

No. 1, Found in 100 parts.

			In combining weight.
Undecomposable silicates,	7.65		
Water,	12.31	H ₂ O	× 1.3680
Carbonic acid,	12.52	CO ₂	× 0.5690
Phosphoric acid,	3.19	P ₂ O ₅	× 0.0449
Silica,	25.60	SiO ₂	× 0.8533
Alumina,	8.43	Al ₂ O ₃	× 0.1640
Ferric oxide,	5.40	Fe ₂ O ₃	× 0.0675
Manganous oxide,	1.29	MnO	× 0.0363
Lime,	9.93	CaO	× 0.3546
Magnesia,	5.95	MgO	× 0.2975
Potash,	2.60	K ₂ O	× 0.0553
Soda,	3.61	Na ₂ O	× 0.1163
	98.48		

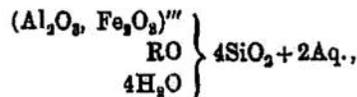
Number of eqq. of phosphoric and carbonic acids = 0.7037 ; of lime and magnesia = 0.6521 ; excess of acid = 0.0516 eqq.

Excess of acid eqq.,	0.0516
Eqq. of ferric oxide,	0.2025
Excess of ferric oxide,	0.1509

to be carried over to the silica as Fe₂O₃ × 0.0503. Doing so, we have in multiples of

SiO ₂	R ₂ O ₃	RO and R ₂ O	H ₂ O
0.8533	0.2143	0.2079	1.368 ; or
1	0.2511	0.2437	1.60 ; or
4	1.004	1.025	6.4

This, if we leave the water on one side, is the formula of a metasilicate ; but, as the substance is decomposable by hydrochloric acid, it must be looked upon as a hydric ortho-silicate (a zeolite) of the formula



mixed with the normal carbonates and phosphates of lime and magnesia, and some phosphate of ferric oxide.

This, at least, appears to me the most plausible theory, although possibly the close agreement of the above co-efficients with the small integers of the formula may be purely accidental.

21. CRYSTALS OF PHILLIPSITE.—Station 276. Lat. 13° 28' S., long. 149° 30' W., 2350 fathoms (Dittmar).

No. 2, Found in 100 parts.

			In combining weight.
Undecomposable silicates,	8.04 (by difference).		
Water, ¹	19.79	H ₂ O	× 1.3660
Carbonic acid,	5.17	CO ₂	× 0.1993
Phosphoric acid,	0.65	P ₂ O ₅	× 0.0078
Silica,	35.38	SiO ₂	× 1.0000
Alumina,	15.04	Al ₂ O ₃	× 0.2481
Ferric oxide,	7.35	Fe ₂ O ₃	× 0.0779
Manganous oxide,	0.47	MnO	× 0.0112
Lime,	1.73	CaO	× 0.0524
Magnesia,	2.35	MgO	× 0.0997
Potash, ³	1.63	K ₂ O	× 0.0294
Soda, ²	2.40	Na ₂ O	× 0.0657
	100.00		

¹ 9.10 of this water proved volatile at 100° C.

² After the summary determination of the alkalis as chlorides, the weight of the PtCl₆K₂ was lost. The numbers given are calculated on the assumption of the ratio of potash and soda being the same as in No. 1.