

Article XVII.—DESCRIPTIONS OF NEW FOSSIL SPONGES
FROM THE HAMILTON GROUP OF INDIANA.

By R. P. WHITFIELD.

PLATES IX-XI.

Among the numerous fossils purchased from Mr. G. K. Green, of New Albany, Indiana, there is a series of fossil sponges from the Hamilton Group, at and near Speed's quarry, in the vicinity of Charlestown, Clark Co., Indiana, that appears not to have been noticed by any one up to the present time, as I can find no generic or specific names under which the forms can be readily or satisfactorily placed. They comprise three distinct types, or generic groups; although associated together and in the same state of preservation, they are probably fundamentally distinct from each other. All are so thoroughly silicified that none of the microscopical features of their structure can be obtained; in fact, they are often completely agatized.

One of the forms presents a somewhat similar appearance to that which is often seen on a species of Favosite that has been deformed by severe compression in a soft matrix, retaining the semblance, however, of a group of tubes or cells, but without distinctive specific characters. This form rather closely resembles the figures of *Somphospongia*, as given by I. W. Beede, in Vol. VI of the Kansas Geol. Report for 1900, plate ii, figs. 1-5. It also appears to be fully as diverse in form as that one.

A second form among them is usually conical, often highly so, though sometimes almost flat; the upper surface being finely pitted and sometimes indistinctly striate radially, especially on the under side around the edge and near the base of the cone. This form is quite generally attached to the upper valve of a species of *Discina*-like shell, resembling *Roemerella grandis* Vanuxem but usually more elevated. The structure of this sponge (if it be a sponge) is very compact, and the substance is so thoroughly replaced by silica as to entirely obliterate all other internal features. If turned upside down it might readily be mistaken both in form and surface marking for *Palæomanon cratera* Roemer, from the Silurian strata of Perry County, Tennessee.

The third form differs again entirely in its general structure and

surface features. It is as multiform in shape as the first mentioned, being irregularly spherical, conical, or depressed convex. One species is dactyloid. The surfaces of all, however, present the same characteristic, namely, that of looking as if one had gathered together the castings of an earthworm from soft mold and pressed them into shape without destroying entirely their vermiform appearance. Hence the name *Vermispongia*.

Vermispongia, gen. nov.

Bodies more or less spherical in form, conical, compressed spheroidal, or occasionally flattened. Composed of partially isolated particles, which resemble the castings of earthworms closely pressed together, forming irregularly shaped masses without entirely destroying their cylindrical form. The individual masses bear evidence of attachment to foreign bodies.

Microscopical features of the skeleton not obtainable. Geological horizon Hamilton Group.

Vermispongia hamiltonensis, sp. nov.

PLATE XI, FIGS. 1-5.

Species extremely various in form, generally of a more or less compressed spheroidal shape, and quite frequently showing evidence of attachment to some foreign body, generally the shell of a brachiopod. The outer surface presents the appearance of being composed of loose, string-like material closely compressed into rounded masses, as if a group of the castings of earthworms had been pressed into this shape without entirely destroying the cylindrical form.

Many of the specimens in the collection show on their under surface remains of the shells of *Strophæodonta*, *Chonetes*, and one of *Roemerella grandis*.

Vermispongia dactyliformis, sp. nov.

PLATE XI, FIG. 6.

A single individual of what would appear to be a distinct specific form occurs in the collection. It is two and a half inches long ($10\frac{1}{2}$ cm.) by seven-eighths of an inch wide ($13\frac{1}{2}$ mm.) in its flattened condition. The surface presents almost the same appearance as those of the last species, but has been worn slightly and in this condition looks extremely like the figures of *Streptosolen*, given by Mr. E. O. Ulrich in Vol. VIII of the Illinois Geol. Surv. Reports, plate iv, figs. 4 and 4a, but I have concluded to place it under the above named genus in preference. The geological horizon of the specimen is established by the fact that it bears the markings of *Strophæodonta perplana* and *Chonetes lepida*, and that attached to it is a small cheek plate of a *Prætus*.

The second form mentioned is so closely similar in its external features to one figured by Mr. E. O. Ulrich in Vol. VIII of the Illinois

EXPLANATION OF PLATE IX.

SOMPHOSPONGIA FAVOSITIFORMIS, sp. nov.

