

The following comments on the four samples, A to D, supplement the tables just given:

*Sample A.*—The color of the sample, after 20 weeks, is a *ferric yellow* rather than an iodine brown. The "scum" mentioned in the tables refers to a grayish precipitate forming at the top of the syrup. This scum, after collection on filter paper and thorough washing with water, gave the ferric test with potassium thiocyanate and upon ignition gave off inflammable phosphine vapors. Attempts to produce a scale salt with sodium citrate was only partially satisfactory. The yellow color of the syrup was not bleached upon exposure to sunlight. After 22 months, however, serious decomposition had set in, the product was dark brown, did not bleach when exposed to sunlight, although it did not respond to the starch test for iodine and showed no diminution in iodide content.

*Sample B.*—After 20 weeks the scum noted in Sample A was missing. Sample darkens to brown rather than to yellow color. Color bleached on exposure to sunlight and comes back when taken away from direct sunlight, the darkening first appearing at the top of the syrup. A brownish sample responding to the starch test for iodine before bleaching by exposure to sunlight, did not respond to the free iodine test, after it had been bleached. After 22 months, however, the color had returned to a light green, there was no response to the starch test for iodine—in short, after 22 months the sample was in better condition than after 20 weeks.

*Sample C.*—After 20 weeks, no scum was noted; color brownish yellow rather than green; presence of free iodine indicated by the starch test. After 20 months, color was green-yellow and no free iodine could be detected by the starch test.

*Sample D.*—After 12 weeks, color pale green; no scum noted; no free iodine. After 19 months, color darkened to yellow-brown; trace of precipitate; no free iodine.

(To be continued)

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## HISTORY OF PHARMACY A VALUABLE ASSET TO THE PHARMACIST.\*

BY OTTO RAUBENHEIMER, PH.M.

There is much more to pharmacy than the dispensing of drugs and medicines, the preparation of galenicals and incidently the sale of candy and cigars, soda water and ice cream, which side lines, in recent years, have been still further enriched by a luncheonette with such ethical signs as "Roast Beef Sandwiches" and "Clam Chowder on Fridays."

There is a fascinating field of study which should be attractive to every pharmacist and druggist who is interested in his profession, namely, History of Pharmacy, as it shows him the growth and development of his beloved calling.

It was Cicero, the great Roman orator (106-43 B.C.) who spoke thus: "History is the witness of the times, the torch of truth, the life of memory, the teacher of life and the messenger of antiquity." Goethe, the German poet and scientist (1749-1832), even went further in the words "The History of a Science Is Science itself."

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\* Section on Historical Pharmacy, A. PH. A., Portland meeting, 1928.

Besides the systematic study of the History of Pharmacy of each country, may I call attention to the following important general historical facts, which I have subdivided into seven classes? Seven, from the earliest days, has always been a mysterious, if not a lucky number!

1. *General Facts.*—Pharmacy in the Bible; Chaldean Magicians; Egyptian priests—physicians; Greek Pharmakopoi; Hippocrates, father of Medicine, 400 B.C. Theophrastus, father of Botany, 300 B.C.; Dioscorides, father of *Materia Medica*, 50 A.D.; Roman Confectionarii; Galen, father of Pharmacy, 150 A.D.; Alexandria and other Libraries; Arabian Alchemists; First pharmacy in Bagdad about 760; The Arabian School of Medicine and Pharmacy; Salerno, the first Medical School, 848, and University, 1213; Influence of the Crusades on pharmacy; Separation of Pharmacy from Medicine by the first Pharmacy Law of Frederick II in 1224; Pharmacy in the Monasteries; The Development of Apothecary Shops in Germany, France, England, etc.; Philippus, Aureolus, Paracelsus, Theophrastus Bombastus von Hohenheim (1493–1541), and Iatro-chemistry; Discovery of America and its valuable *Materia Medica*; Pharmacy in the United States.

