

Quality in the 19th and 20th Centuries

- **19th Century Products** – Atkin's Tonic contains quinine, Hepatic contains mercury, Warburg's Tincture was anti-fever and contained quinine.

Quinine used to be the first-choice drug for treating malaria, which is a bad fever caused by the bite of a mosquito that has the disease. Quinine pills were huge sellers because in the 1800s, almost everyone in Michigan had malaria. That was because the state was one giant wetland back then. It was not until most of the wetlands were drained for farming that malaria was no longer seen in Michigan.

A lot of mercury-containing medications were made back then. We now know that taking mercury is a terrible idea.

- **Quality in the 19th Century** – No testing of materials, active ingredients and finished products was performed. None.

Since there used to be no clinical testing and no FDA to regulate products in the 1800s, companies could sell anything they wanted. It didn't matter if a product worked or not, or what the side effects were. There were no rules at all.

Oh, and there were no batch/lot numbers on product labels.

- **USP and NF** – USP started in 1820. NF started in 1888.
- **The Start of Quality** – Art Crooks set up a small lab to appraise incoming materials, particularly active ingredients, which were called crude drugs back then. He filtered out dirt and impurities, and by adjusting the pH he could help products have a longer shelf life.

By 1906, Art Crooks and Fred Staley were performing some simple analytical testing of final products.

In 1910 a bacteriologist by the name of Will Perkins was hired to create and run the first biological tests on Upjohn fluid products.

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- **Fred Heyl** - In 1913, Fred Heyl was hired as the company's first scientist. He was the person that pulled together a company-wide program for product quality. Not only that, he ensured that new products were based on science. Two of the earliest products that had science behind them were Citrocarbonate, which was an antacid, and Phenolax, which was a mild laxative. Fred was given the prestigious Upjohn Award in 1938.
- **1914-1915 Quality Report** – This 25-page report was discovered in the 1980s when some walls were being torn out in Building 41.
- **New Manufacturing Plant** – Building at this site started in 1946. It fully opened in 1951. The total cost was \$31M and 1750 employees moved into it.
- **Modeling Building 41 Production** – There are 1.5 million square feet of space in Building 41. That is 33 acres. It was critical to ensure that all production lines and processes fitted into it. A model of the first floor of Building 41 was built, using over 5,000 small models of equipment and people so they could lay out every production process in miniature. Individual small models were made from metal, wood or plastic.
- **Pneumatic Tube System** – There were many processes in Building 41 that used paper we needed to have a pneumatic tube system. This is the same as you would use at the drive-through at your bank. The difference is that that there were 3 miles of pneumatic tubing here. This photo shows the central transfer station that used to be on the B41 mezzanine. There were 42 tubes coming into this station. The carriers were made of plastic and leather. They traveled at 20mph.
- **Dangerous Ingredients** – On the list of ingredients in this Hepatic tonic are arsenic, mercury and strychnine, which are two toxic metals and a deadly

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poison. We know now that this product was a terrible idea. Why would anybody take these pills? A homeopathic principle back then was that a very small quantity of poison will really stimulate your immune system. Fortunately for us, that principle has long been debunked. This particular Upjohn product was made from 1920 to 1929.

At one time Upjohn had over 40 products that contained mercury. Some were made in Building 41. They were all toxic. Fortunately, by the mid-1960's there were no mercury products.

One of the programs at the FDA was to eliminate all the harmful ingredients and products that had no therapeutic effect. Surprisingly, it took until the 1980s to complete this program.

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