ATTEMPT AT A BIBLIOGRAPHY OF THE

By

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History. On March 20, 1846, Schoenbein first communicated his observations on the explosiveness of gun cotton to a military representative of his native state, Wuertemberg. The public demonstrations given by him as to the combustibility (with "Fire Devils") and explosiveness of his new discovery for the time being made Schoenbein one of the most popular chemists of Europe. His secret was discovered by Boettger of Frankfurt-on-the-Main, as early as July of the same year and by Otto of Braunschweig in October. Whereas Boettger came to an understanding with Schoenbein, Otto published his results, trusting to the generosity of the governments of Germany, France, England, Russia and America for his reward.

The problems connected with the manufacture of gun cotton as explosive, early led to the search for proper solvents. The handling of a solution of gun cotton in ether-alcohol, of necessity soon led to the observations of the "sticky" properties of this solution and

its use as a "liquid adhesive plaster". The question as to whom belongs the credit for the first observations in this direction and as to the first application in hospital and general practice is one that has been debated much by Americans and Frenchmen as well as Germans, all of whom claim priority for their own countrymen. According to Kahlbaum*), the well-known and careful chemical historian, the evidence is clearly in favor of Schoenbein.

Not only could "Klebaether" be had commercially as early as March, 1847, in the drug store (?) of Geizy and Bernouilli of Basel, Karl Gustave Jung, the Professor of medicine at Basel, read papers on its clinical application, covering some length of time, on March 24 and again on April 7, 1847, before the Naturforschende Gesellschaft of Basel.

To what extent and how Domonte and Meynard, two American medical students who had traveled in Switzerland, were indebted to Schoenbein, what are the merits of the claims made for Jackson, "the discoverer of anaesthesia

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*) Die Entdeckung des Kollodiums, Verhandlungen der Naturforschenden Gesellschaft zu Basel, 13, p. 342.

by chloroform", Bigelow, and Hassard, may never be definitely settled.

The question of the solubility of the true gun cotton and similarly nitrated products of cellulose, which is a problem that has given trouble to pharmacists even in recent years, involves a study of the constitution of of the nitration products of cellulose.

Synonomy. The names first applied to the solution of gun cotton in ether-alcohol, as used for minor surgical purposes, were the German word "Klebaether" and the Latin designation "Liquor sulphurico-aethereus constringens".*) The latter refers to the nature of one of the components of the solvent mixture and to the constringent properties of the solution. Both designations were used by Professor Jung in the title of his papers before the Naturforschende Gesellschaft zu Basel in March-April, 1847. The name now commonly used, viz. Collodium, appears to have been introduced by Dr. Augustus A. Gould**), Corresponding Secretary of the Boston

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*) Verh. d. Naturf. Gesell. zu Basel, 13, p. 338.

**) Ibidem, p. 352.

Society of Natural History; and not by Dr. Erasmus*) Wilson who introduced the word into European literature; neither by Maynard, to whom it has been attributed by Hagenbach.

For the sake of completeness, a list of synonyms is herewith arranged alphabetically.

Collodium [1]

Ether glue [2]

Klebaether [3]

Kollodium [4], from the Greek κολλώδης, sticky, Ger. "klebrig".

Liquid adhesive plaster [5]

Liquor constringens [6]

Liquor sulphurico-aethereus constringens [7]

Maynard's adhesive solution [8].

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*) Verh. d. Naturf. Gesell. zu Basel, 13, p. 339.

1) Ibidem, p. 352.
2) Ibidem, p. 360, footnote.
3) Ibidem, p. 338.
4) Schelenz, Geschichte der Pharmacie, p. 662.
5) Verh. d. Naturf. Gesell. zu Basel, 13, p. 8.
6) Ibidem, p. 360.
7) Ibidem, p. 338.
8) Ibidem, p. 352.

Collodions of the U. S. P. from 1820 to 1900.

