

# HEROIN® and ASPIRIN®

## The Connection! & The Collection! - Part I

By Cecil Munsey  
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Between 1897 and 1914 Heinrich Dreser (1860-1924) a chemist, worked for Friedrich Bayer & Company, a dye factory in Wuppertal, Germany that was to eventually become the world's first pharmaceutical giant.

As head of Bayer's pharmacological laboratory Heinrich Dreser was responsible for the launch of two drugs that have shaped the way we live: aspirin, the world's most successful *legal* drug; and heroin, the most successful *illegal* drug.

The stories of aspirin and heroin are intertwined through Dreser: HEROIN® was brought to market in November 1898 by Bayer and was registered as a trademark



Figure 1

in various countries, most lucratively in the United States. ASPIRIN® [acetylsalicylic acid (ASA)] was first introduced in 1899 as a loose powder in a small paper-labeled generic bottle with a cork closure [Figure 1]. The drug was sold under the Bayer trademark "Aspirin."

The German Company named the pain reliever after the medicine's active ingredient – "a" from acetyl, "spir" from the spires plants (which yields salicin) and "in," a common suffix for medications.

### Heinrich Dreser

Born in 1860, in Darmstadt, Germany the son of a physics professor, Heinrich Dreser [Figure 2] showed promise as a chemist from an early age. After receiving his doctorate from Heidelberg University, he worked in various laboratories before becoming a professor at Bonn University in 1893. Four years later he joined the Bayer Company (originally a dye producing firm), where he was placed in charge of testing the efficacy and safety of new drugs.

Dreser was admired for his thorough, methodical approach, and his innovations in testing. The credit for originating new

products for Bayer belonged, strictly speaking, to the researcher Arthur Eichengruen and chemist Felix Hoffman, but Dreser had the power within the company to decide which new products would be developed. He had also negotiated a special deal with the company that guaranteed him a share of profits from products he launched.

### I. History of Opium, Morphine, and Heroin®

Use of opium dates back further than there is history. Archeological digs in Switzerland have found opium poppy seeds and pods, dating from the Neolithic age – the "New Stone Age," a period running from 5500 BC to 8000 B.C. This makes opium the oldest known drug.

As long ago as 3400 B.C., the opium poppy was cultivated in lower Mesopotamia (now western Iraq). The Sumerians called it *Hul Gil*, the "joy plant." The Sumerians (best remembered as the culture that invented writing) had knowledge of poppy cultivation and passed it to the Assyrians, the Babylonians, and ultimately, the Egyptians.

By 1300 B.C. the Egyptians were cultivating opium thebaicum, named for their capital city of Thebes. From Thebes, the Egyptians traded opium all over the Middle East and into Europe. Throughout that period, opium's effects were considered magical or mystical.

Some eight hundred years later, the Greek physician, Hippocrates [Figure 3], dismissed the idea that opium was "magical." Instead, he noted its effectiveness as a painkiller and a styptic (a drug used to staunch bleeding).

Around 330 B.C. Alexander the Great [Figure 4] introduced opium to the people of Persia and India, where the poppies later came to be grown in vast quantities. By A.D. 400,

opium thebaicum was first introduced to China by Arab traders.

During the Middle Ages in Europe, when anything from the East was linked to the Devil, opium went unmentioned and unused in Europe. However, the surge of seafaring and exploring re-introduced the drug in the late 15<sup>th</sup> and early 16<sup>th</sup> centuries. Portuguese sailors are thought to have been the first to smoke opium, around 1500. As with any drug, smoking has an instantaneous effect, contrasted with eating or drinking the drug.

The early scientist, Paracelsus [Figure 5] first compounded laudanum, an



Figure 5

alcoholic solution of opium, about 1527. The preparation was widely used up through the 19<sup>th</sup> century to treat a variety of disorders. The addictive property of

opium (or laudanum) was not yet understood. A leading brand of laudanum, Sydenham's Laudanum, was introduced in England in 1680.

Purely recreational use of opium gained some prevalence in the early 1600s in Persia and India, where it was either eaten or drunk in various mixtures. The heavy traffic of trade and exploration by sea continued to spread the traffic of opium around the world during this period. Opium was traded everywhere from China to



Figure 6

England. In fact, in 1606 ships chartered by Elizabeth I [Figure 6] were instructed to purchase the finest Indian opium and transport it back to England.