2. *History of Drugs.*—May I call attention to the introduction and interesting history of such drugs as opium, conium, aconite, belladonna, hyoscyamus, stramonium, rhubarb, nux vomica, digitalis, strophanthus, etc., still further enriched by the contribution of the American *Materia Medica* in the form of cinchona, ipecac, coca, jalap, vanilla, sarsaparilla, cactus and the different dye woods? I must not forget the drugs of the United States, such as sassafras, witch hazel, cascara, hydrastis, mandrake, scullcap, sanguinaria, lobelia and many others, with which our country supplies the need of all other nations. Each of these drugs has a highly interesting history. Consult our veteran Professor John Uri Lloyd and his excellent "Origin and History of the Pharmacopoeial Vegetable Drugs," a volume which should be in the library of every pharmacist.

3. *Discoveries in Chemistry.*—May I call attention to the many discoveries—frequently accidental—in chemistry, such as the different acids, alkalies and salts, as Glauber salt, Epsom salt and Rochelle salt, of the vitriols, antimonials, arsenicals and mercurials, of iodine and the iodides, of bromine and the bromides, and the isolation of other elements? This interesting history not only applies to inorganic chemistry, but also to the many organic chemicals, to alcohol, ether, to the alkaloids, principally isolated by pharmacists, to the coal tar derivatives and synthetic chemicals. I must not forget the first synthesis, that of urea by Frederick Woehler in 1828, just one hundred years ago, which is treated in a separate paper.

The origin and evolution of chemistry and especially of pharmaceutical chemistry is indeed a fascinating study. In connection with this I want to repeat the words of Prof. Paul Walden, of the University of Riga, the delegate from the Russian government, in his address before the Section of Pharmaceutical Chemistry of the VIII International Congress of Applied Chemistry in September 1912, of which the writer was acting secretary—"Pharmacy is the mother of chemistry." The history of botany and *materia medica* and other allied sciences is equally as interesting and important as that of chemistry.

4. *History of Galenicals.*—May I call further attention to the origin and history of some of our galenicals: Vinegar of Squill by Pythagoras, 550 B.C.; Diachylon Plaster by Menekrates, 40 A.D.; Cold Cream by Galen, 150; Mercurial Plaster

by John de Vigo, about 1500, first physician to Pope Julius II; Spirit of Nitre by Franciscus Sylvius of Leyden (1614-72); Paregoric by Dr. Jacob Le Mort, professor of Chemistry, University Leyden and predecessor of the immortal Boerhaave, (1668-1738); Solution of Mercuric Chloride by Baron Gerard Van Swieten (1700-72) who together with his teacher Boerhaave established the Vienna Medical School; Spirit of Ether by Friedrich Hoffmann, 1700; Powder of Ipecac and Opium by Dover, 1725; Compound Tincture of Cinchona by Huxham, 1750; Lead preparations by Goulard, 1760; Laudanum by Sydenham, 1775 Arsenical Solutions by de Valangin, 1765, Fowler, 1780, Clemens, Pearson and Donovan, 1830; Calamine Ointment by the celebrated London surgeon Dr. Daniel Turner 1720; Compound Licorice Powder by the Berlin physician Dr. E. G. Kurella, 1795; Compound Rhubarb Powder by Dr. James Gregory of Edinburg, 1800; Compound Solution of Iodine by Dr. J. G. A. Lugol of the Hospital St. Louis in Paris, 1832; Stronger Tincture of Iodine by the Dublin gynecologist, Dr. Churchill, 1840; Pills of Ferrous Carbonate by the Paris physician, Dr. P. B. Blaud, 1820; Mass of Ferrous Carbonate by the French pharmacist, A. G. Vallet, 1837; Antiperiodic Tincture by the Austrian physician, Dr. Carl Warburg, 1840; Solution Aluminum Acetate by the Koenigsberg Professor, Dr. August Burow, 1857; and many others up to the introduction of Fluidglycerates in 1910, by that prince of pharmacists, the late George M. Beringer, of Camden, N. J?

Is it not remarkable that the names of the originators still cling to the preparations after centuries? It should be the duty of every pharmacist to know the origin and history of galenicals, especially those known by personal name synonyms.

In connection with the History of Galenicals, I beg to quote, as a ready reference, the birth of the oldest Patent Medicines, or the years when letters-patent were issued: Haarlem Oil, 1672; Godfrey's Cordial, 1720; Bateman's Pectoral Drops, 1726; British Oil, 1742; John Hooper's Female Pills, 1743; Dr. James' Powder, 1747; Roche's Embrocation, 1803; St. John Long's Liniment, 1820.

