

A History of Blaud's Pills*

By *M. L. Neuroth*† and *C. O. Lee*‡

Pills of ferrous carbonate were introduced into medicine in 1831 in France. The inventor of the formula, so far as we know, was Dr. Blaud, head physician of the Hospital of Beaucaire, Gard. He was a corresponding member of the Academie Royale de Medicine and reported his product to the journal. It seems that the formula was well received and much praised.

In September (1831) Cottereau, reporting in the *Bulletin Generale de Therapeutique*, stated that a provincial medical man had some time previously communicated the composition of certain pills which he had found efficacious in cases of chlorosis to the Academie Royale de Medicine.

Cottereau went on to say that a pharmacist by the name of Guillard had made pills presumably similar to those of Blaud. The formula for them was as follows:

Subcarbonate of Potassium	℥ii
Crystals of Iron Sulfate well powdered	℥ii

These ingredients were made into 48 pills which were silver coated. Licorice, marsh-mallow or gum arabic were used as excipients.

Early in 1832 Blaud protested the report of Cottereau stating that the latter's formula was not identical with his own which was as follows:

℞ Sulfate of Iron, finely powdered	℥i
Carbonate of Potassium finely powdered	℥i

These salts were made into a mass, using mucilage of tragacanth and powdered licorice as excipients, and divided into 96 pills.

It is evident that Blaud was the provincial medical man concerning whom Cottereau had made reference. In a letter to the *Bulletin Generale de Therapeutique* (2)

Blaud later claimed that the composition of *Pilules Antichlorotique* was his invention. A translation of his letter from the French is as follows:

"It is to me that the composition of the antichlorotic pills belongs, (*i. e.*, the composition is my composition, my work, my formula) the formula of which M. Cottereau has given on page 290 of your excellent journal.

This formula does not at all conform to that which I have communicated to the Academy; the dose of the medicaments which compose it are there in quantity a half less than in mine. I hold that a remedy so precious, which has never failed in my hands and which I consider as a specific in chlorotic affections, may be used in suitable doses to obtain a complete success, I hasten to communicate to you the mode of preparation which I have always used.

℞ Sulfate of Iron, in fine powder,	one ounce
Sub-carbonate of Potash, in fine powder,	one ounce

Mix intimately in a mortar and add tragacanth mucilage a sufficient quantity. Make a pilular mass by adding the proper amount of licorice powder, and divide into ninety-six pills. On triturating the mixture during about a half hour, there results a mass consistent enough to be divided into pills. Licorice powder is used only to keep the pills from adhering together.

The dose of the pills is not more perfectly indicated in the formula of M. Cottereau. One ought to take them as follows: the first three days one in the morning fasting, and a second in the evening on going to bed; the three following days one adds a third, which is taken in the afternoon; the seventh, eighth, and ninth days one takes two morning and evening; the tenth, eleventh, and twelfth days, two in the morning, two afternoon, and two in the evening; the three following days, three morning and evening; and thereafter nine per day until a perfect cure. I do not believe it necessary to take an infusion of buds of northern spruce or any other auxiliary medicament." Blaud.

The truth about Blaud's Pills is discussed editorially in the *Pharmaceutical Journal* (3) of 1906. The editor stated that "some marvelously inaccurate information" had been published about the original formula for Blaud's Pills in a German Medical paper. It does not appear, however, that there was any question as to Blaud's priority concerning the formula. There were, it appears, discrepancies as to the formula and the time of publication.

Boudet (4) in 1841 reported Simonin's modified procedure for the manufacture of

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† Instructor in Pharmacy, Ohio Northern University, Ada, Ohio.

‡ Professor of Pharmacy, Purdue University, Lafayette, Indiana.

Blaud's Pills. This involved the use of honey which apparently produced a mass of a dark green color and good consistency. It was recognized at this time that saccharine substances prevented the oxidation of iron. No further modification of Blaud's Pills formula was made until the Codex Medicamentarius of 1866 appeared (5).

VALLET'S MASS

In connection with Blaud's Pills it might be well to suggest that the original formula for Vallet's Mass was reported to the Royal Academy of Medicine in 1837 and published in the *Journal de Pharmacie* in 1838 (5). It was contended that the mass was less apt to change with age than Blaud's Pills. Blaud took exception to this suggestion.

The original formula for Vallet's pill mass was as follows:

Sulfate of iron crystals, recently prepared according to the method of Bousdorff	500 Gm.
Carbonate of soda, pure	588 Gm.
White honey, very pure	306 Gm.
Syrup	q. s.

