

tion will be greater or less as the pepper comes from a sandy soil or otherwise, so that this estimation cannot be expected to be so uniform in its indications for genuine berries; although it should be easy to fix a limit which should never be exceeded by the sand: *i. e.* residue insoluble in hydrochloric acid. The following maxima have been suggested or adopted by the authorities quoted:—

	Total Ash.	Sand.	Authorities.
Black Pepper .....	6.5	2.0	Bavarian Association of Technical Chemists, 1890.
	5.0	1.0	Wm. Johnstone, Ph.D., &c., "The Analyst," March, 1889.
	5.5	.....	A. W. Blyth, Dict. of Hygiene, &c.
	6.0	.....	Röttger, quoted by C. Richardson.
White Pepper .....	5.0	.....	Clifford Richardson; Bull. Dept. of Agriculture, Wash, 1887.
	3.5	1.0	Bavarian Association of Technical Chemists, 1890.
	3.0	.....	Röttger.
	2.0	.....	Clifford Richardson, 1887.

In the following table I have collected, as far as the total ash is concerned, the result of analysis of a large number of samples of genuine pepper.

## ASH OF BLACK PEPPER.

Number of Samples.	Highest.	Lowest.	Mean.	Authority.
25 .....	5.67	4.17	4.25	Ch. Girard, Chief of the Musical Laboratory of Paris, Second Report, 1885.
8 .....	8.99	4.35	6.39	C. Heisch, F.C.S., in "Analyst," vol. xi, p. 186.
6 .....	4.61	3.67	4.26	A. H. Hassall, "Food, &c.," 1875.
Unknown .....	.....	.....	4.57	König, "Nahrungs- und Genussmittel," 1883.
do .....	5.30	.....	4.84	A. W. Blyth, "Foods, &c.," ed. 1882.
do Penang I. ....	.....	.....	4.59	Pharm. Centralblatt, 1883, quoted by Dr. O. Dammer, in
do do II .....	.....	.....	4.15	"Lexikon der Verfälschungen," p. 712.
do Sumatra .....	.....	.....	4.41	
do Aleppo .....	.....	.....	3.27	
Singapore .....	5.93	4.42	5.18	
Unknown .....	4.70	3.30	4.00	D. Dammer, id., p. 717.
do .....	5.30	3.30	4.30	A. W. Blyth, Dict. Hygiene, p. 433.
12 .....	4.65	3.51	3.96	W. Johnstone, Ph. D., &c., "Analyst," xiv.
Unknown .....	5.10	3.40	.....	Röttger, quoted in Wash. Bull., 1887.
4 .....	3.85	3.62	3.68	Lenz, Zeit. Anal. Ch., 1884.
Unknown .....	7.00	3.00	5.00	Weigmann, Report Anal. Ch., 6, 399.
5 .....	4.70	2.91	3.97	C. Richardson; Bull. Dept. of Agriculture, Wash., 1887.
6 .....	5.16	3.98	4.47	Myself.