

But very few shipments of sub-standard drugs are destroyed. Most of them are either reexported or reconditioned in such a manner as to bring them up to standard. During the coming year the Pharmacognosy Laboratory will endeavor to do all it can to assist importers in working out economical methods for reconditioning such sub-standard importations as may be received from time to time. This will not be done to encourage buying low-grade drugs abroad, but mainly to mitigate a financial loss which might accrue to the importer, and also to make available for this market drugs which otherwise would be lost to it.

In conclusion, it is a pleasure to state that practically all of the drug importers in the city of New York have voiced a willingness to cooperate with us in the conduct of this drug control work. With their hearty support, much can be accomplished. It is, therefore, with confidence that we can look forward to the work of the coming year, and feel reasonably sure that the consumer will have available to him standard crude drugs of uniformly good quality.

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### THE NECESSITY OF A COMPARATIVE PHARMACOPŒIA.\*

BY OTTO RAUBENHEIMER.

Uniformity in medicines, as to strength and physical properties, has been the desideratum from time immemorial. This is how formulas were originated in local communities, in districts, in states, and later in entire countries. The desire for uniformity gave birth to our National Formulary in 1888, an everlasting credit to the A. Ph. A.

From the collection of formulas by the old medical writers, formularies, dispensatories and pharmacopœias originated. From such a collection (*Formulæ Selectorium Pharmacorum*) by Valerius Cordus the city of Nuremburg in 1546 published that celebrated *Dispensatorium*, the first legal pharmacopœia of its kind. With the principal object of creating uniformity the pharmacopœias of cities extended over states, countries and nations. This desire for uniformity gave birth to our U. S. P. in 1820, to the British Pharmacopœia in 1864 (from the London, Edinburgh and Dublin Pharmacopœias), and to the German Pharmacopœia in 1872, and to all national pharmacopœias.

As is to be expected, a number of drugs, and especially preparations, vary in strength and composition in the different pharmacopœias from all parts of the world. Examples of this sort are the following:

The *Pharmacopœa Universalis* of 1828 is a compilation of 34 pharmacopœias, of which 28 contain formulas for Tincture of Cantharides, which not only differ as to *modus operandi*, namely, maceration or digestion, or the time, from 2 to 14 days, or the alcoholic strength, from 50% to 90%, but what is most important of all, as to strength of the finished tincture, which varies from 1:6 to 1:96. This means that the ratio in the different tinctures of cantharides is 1 to 16.

As a teacher the writer holds up the following variations in strength, before the Brussels Protocol, September 1902, as vivid examples to his students:

Pulv. Doverii—8.8% Sp., 14.3% Aust. and It., 16% Belg., 10% others.  
 Tinct. Strophant.—2.5% Brit., 5% U. S., 20% Fr. and Mex., 10% others.  
 Tinct. Aconit.—5% Brit., 20% Fr. and Hung., 35% U. S., 10% others.

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\* Scientific Section, A. Ph. A., Cleveland meeting, 1922.

HCN Dilut.—1% Jap., Fr. and Mex., 2.5% Belg., 10% Sp. and Port., 2% others.

Syr. FeI<sub>2</sub>—0.5% Belg. and Fr., 1% Mex. and Helv., 5% Ger., 10% U. S., and others, and 12.2% Hung.

If we include in the last also the Greek Ph., which merely contains 0.0052% FeI<sub>2</sub>, we have a ratio of 1:234 in the variation of the FeI<sub>2</sub> content in Syrupus Ferri Iodidi of the different pharmacopœias, an illustration which is also quoted by the celebrated pharmacologist, Professor Ewald, in the preface to the 13th edition of his *Arzneiverordnungslehre*.

Numerous attempts have been made to create uniformity and as a chief remedy the publication of a universal or International Pharmacopœia has been proposed. I will quote here the principal publications since the 16th century:

Nicolas de Prevost: *Pharmacopée Générale*, Tours, 1505.

Horstius: *Pharmacopœa Galeno-Chymica Catholica*, Frankfurt, 1651.

Nicolas Lémery: *Pharmacopée Universelle*, Paris, 1607.

James: *Pharmacopœa Universalis*, London, 1747.

Reuss: *Dispensatorium Universale*, Strassburg, 1786.

Brugnatelli: *Farmacopœa Generale*, Pavia, 1802.

*Codex Medicamentarius Europæus*, Lipsiae, 1819-1822.

