

12. Fuld and Levison, *Biochem. Zeitschr.*, Bd. 6, p. 473 (1907).
13. E. Solms, *Zeitschr. f. Klin. Med.*, p. 159 (1907).
14. E. Fuld, *Berl. klin. Wochenschr.*, Bd. 45, p. 857 (1908). Or Efront-Pracott, "Biochemical Catalysts in Life and Industry," p. 253.
15. A. Zubini, *Biochem. Centralbl.*, Bd. 9, p. 348 (1909-1910).
16. S. Küttner, *Zeitschr. f. physiol. Chem.*, Bd. 52, p. 63 (1907).
17. O. Gros, *Berl. klin. Wochenschr.*, Bd. 13, p. 643 (1908).
18. Hercod and Maben, *Schweiz. Wochenschr. f. Chem. and Pharm.*, Bd. 49, p. 17 (1911).
19. M. Jacoby, *Biochem. Zeitschr.*, Bd. 1, p. 58 (1906).
20. J. H. Northrup, *Journ. Gen. Physiol.*, Nov. 1919, pp. 113-122.
21. J. F. Brewster, *Jour. Biolog. Chem.*, Mar. 1921.
22. J. Efront, "Biochemical Catalysts in Life and Industry," pp. 251-2.
23. Geselschap, *Zeits. f. physiolog. Chem.*, Bd. 94, p. 209 (1915).
24. Taylor and Acree, *Jour. Am. Chem. Soc.*, 1916, 2415.
25. E. Buchner, *B.* 30, 1, 1110 (1897).
26. Jul. Schütz, *Wiener klin. Wochenschr.*, Vol. 20 (1907), p. 1361.
27. Efront-Pracott, "Biochemical Catalysts in Life and Industry," p. 173.
28. H. T. Graber, *Journ. Ind. and Eng. Chem.*, Dec. 1911.
29. W. W. Taylor, "The Chemistry of Colloids," pp. 113-114.

MODIFIED METHOD FOR DETERMINATION OF BISMUTH IN MAGMA BISMUTHI—BISMUTH MAGMA—MILK OF BISMUTH U. S. P. IX.

BY M. CRANE AND E. C. MERRILL.

Milk of Bismuth, U. S. P. IX, pages 260 and 261, calls for an assay requirement under the following method:

Assay—Evaporate to dryness about 10 Gm. of Bismuth Magma, accurately weighed, and ignite the residue to constant weight; the residue corresponds to not less than 5.6 percent nor more than 6.2 percent of the weight of Bismuth Magma taken.

This method of assay may be modified by use of Gooch method, by means of which speed of assay may be increased without affecting in any respect the accuracy of the determination. Such method is as follows:

Prepare a Gooch crucible in the regular manner, and place inside of a regular porcelain crucible, about size O. Dry and weigh both together. Pour about 20 Gm. of Magma into the Gooch and weigh again. Put the Gooch on a suction funnel and filter out the water. Then place Gooch on a pipe-stem triangle and heat up slowly. Finish at full heat of Bunsen. Cool in desiccator and weigh with regular crucible, which has been dried in the meantime.

The object of using the additional crucible is to hold the water that drains through the Gooch while weighing. This method cuts the time of assay to about one-third of the time required by the U. S. P. method and at the same time checks it.

Results given as follows:

	Gooch method.		U. S. P. method.
Gooch + Crucible + Magma	43.8408	Crucible + Magma	18.3955
Gooch + Crucible	23.7545	Crucible	8.3230
Weight taken	20.0863	Weight taken	10.0725
Gooch + Crucible + Bi ₂ O ₃	24.9273	Crucible + Bi ₂ O ₃	8.6090
Gooch + Crucible	23.7545	Crucible	8.3230
Bi ₂ B ₃	1.1728	Bi ₂ O ₃	0.5860
	5.85%		5.83%

An additional advantage that this method has is that the washings from the Gooch left in suction flask may be utilized for test for neutrality and absence from nitrates or other impurities.

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NOTES ON ASH YIELD OF GLYCYRRHIZA.

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A series of samples of powdered Glycyrrhiza were first examined, total and acid-insoluble ash determinations being made. Following this, samples of Glycyrrhiza from different sources were prepared by submitting to various cleaning processes, then powdered and ashed.

A study of the results obtained showed that one sample, No. 3, exhibited a higher acid-insoluble ash than the total ash of clean samples. The soluble ash was also excessive for reasonably clean Glycyrrhiza. On microscopic examination, the sample proved to be largely Senna. Sulphur was not present. Apparently a pure case of accidental labeling.

The several cleaning processes used are described briefly in the table as this will enable a more ready comparison with the methods employed and the results.

Sample No.	Source of sample and remarks.	Percent total ash.	Percent ash insoluble in 5% HCl.
1.	Commercial, No. 60 Powder.....	5.18	1.12
		5.31	1.15
2.	Commercial, No. 60 Powder.....	3.31	0.46
		3.42	0.92
		3.71	0.819
		3.45	0.45
3.	Commercial, No. 60 Powder.....	12.14	4.14
		12.08	4.21
4.	Commercial, No. 60 Powder.....	6.79	3.19
		6.78	3.22
5.	Commercial, No. 60 Powder.....	7.13	3.19
		7.17	3.26
6.	Commercial, No. 80 Powder labeled "Spanish 1918, ash 10.25".....	5.09	1.51
		5.20	1.73
7.	Commercial, No. 80 Powder labeled "Russian 1918".....	3.75	0.39
		3.77	0.53
8.	Commercial, Powdered, Spanish, 1920.....	3.63	0.47
		3.64	0.85
9.	Commercial, Whole, Spanish, garbled to remove stems, powdered, University of Minnesota.....	4.84	1.25
		4.85	1.37
10.	Commercial, Whole, Spanish, garbled to remove stems, powdered, University of Minnesota.....	4.13	0.77
		4.24	0.84