

exactly two inches, of the next three and a half inches, and next to the outer one five inches, 'certainly has a modern look,' as Dr. Farquharson truly remarks (vol. ii. p. 109). The reader is doubtless aware that among the illustrations in the latter part of the dictionary mentioned is a figure of the zodiac with four rings or zones (p. 1704).

These facts, gathered from the statements and figures published in the Proceedings of the academy, are presented for consideration by our antiquarians. The question of the authenticity of these relics should, if possible, be definitely settled, as they have, if genuine, an important bearing on some troublesome archeological problems. CYRUS THOMAS.

Dr. Otto Meyer and the south-western tertiary.

In the December number of the *American journal of science*, Dr. Otto Meyer publishes what purports to be a reply to criticisms on his attempt to prove that all observers previous to himself have been mistaken as to the broad facts of the succession of the tertiary strata of the south-western states, and that what Lyell and the American geologists have found to be the top is really the bottom, and *vice versa*. This is the third of three lengthy papers devoted by him to the same theme; and one would naturally suppose that one who is allowed to occupy so much space in a scientific journal of such high standing had at least some new observations of his own to communicate, upon which to base so sweeping an assertion; and that he had studied and candidly considered the published work of his predecessors. His second paper showed the extremely limited extent of his own observations, and his failure to even read, much less study, the literature of the subject, from which he quoted only disjointed sentences, selected to suit his ideas. The three articles in the October number of the journal, from three observers whose observations he calmly sets aside as unworthy of confidence beside his own superior lights, expressed their astonishment at the cool assumption, grounded on such a slender basis, that pervades Dr. Meyer's methods and assertions; and they gave a few of the simple facts that irrefragably prove the correctness of the recognized succession of formations.

In his latest article, Meyer goes even farther than before. He not only denies categorically that stratigraphy alone, including dips, can give any certainty as to the natural succession of the formations, unless we could 'follow the strata foot by foot;' but he proceeds to pick out from the work of myself and others such portions as leave room for doubt in their interpretation, and upon these constructs and supports his fanciful fabric. He simply ignores facts pointedly stated, that completely overturn his whole scheme; as, for instance, the paragraph in which I state the fact, verified innumerable times, that the sandstone of the Grand Gulf group is found "*overlying* the Vicksburg strata generally along the southern line of the Vicksburg group." In the face of this statement, which, if he had chosen, he could easily have verified near the very localities examined by him at Jackson and Vicksburg, and of the universal and patent fact that all the divisions of the Mississippi tertiary disappear beneath the drainage-level with a southward or south-westward dip, he presents for acceptance by guileless American geologists a section in which the Grand Gulf rocks are made the base of the tertiary. In referring to the re-appearance of the Jackson

shell bed at one point on the Chickasawha River, southward of the main belt, he entirely overlooks the fact that it is there directly overlaid by the most characteristic 'orbitoides limestone' of the Vicksburg group, under which it disappears to southward.

Similar methods are pursued in other cases, varied with elementary platitudes concerning the general value of lithological and paleontological characters.

I cannot consent to cumber the columns of this or any other journal with a detailed refutation of assertions founded upon such methods of procedure. Whenever Dr. Meyer or any one else shall come forward with any thing tangible that seems incompatible with the results deduced from my elaborate researches in the south-western tertiary, I am ready to discuss the issue; but I am unwilling to waste time, paper, and ink upon the flimsy but elastic structure which Dr. Meyer has, in the face of known facts, evolved from his inner consciousness. Fortunately, the geological area which he attempts to turn wrong side up is now again under examination by competent observers, who have no hobby to ride, and whose results, I have reason to hope, will be made public before many months. In the mean time, I commend Dr. Meyer's methods to the attention of ambitious young geologists as a conspicuous example of 'how not to do it.' E. W. HILGARD.

Berkeley, Cal., Dec. 15.

A new meteoric iron from West Virginia.

In your last issue appears a communication entitled 'A new meteoric iron from West Virginia,' in which a meteorite said to have been found near Charleston, Kanawha county, W. Va., is described.

The writer is evidently not aware that this same piece of iron was described in a paper read at the meeting of the American association for the advancement of science, held at Ann Arbor in August last. The transactions of that session are not yet published, but the title of the paper above mentioned was noticed in *Science*, vi. No. 136, p. 222, Sept. 11, and in the *American journal of science*, xxx. No. 178, p. 326, October, 1885. No mention would be made of this oversight if the iron were correctly described, but several inaccuracies demand attention. When the paper was prepared, the only information at my command was that furnished me by Dr. H. G. Torrey, and was simply this: that the iron had been sent to him from Charleston, Kanawha county, W. Va., by Major Delafield Du Bois, who wished to have it assayed. The major had received it from parties who thought it precious metal of some kind.

Since this first report was made, Major Du Bois has looked up the matter more thoroughly, visiting the true locality, and making many inquiries. At a meeting of the New York academy of sciences, Nov. 30, the writer read a paper, announcing the full particulars of the finding. Owing to press of matter, this paper will not appear in the *American journal of science* until February, and in the New York academy proceedings as customarily published. I then announced the true locality to be Jenny's Creek, — a fork of the Big Sandy River, 15 miles from the Chatteroy railroad, 35 miles from Louisa, Kentucky, and 38 miles from Wayne Court-house, Wayne county, W. Va., not Kanawha county, as formerly announced. Your correspondent says, "Of its chemical constitution and the circumstances of its fall, we are quite ignorant." He further asserts that