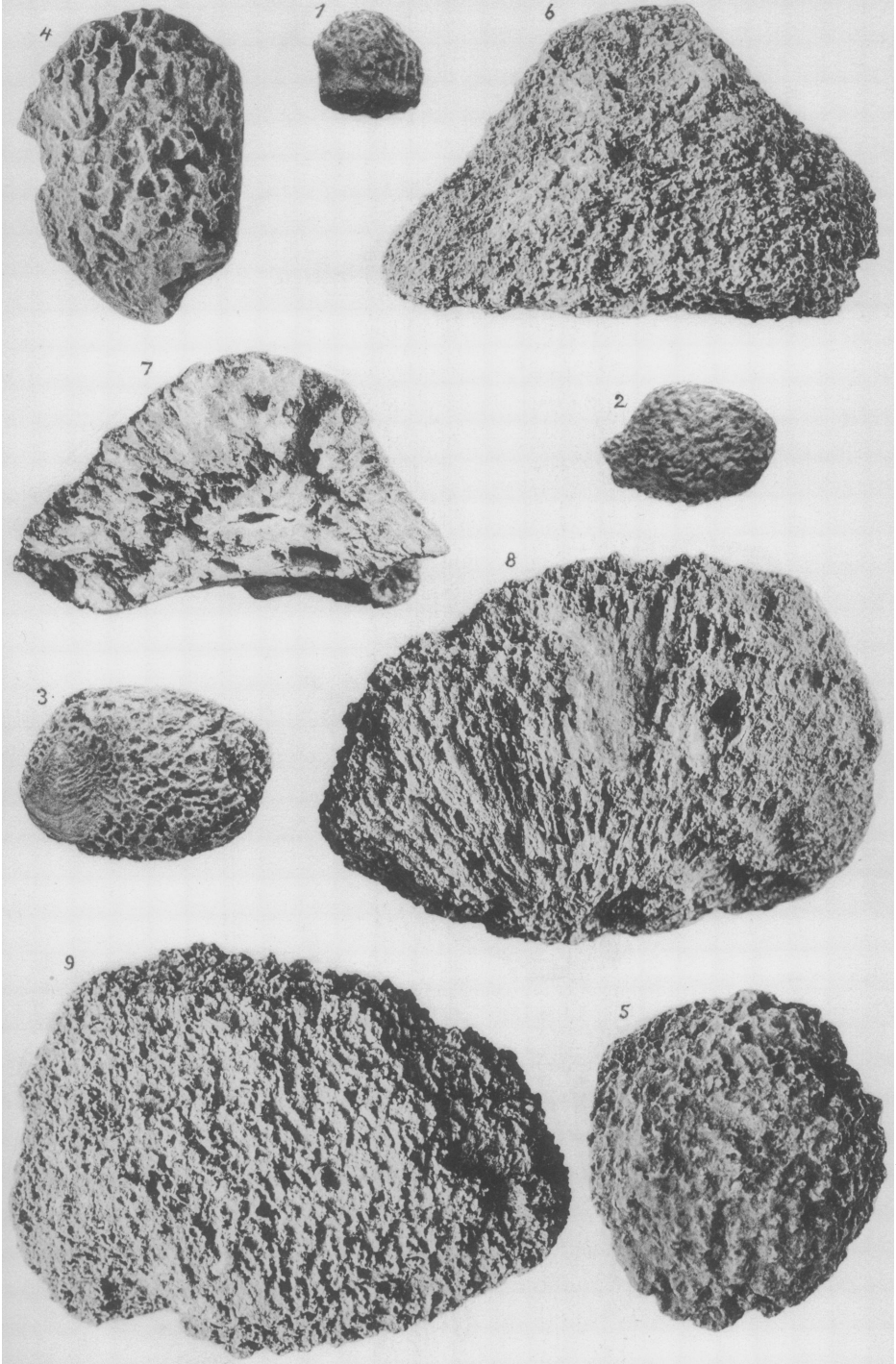
FIGS. 1-5.—Specimens of various sizes illustrating the general form of the species in its younger stages.

FIG. 6.—Lateral view of a large conical form of the usual character.

FIG. 7.—View of a section through the center of specimen shown in Fig. 6.

FIGS. 8 and 9.—Two views of a larger specimen showing the radiating character of the side and the irregular cell-like form of the surface.

(All figures are from photographs, nat. size.)