The eighteenth century saw greater incursions of the



Figure 2

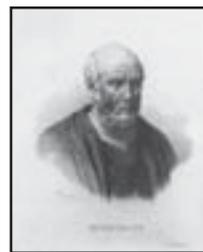


Figure 3



Figure 4



Figure 7



Figure 8



Figure 9



Figure 10

opium trade into China, along with the practice of smoking the drug in [collectible] pipes [Figures 7, 8, 9, and 10]. The British undertook creating a demand for opium in China in order to create a trade balance for all of the tea from China they required. The opium problem became widespread enough to inspire a Chinese ban, in 1729, of opium for anything other than licensed medical use. Beginning in the second half of the eighteenth century, the British East India Company dominated the opium trade out of Calcutta to China.

The amount of opium sold into China was approximately two thousand chests of opium per year by 1767, and by 1858, that number had risen to 70,000 chests of opium. By the end of the century, the British East India Company had a complete monopoly on the Indian opium trade. In 1799, all opium trade was banned in China, but by then millions of Chinese were addicted. In some coastal provinces, 90% of Chinese adults were opium addicts by the mid-1830s.

Not to be outdone, the British Levant Company began, in 1800, to purchase nearly half of all of the opium coming out of Smyrna, Turkey for export to Europe and the United States.

In 1803, Friedrich Sertuerner [Figure 11] of Germany synthesized morphine (principium somniferum) from opium for the first time, and discovered the active ingredient of the opium poppy, which Carl Linnaeus (Swedish botanist, physician,



Figure 11

zoologist), [Figure 12] had first classified in 1753 as papaver somniferum. The

discovery of morphine was considered a milestone. It was from opium, morphine (named after the Greek god of dreams, Morpheus), a derivative, was developed as a painkiller in approximately 1810. By the mid-1850s, morphine was available in the U. S.



Figure 12

The medical community declared that opium had been “tamed.” Morphine’s reliability, long-lasting effects, and safety were extolled. In fact, despite its potential for addiction, morphine is still the premier drug used for extreme pain in hospitals and for end-of-life care.

Following the 1799 ban on opium in China, opium smuggling began to be a crowded industry, with several well-known Americans entering the trade. Charles Cabot and John Cushing, of Boston, worked separately to amass opium-smuggling wealth. John Jacob Astor of New York City smuggled ten tons of opium into China under his American Fur Company banner, but later confined his opium selling to the English trade.

English artists, writers, and other luminaries were famously experimenting with and becoming addicted to opium in the early 19<sup>th</sup> century. By 1830, British use of opium for both medicinal and recreational purposes was at an all time high. 22,000 pounds of opium were imported from Turkey and India that year.

Laudanum continued to be popular, and was actually cheaper than beer or wine. Patent medicines (non-prescription “cures”) of all descriptions, and opium preparations such as Dover’s powder, were readily available.

Dover’s powder, first developed by the English physician and buccaneer Thomas Dover (1660-1742) [Figure 13], contained opium, salt peter, tartar, licorice and ipecacuanha (South American shrub). In addition to producing his opium-containing “sweating powder,” Dover was the assistant captain aboard the privateer Duke that rescued Alexander Selkirk (Robinson Crusoe) from one of the Juan Fernandez Islands in 1709.



Figure 13

The incidence of opium dependence grew steadily in England, Europe, and the

United States during the first half of the 19<sup>th</sup> century by means of these treatments. Working-class medicinal use of products containing opium as sedatives for children was especially common in England. Those using opium for recreational purposes seem to have been primarily English literary and creative personalities, such as Thomas de Quincey, Byron, Shelley, Barrett-Browning, Coleridge, and Dickens.

The First Opium War between China and England began in 1839 as a result of a Chinese ban on opium traffic, and an order for all foreign traders to surrender their opium. In 1841, the British defeated the Chinese and took possession of Hong Kong as part of their bounty – it was returned to China 156 years later in 1997. The Second Opium War of 1856 finally made the importation of opium into China legal again, against the wishes of the Chinese government.

Dr. Alexander Wood of Edinburgh discovered the technique of injecting morphine with a syringe in 1843. The effects of injected morphine were instantaneous and three times more potent than oral administration.

During the civil war in the U. S., the numbers of people exposed to morphine in the course of being treated for their war-related injuries skyrocketed. Tens of thousands of northern and confederate soldier became morphine addicts.