This formula somewhat modified was made official in the Codex of 1866 and through its subsequent revisions under varying titles. The formula is official in the 6th edition (1937) of the Codex Medicamentarius Gallicus as *Pilules de Carbonate Ferreux*. The synonym is *Pilules Dites de Vallet*. Inasmuch as the latest issue of the Codex has retained the Vallet's pill mass formula and omitted the Blaud's Pills formula one is led to conclude that perhaps there was something to the argument set forth more than a hundred years ago that Vallet's mass was more stable than Blaud's Pills. However, the Blaud's Pills formula is still official in the following pharmacopœias recently revised.

Deutsches Arzneibuch VI (1926)
British Pharmacopœia (1932)
Pharmacopœia Danica VIII (1933)
U. S. Pharmacopœia XI (1936)

This fact would indicate some differences of opinion concerning these two ferrous carbonate formulas.

COMPOUND PILLS OF IRON IN THE UNITED STATES PHARMACOPŒIA

Compound Pills of Iron appeared in the U. S. Pharmacopœia of 1830, Philadelphia edition. The formula was as follows:

Take of Myrrh, in powder, two drachms;
Carbonate of Soda
Sulphate of Iron, each, a drachm;
Syrup, a sufficient quantity.

The ingredients were formed into a mass and divided into 80 pills. It seems reasonable that ferrous carbonate would have been formed.

A formula of like nature also appeared in the U. S. Pharmacopœia of 1830, New York edition. It bore the title Compound Pills of Iron, synonym Griffith's Pills. The only difference between this formula and the one given above was that sugar replaced the syrup.

The U. S. Pharmacopœia II (1840 retained this formula making use of syrup instead of sugar as a massing agent. It was official in the U. S. Pharmacopœias III (1850), IV (1860), V (1870) and VI (1880) unchanged except that variations in the amounts of the constituents were made from time to time. No changes in the ratios of each were made. The synonym, Griffith's Pills, was not retained after 1840.

PILLS OF FERROUS CARBONATE

Pills of Carbonate of Iron were recorded in the U. S. Pharmacopœia II (1840). The formula was as follows:

Take of Sulfate of Iron, four ounces;
Carbonate of Soda, five ounces;
Clarified Honey, two ounces and a half;
Syrup
Boiling water, each a sufficient quantity.

Directions were given for preparing a mass of pilular consistence, but nothing was said about the number of pills to be made.

The U. S. Pharmacopœia III (1850) retained the formula increasing the amounts of the ingredients to twice those of the above formula. The U. S. Pharmacopœia IV (1860) varied the proportions of the constituents considerably from the original formula. This same formula appeared in the U. S. Pharmacopœia V (1870) without

change, but was not retained in the U. S. Pharmacopœia VI (1880).

BLAUD'S PILLS OFFICIAL IN THE U. S. PHARMACOPŒIA

The U. S. Pharmacopœia VII (1890) introduced Pills of Ferrous Carbonate similar to Blaud's Pills formula. Other synonyms were Ferruginous Pills and Chalybeate Pills. The formula was as follows:

Ferrous Sulphate, in clear crystals	16 Gm.
Potassium Carbonate	8 Gm.
Sugar	4 Gm.
Tragacanth in fine powder	1 Gm.
Althaea in No. 60 powder	1 Gm.
Glycerin	
Water, each a sufficient quantity to make a hundred pills.	

The details for making these pills was given with the statement that they should be freshly prepared when wanted.

This same formula was official in the U. S. Pharmacopœia VIII (1900), but the synonyms were not retained. However, the U. S. Pharmacopœia IX (1910) retained the previous formula and its three earlier synonyms. The substitution of monohydrated sodium carbonate for the potassium carbonate was ordered in the formula. This was a return, in part at least, to the Vallet's pill mass idea which has been discussed earlier in this paper. An assay procedure was introduced for the first time.

No significant changes appeared in this formula in the U. S. Pharmacopœias X (1920) and XI (1930). However, there is a note in the latter which permits these pills to be made by other methods if desired.

It is interesting that the U. S. Pharmacopœia VI (1880) was without a ferrous carbonate formula either of the Blaud's Pills or the Vallet's pill mass type. It is likewise of interest to note that prior to 1890 the ferrous carbonate formulas which were official in the U. S. Pharmacopœias were of the Vallet's pill mass kind and after that date they were all of the Blaud's Pills type.

UNOFFICIAL FERROUS CARBONATE FORMULAS

It seems that pills of ferrous carbonate have been a popular medicine for about a hundred years, but the ideal formula for the product has not been proposed as yet. The

fact that ferrous carbonate masses are usually unstable has doubtless stimulated many workers to study the problem. As a consequence the literature is replete with formulas essentially alike, varying only in slight details.