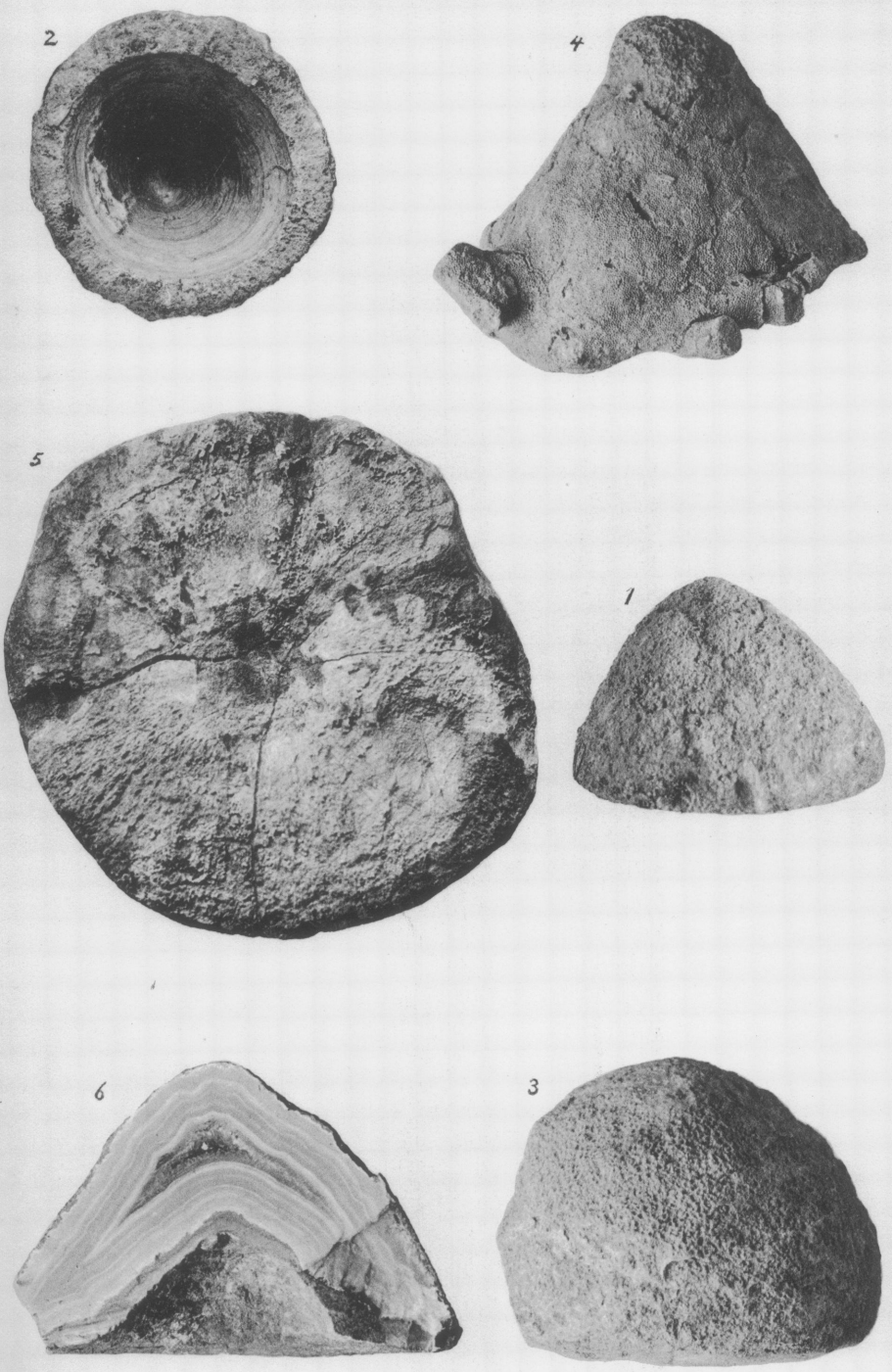
FOSSIL SPONGES.

EXPLANATION OF PLATE X.

HINDIA INDIANENSIS, sp. nov.

