

Silurian System.

(Appearance of vertebrata)
 Welsh Bala beds. Berwyn Phosphate mine.
 Lingula flags (Quebec) 40% tribasic.
 Angers slates (France).
 Phosphate limestone of Kentucky.
 Logrosan (Spain) Phosphorities (Apatites?)
 Caceres (Spain)
 Portugal “

Cambrian System.

(Appearance of Protozoa, Mollusca, Annuloida, and Crustacea.)

Laurentian System.

Canadian Apatite.
 Norwegian Apatite.

Thus at the present time, we have Mineral phosphates of lime in process of formation, and principally known in commerce as “Crust guano”.

Looking at the chemical composition of average Bird guano, we find it to be composed of the following constituents:—

Moisture	15.8
Organic matter and Ammoniacal Salts.....	52.5
Phosphates of lime.....	19.5
Phosphates of Iron and Alumina.....	3.1
Alkaline Salts	7.6
Silica and Sand.....	1.5

This typical analysis is from the average of 15 samples, made by Nesbit on the Chinchas Inland Guano.

An elementary knowledge of chemistry will assist us to perceive that a large proportion of the above constituents will be leached out by water, or dissipated by prolonged exposure to ordinary atmospheric influences, especially when we remember that the organic matter above mentioned comprises uric, oxalic and phosphoric salts of alkalis and ammonia, and even about one third of the phosphates of lime is found to be soluble in water. Given a deposit of guano on a limestone soil or rock, and it is readily perceived that every shower will contribute to the steady but continual process of the transmutation of the carbonate of lime into phosphate of lime, in consequence of the discharge of the weaker carbonic acid by the stronger phosphoric acid.