Jourdan: *Pharmacopée Universelle ou Conspectus des Pharmacopées*, Paris, 2 vol., 1828, 2 edit., 1840.

*Pharmacopœa Universalis oder Übersichtliche Zusammenstellung der Pharmakopöen*, Weimar, 2 Bände, 1828-30; 2 Aufl., 1832; 3 Aufl., 1838-40; 4 Aufl., 1845-46.

Geiger & Mohr: *Pharmakopœa Universalis*, Heidelberg, 2 Bände, 1836-45.

*Kodex der Pharmakopöen*, Leipzig, 1843-1847.

Bruno Hirsch: *Universal-Pharmakopöe*, Bd. I, Leipzig, 1887, Bd. II, Göttingen, 1890; 2 Aufl., Göttingen, 1902.

That uniformity in medicine and the compilation of an International Pharmacopœia are very important subjects can be seen from the fact that every International Congress of Pharmacy brought up this matter for discussion and action. As early as 1865 the first International Congress of Pharmacy at Braunschweig declared itself in favor of an International Pharmacopœia, "or at least a uniformity in the formulæ of galenicals." A number of attempts were made, of which I will name the principal ones.

Robinet & Mialhe: *Codex Universal*, prepared by the Société de pharmacie in Paris and submitted to the III Congress in Vienna, 1869.

Méhu: *Pharmacopée Universelle*, submitted to the IV Congress in St. Petersburg, 1874.

Waldheim: *Projectum Pharmacopœæ Internationalis*, containing 293 articles, especially potent remedies, submitted to the VI Congress, Brussels, 1885.

Many efforts were made, much work was done, lots of money was wasted, but no results were accomplished. Perhaps for that reason Prof. C. T. P. Fennel, with his usual "pep," introduced the following resolution at the 41st annual meeting of the A. Ph. A. in Chicago, in August 1893, during the week preceding the VII International Congress of Pharmacy:

"Resolved that the sum of one thousand dollars be and is hereby appropriated to be placed at the disposal of the Seventh International Congress of Pharmacy by the Council of the A. Ph. A., for the compilation, publication and distribution of an International Pharmacopœia."

Prof. Oscar Oldberg, chairman of the committee, in his Report of the Congress, given to the 42nd annual meeting of the A. Ph. A. at Asheville, N. C., in September 1894, stated:

"The Congress appointed a committee of three to take steps for the appointment of an International Pharmacopœia Commission to compile, publish and distribute an *International*

*Pharmacopœia of Potent Remedies*, and it accepted with thanks the offer of this Association of the sum of \$1000.00 to help to pay the expense of compiling, publishing and distributing this *Pharmacopœia of Potent Remedies*. The said Committee consists of:

Prof. Joseph P. Remington, Philadelphia, Chairman.

President Michael Carteighe, of the Pharmaceutical Society of Great Britain.

Apotheker Anton Schürer von Waldheim, of Vienna."

At the VIII International Congress at Brussels in 1898, and the IX in Paris in 1900, no further steps were taken, and with the death of the active Anton Schürer von Waldheim, August 13, 1899, the live soul of this project, the subject of an International *Pharmacopœia* was also buried.

There are many objections to such a work; the principal ones I will quote, as follows:

1. It would be entirely too voluminous should it contain all the drugs, chemicals and preparations of all countries.
2. Each nation prefers to use products of its own country; for instance, the United States prefers Cottonseed Oil, Italy Olive Oil and Russia Sesame Oil; Germany prefers Rhine Wine, France Bordeaux and the United States California Wine (provided the Prohibition Department permits it).
3. Each country adheres, in fact clings with the tenacity of a bulldog, to certain pet formulas or preparations and refuses to give them up.
4. Why should pharmacists and physicians overburden their knowledge with drugs and preparations of which they never heard and for which they have no use whatsoever?

However, the various attempts for an International *Pharmacopœia* culminated in the *Conférence internationale pour l'unification de la formula des médicaments heroïques*, held at Brussels Sept. 15-20, 1902, the adopted resolutions being commonly known as the Brussels Protocol. Signal service was thus rendered, at least as to uniformity of potent medicines in the various *pharmacopœias*. The U. S. P. VIII was one of the first to adopt some of these international standards, more of which were adopted in the U. S. P. IX. The latter on pp. LVIII to LVIII also contains a table in which the standards of drugs and preparations in U. S. P. VIII are compared with those of the International Protocol. The much-desired uniformity was thus created at least as to potent remedies; for instance, Potent Tinctures (10%), Arsenical Solutions (1%), Diluted Hydrocyanic Acid (2%), Syrup Ferrous Iodide (5%), etc.

