proves that the original substance could not have contained any manganous carbonate or hydrate. The principal bases were determined quantitatively with the following results :—

Alumina,	0·170	per 100 parts of original substance.
Lime,	0·446	
Magnesia,	0·365	
Soda,[1]	0·597	

The residue left undissolved by the acetic acid was exhausted with hot hydrochloric acid of 20 per cent., the solution filtered, evaporated to dryness, to eliminate the dissolved silica, the silica filtered off and weighed. It amounted to 0·73 grms., *i.e.*, 0·73 per cent. of the original substance. The de-silicated solution was made up to 400 c.c., and aliquot portions used for the following experiments. One portion served for a thorough qualitative analysis, the results of which are included in the statement of quantitative determinations given below; but it is perhaps as well to state explicitly that lithium, beryllium, and the metals of the arsenic group, although very specially sought for, could not be detected. A second portion (25 grms. of original substance) was devoted to the quantitative determination of the cobalt, nickel, copper, and lead. A third portion was used for the determination of the alkalies.

The residue left undissolved by the hydrochloric acid amounted to 26·3 grms. (dried at 100° C., but not completely). Of these 26·3 grms. of matter separate portions were used for determining the following components :—(*a*) the water volatile on ignition; (*b*) the silica which had been rendered soluble by the treatment with hydrochloric acid—it was extracted by means of boiling carbonate of soda solution and separated out and weighed as usual; (*c*) the part disintegrable by the method customarily used for the analysis of clays, viz., by treatment in the heat with concentrated sulphuric acid, and evaporation of the acid from the substance—the silica and alumina thus rendered soluble being determined by the usual methods.

Found in the 26·3 grms. of matter insoluble in hydrochloric acid—

Water,		1·99
Silica, set free by hydrochloric acid,		6·74
Alumina[2] rendered soluble by sulphuric acid,		1·62
Silica, rendered soluble by sulphuric acid,		0·83
Ultimate residue,		14·91
		26·09
	Loss,	0·21
		26·30

As the hydrochloric acid solution had been nearly all used in the numerous qualitative trials made, and the quantitative determinations reported, a special portion of "original substance" (identical with the 100 grms. used for making that solution) was employed for determining the alumina, ferric oxide, manganese, lime, and magnesia extractable by hot hydrochloric acid. Other portions served for the direct determination of the total water and of the total carbonic acid.

The results are included in the following :—

Summary of Quantitative Determinations.

	P.	E.	$\frac{P.}{E.}$
Total water,[3]	24·90		
Total carbonic acid,	0·38		
Total phosphoric acid, extractable by hydrochloric acid,	0·07		
(a) In Acetic Acid Extract.			
Lime,	0·45		
Magnesia,	0·36		
Soda,	0·60		

[1] Including a little potash.

[2] Includes a little oxide of iron.

[3] Determined directly, by expulsion in a combustion tube and collecting in chloride of calcium.