	1820	1830	N.Y. 1836	1840	1850	1860	1870	1880	1890	1900
Collodium	-	-	-	-	-	x	x	x	x	x
Collodium cum Cantharidis	-	-	-	-	-	x	x	x		
Collodium Flexile	-	-	-	-	-	-	x	x	x	x
Collodium Cantharidatum	-	-	-	-	-	-	-	-	x	x
Collodium Stypticum	-	-	-	-	-	-	-	x	x	x

As becomes apparent from the above table, collodion found its way into the U. S. Pharmacopoeia as early as the revision of 1850, only three years after its discovery by Schoenbein. Its early introduction into the U. S. P. was probably due to the publicity it was given, as a medicament through the papers written by a Bostonian, Maynard, to whom its discovery is sometimes accredited.

In the U. S. P. of 1850, Collodium is found classified with a group of preparations under the general heading "Aetherae", which includes chloroform, ether, spirits of ether and fusel oil. This grouping, which seems peculiar to us at present, must be attributed to the ether-alcoholic menstruum used as a solvent in its preparation. This edition of the U. S. P. also contains directions for the preparation of collodium directly from cotton.

In the Pharmacopoeia of 1860 another collodion was added with the official title Collodium cum Cantharide. It was in this revision that the collodions were first given a separate place in the U. S. P., being classified no longer as "Aetherae" as the original collodion had been grouped in the Pharmacopoeia of 1850.

Collodium Flexile and Collodium Stypticum were introduced into the Pharmacopoeias of 1870 and 1880 respectively. In the revision of 1890 the Latin title of Collodium cum Cantharide was changed to Collodium Cantharidis, the original titles of the remaining three collodions remaining unchanged.

No changes were made in the U. S. P. 1900.

It is noteworthy that, whereas the number of collodions in the U. S. P. is small, not one of this class of preparation, having been once introduced, has been eliminated.

Collodions of the National Formulary.

Latin Title.			
Collodium Iodatum	+	+	+
Collodium Iodoformatum	+	+	+
Collodium Tiglii	+	+	+
Collodium Salicylatum compositum	+	+	+

The tabulation of collodions, for which formulas have been provided by the National Formulary, readily tells its own story. None have been dropped from the original list, none have been added thereto.

The Collodions According to Hirsch's Universal

Whereas the brief review of the collodions official in the U. S. P., revealed the fact that collodion was introduced shortly after its discovery, a similar review of the pharmacopoeias of the world shows that this class of preparations is not over popular. The accompanying table, compiled from Hirsch Universal-Pharmakopoe, shows that simple collodion was, at the date of publication, official in all pharmacopoeias except those of Austria, Hungary and Japan.

Of the preparations of collodion, or compound collodions, collodium elasticum (C. flexile of the U. S. P.) was official in thirteen pharmacopoeias, being wanting in those of Austria and Hungaria. Collodium Cantharidatum or blistering collodium was official in ten pharmacopoeias; collodium iodoformatum in three (French, German and Dutch); collodium stypticum also in three (Greek, Dutch and U.S.) and collodium salicylatum only in two (German and Dutch).

Bibliography.

Mussgiller, F. C.

Collodion.

Proc. A. Ph. A., 17, p. 407.

The author gives formulas for Flexile Collodium, and also compares the strength of U. S. P. Collodium with that of the British, French and Prussian Pharmacopoeias. He also reports on the composition (gun cotton, glycerin, castor oil, Canada balsam, cantharides and carbolic acid) of 21 commercial samples of collodion.

Klie, G. H. C. 1877.

Collodion.

Am. Journ. Pharm., 49, p. 301. (Proc.A.Ph.A. 25, p. 286)

Only incidental mention is made of collodion, the article being devoted almost entirely to a discussion of formulas for the preparation of pyroxilon.

Roberts, J. 1877.

On Cantharidal Collodion.

Proc. A. Ph. A., 25, p. 417.

The author suggests that the official formula for cantharidal collodion may be improved by increasing the quantity of alcohol therein prescribed.

Moleschott 1878.

Collodium Iodoformatum.

Centralh., 19, p. 373. (Proc. A. Ph. A., 27, p. 69)

The author recommends the following formula for glandular swellings, enlargement of the spleen, orchitis, etc.

