

ELIXIR FERRI, QUININAE ET STRYCHNINAE PHOSPHATUM—  
RAPID FORMULA.

THOMAS LATHAM.

Soluble Ferric Phosphate.....	17.500 gm.
Quinine Alkaloid .....	8.750 gm.
Strychnine Alkaloid .....	0.275 gm.
Alcohol .....	60.000 cc.
Boiling Water .....	60.000 cc.
Aromatic Elixir to make.....	1,000.000 cc.

Dissolve the strychnine in 20 cc. of the alcohol contained in a round Berlin dish of 250 cc. capacity by boiling briskly, using a rather small Bunsen flame in order to prevent the alcohol catching fire. Be sure that the strychnine is thoroughly dissolved, and make up the volume of the alcohol lost in boiling, then add the remainder of the 60 cc. and lastly the quinine. This latter quickly dissolves with a little heat. Add the Alkaloidal solution quickly (it also must measure completely 65 cc.) to 800 cc. of aromatic elixir, and shake a little.

Raise the 60 cc. of water to boiling, being careful, if the same dish is used, to clean it from the last traces of the alkaloids with a little alcohol.

Dissolve the Ferric Phosphate in the boiling water and add the solution to 125 cc. of aromatic elixir. Add the iron solution and this latter part of the elixir, mingled suddenly, to the 800 cc. alkaloid solution, and add enough aromatic elixir to make 1000 cc. Let stand a few hours. It will scarcely need filtering.

There is no doubt that this is a much better formula than the U. S. P. Its rapidity and simplicity leave nothing to be desired.

MICROSCOPICAL ANALYSIS OF ASPIRIN AND ACETYL SALICYLIC  
ACID.\*

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Aspirin (Bayer) of Farbenfabriken von Elberfeld Company, is the copyright name of acetyl salicylic acid prepared by the process granted under the patent. Salol, the patent rights of which have run out, was replaced by Aspirin, which is supposed to be a great improvement on the older compound in that it has no deleterious action on the heart. Aspirin is widely advertised and used today as a remedy for colds, grippe, etc. During the past few months there has been much discussion concerning aspirin, it being claimed by its importers that the substitution of acetyl salicylic acid (Heyden) was a very common practice. The importers have, in fact, prosecuted and secured the conviction of one or two men. It has been reported more than once that very often a person accused of substituting, did so innocently, as he was dispensing what he thought and what he believed to be true aspirin (Bayer).

The origin of some of these samples could be questioned, they not having been procured from reliable sources. Substitution is a practice condemned by honest

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pharmacists, and that means the larger percentage of the members of the pharmaceutical profession. Pharmacists are men of right principles and high ideals, and they feel it more keenly than any one outside the profession, when one of their number is proven to be dishonest. A man cannot receive his college diploma and his State Board of Pharmacy license unless he is of good moral character, and no one will question that the colleges and State Boards of Pharmacy enforce this condition. Show the average pharmacist the right and the wrong way, and he will invariably choose the right way. If he makes mistakes, as we all do at

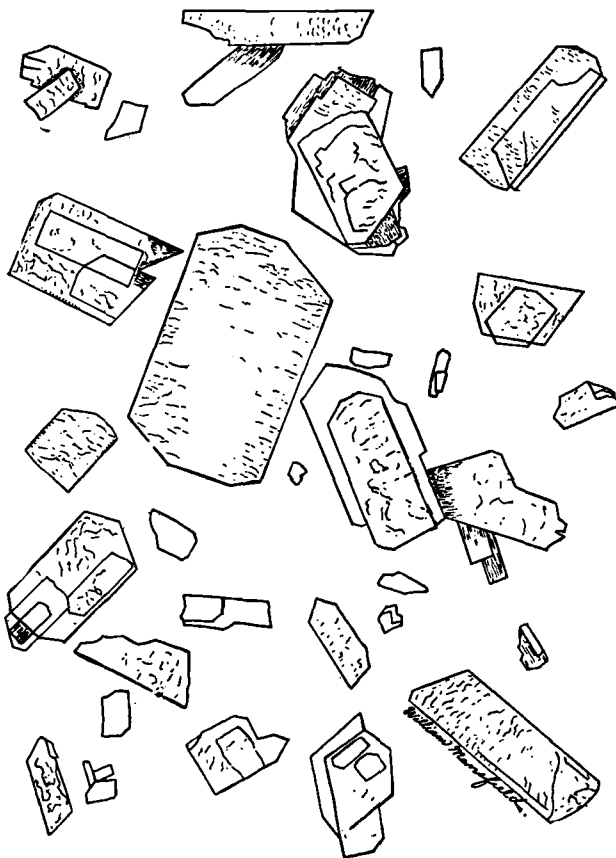


Fig. 1.—Aspirin (Bayer).

times, it is unknowingly. In several cases where acetyl salicylic acid was dispensed for aspirin, the druggist believed that aspirin was put in the prescription.

It has been generally understood that there is no known method of distinguishing Aspirin (Bayer) from acetyl salicylic acid (Heyden). After very careful investigation it seems proven that there is no chemical means of distinguishing between these two compounds. With these facts in mind, I began to study the two chemicals in question, in order to ascertain if it were not possible to differentiate between them, by means of the compound microscope. After a very careful study of several specimens of large crystals and fine powders of aspirin and acetyl salicylic acid, I found that there was a decided difference in the microscopic

structure of the two compounds. The charts which were made from authentic samples will bear out my statement. In order to be perfectly certain of the practicability of this method of analysis, samples marked a, b, c, etc., were examined, the source of which being unknown to the examiner. The result of such examinations showed in every case the true source of the powder, i. e., whether Aspirin (Bayer) or acetyl salicylic acid (Heyden).

