The next step will be a published abstract of the changes proposed in texts which have reached this stage of revision and only when texts have passed through this complete course can the final manuscript be made up.

DATE OF APPEARANCE FOR THE NEXT U. S. P.

For several decades there has been strong pressure brought upon the Chairman of the Committee of Revision to fix a definite date for the appearance of the new book. After the very successful conference of the Committee in Philadelphia last July, one of the pharmaceutical journals predicted the appearance of the U. S. P. X in late 1923.

Those who have had experience in Pharmacopoeial revision know that the fixing of a definite date for its appearance is a mistake. First, because, if ample time is given after the book appears before the new standards are enforced, no interest suffers by withholding even a prediction of the time for its publication, and, secondly, because no one can foresee the complications and delays which may arise where so large a Committee are working on a voluntary basis, and a failure to meet a promise would only bring criticism, embarrassment and disappointment to all.

The Chairman and Committee ask that those interested in the new revision accept the assurance that an earnest effort is being made to complete the new book as rapidly as is consistent with a thorough and creditable revision and that the proposed changes when published will of themselves be a fair indication of the progress of revision. Furthermore, it must be remembered that the printing of a book like the Pharmacopoeia, with proof reading by a large Committee, alone requires at least a year for its completion.

THE SUBSTITUTION OF CONVALLARIA FLOWERS FOR CHAMOMILE.*

BY ARNO VIEHOEVER AND J. F. CLEVENGER.

Several adulterations or substitutions of Chamomile (*Matricaria chamomilla* L.) have been reported in the literature.[1] In addition, we have recently discussed the substitution of *Santolina chamaecyparissus* L.[2] and also dog fennel (*Anthemis cotula* L.) for Chamomile.[3] We can add another unexpected case of substitution, evidently thus far not reported. While we are inclined to believe that the substitution occurred by mistake rather than intentionally, the fact of substitution and the nature of the substitute may merit a brief note.

The material of the substitute, labeled Chamomile, contained many loose flowers (Pl. I, B) which, upon superficial observation, resembled the flower of

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* Presented before the Scientific Section at the New Orleans meeting of the A. Ph. A., September 6 to 8, 1921.

[1] Antonin Rolet, "Les Camomilles," *Schweiz. Apoth.-Zeit.*, 58, No. 30, p. 373 (July 22, 1920). Walter, "Substitute for German Chamomile," *The Druggists' Circular*, January 1920, p. 22. Th. Sabalitschka, "Het Inzamelen Van Kamillen," *Pilz-und Kräuterfreund*, 1920, 259; *Pharm. Weekbl.*, 57, No. 36, 1086, 1920.

[2] J. F. Clevenger and C. O. Ewing, "*Santolina Chamaecyparissus* L., an Adulterant of *Matricaria Chamomilla* L.," J. AM. PHARM. ASSOC., 8, 536, 1919.

[3] "Service and Regulatory Announcements, Chemistry," p. 22 (1918), item 257. C. L. Alsberg, A. Viehoever, and C. O. Ewing, "Some Effects of the War upon Crude Drug Importations," J. AM. PHARM. ASSOC., 6, 469, 1919. See also Ballard, "Wild Anthemis—a Possible Matricaria Adulterant," *Ibid.*, 9, 952, 1918.

Chamomile (Pl., I, E). A closer examination, however, revealed the difference, the substitute being a mass of single flowers, the true chamomile representing the flowerhead.

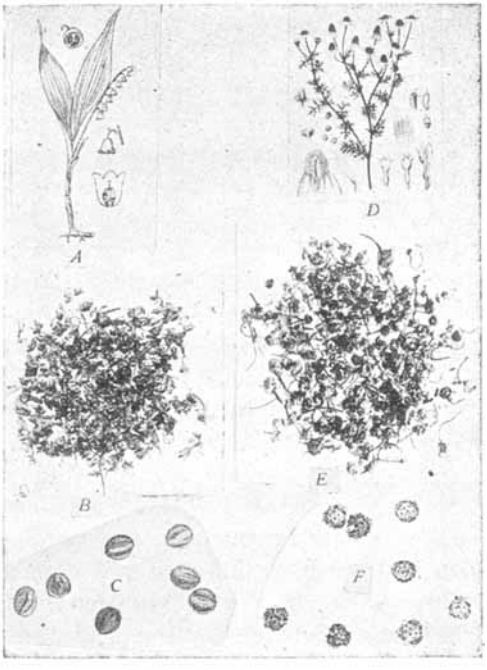

Plate I.

A. *Convallaria majalis*, after Potonié.
B. Flowers of *Convallaria majalis* as they occurred loose.
C. Pollen grains of *Convallaria majalis*, approximately × 50.
D. *Matricaria chamomilla*, after Berg and Schmidt.
E. Flowers of *Matricaria chamomilla* as they occur in the drug, approximately × 1/6.
F. Pollen grains of *Matricaria chamomilla*, approximately × 50.

The substitute was identified without difficulty as Convallaria. The plant is totally different from Chamomile, belonging to the family Liliaceae of the monocotyledons, rather than to the Compositae of the dicotyledons. The different habitus of either plant is illustrated in Plate I, A and D. The flowers of Convallaria are white and about 6 to 8 mm. long, somewhat broader than long, bell-shaped, corolla distinct, with ovate, obtuse, slightly recurved petals. The flowers of Chamomile consist of yellow disk-florets and white ligulate ray-florets of different size and shape, crumbling, however, materially during drying.

The most striking microscopical means of differentiation is the form of the pollen grains. These are oval and smooth, with two openings in the exine in the case of Convallaria (Pl. I, C), and spherical, with a spiny exine, F, and three openings in the case of Chamomile (Pl. I, F). This characteristic is important in the examination of powders.

The flavor of the Convallaria flowers was gone, so that it was not possible to identify it by such means.

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