While the International Protocol has created uniformity in potent remedies, we should go further and also have more international uniformity in drugs, chemicals and galenicals. If the standards differ the therapeutic actions will also differ. As chairman of the Section on Practical Pharmacy and Dispensing I arranged a Symposium on the *Pharmacopœias of the World* at the 58th Annual Meeting of the A. Ph. A. in Richmond, Va., in May 1910. An entire session was devoted to this, to the entire satisfaction of the members. In my address on this subject (PROCEEDINGS, Vol., 58, pp. 1135-1139) I presented a number of illustrations in which the *Pharmacopœias* of the world differ and in which uniformity is very desirable. There are at present 26 *Pharmacopœias* official, but no one individual can own them all, or at least can read or understand them all. What is needed is a *compilation of the standards of the existing Pharmacopœias*, a so-called *Comparative Pharmacopœia*.

Such a work did exist at one time, namely, *Die Verschiedenheiten gleichnamiger officineller Arzneimittel*, by Dr. Bruno Hirsch, Apotheker in Dresden, published in 1895 by Ferdinand Enke, Stuttgart, a book with which some of the members of

the A. Ph. A. are acquainted. In 331 pages, and frequently in tabular form, Hirsch presented the variation of drugs, chemicals and galenicals official in 20 Pharmacopœias. The excellence of the work is unquestioned and personally I have derived much benefit from it during the revision of the U. S. P. and N. F., in other scientific work and in the dispensing of foreign prescriptions. However, the book is now antiquated, as 18 out of the 20 Pharmacopœias have since been published in new editions.

A short time ago it came to my notice that a German scientist has been working on the compilation of such a book, namely, Dr. A. Falck, Professor of Pharmacognosy and Pharmacology at the University of Kiel, and Director of the Pharmacologic Institute. Out of his own means and under great sacrifices one part of the work has been published—*Die Arzneibücher vergleichend besprochen* (The Pharmacopœias, reviewed and compared), Verlag Johann Ambrosius Barth, Leipzig. With the usual German diligence and thoroughness Dr. Falck presents in a condensed space of only 140 pages a critical, comparative review of all of the existing (26) Pharmacopœias, their titles, language, editions, supplements, legal power, general principles and introductions. Under the Pharmacopœias proper he compares the titles, monographs, galenicals, chemicals and drugs of the mineral, animal and vegetable kingdoms. Even abbreviations, doses, maximum doses and also the indices are compared. Truly as a scientist and an idealist the author deserves great credit for the publication and compilation of this book.

This is but one part of Dr. Falck's work, the second one being a *comparison of the botanical drugs of the various pharmacopœias*. This has been ready in manuscript for some time, but owing to the extremely high cost of paper and printing its publication has been delayed until proper financial aid can be secured. The writer is fully convinced of Dr. Falck's unselfishness and has consequently pledged his "mite" to the good cause. Should any other members of our great A. Ph. A. care to support this good cause I should be pleased to hear from them. This paper is not written to solicit subscriptions but to prove the need of an up-to-date "Comparative Pharmacopœia."

In conclusion I try to point out the

*Advantages of a Comparative Pharmacopœia.*

1. Ready reference showing the existing differences in the various Pharmacopœias.
2. Contains in one book the 26 Pharmacopœias of to-day.
3. Immense value to the Revision Committees of the U. S. P. and N. F. and all Pharmacopœia Commissions.
4. Great profit to importer, exporter and wholesaler by becoming acquainted with the standards of other countries.
5. Colossal service to the teacher in his lectures to his students.
6. Vast advantage to the writer in his papers for his readers.
7. Considerable importance to the author in the compilation of his books.
8. Enormous use to the research pharmacist, chemist and pharmacognosist in their work on these subjects.
9. Great value to the dispensing pharmacist in the compounding of foreign prescriptions, the formulæ and standards of which frequently differ.
10. Last, but not least, such a work possesses an immense educational value, as from the differences in other Pharmacopœias, be they advantages or disadvantages, we can all learn!

*Let us have a Comparative Pharmacopœia!*

BROOKLYN, N. Y.,

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