

## NOTES AND NEWS

## THE FORMULA OF GLAUCONITE

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In a recent discussion on the formula of glauconite (*Jour. of Geology*, 1927, vol. 35, pp. 289-310) H. Schneider concludes that five new analyses published by him, together with five selected earlier analyses, are best represented by the formula  $(K,Na)(Fe,Mg)(Fe,Al)_3Si_6O_{18} \cdot 3H_2O$ , and not by the formula proposed by me in 1922 (*Mineral. Mag.*, 1922, vol. 19, pp. 330-333), namely,  $R_2O \cdot 4(RO, R_2O_3) \cdot 10SiO_2 \cdot nH_2O$ . No numerical comparison of the two formulae is given, but it is not difficult to convert the molecular ratios given by Schneider into a comparable form by recalculating on the basis  $SiO_2 = 1000$  as was done in my own paper.

The result is as follows:

	SiO <sub>2</sub>	R <sub>2</sub> O <sub>3</sub>	RO	R <sub>2</sub> O	RO+R <sub>2</sub> O <sub>3</sub>
<i>5 new analyses (Schneider)</i>					
1	1000	258	165	99	423
2	—	264	167	109	431
3	—	250	174	104	424
5	—	258	158	94	416
6	—	297	142	99	439
<i>5 selected analyses (Schneider)</i>					
11	1000	259	142	105	401
12	—	243	156	111	399
13	—	223	170	105	393
14	—	215	176	105	391
15	—	265	134	97	398
<i>Theoretical values required by formulae of</i>					
Hallimond	1000	—	—	100	400
Schneider	1000	250	167	83	417

Schneider's proposed value 83 for the alkalis seems inadmissible, for it will not explain any of the analyses; as regards the RO and R<sub>2</sub>O<sub>3</sub> groups, Schneider's new analyses give indications of the replacement RO/R<sub>2</sub>O<sub>3</sub> which I noted and which was confirmed independently by Ross (*U. S. Nat. Mus. Proc.*, 1926, vol. 69, Art. 2), but the totals are a little higher than the value 400 found by other analysts. This is probably due (a) to the presence of a small amount of staining by free Fe<sub>2</sub>O<sub>3</sub>; Schneider says "Many of the pellets in No. 6 when examined under the microscope show pin points of limonite and limonite stain"; (b) to the presence of P<sub>2</sub>O<sub>5</sub>, for we read in a footnote to the analyses " . . . any P<sub>2</sub>O<sub>5</sub> that may be present is given in the analyses as Al<sub>2</sub>O<sub>3</sub>." As regards P<sub>2</sub>O<sub>5</sub>, Mr. Radley has been good enough to test the material he analyzed (No. 15 above) and finds only a trace of P<sub>2</sub>O<sub>5</sub>, limonite is absent and magnetite entirely negligible. His total for R<sub>2</sub>O<sub>3</sub> is, therefore, the true value for that group only.

Reference is made to the similarity between X-ray powder photographs of glauconite and zinnwaldite. I believe these are frequently dominated by the oxygen

pattern, which W. L. Bragg has shown to be common to many silicates, even when the chemical units vary in size, e.g., in the chondrodite group. Without a complete solution of the structure it seems doubtful whether similarity in X-ray pattern possesses any value as evidence of equality either in the molecular volume or in the number of oxygen atoms in the molecule. I would suggest that glauconite is derived from mica by the addition of an acid clay molecule, thus  $K_2O \cdot 3Al_2O_3 \cdot 6SiO_2 \text{ aq} + Al_2O_3 \cdot 4SiO_2 \text{ aq.} = K_2O \cdot 4Al_2O_3 \cdot 10SiO_2 \text{ aq.}$  (the formulae can be halved). This will account for the replacement  $R_2O_3/RO$ , the peculiar hydration and the structural similarity, without departing from the empirical formula required by the chemical composition.

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The library of the late Thomas Leonard Watson has been secured by the Agricultural and Mechanical College of Texas for its department of Geology. The library consisting of approximately 1500 bound volumes and hundreds of separate papers and pamphlets will be known as the Watson Memorial Library and will form the nucleus of a much larger library in geology which the college authorities hope to build up. The library reflects Dr. Watson's interest in mineralogy, petrology and economic geology but there are also many works of a general nature including complete sets of the American Geologist, Journal of Geology, Economic Geology and the Bulletin of the Geological Society of America.

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At the 100th regular meeting of the Newark Mineralogical Society, held on Oct. 7, 1928, two papers were presented, one by Dr. Alfred C. Hawkins on "New Jersey Minerals" and the second by Col. George C. Lewis on "Strategic Minerals and Metals."

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The ninth annual meeting of The Mineralogical Society of America will be held at the American Museum of Natural History, New York City, December 27-29, 1928, in conjunction with the Geological Society of America and the American Association for the Advancement of Science. The first session of the Mineralogical Society will be held at the Museum at 2 P.M. Thursday, December 27. A preliminary list of titles of papers to be presented before the Society at this time will be found on the last two pages of this issue. The headquarters of the Society will be at the Hotel Astor, Times Square at 44th Street, where the banquet will be held on Friday, December 28. It is earnestly requested that everyone secure a *certificate* when purchasing a ticket to New York City to attend the American Association or the Mineralogical Society in order that the required number may be secured to insure reduced rates for the return trip.