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every 4½°, making approximately a ring of these small bodies. But we cannot for a moment entertain the idea that nearly all these bodies have been discovered. They are very small and necessarily difficult to detect; and judging from what we already know of the size of these small bodies, we must conclude that many more exist, much the larger share of which are too small to be detected by our best telescopes. The most rational theory of meteoric stones, is that which regards them as minute asteroids. The whole group, many thousands very probably, perhaps millions—between the orbits of Mars and Jupiter, must have very eccentric orbits, and be subject to extraordinary perturbations in their motions, and it is highly probable that many of them become satellites of some of the planets, and finally come in contact with their surfaces as meteoric stones. It is certainly a little curious that the orbits of the known Asteroids intersect. The mean width of the whole zone so far as known, lies between the limits 2·145 (Feronia) and 3·452 (Maxamiliana) giving a breath of 1·307, which is rather greater than the diameter of the sphere of attraction of Kirkwood's Asteroid-planet.

At present we shall add nothing respecting comets, as Prof. Kirkwood has called attention, in several places, to the orbits of these bodies.

Hector, N. Y., Nov. 11, 1864.

ART. V.—*On Brushite, a new mineral occurring in Phosphatic Guano;* by GIDEON E. MOORE, Ph.B.

(Communicated to the California Academy of Sciences, Sept. 5th, 1864.)

IN the spring of the present year, I received, through the kindness of Wm. E. Brown, Esq., of Mare Island in this State, a specimen of a mineral discovered by him in a cargo of phosphatic guano at Camden, N. J. The locality from which it was derived is not known,[1] and, though letters of inquiry have been sent to the parties to whom the cargo was originally consigned, no reply has been received up to this date. The texture and appearance of the guano would, however, point to some one of the Carribean islands, and more particularly to the island of Sombrero as its probable source. It is very probable that the mineral may be recognized among the crystallized products occurring in other guano deposits.

In the specimen in my possession, the mineral occurs filling seams in the guano, varying from $\frac{1}{8}$ to $\frac{1}{4}$ of an inch in width. The matrix itself is of the variety known as rock guano. It

[1] In a letter from Mr. Moore, dated San Francisco, Nov. 13th, 1864, he states that he has ascertained the locality of the new mineral to be Avis Island in the Carribean Sea.—EDS.

possesses an oölitic structure and a brownish white color, interspersed with small spots of pure white.

The mineral is in the form of small but very perfect and brilliant crystals, with a cleavage in the direction of their greatest length nearly equal to that of selenite, the laminæ being also slightly flexible, as in the case of the latter species. Hardness, 2·25. Specific gravity, 2·208 (mean of two determinations). Color yellowish white. Transparent. Lustre vitreous, splendent, inclining to pearly on the cleavage faces.

When heated in a closed tube before the blowpipe, it whitens and gives off water at an incipient red heat. In the platinum forceps, it fuses with intumescence at about 2 on von Kobell's scale, tinging the flame with the peculiar green characteristic of phosphoric acid. The button formed by fusion crystallizes on cooling, showing numerous brilliant facets. It readily dissolves, even in coarse crystals, in dilute nitric and chlorhydric acids.

A qualitative analysis revealed the presence of lime, phosphoric acid and water, with barely discernible traces of magnesia and alumina.

The quantity of mineral at my disposal was very small, scarcely exceeding one gram in weight. In each of the two following analyses, the water was determined in 0·2 gram, the remaining 0·3 gram being employed in the determination of the lime and phosphoric acid. The result was as follows:

	1.	2.
Lime,	32·65	32·78
Phosphoric acid,	41·50	41·32
Water,	26·33	26·40
	100·48	100·45

These figures agree exactly with the composition of the neutral tri-basic phosphate of lime, $2CaO, HO, PO_5$, with the addition of four equivalents of water of crystallization ($2CaO, HO, PO_5 + 4aq$), viz:

$2CaO$,	56·26	=	32·59
PO_5,	71·36		41·34
HO	9·00		
$4aq$,	36·00		26·07
	172·62		100·00

In the polarizing microscope, the mineral shows a vivid succession of colors. A sample has been sent to Prof. J. D. Dana, who has kindly undertaken the study of its crystallographic characters, and I hope in a short time to be able to communicate the results of his investigations to the Academy.

It is with great pleasure that I dedicate this species to Prof. G. J. Brush, of Yale College, to whose unwearied zeal and efficient labors American Mineralogy stands so deeply indebted.

San Francisco, Cal., Sept., 1864.