

This analysis, however, must not be supposed to represent the value of actual cargoes of this article. Very few of them reach so high a grade; the average per centage of those I have analyzed, usually varying between 65 and 75 of bone phosphate. Many of the guanoes recently brought in and sold under this name, are, in reality, common soft guano mixed with fragments of hard guano, which raises their per centage as in the case I have cited in analysis No. 1.

COLOMBIAN GUANO.

This substance is memorable for the singular errors into which several chemists fell in reference to its constitution. When offered for sale here in 1855, the dealers advertised it as a natural *super-phosphate* of lime, publishing certificates of analysis by several well-known chemists. These, after stating the amount of bone phosphate of lime present, gave estimates of *free phosphoric acid* varying from 5 to 11 per cent. of the whole weight of the guano. The simplest tests were sufficient to show the incorrectness of these statements. For example, the watery solution of the guano was neutral to test paper; is never contained, even after boiling a few minutes, one per cent. of phosphoric acid, and what it did contain was invariably combined with lime. I determined to ascertain, if possible, the cause of this mistake, and in order to this end undertook a minute analysis of the article. My results enabled me to announce its true constitution, and to show that the lime existed as the neutral phosphate, consisting of two atoms of lime, one of water, and one of phosphoric acid, instead of the bone phosphate, which has three atoms of lime and one of phosphoric acid. The error was occasioned by overlooking this. The following table expresses my results:

Moisture	2.34
Organic matter and water combined	8.95
Phosphate of iron	0.35
Phosphate of magnesia	0.61
Lime	38.75
Phosphoric acid	46.22
Sulphuric acid	1.96
Chlorine	free
Sand	0.63
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	100.81

Upon calculating the results, some lime will be found over and above the exact amount for the neutral phosphate. This I take to be combined with one of the acids of the humic group, because the substance effervesces with acids after igni-