

**PHOSPHATE ROCKS OF SOUTH CAROLINA  
AND THE "GREAT CAROLINA MARL BED". A  
POPULAR AND SCIENTIFIC VIEW OF THEIR  
ORIGIN, GEOLOGICAL POSITION AND AGE.  
THEIR CHEMICAL CHARACTER AND  
AGRICULTURAL VALUE. A HISTORY OF THEIR  
DISCOVERY AND DEVELOPMENT**

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**FRANCIS S. HOLMES**

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SPECIMEN OF  
**PHOSPHATE ROCK**



**One fourth Natural Size.**

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DEDICATION

TO THE PEOPLE OF SOUTH CAROLINA,

(MY NATIVE STATE,)

AND TO THE MEMORY OF

PROFESSOR MICHAEL TUOMEY AND OF DR. THOS. L. BURDEN;

TO

JAMES T. WELSMAN, ESQ., OF CHARLESTON, S. C.,

AND

GEORGE T. LEWIS AND FREDK. KLETT, ESQS.,

OF PHILADELPHIA, PA.,

This little work, one of the results of thirty years' observations and labor  
in the Geological fields of the Ashley,

IS RESPECTFULLY DEDICATED.

The first were my revered friends and co-laborers; and the last are  
entitled to the honor and distinction of having at once recognized the  
value of the great discovery of the Phosphate Rocks, and of having lib-  
erally furnished the means to develop these long hidden treasures PREPARED  
OF OLD by the GREAT MASTER BUILDER, and laid up in store for the  
APPOINTED TIME, when the waste places of the earth should be replenished.

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## SCIENTIFIC TERMS AND POPULAR NAMES.

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To comprehend fully the scientific terms used in our descriptions, and the popular names of the objects of which we treat, is of the first importance, in order that there may be no confusion of names, and that the reader may clearly understand the subject before him. The common or popular name which a writer in this State may give in his description of a specimen or object in Natural History, would be readily understood in his own County or neighborhood; but in an adjoining County or State the object may be known by a very different name, and the people be misled by the description. For example: an intelligent traveller on a visit to Sullivan's Island, enquired the name of a venomous looking reptile, which he saw running along the rail of a fence, and he was told that it was a "Salamander." Passing through Georgia a few weeks after, he was invited by a planter to visit his fields, where the laborers were engaged in clearing and burning the pines preparatory to the next year's crop. During the walk he observed that several animals had just been caught escaping from the burning heaps of wood, and which, though resembling the well known forms of the tortoise or terrapin, were yet dissimilar from any he had ever seen. The farmer told him they were called Salamanders or Gophers. Soon after, visiting an orange grove in

Florida, he saw, in a clearing near by, a number of negroes with clubs killing what looked like rats, escaping from the burning brush, and on enquiring what sort of rats they were, he was politely informed that they were not rats, but "Salamanders."

Here we find a lizard, a tortoise and a rat called in three different States by the same name—*Salamander*; whereas, this name is given by scientific men to a little lizard-like animal, that in its general form and characteristics seems intermediate between the frog and the lizard; and, like the former, is amphibious in its habits. They are abundant in the up-country of South Carolina, and may be found in their nests under stones in wet places, often with many eggs around them.

The story of the ancients that the Salamander is able to endure fire is altogether fabulous; yet no doubt it has caused the name Salamander to be given to the Carolina Lizard, because of the fiery red bag apparently suspended under the throat, and from which it is said to "spit" a red fluid that will instantly quench the flames of a burning rail. The Gopher and the ground rat are also thus called, because in escaping from their burrows under ground, directly over which are the burning piles, they appear to endure the hot coals without injury. It is admitted it is always better to employ plain English names when they serve the purpose in view, but when each county, or each popular writer, gives the same name to a totally different object, it tends only to confusion. Let us then adhere to the scientific name, when one

has been given, and make it universal ; for derived, as it usually is, from languages common to all scientific men, when once adopted, there can no longer be any misconceptions.

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#### NAMES GIVEN TO THE PHOSPHATE-ROCKS.

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Writers have called these rocks by different names ; this has occurred even in the writings of scientific men, who should have at once fixed upon one name, and brought it into general use.

They have been called Marl-rocks, Marl-stone, Bone-phosphates, Phosphate-rocks, Coprolites, Conglomerates, and sometimes Bone-rocks. These names have been so used by writers of late that one is sometimes at a loss to know which of all the mineral products of the region is meant.

That there may hereafter be no mistake as to the name, we have adopted that of PHOSPHATE-ROCKS, as the best and most comprehensive. For, though by the terms Bone-phosphates, Marl-rocks, or Marl-stones, they might very properly be called, we think the name Phosphate-rocks, is more in accordance with popular usage, and conveys also a better idea of their true character.

And here it may be remarked, that these rocks are not Conglomerates, Coprolites, or Bones, and that the teeth and bones which are found mingled with the Phosphate-rocks in their beds, should not be called