- FIGS. 1 and 2.—Lateral and basal views of a small, quite perfect specimen, showing the prevailing form and on Fig. 2 the markings of *Roemerella grandis* Vanuxem.
- FIG. 3.—Side view of a medium-sized individual of the ordinary form, showing the general structure of the surface.
- FIG. 4.—View of a specimen overgrown with the Hamilton bryozoan *Palæschara reticulata* Hall.
- FIG. 5.—View of the base of a large specimen, somewhat weathered and worn, showing the radiating structure.
- FIG. 6.—View of a section of a specimen of the ordinary form, illustrating the highly silicified character of the entire group, chalcedonized, which has entirely destroyed all the features of the sponge, except form.

(All figures are from photographs, nat. size.)



FOSSIL SPONGES.

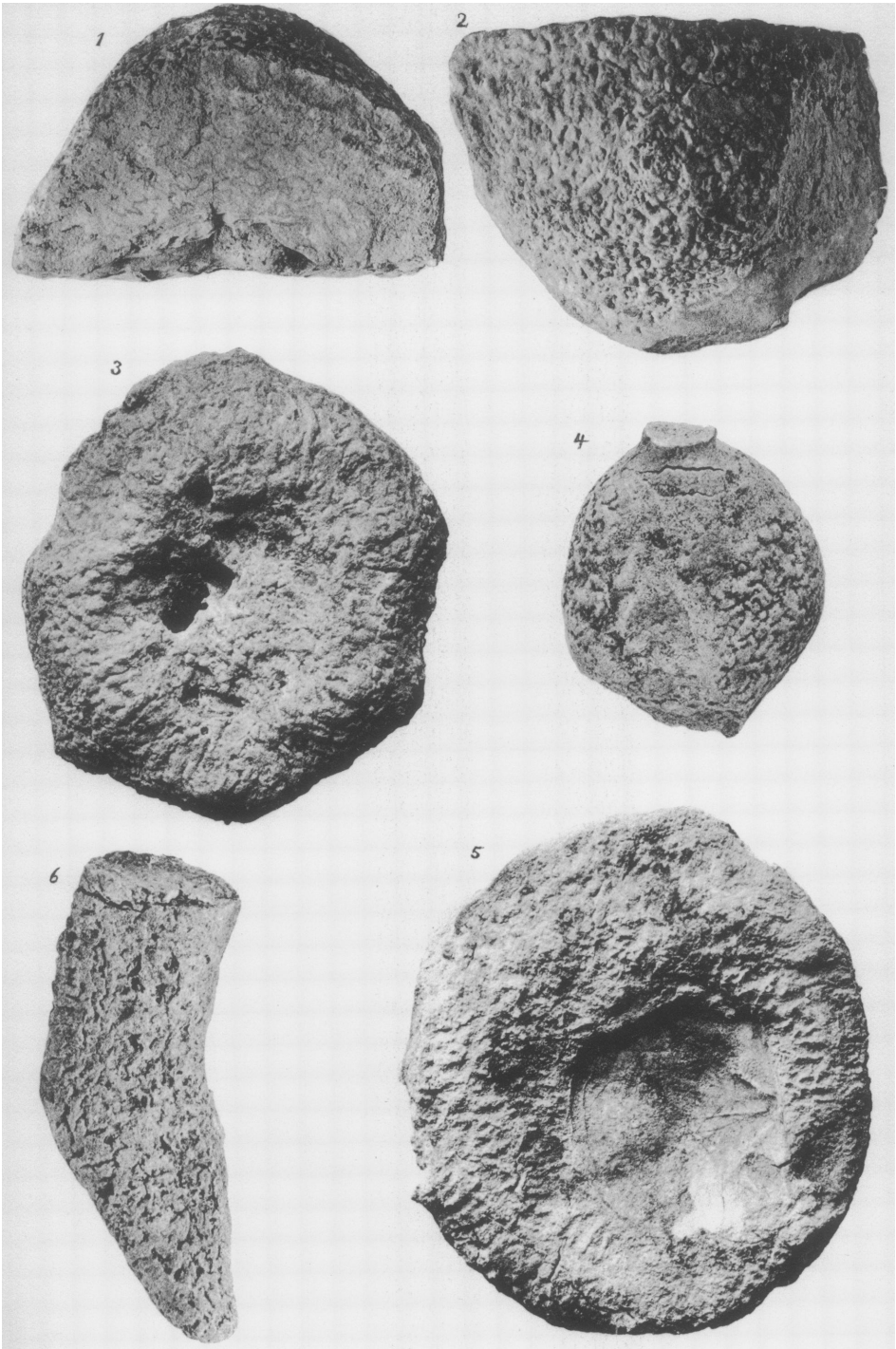
EXPLANATION OF PLATE XI.

