

Summary of Quantitative Determinations.

	P.	E.	$\frac{P.}{E.}$
Total water (H ₂ O),*	24.90		
Total carbonic acid (CO ₂),	0.38		
Total phosphoric acid (P ₂ O ₅) extractable by hydrochloric acid,	0.07		
<i>(a) In Acetic Acid Extract.</i>			
Lime (CaO),	0.45		
Magnesia (MgO),	0.36		
Soda (Na ₂ O),	0.60		
<i>(b) In Hydrochloric Acid Extract from Acetic Acid Residue.</i>			
Silica (SiO ₂),	7.47		
Oxide of lead (PbO),	0.01	}	0.93
Oxide of copper (CuO),	0.272		
Oxide of cobalt (CoO),	0.25		
Oxide of nickel (NiO),	0.40		
Manganous oxide (MnO),	19.39	35.5	0.546
Loose oxygen (O),	3.95	8	0.494
Lime (CaO),	1.33		
Magnesia (MgO),	1.42		
Alkalies (R ₂ O),	0.34		
Alumina (Al ₂ O ₃),	3.03		
Ferric oxide (Fe ₂ O ₃),	16.20		
<i>(c) In Sulphuric Acid Extract from Hydrochloric Acid Residue.</i>			
Alumina and ferric oxide,	1.62		
Silica (SiO ₂),	0.83		
<i>(d) Ultimate Residue.</i>			
Silicates and silica,	14.91		
	98.18		

Special Experiments on the State of Oxidation of the Manganese.

The loose oxygen reported above had been determined in two ways, viz., firstly by Bunsen's method: distilling with hydrochloric acid, and titrating the iodine equivalent of the chlorine liberated by means of thiosulphate—chemically pure iodine serving as a standard; and secondly, by Fresenius and Will's method: digestion of the substance with dilute sulphuric and oxalic acids, collecting the carbonic acid liberated in a tared potash bulb and soda-lime tube, and determining the increase of weight shown by the absorption apparatus. In the latter case the carbonic acid of the carbonates was determined in

* Determined directly, by expulsion in a combustion tube and collecting in chloride of calcium.