Figure 14

From the late 1800s to the early 1900s the reputable drug companies of the day began manufacturing over the counter drug kits [Figure 14]. These kits contained a glass barreled hypodermic needle and vials of opiates (morphine or heroin) and/or cocaine packaged neatly in attractive engraved cases [Figures 15 and



Figure 15

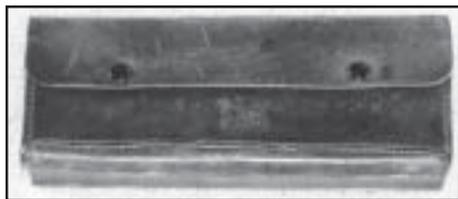


Figure 16

16].

Heroin (diacetylmorphine) was first synthesized from morphine in 1874 by English researcher, C. R. Wright. The drug went unstudied and unused until 1895 when Heinrich Dreser, working for the Bayer Company of Germany, found that diluting morphine with acetyls produced a drug without the common morphine side effects. Heroin was considered a highly effective medication for coughs, chest pains, and the discomfort of tuberculosis. This effect was important because pneumonia and tuberculosis were the two leading causes of death at that time – prior to the discovery of antibiotics. Heroin was touted to doctors as stronger than morphine and safer than codeine. It was thought to be nonaddictive, and even thought to be a cure for morphine addiction or for relieving morphine withdrawal symptoms. Because of its supposed great potential, Dreser derived his name for the new drug from the German word for “heroic.”

After decades of promoting the consumption of opium, Britain in 1878 passed the Opium Act to reduce opium consumption in China, India, and Burma. Under the new regulation, the selling of opium was restricted to registered Chinese opium smokers and Indian opium eaters.

In 1886, the British acquired Burma's northeast region, the Shan State. Production and smuggling of opium along the lower region of Burma thrived despite British efforts to maintain a strict monopoly on the opium trade. To this day, the Shan state of Burma (now known as Myanmar) is one of the world's leading centers of opium production.

During the early years of the 20<sup>th</sup> century, the Chinese leadership worked in a variety of ways to stop the flow of opium into their country. In 1910, after 150 years of failed attempts to rid the country of opium, the Chinese were finally able to convince the British to dismantle the India-China opium trade.

Despite the 1890 U.S. law-enforcement legislation on narcotics, which imposed a tax on opium and morphine, consumption of the drugs, along with heroin, grew

rapidly at the end of the 19<sup>th</sup> and beginning of the 20<sup>th</sup> centuries. Various medical journals of the time wrote of heroin as a morphine step-down cure. Other physicians argued, on the other hand, that their patients suffered from heroin withdrawal symptoms as severe as morphine withdrawal.

Heroin, morphine and other opiate derivatives were unregulated and sold legally in the U. S. until 1920 when Congress recognized the danger of these drugs and enacted the Dangerous Drug Act. By the time this law was passed, however, it was already too late. A market for heroin in the U. S. had been created. By 1925 there were an estimated 200,000 heroin addicts in the country.

In the mid to late 1800s, opium was a fairly popular drug. Opium dens were scattered throughout what we know today as the “wild west.” The opium influx during this period was due in large part to the drug (mostly in collectible glass bottles, [Figures 17, 18, and 19]), being brought into the country via Chinese immigrants who came here to work on the railroads.

Accurate American history tells us that famous names of the period like “Wild Bill” Hickok [Figure 20] and Kit Carson [Figure 21] actually frequented opium dens more often than saloons. The stereotyped picture we have of the cowhand belly up to the bar drinking whiskey straight after a long hard ride on the dusty trail is only part of the story of the old west. Oftentimes the cowhand was not belly up to a bar at all. He was in a prone position in the dim candle-lit room smoking opium in the company of an oriental prostitute. It was not uncommon for some of these cowhands to spend several days and nights at a time in these dens in a constant dream-state, eventually becoming physically addicted to the drug.

In 1905, the U.S. Congress passed a law banning opium. The following year, Congress passed the famous Pure Food and Drug Act, which required pharmaceutical companies to label their patent medicines with their complete contents. As a result, the availability of opiate drugs in the U.S. significantly declined. In 1909, Congress banned the import of opium entirely. In 1914, Congress passed the Harrison Narcotics Act, which aimed to curb drug abuse and addiction. It required doctors, pharmacists, and others who legally prescribed narcotics (cocaine and heroin) to register and pay a tax.