One gram of iodoform dissolved in 15 grams of flexile collodium.

Barnes, J. B. 1883.

Suggestion for Combinations of Collodion.

Yearbook of Pharm., 20, p. 578. (Proc. A. Ph. A., 32, p. 62)

The author suggests numerous instances where collodion may probably be used advantageously for topical application of medicaments. Among these may be mentioned: wood tar (1:4); juniper tar (1:5); oil of gurjun (1:4); oleic acid; various oleates; Peruvian balsam, extract of belladonna and several alkaloids.

Bilteryst, A. 1887.

Iodol-Collodium.

Journ. de Pharm. d' Anvers, --, p. --. (Pharm. Ztg., 32, p. 488; Proc. A. Ph. A., 36, p. 239)

The author gives a formula for its preparation.

Chevreau 1887.

Préparation instantanée du collodion.

Journ. de Pharm., 124, p. 556. (Am. Journ. Pharm., 59, p. 401; Proc. A. Ph. A., 36, p. 239)

The author criticizes the method of preparation given in the Codex as inconvenient, because not rapid, and suggests a formula that admits of its rapid preparation.

Bilief 1888.

Rev. Ther., --, p. --. (Am. Journ. Pharm., 60, p. 409.) (Proc. A. Ph. A., 37, p. 370)

Ichthyol collodion used as a local application for erysipilas, was prepared by the author from ichthyol, 1 gm., ether, 1 gm. and collodion, 15 gms.

Kranzfeld, J. J. 1889.

Mittheilungen aus dem chemischen Laboratorium.

Pharm. Ztschr. f. Russl., 28, p. 392. (Proc. A. Ph. A., 38, p. 313)

The author suggests the clarification of collodium with quartz sand that has been washed and heated to a high temperature.

Dieterich 1890.

Aus dem Geschaeftsbericht der Chemischen Fabrik E. Dieterich in Helfenberg, --, p. --.

Pharm. Centralh., 31, p. 264. (Am. Journ. Pharm., 62, p. 293; Proc. A. Ph. A., 38, p. 313)

The firm publishes a formula for Collodium Cantharidini.

Mack, J. S. 1891.

Pharmaceutical Notes.

Am. Journ. Pharm., 63, p. 125. (Proc. A. Ph. A., 39, p. 282.

Noticing that collodium stypticum depositsa sediment containing tannin, the author suggests a formula which yields an efficient clear preparation.

Martindale, W. 1892.

Camphoid: A new substitute for collodion for medicinal use.

Pharm. Journ., 51, p. 831. (Proc.A.Ph.A. 40, p. 426)

The author suggests the use of a solution of pyroxylin (1 p.) in Rubinis solution of camphor (40 p.) as a medium for the external application of carbolic acid, salicylic acid, resorcin, iodine, chrysarobin, and ichthyol. He suggests the name "camphoid" for the simple pyroxylin solution.

1894.

Hemm, F.

Pharmaceutical Notes.

Am. Journ. Pharm., 66, p. 390. (Proc. A. Ph. A., 43, p. 555)

The author describes a method for the preparation of collodium cantharidatum which he prefers to the U. S. P. method.

Schiff 1898.

Filmogen.

Zeitschr. des allg. oesterr. Apoth. Ver., 34, p.686. (Yearbook Pharm., 34, p. 252)

Filmogen is a solution of nitro-cellulose in acetone. The action of medicaments applied by means of this vehicle has been reported favorable by Schiff, Kaposi, Lassar, Atana and Powlow.

Sieker, F. A. 1899.

Laboratory Notes.

Pharm. Review, 17, p. 398. (Proc. A. Ph. A., 48, p. 445.)

The U. S. P. Collodium test for carbolic acid in creosote (page 101) is pronounced unreliable except when phenol is present in considerable quantity.

Thibanet 1899.

Crystalline.

Journ. de Pharm. de Liege, --, p. 182. (Bull. de Pharm. de Sud Est, 4, p. 656; Proc. A. Ph. A. 48, p. 445; Apt. Ztg., 15, p. p. 64.

