Nov. 13, 1833, had aroused the imagination and the determination of these keen observers, and they were constantly engaged in meteoric discussions. The enormous Texan aerolite, preserved in the college cabinet, was an imperishable wonder. The Weston meteor had been described, long before, by Silliman and Kingsley. Even in the previous century, Thomas Clap, the rector of the college, had published a tract upon meteors, interesting now as an embodiment of what was then known and thought. These were precursors of the investigations in which Newton was destined to become a leader. The story of this period may easily be gathered from an article (which appeared in the *New Englander* for 1868) by a writer qualified in all respects to prepare the narrative, Prof. C. S. Lyman.

Without going over the ground there traversed, we shall follow Professor Lyman in saying that the cosmical origin of the November meteors, and the true explanation of the radiant, as well as of its position with respect to the earth's orbit, had been well settled by the observations of Olmsted and Twining after the shower of 1833. Olmsted had attempted, but unsuccessfully, to point out the probable orbit of the meteors in space. Newton first took sure and definite steps toward such a determination. He collected and analyzed previous observations, and pointed out not only the five possible orbits, but how the only true one could be determined. The laborious computations necessary were made by the distinguished English astronomer, Professor Adams of Cambridge; and thus the orbit of thirty-three and one-fourth years was definitely established. Newton's papers on this subject in the *American journal of science* have become classical, and are referred to by all writers on meteoric astronomy. His later papers on comets are characterized by the same originality and ability as those on meteors, and have largely added to his scientific reputation. An important memoir from his pen appeared in the first quarto volume published by the National academy of sciences in 1866, wherein he endeavored to show the laws which govern the movement of sporadic meteors, as he had previously investigated the phenomena of periodic showers. Two admirable summaries of what is known in respect to meteoric laws have been contributed by this acknowledged authority to the new edition of the Encyclopaedia Britannica (vol. xvi. 1883), and to Johnston's Cyclopaedia (1877).

In all matters pertaining to the advancement of education and the progress of science, Professor Newton has been a wise and firm upholder of conservative ideas. He has shown no desire for popular applause: he has rarely appeared as a speaker before public assemblies. But wherever he has been called upon, he has come forward with independence, courage, and persistence, to uphold what he believed to be right. In electing him to be their president, the association has shown its desire to honor one whose titles to such a distinction are of the most solid character, — important contributions to knowledge, by difficult and prolonged study, guided by an acute and well-trained mind.

LETTERS TO THE EDITOR.

*** Correspondents are requested to be as brief as possible. The writer's name is in all cases required as proof of good faith.*

Man's ancestry.

Permit me to dissent from your editorial comment (*Science*, vol. vi., p. 81), that man is of those forms whose ancestry is unknown. I cannot but think that the data at hand are already abundant for an answer, and that we can allocate his systematic relationships as well as those of any other animal. The data are given in the anatomical monographs, or, better still, can be tested by a comparison of the structure of man, and the primates, as expressed in the skeletal and other systems. It is difficult for me to understand how any one acquainted with the data could reach a conclusion other than that man is the derivative of a form very much like the chimpanzee and gorilla, and that, could his remote ancestors be seen, they would be placed not only in the same family, but in the same group with the African apes. The general agreement in the skeleton, the anapophyses, the digits, the sternum, the pelvis, the carpal and tarsal bones, the tuberculation and ridges of the molars, and numerous other points in which there is similarity between man and the African anthropoids, appear to me to preclude any other scientific conception. Compare man and the anthropopitheci of Africa, contrast the several species with the other apes, and the monkeys generally, and then apply the doctrine of probabilities to the morphological results. The only logical conclusion must be that man is

descendant of an ape, which would be only generically separable from the chimpanzee and the gorilla; and that while the last two are little modified descendants from a common stock, man's structure, in some respects, has been much modified, — but even man's deviation is mostly superficial and psychological. THEO. GILL.

Washington, Aug. 5.