Is it not remarkable that Haarlem Oil or "Dutch Drops" after an existence of our 250 years still has a very large sale? This and other preparations, although looked down upon as "Patent Medicines" have most certainly stood the test of time.

5. *Evolution of Formularies and Pharmacopœias.*—May I call attention to the history and evolution of the Pharmaceutical Formularies and Pharmacopœias beginning with the Papyrus Ebers, 1500 B.C. and ending with the A. Ph. A. Recipe Book, 1928, a lapse of 3428 years? Papyrus Ebers, 1500 B.C.; Narthex by Mantias, 270 B.C.; Dispensatory of Scribonius Largus, 47 A.D.; Antidotarium Medicamentorum Compositorum by Mesue Jr., 950, remained the authority and standby of physicians and apothecaries until the 17th century; Antidotarium Magnum by Nicolai Praepositus of Salerno, 1100; Ricettario by the College of Medicine in Florence, 1498; Dispensatory of Valerius Cordus, 1546-1666; Pharmacopœia Augustana, 1564-1673. In connection with this, may I add that Historical Pharmacy owes a debt of gratitude to the State Historical Society of Wisconsin for the publication of a Facsimile of the First Edition of this valuable work by a photographic reproduction of the copy in the library of the University of Würzburg, which contains one of the two copies still in existence? Thanks are also due to our Professor Dr. Edward Kremers for the translation of the two Essays on the subject

by the well-known authority Theodor Husemann of Göttingen which form the Introduction to this valuable book.

In the following table I have attempted to arrange the principal National Pharmacopœias in chronological order together with the local Pharmacopœias which preceded them.

- 1772, Pharmacopœa Danica; 1658, Dispensatorium Hafniense.  
1775, Pharmacopœa Svecica.  
1794, Pharmacopœa Hispana; 1762, Pharmacopœa Matritensis.  
1818, Codex Medicamentarius; 1637, Pharmacopœa Parisiensis; 1732, Codex Parisiis.  
1820, United States Pharmacopœia, preceded by the U. S. Army Military Pharmacopœia in 1778, the Massachusetts Medical Society Pharmacopœia in 1808 and the New York Hospital Pharmacopœia in 1816.  
1864, Pharmacopœia of Great Britain; 1618, Pharmacopœia Londonensis; 1722, Pharmacopœa Fdinburgensis.  
1872, Pharmacopœa Germanica; 1698, Dispensatorium Brandenburgiensis; 1799, Pharmacopœia Borussica.  
1888, National Formulary; preceded by several local formularies and quite especially by the New York and Brooklyn Formulary, in 1883.

The author reserves the right to go into this particular subject more extensively at a future date.

6. *History of Pharmaceutical Apparatus and Utensils.*—May I call attention to the origin and evolution of pharmaceutical apparatus and utensils, as scales, balances and weights, mortars and pestles, pill machines, alembic, retort and still, Liebig condenser, Mohr's specific gravity balance, burette, pinch cock and cork-borer, Erlenmeyer and other flasks, compressed and tablet triturate machines, vacuum apparatus, percolators, etc.?

7. *History of Pharmaceutical Processes.*—May I, last but not least, call attention to the history of the different pharmaceutical processes such as Evaporation, Distillation, Sublimation, Calcination, Filtration, Precipitation, Maceration and Percolation, Sterilization, etc.?

What a variety of subjects! What a mine of interesting and valuable information! In the above seven "cardinal points" I have only outlined the principal features which History of Pharmacy has to deal with. It does not seem possible that one brain could master it all, but the subject is by no means complete. This is the reason that the newly-formed Gesellschaft für Geschichte der Pharmazie (Society for History of Pharmacy) has subdivided this immense subject among its collaborators as pointed out in my last year's paper.

Every calling, trade, art and profession—including pharmacy—has its history. It is the duty of every pharmacist to become somewhat acquainted with this interesting and fascinating subject. Above all, the knowledge of history of pharmacy is a valuable, a very valuable asset to the pharmacist. It places him above, far above, his competitors. He is looked upon by his customers and the community at large with respect. He is again a professional man as in olden times. Now, since we have an excellent book on this subject in the English tongue, namely, LaWall's "Four Thousand Years of Pharmacy," there is no more excuse for neglecting this interesting study of History of Pharmacy.