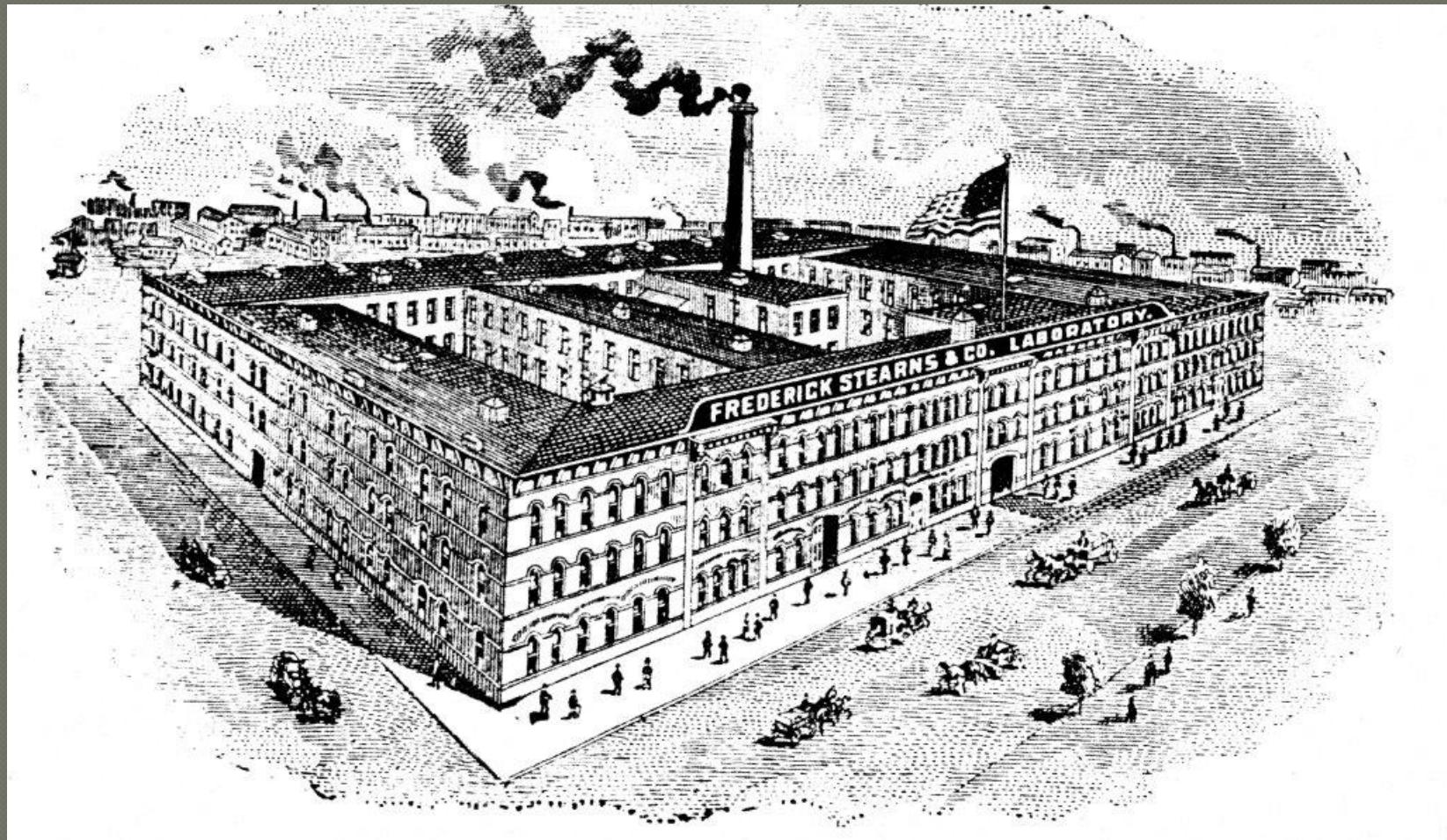
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- 1907: American Association of Pharmaceutical Chemists (1920, name changed to the American Pharmaceutical Manufacturers Association)
- 1912: National Association of Manufacturers of Medicinal Products (1917, name changed to American Drug Manufacturers Association)
- 1958: These associations merged to become the Pharmaceutical Manufacturers Association (now called the Pharmaceutical Research and Manufacturers of America or PhRMA)
- “Big Pharma”