[We meant, by the statement which Dr. Gill criticises, that the immediate exact ancestors of man are not known to paleontologists; and that the morphological evidence has not yet been so fully worked over as to afford definite conclusions as to the evolution of man. The elucidation of the exact affinities of man with various primates still awaits exhaustive study: that he is related to the anthropoid apes, is, of course, well established; but that he is more closely related to them than to any other primates has still to be proven. In suggesting a relationship between man and the monkeys, we meant rather to propound a question, than to advocate a conclusion. In reality, there is probably no essential difference between Dr. Gill's opinion, and the suggestion emitted in our comment, which our critic seems not to have understood as we intended. — ED.]

A mad stone.

Your question, Mr. Editor, having regard to Mr. Sampson's letter concerning a 'mad stone,' 'how did such a superstition arise?' admits of a ready answer. Many a porous stone, in good capillary condition, can *suck a wound*, not so effectively, perhaps, as the lips of Queen Eleanor, but still with considerable power. This fact is especially true in case the stone has been moistened so that close contact between it and the body may be secured, as well as continuity of the fluids, and evaporation from the external surface of the stone, to actuate the capillary flow. Familiar applications of the principle are seen when the country-boy puts a dab of mud upon the spot where a hornet has stung him to compose the pain; and when the housewife uses French chalk, or soap-stone dust, or wet plaster-of-Paris, or, better yet, clay moistened with naphtha, ether, or oil of turpentine to draw out a grease-spot from clothing or from the floor. Thus much for the basis of the 'superstition.' It is assuredly easy to conceive withal that 'mad stones' may have existed of such chemical composition, or charged with such chemical substances, that they could act as germicides as well as absorbents. Indeed, we have already in that most sovereign of balms, powdered chalk for a mosquito bite, something so nearly akin to the ideal mad stone, that your correspondent was more than justified in according to the matter his portion of that careful attention which Arago did extol. F. H. STORER.

THE KONGO FREE STATE.

MR. STANLEY has given a history of the planting of this state, its growth to the present time, and the recognition of its flag and sovereignty by the powers of Europe and America, at the Berlin conference. His book has been supplemented by reports from French and Portuguese travellers; from Lieut. Cameron of the English army, who crossed Africa from the east to the west a little below the valley of the Kongo; from Mr. W. H. Tisdel, the agent sent by our government to the Kongo; and from Admiral English, commander of our fleet on the African coast. These reports, though somewhat conflicting, can be reconciled, and the truth ascertained.

The Kongo free state, by the terms of the Berlin convention, controls a narrow strip on the northern banks of the Lower Kongo, from the ocean to Stanley Pool; thence the territory extends north-east to between the fifth and sixth degrees of north latitude, and south below the eleventh degree of south latitude, and east to within a few hundred miles of the Indian Ocean, including in its limits nearly all the water-shed of the Kongo and its branches.

The river is navigable from the ocean to Vivi. Between Stanley Pool and Vivi, 235 miles, there is a fall of 1,200 feet, with 80 miles of navigable water between the falls. There are a large number of navigable branches running into the Kongo, and steam-launches have sailed on the Kongo and these branches nearly 1,500 miles. Mr. Stanley estimates, indeed, that there are over 5,000 miles of uninterrupted navigation on them; and that, in addition, the navigable waters of other tributaries would probably bring the total to about 20,000 miles: these estimates cannot be fully relied upon, but there is sufficient evidence to prove that the navigable waters of the Kongo exceed those of any other river in the world.

The land in the eastern part of the water-shed of the Kongo is between 4,000 and 5,000 feet in height, falling at first pretty rapidly, and then more gradually, into the great valley of the Kongo, about 1,500 feet above the sea-level.

As the river rises in the east, runs to the west near the Equator, its valley has nearly the same climate, growing more temperate towards the sources of the river. The whole area is abundantly supplied with rainfall.

The outlets for the trade of this vast region have hitherto been south through the Portuguese territory to the Atlantic Ocean at Benguela, or else north-west through the French possessions to the valley of the Ogowé. The Kongo offers the shortest route to the ocean, but the river has cut its way through the chains of mountains; while the Kwilu Niadi, in the territory of the association, and the Ogowé, follow natural valleys, and reach the ocean by longer and easier routes.

Mr. Stanley constructed a road around these falls. It crosses a succession of valleys and steep hills, some one thousand feet in height.