

the figures mentioned. For this reason the 'guaranteed contents' of a fertilizer, as stated in Table I, must be understood to indicate only the lowest percentage given in the manufacturers' label, or in his communications to the department.

As required by the Fertilizer Act, Table I. also contains a column in which 'the relative value of each fertilizer calculated from the contents in fertilizing ingredients' is given, the prices of these ingredients being as follows:—

	Cents Per Lb.
Nitrogen in salts of ammonia or nitrates, as well as in compound fertilizers.....	13
Organic nitrogen in ground bone, fish, blood or tankage.....	12
Phosphoric acid:—	
Soluble, in water.....	6
Soluble, in 1 p.c. citric acid.....	5½
Insoluble in Thomas phosphate powder.....	3½
Insoluble, in ground rock phosphate and fertilizers generally.....	1½
Potash, contained in wood ashes.....	6
Potash from high grade salts.....	5½

The valuation of each brand is calculated on the results of the analysis of the standard samples, but it has been omitted in the case of the guaranteed contents on account of the imperfect character of the information supplied in the majority of cases.

I have also to submit a description of the fertilizer samples which were collected, as sold in the open market, in accordance with the instructions received from you on 27th March last. This description is called Table II, and contains the date of collecting the samples, the names of the vendors and manufacturers, the designation of the brand, and the results of the analyses. The figures obtained in examining the sample as sold are given in the third line following the name of the fertilizer, and on the second will be found the analysis of the corresponding standard sample, as well as its valuation. In cases where no standard samples have been sent in to the department and, nevertheless, in contravention of the Fertilizer Act, the fertilizers have been offered for sale it has of course not been found possible to give either the guaranteed contents or the analysis of a standard sample. The number of such fertilizers not registered and therefore illegally sold, amounts to ten, which is slightly less than in former years.

According to the opinions expressed by the analysts 9 out of the 84 samples collected as sold have been found to be adulterated, according to the Act, being deficient in available phosphoric acid or other fertilizing constituents, or have been indicated as being 'below guarantee.' It not unfrequently happens that the fertilizing constituents of the standard samples show higher percentages than claimed in the guarantee of the manufacturers. Nevertheless, the latter must be used by the analysts in judging of the genuineness of a sample, and where the figures of the guarantee are defective it becomes almost impossible to give an opinion. It is therefore very important that when standard samples are supplied by vendors or manufacturers, they should be accompanied by certificates of analysis, or at least by a statement of the lowest guaranteed percentages of every fertilizing constituent present.

It will be remembered that in my report of May 13, 1901, (Bulletin No. 75) the proceedings were fully detailed which led to an alteration in the method of determining the available phosphoric acid in fertilizers, the adoption of which was then authorized by the Commissioner of Inland Revenue, and has since been carried out in this laboratory and in those of the district analysts. Since many manufacturers in the United States still continue to mention, in their guarantees, a percentage of 'reverted' phosphoric acid, it seems necessary to state that in Canada a determination of 'citric soluble' phosphoric acid is made, and the determination of 'reverted' discontinued. It would also seem to be advisable to repeat here the details of the process adopted in Canada for ascertaining the percentage of 'available' phosphoric acid contained in agricultural fertilizers:—

Citric insoluble phosphoric acid.

(a) In acidulated samples—Introduce the filter containing the washed residue from the determination of soluble phosphoric acid in two grammes of the original sample