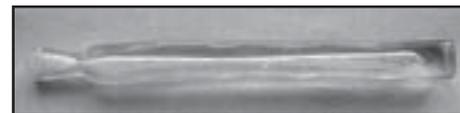


Figure 17

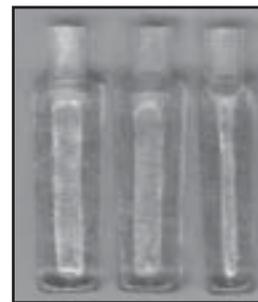


Figure 18



Figure 19



Figure 20



Figure 21

In 1923, the U.S. Treasury Department's Narcotics Division (the first federal drug agency) banned all legal narcotics sales, under the Dangerous Drug Act of 1920, forcing addicts to buy from illegal street dealers. Soon, a thriving black market opened up in New York's Chinatown and other places.

### Discovery of Heroin®

Like aspirin, the drug that Bayer launched under the trademark Heroin® in 1898 was not an original discovery. Diacetylmorphine, a white, odourless, bitter, crystalline powder derived from morphine, as previously indicated, had been invented in 1874 by an English chemist, C. R. Wright.

But Dreser was the first to see its commercial potential. Scientists had been looking for some time for a non-addictive substitute for morphine, then widely used as a painkiller and in the treatment of respiratory diseases. If diacetylmorphine could be shown to be such a product, Bayer – and Dreser – would hit the jackpot.

Diacetylmorphine was first synthesised in the Bayer laboratory in 1897 – by Felix Hoffmann, two weeks after he first synthesised ASA (aspirin). The work had been initiated by Dreser.

By early 1898 Dreser was testing heroin on animals, on some Bayer's workers, and on himself. The workers loved it; some

saying it made them feel “heroisch” (heroic). The diacetylmorphine (heroin) was four times stronger than morphine. Creating the brand name “Heroin®” was easy.

In November 1898. Dreser presented the drug to the Congress of German Naturalists and Physicians, claiming it was ten times more effective as a cough medicine than codeine but had only a tenth of its toxic effects. It was also more effective than morphine as a painkiller. *“It was safe. It wasn’t habit-forming.”* In short, Dreser claimed it was a wonder drug.

What we forget now is that heroin met what was then a desperate need – not for a painkiller, but for a cough remedy. As already stated, tuberculosis and pneumonia were then the leading causes of death, and even routine coughs and colds could be severely incapacitating. Heroin, which both depresses respiration and, as a sedative, gives a restorative night’s sleep, seemed a godsend at the turn of the 20<sup>th</sup> century.

The initial response to its launch was overwhelmingly positive. Dreser had already written about the drug in medical journals and studies had endorsed his view that heroin could be effective in treating asthma, bronchitis and tuberculosis. As would later be done with Aspirin®, flyers and free samples were sent out by the thousands to physicians in Europe and the U.S. (For the information of collectors, the label on the samples showed a lion and a globe.)

By 1899, Bayer was producing about a ton of heroin a year, and exporting the drug to 23 countries. The country where it really took off was the U.S., where there was already a large population of morphine addicts, a craze for patent medicines, and a relatively lax regulatory framework. Manufacturers of cough syrup were soon lacing their products with Bayer heroin. There were heroin pastilles, heroin cough lozenges, heroin tablets, water-soluble salts and a heroin elixir in a glycerine solution. (The containers for these various products are what hundreds of collectors seek today.)

### Habit-forming Nostrums

The following preparations were some of those that contained habit-forming drugs other than alcohol. They were such drugs as opium and its derivatives, morphine, codeine, and heroin; cocaine; cannabis indica; et cetera (all containers of these products are very collectible).

