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 hy 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

the iron was devoid of any thing like a crust. I would repeat that the iron was found in October, 1883, in two masses aggregating at least twenty-five pounds in weight, and that both these masses were covered with a crust. I presented an analysis of the iron made by Mr. James B. Mackintosh of the School of mines, New York, and also cuts showing two views of the iron, and one of the crystalline structure of its surfaces. The iron which I described is unquestionably that mentioned by the writer in your last issue.

Instead of being found near Greenbrier county, it was found two counties farther off, or one hundred miles. Hence it is scarcely credible that all these pieces are fragments of a meteorite which burst in mid-air.

It is exceedingly important in the study of meteorites that wrong localities should not creep into print. If this instance were allowed to pass unnoticed, it would result in the recording of two distinct falls; i.e., one at Charleston, Kanawha county, W.Va., and the other at Jenny's Creek, Wayne county, W.Va. The two small pieces brought to me from Wayne county are identical with the original piece loaned to me for description, and the danger of meeting with these remaining fragments as supposed new finds was touched upon in the paper read at the Academy of sciences. GEORGE F. KUNZ.

A national university.

In No. 149 of *Science* (Dec. 11), in an article on 'A national university,' is a criticism upon that part of the report of Secretary Lamar recommending the establishment of a national university in Washington. The writer urges that there must be "a fatal defect in any congressional bill to establish a university, so long as the principles of appointment to United States offices, and the tenure of those offices, remain what they are." The writer is ignorant of the fact that we now have established in Washington, by congressional bill, the Columbia institution for the deaf and dumb and the Howard university. Both of these institutions, in their present form, were established by congress, and are supported by yearly appropriations. No greater degree of permanence in tenure of office is found in any university of the country than in these, and no difficulty is experienced in finding competent and able professors and instructors.

The next objection is, that "the government of a national university would necessarily be in the hands of some board of officers, and the constitution of such a board would lead to many difficulties."

We supposed that all universities were in the control of some board, and in almost every one of our large universities the constitution of such a board has led to many difficulties: the board of Yale college is now no exception. The Smithsonian institution is controlled by a board of officers appointed by congress, and it has not led to the difficulties suggested. The influence of sectional feeling has not been felt, and we doubt if any plan could have been devised by which more good could have been accomplished than has been by the board of the Smithsonian, with Professors Henry and Baird as its secretaries.

The writer objects that "the gift of such an education would rest in the hands of the members of congress, and would only place so much injurious patronage at their disposal."

There would be no necessity for any thing of this kind. Such patronage does not exist either in the Columbia institution or the Howard university; but, even if it should rest in the members of congress, the results in analogous cases prove that the objection has no weight. The appointments both to West Point and the Naval school at Annapolis are in the gift of the members of congress, and there are no institutions of the kind in the world where abler men or better scholars have been graduated. These institutions have educated and trained commanders of the army and navy, and they have in war and in peace shown the excellence of their education.

The last objection is, that a national university would be un-American in principles. Washington, Jefferson, Madison, and Adams thought a national university was necessary. We do not understand how an institution which the founders of our country recommended can be considered un-American.

There is no place in the country which possesses such advantages for a national university as Washington. Here are the Smithsonian institution with its various departments, the geological survey, the coast survey, the nautical almanac, the hydrographic office, the signal-service bureau, the national museum, the medical museum, the patent office, the libraries in the various departments, and the congressional library, — each of these bureaus presided over by gentlemen of the highest ability, aided by a corps of men the equals of those of any of our universities; the whole forming a nucleus for a university, when grouped together and combined, superior to any in the world. Washington is the capital of the country, and is to-day a centre of more scientific apparatus and more scientific men than any other city in the union. G. G. H.

It is perhaps unnecessary to point out the difference between a 'national university' and a university incorporated by act of congress.

I think the writer of the above letter must be unaware that the absolute permanence of tenure of office during efficiency is the one great inducement which leads young men of good parts to enter the service of such a college as Harvard. It goes without saying, that it would be out of the question to induce one of the full professors at Harvard, except for much larger pay, to give up his reasonable salary, his position for life, and his comparative freedom from the necessity of explaining his work to unsympathetic critics, to accept a position under the United States government, where he could, by constitutional provision, only be sure of his salary and place from year to year; whereas I know of the anxiety felt by instructors in colleges under city control to escape from their bondage to the politician.

It is true that there are a large number of scientific men in government employ, but they are there for the simple reason that there is the one great market for their services. It has never been my fortune to meet with any teacher who would not prefer to be in the employ of a private school or college, rather than in that of city, state, or United States. The constant parleying with politicians which government employ entails is simply unbearable for many of the men, whose disposition leads them to choose the teacher's life.

The scientific bureaus were established by the United States with the view of making surveys of the country, and the work of scientific investigation is carried on at present only with the object of mak-