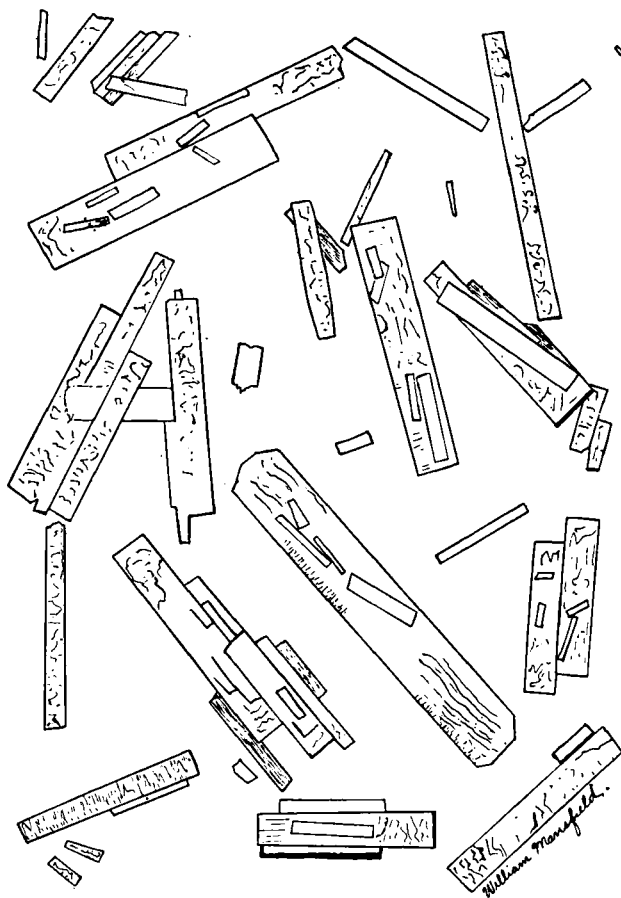


Fig. 2.—Acetyl Salicylic Acid (Heyden).

In making this test, simply add a small quantity of the crystals or powder to a clean slide, add a drop of water, mix and cover with a cover glass.

True Aspirin (Bayer) under the microscope shows numerous thin, broad crystals, two or more of which are often superimposed, lying parallel or crossing at various angles; the ends are either blunt or two or three angled; broad, irregular pieces are seen throughout the field, and many small, irregular fragments of larger crystals.

Acetyl salicylic acid (Heyden) under the microscope shows elongated, thick, narrow, rod-shaped crystals with blunt ends, occurring singly or in groups of two or more, which are frequently superimposed and usually lie parallel and in prac-

tically every group there will be crystals of variable size, some so small that they are scarcely visible under the high power. Among the perfect crystals are numerous broken fragments of large and small crystals, retaining, however, the characteristics of the larger crystals.

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## THE CHEMISTRY OF ASPIRIN OR ACETYLSALICYLIC ACID.<sup>1</sup>

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The flowers of *Spiraea Ulmaria L.*, Meadow Sweet, or Queen of the Meadow, which were formerly official in the French Codex, 1884, and which as *Flos Spiraeae* are still official in the fourth edition of the Swiss Pharmacopoeia, contain methyl salicylate, and used to be the source of salicylic acid, which was isolated, from the flowers, by Löwig in 1839.

*Acidum Spiricum* is even today a synonym for salicylic acid, and *Spirin*, the active principle of *Spiraea*, denotes the same.

The prefix "A" in Aspirin stands for "Acetyl" and the meaning of the coined word "Aspirin" is consequently "*Acetylsalicylic Acid*."

The author cannot help but admit that the short and euphonious word "Aspirin" is coined in a very clever and scientific way.

That this name is very valuable as a trademark can be appreciated. The word Aspirin has been registered as a trademark in Germany as Warenzeichen No. 36,433, in Austria, Wortmarke No. 1899/399, and in the United States as Trademark No. 32,805.

The owners of this trademark are the manufacturers *Farbenfabriken vorm. (formerly) Friedr. Bayer & Co., Elberfeld, Germany*, and in the United States, *The Farbenfabriken of Elberfeld Co., New York City*.

In 1853 *Gerhardt*<sup>2</sup> was the first to prepare this chemical from acetyl chloride and sodium salicylate, and named same "Anhydrous Salicylic-Acetic Acid (wasserfreie Salicylsäure—Essigsäure.) Although he did not give any further details of the constitution of the new substance, he was of the opinion that it was an anhydride of the two acids. In 1859 *von Gilm*<sup>3</sup> reported the discovery of a crystalline substance from chloracetyl and salicylic acid, and named the same "Acetylated Salicylic Acid" (acetylierte Salicylsäure).

In 1869 *Kraut*<sup>4</sup> determined the constitution of the chemical and named it "Acetylsalicylic Acid" (Acetylosalicylsäure).

On December 22, 1898, Newton took out an English patent on the preparation of acetylsalicylic acid. In 1900 Hoffman, of the *Farbenfabriken Elberfeld* obtained a patent "for a medicinal body whose trade name is aspirin, a product of coaltar, otherwise known as acetylsalicylic acid."

Hoffman discovered a waterless process by which a pure chemical was obtained. Although impure acetylsalicylic acid had been known long ago, Hoff-

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<sup>1</sup> Reprinted from the *Practical Druggist*, Dec., 1912.

<sup>2</sup> Gerhardt: *Untersuchungen über die wasserfreien Säuren*. *Ann-der Chemie* 87, 162 (1853).

<sup>3</sup> von Gilm: *Acetyl-derivate der Phloretin-und Salicylsäuren*. *Ibid* 112, 180 (1859).

<sup>4</sup> Kraut: *Über Salicylverbindungen*. *Ibid* 150, 9 (1869).