The author recommends as a substitute for ordinary collodion a solution of five parts pyroxylin in twenty parts methyl alcohol and twenty parts amyl acetate. He gives the name "Crystallin" to the preparation, and claims for its advantages over collodion that it evaporates slower and produces a less friable film.

Kahlbaum, G. 1901.

Die Entdeckung des Kollodiums.

Verhandlungen der Naturf. Gesellschaft in Basel, 12, p. 338. (Muench. Med. Wochschr., 47, p. 1896; Natl. Drugg., p. 8; Proc. A. Ph. A., 50, p. 707.)

The article contains an account of the contributions of

C. F. Schoenbein (1846)

C. J. Jackson (1847)

Bigelow and Maynard

Demonte and Menard (1847)

Lyon, W. 1901.

Pharmacopoeia Revision Notes.

Pharm. Journ., 67, p. 274. (Proc. A. Ph. A., 50, p. 708.)

The author calls attention to the practical convenience that would result if the B. P. directed the collodion to be weighed, instead of measured, in the preparation of flexible collodion.

Gordon, F. T. 1904.

Query No. 35. -- "Collodion. The U. S. P. process often gives a product too thick for practical use. Is the fault in the gun cotton or in the process?"

Proc. Pa. Pharm. Assoc., 24, p. 124. (Proc. A. Ph. A., 50, p. 708.)

The difficulty, it is pointed out, may be due:

1.) To the chemical character of the gun cotton.

2.) To want of ageing (6 months claimed necessary by one manufacturer).

3.) To insufficience of alcohol in U. S. P. formula for certain gun cottons.

Francis, J. M. 1905.

The New Pharmacopoeia.

Bull. Pharm., 19, p. 449.

The author points out that collodions (p. 450) have been made very popular of late years under proprietary names, and that celluloid and acetone are being used to replace the official substances in part.

The pyroxylin content has been increased in the last revision of the U.S.P. from 30 to 40 gm. in each 1000 cc.

Lorenzen, J. 1905.

Collodium und Collodium Elasticum.

Pharm. Ztg., 50, p. 20. (Proc. A. Ph. A., 53, p. 523)

The author points out that the turpentine directed by the German pharmacopoeia IV, may be a source of possible impurity in flexible collodion. He recommends that the turpentine be dissolved and filtered before being added.

Beringer, Geo. 1906.

Acetone Collodions.

Am. Journ. Pharm., 78, p. 831. (Proc. A. Ph. A., 54, p. 501.)

The author suggests the use of acetone as a solvent in the preparation of collodions.

He gives formula for

Acetone collodion and

Acetone cantharidal collodion,

also comments on

Styptic collodion.

Dohme, A. R. L., and H. Engelhart. 1908.

Purity of some official and non official drugs and chemicals.

Proc. A. Ph. A., 56, p. 816.

The authors give a report on a lot of collodion (p. 816) which answered all the requirements of the U.S.P. as to pyroxylin content, but which became cloudy when mixed with balsam of fir and castor oil, and which, after standing for a day, deposited a heavy precipitate.

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	Austr.	Belg.	Brit.	Dan.	Fenn.	Gall.	Germ.	Graec.	Helv.	Hisp.	Hung.	Ital.	Japan	Norv.	Ndl.	Port.	Rom.	Russ.	Suec.	U.S.
Collodium	-	+	+	+	+	+	+	+	+	+	-	+	-	+	+	+	+	+	+	+
Collodium Cantharid.	-	+	+	+	-	-	+	-	+	-	-	-	+	+	-	+	-	+	-	+
Collodium Elasticum	+	+	+	+	-	-	+	-	+	+	+	+	+	+	+	+	+	-	+	+
Collodium Iodoformat.	-	-	-	-	-	+	+	-	-	-	-	-	-	-	+	-	-	-	-	-
Collodium Salicylatum	-	-	-	-	-	-	+	-	-	-	-	-	-	-	+	-	-	-	-	-
Collodium Stypticum	-	-	-	-	-	-	-	+	-	-	-	-	-	-	+	-	-	-	-	+