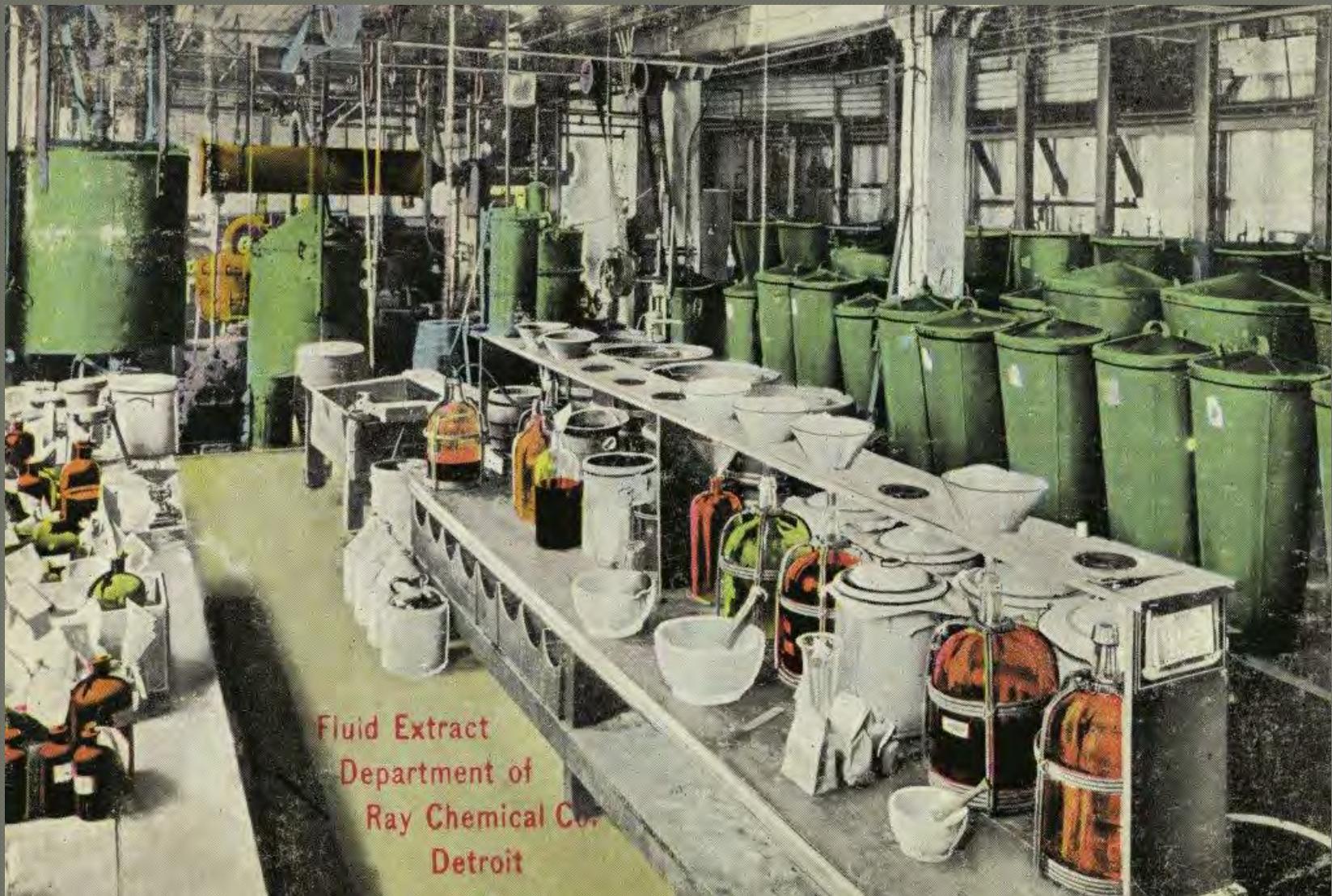
# Pharmaceutical Industry Associations

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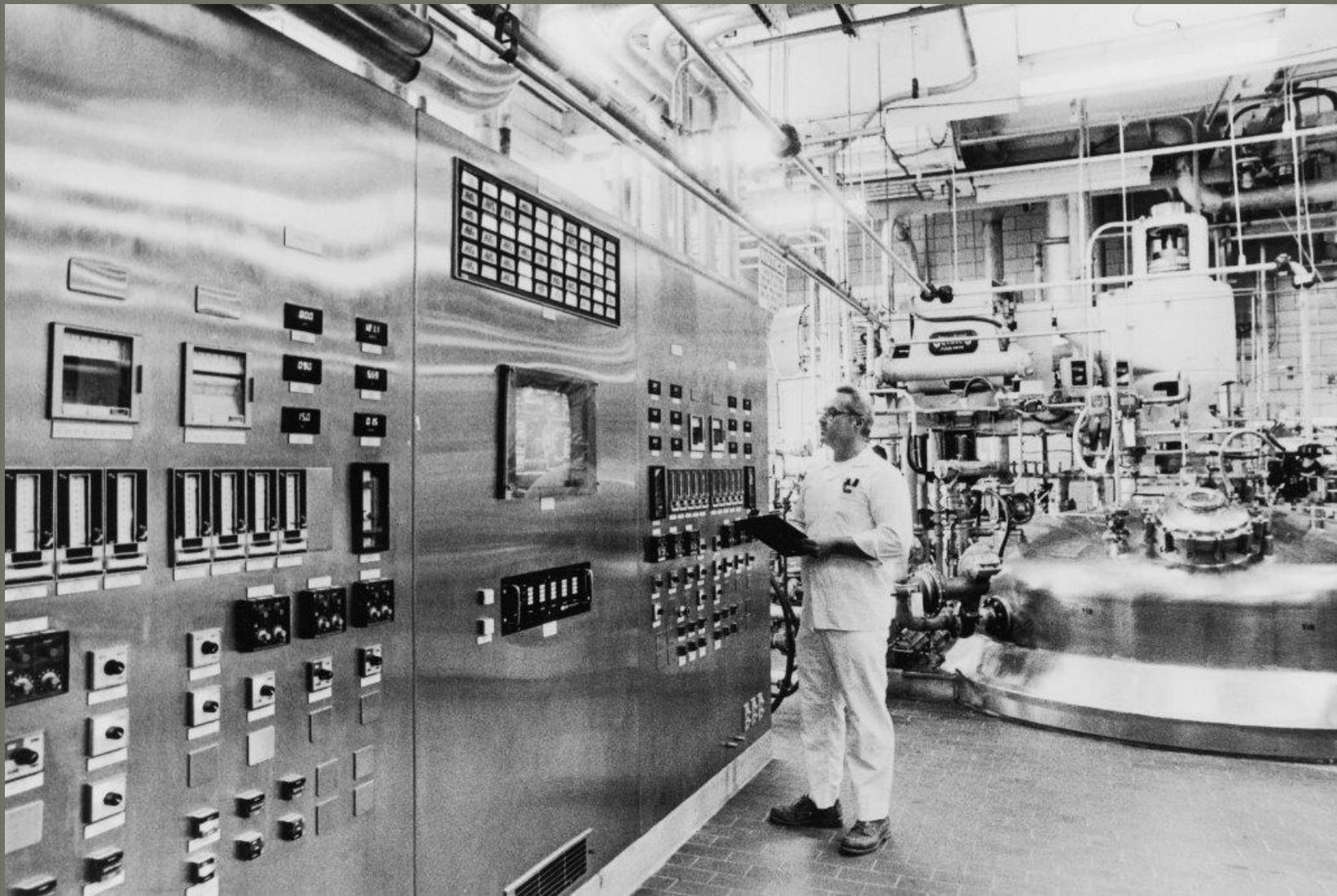
- 1946: Parenteral Drug Association
- 1955: National Association of Pharmaceutical Manufacturers; 1981: Generic Pharmaceutical Industry Association; these merged in 2001 to become the Generic Pharmaceutical Association.
- 1953: National Pharmaceutical Council—formed to do public relations for major research-oriented pharmaceutical manufacturers.



Source: American Pharmacists  
Association



Source: American Pharmacists Association



Source: American Pharmacists Association



**Source: American Pharmacists Association**