In 1871 Maisch (6) presented a Blaud type of formula. He suggested that the hygroscopic effect of the potassium salt could be remedied by substituting sodium bicarbonate for it. Chipman (7) two years later discussed the use of honey and sugar in retarding the oxidation of iron in Blaud's Pills. In 1879 Pitschke (8) published a formula which, he claimed, would remain soft and green for a long time. It contained magnesium carbonate, glycerin and grape sugar as excipients. Another writer stated that a metallic luster could be given to pills by rolling them upon a hard board in coarsely powdered graphite moistened with a little alcohol.

Deupser (9) proposed the use of sodium borate in a formula. He claimed that it remained green for a long time and did not harden rapidly. Thompson (10) in 1887 proposed castor oil as one of the excipients.

During these years when our American pharmacists were suggesting many formulas for pills of ferrous carbonate, British pharmacists were also busy. Among those who contributed discussions upon the subject in the *Pharmaceutical Journal* were, Ince, Martindale, and others. Maben devised a formula for *Pilula Ferri* which was published in the British College of Physicians Formulary. It was made official in the 1890 additions to the British Pharmacopœia of 1885. Blaud's Pills was the synonym.

In 1899 Miehle (11) suggested a formula for pills containing equal parts of potassium carbonate and sodium bicarbonate. Dunning (12) later published a formula which contained glucose as one of the chief excipients. He maintained that this mass remained plastic for weeks.

After experimenting with various formulas for Blaud's Pills, Lowry (13) concluded that the bicarbonates are better than the carbonates and that sodium is more satisfactory than potassium for a good mass. He proposed a formula containing sodium

bicarbonate. Heat was used in the procedure and ether was one of the excipients.

In 1930 Lang (14) made use of exsiccated sodium carbonate in a formula and used dextrin and kaolin, glycerin, and water as the excipients. He claimed that his mass did not oxidize or harden with age. In spite of such a claim as this Witts (15) says that the ideal preparation of iron still awaits discovery.

From a résumé of the subject one becomes convinced that many hours of labor have been expended by a long list of workers in an effort to perfect an ideal mass of ferrous carbonate. The problem is still an intriguing one.

It is of interest to note that the formulas for Blaud's Pills in the pharmacopœias of the United States, Great Britain, France and Germany have not been altered greatly since 1890. Not much has been written about the problem since 1900. However, it seems that there is a revival of interest in it at the present. The results of our recent work and observations will appear in another paper.

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"If you have knowledge, let others light their candles on it"—Margaret Fuller

Book Reviews

"*Cushny's Pharmacology and Therapeutics*," by EDMUNDS and GUNN. 852 pages. Lea & Febiger, 1940. Price, \$6.50.

When a book has passed through twelve editions and has enjoyed the wide acceptance of this text in both medical and pharmacy schools for forty-one years, little can be said in comment on it. The changes in the present edition over the previous one are mainly in bringing the subject matter up-to-date, and in the inclusion of newer remedies. Among these is sulfanilamide and related compounds where an excellent job of correlation has been done in a difficult field. The temptation to introduce into this section material with unproved but fascinating implications must have been great. This has been avoided and consequently the student is properly prepared for future more controversial aspects of this field. The outstanding characteristic of this edition, as well as those which have immediately preceded it, seems to be a careful and intentional attempt to make this text useful to the student. There is probably no subject in the medical-pharmaceutical curriculum which lends itself to organization with such difficulty. Drugs often have many points of action and are used for so many different therapeutic purposes that the author of a textbook is confronted with the difficult task of classification and presentation in a logical form. The original author and his revisers have given evidence of awareness of this problem and have consciously set out to solve it in so far as our present knowledge of pharmacology will permit. To this end they have devised a system which is designed for "convenience in teaching the subject and ease of learning it." They have admirably succeeded. Some may object to occasional omissions of obscure, but pharmacologically interesting substances. Others might object to the use of so few references. But if one remembers the purpose for which the book was designed, it can be seen that these are advantages. For students, particularly those in pharmacy, proper orientation and sound fundamental organization are more important objectives than heterogeneous miscellanea, no matter how extensive. These objectives are admirably fulfilled by this text.—J. M. DILLE

Vitamin E—A Symposium, under the auspices of the Food Group (Nutritional Panel) of the Society of Chemical Industry on April 22, 1939, at the School of Hygiene and Tropical Medicine, London, W.C.I., England. Monograph of 88 pages, bound. Chemical Publishing Co., Inc., New York. Price \$2.00.

The monograph, which is edited by A. L. Bacharach of the Glaxo Laboratories, Middlesex, and Professor J. C. Drummond of the Biochemistry De-