VERMISPONGIA HAMILTONENSIS, sp. nov.

- FIGS. 1 and 2.—Views of a solid specimen, Fig. 1, showing a natural vertical section, and Fig. 2, the natural outer surface.
- FIG. 3.—Top view of a flattened individual.
- FIG. 4.—Natural surface of a small ovate specimen.
- FIG. 5.—The under surface of a specimen, showing its starting-point to have been on a specimen of *Strophodonta perplana* Conrad.

VERMISPONGIA DACTYLIFORMIS, sp. nov.

- FIG. 6.—Side view of the only specimen of the species known.
(All figures are from photographs, nat. size.)



ILLUSTRATIONS OF VERMISPONGIA.

Geol. Surv., plate vii, fig. 3, under the name *Actinostroma trentonensis*, that, were it not for the difference in their geological position, I should be strongly inclined to refer our specimens to that species, but there can be no question as to their Devonian origin, as I find, besides the *Discina*-like shell above referred to, several well authenticated Hamilton Group fossils attached to the bases of the specimens, showing that the sponges grew upon them. One specimen of this form I also find nearly half covered by a growth of *Palæschara reticulata*, a bryozoan common in the Hamilton Group of New York, which throws up solid stems from the spreading base.

The resemblance of this species to an over-silicified form of *Stromatopora* or *Actinostroma* is certainly very great, but I am much more inclined to think it pertains to the genus *Hindia* Duncan, as represented in the *Astylospongia inornata* of Hall. On a large overgrown specimen, badly weathered, one can readily see indistinctly a resemblance to the peculiar structure often observed on that species. I have therefore concluded to refer this species to the genus *Hindia* Duncan, with the following description.

***Hindia indianensis*, sp. nov.**

PLATE X, FIGS. 1-6.

Body conical, more or less elevated, often compressed and flattened. Quite generally showing an attachment in early stages of growth to a Discinoid shell (*Roemerella grandis* Vanuxem) or other foreign substance. Base always (?) concave, flattened at the margins and often rounded on the outer edge. Much weathered specimens show an incipient radial striation on the flattened border of the base, and a finely punctate structure on the upper surface, but no definite order of the punctation can be discovered. Size varying from less than one inch to fully three inches in diameter. Height very variable.

Geological formation and locality. — In the Hamilton Group at and about Speed's quarry, near Charlestown, Indiana.

The Hamilton Group fossils recognized on the bases or attached to specimens of this species are the following: *Strophæodonta demissa* Conrad, *Productella shumardana*, *Chonetes yandellana*, *Tropodoleptus carinatus*. Upon those associated with it I find *Strophæodonta perpendicularis*, *Craniella hamiltoniæ*, *Spirifer segmenta*, and *Phacops rana* Green.

The first form mentioned at the beginning of this article, the one somewhat resembling a crushed or deformed member of the Favositidæ, I have concluded to place under the same generic head as the

one mentioned as being illustrated in the Kansas Geological Report, namely, *Somphospongia*, and under the following name:

***Somphospongia favositiformis*, sp. nov.**

PLATE IX, FIGS. 1-9.

Sponge body flattened, spherical, globular, or conical with a concave base, or, in some cases, almost discoid; the structure being made up apparently of a mass of compressed and laterally crushed irregular tubes, while these appear to be made up or increased by lateral expansions from the edges of the already formed tubes. The natural surfaces of the separate bodies are therefore rough, either knobby, tuberculose, or presenting the appearance of cells like those of Favosite tubes, crushed or distorted. The microscopic structure of the framework is not obtainable owing to the condition of preservation. A single specimen very highly silicified shows the arrangement of the tubes, or breathing pores, in a decidedly radiant manner, but no evidence of spicular arrangement of the skeleton can be gotten from it. The specimen is figured on Plate IX, Figs. 8 and 9.

This species is quite frequently shown to have started on *Strophæodonta perplana* Conrad, eight specimens out of fourteen present in the collection having started growth on that species of brachiopod, while one is attached to a valve of *S. concava* (?), one to *Roemerella*, one to *Spirifer segmenta*, one to *Craniella hamiltoniæ*, and one to what may have been a small *Atrya histrix* Hall.