Agnew’s Powder (cocaine)

Anglo-American Catarrh Powder (cocaine)

Dr. Seth Arnold’s Cough Syrup (morphine)

Boschee German Syrup (opium)

Brou’s Injection (morphine)

Carney Common Sense Cure (morphine)

Children’s Comfort (morphine)

Coca-Cola (cocaine)

Coco-Bola (cocaine)

Colwell’s Egyptian Oil (opium)

Crossman’s Specific Mixture (opium)

Dr. Drake’s German Croup Remedy (opium)

Dr. Fahrney’s Teething Syrup (morphine)

Godfrey Cordial (opium)

Gowan Pneumonia Cure (opium)

Habitan (morphine)

Harrison Opium Elixir (opium)

Hooper Anodyne – the infant’s friend (morphine)

Dr. James’ Soothing Syrup (heroin)

Jain’s Expectorant (opium)

Maugre Compound Extract Benne (morphine)

Mexican Oil (opium)

Dr. McMunn’s Elixir of Opium (opium)

– [Figure 22]



Figure 22

Dr. Might’s Tethyan Teething Powders (opium)

One Day Cough Cure (cannabis indica and morphine)

Petit’s Eye Salve (morphine)

Pierces Smart Weed (opium)

Piso’s Cure (cannabis indica)

Rectal Cholera Cure (opium)

Shiloh’s Cure (heroin)

Taylor Sweet Gum & Mullein Compound (morphine)

Touselly’s Sneezeless Snuff (morphine)

Tubercine (opium)

Tucker Asthma Cure (cocaine)

Victor Lung Syrup (opium)

Watkin’s Anodyne (heroin)

Mrs. Winslow’s Soothing Syrup (morphine)

Wright’s Instant Relief (opium)

Bayer never advertised heroin to the public but the publicity material sent to

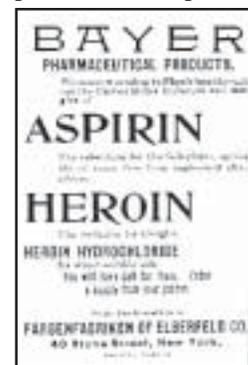


Figure 23

physicians was unambiguous [Figure 23]. One flyer described the product this way: *“Heroin: the Sedative for Cough . . . order a supply from your jobber.”*

*“It possesses many advantages over morphine,”*

wrote the Boston Medical and Surgical Journal in 1900. *“It’s not hypnotic, and there’s no danger of acquiring a habit.”*

But worrying rumors were surfacing. As early as 1899, researchers began to report patients developing “tolerance” to the drug, while a German researcher denounced it as *“an extremely dangerous poison.”* By 1902, when heroin sales were accounting for roughly five percent of Bayer’s net profits, French and American researchers were reporting cases of “heroinism” and addiction.

Between 1899 and 1905, at least 180 clinical works on heroin were published around the world, and most were favorable, if cautious. In 1906 the American Medical Association approved heroin for medical use, though with strong reservations about a “habit” that was “readily formed.”

In 1913, Bayer decided to stop making heroin. There had been an explosion of heroin-related admissions at New York and Philadelphia hospitals, and in East Coast cities a substantial population of recreational users was reported –some supported their habits by collecting and selling scrap metal, hence the name “junkie.” Heroin had, and has, a number of street names: It is sometimes called smack, skag, dope, H, junk, hammer, slow, gear, harry, piss, shit and horse. Prohibition seemed inevitable and, sure enough, the

next year the use of heroin without prescription was outlawed in the U.S. (A court ruling in 1919 also determined it illegal for doctors to prescribe it to addicts.)

Had heroin been Dreser's only pet project, this disappointment could have spelled career disaster. Luckily, although his first "baby" was showing signs of turning into a monster, he had belatedly adopted another: aspirin. Researcher Arthur Eichengruen, refusing to accept Dreser's rejection of ASA (acetylsalicylic acid), had continued to investigate it and to lobby for its development. Eventually, Dreser recognizing which way the wind was blowing, tested ASA on himself and finally published an enthusiastic scientific paper recommending it, particularly for the treatment of rheumatism – but calculatingly omitting to mention the contributions of Eichengruen and chemist Felix Hoffmann. In February 1899, the Brand name "Aspirin®" was registered, and in June, was launched by Bayer.

Like heroin, aspirin more or less sold itself. As a painkiller without undesirable side effects, it was unique. By the end of 1899 it was being used all over Europe and the U.S., and by the time the heroin bubble burst, aspirin had more than filled the gap. The Bayer company was on its way to becoming an industrial giant.

Hoffman and Eichengruen do not seem to have received any special compensation for their efforts. For Dreser, though, the rewards were spectacular.

The next issue of *Bottles and Extras* will conclude this article with Part II, which will begin with "The History of Aspirin."

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