which view Professor Owen coincided in 1853." (See Journal of the Geological Society, August, 1853.)

Here, then, I am accused of ignorance, and leading the Committee into error. First, as to the ignorance. A complete and circumstantial history of these fossil tracks was given to me personally in England by Mr. Logan, on one of the few occasions on which I was in his society, before I came to Canada; and as to the edition of Lyell's Manual, in which an account, though by no means a complete one, of these tracks is given, I happen, unfortunately for the argument, to possess from accidental circumstances no less than a couple of copies. Besides which, on more than one occasion, I have publicly referred in my lectures to the various points connected with this discovery. But when persons are so exceedingly hypercritical, surely they should be exact also. Now, the truth is, Mr. Abraham, although the announcer, was not the real discoverer of these tracks. They were first detected by a miller residing near the spot; and the discovery being brought by this miller, (whose name science unjustly ignores), or by some of his neighbours, under the notice of Mr. Abraham, that gentleman published an account of the matter in the *Montreal Gazette*. Mr. Logan then took up the subject, and pointed out certain geological errors into which Mr. Abraham had fallen. Again, the second and correct determination of the nature of these tracks was made by Owen, not in 1853 as incorrectly stated, but in the early part of 1852. Although dates in scientific matters are serious things, I should scarcely have thought it worth while to notice this error, were it not to show in its true light the ridiculous parade of erudition here brought against me.

Secondly, I am accused of misleading the Committee. But let us see how the case actually stands. I am asked by the Committee, as to the *establishment of new scientific truths* (the italics are my own) in reference to the labours of the survey. Now, I will maintain that the "establishment" of this discovery as a new scientific truth is entirely due to the exertions of Mr. Logan. If the survey had not been instituted at the time, one of two things must inevitably have followed: the discovery would have been a ten days wonder, and then passed out of mind; or, it would have been taken up by some of our scientific neighbours, and the merits of its further developement thus lost to Canadian geology. In 1851, Mr. Logan laid before the Geological Society of London, a large slab of the rock containing these tracks, together with a series of casts relating to the same, and a minute account of their occurrence. In 1852 he again crossed the Atlantic with further casts and more ample particulars, and thus led to the determination by Professor Owen, with whom Mr. Logan put himself in immediate communication, of the true nature of the animals by which these tracks were made. If, after this, the Geological Survey of Canada may not claim the merit of "establishing" the discovery as a scientific truth—and, be it remembered, I spoke to nothing more—with whom, I would ask, in the name of justice, does the merit lie?

But to place my position fairly before the reader, the entire question and answer should be given.

"54. The results to be expected from a Geological Survey being two-fold; the establishment of new Scientific truths, and the discovery of facts and materials of Economic application, can you state to the Committee some of the advantages in both of these branches, which have been already derived from the Survey, and may be expected from its future extension?—*Ans.* With regard to Economic discoveries, I may state generally, that the Survey has brought to light the existence of beds of workable Peat, before, I believe, unknown in Canada, or at least undescribed: of Slate of excellent quality, of Limestone bands, where Limestone was supposed to be absent, and of Lithographic stone, Serpentine, Soapstone, White brick clay, and other valuable materials, previously altogether unknown or undiscovered, along the localities indicated by the Survey; it should also be remembered in an enquiry of this kind, that *positive* discoveries are not the only facts of importance to be made known, *negative* results being in many instances almost equally valuable. Of this latter class, the proof of the non-existence of Coal over the greater part if not the whole of Canada, is entirely due to the Survey; whose labours have thus put a stop to much useless expenditure of money in futile researches after that mineral. Looking at the Survey again, in a Scientific point of view, we find it elaborating many facts of the highest interest, some of which, I do not hesitate to say, may take rank with anything made known of late years by European Science. The discovery of Phosphate of Lime as the chief component of certain shells, is a striking case in point. It was long considered as a settled fact that the Chemical composition of the bones and teeth of vertebrated animals differed entirely from that of the shells and hard parts of the lower classes of the animal kingdom: consisting in the former essentially of phosphate, and in the latter, of carbonate of lime. This fancied difference has been broken down so far as regards certain brachiopods, by the chemical researches of the survey; a discovery which will, no doubt lead to important deductions. Another very interesting discovery is that of the crustacean tracks on the Potsdam sandstone. The celebrated discussion, to which this has given rise in England, has attracted the attention of scientific men, all over Europe, to the results of the survey. Several new minerals have likewise been discovered, and errors have been rectified in regard to species long known. A great deal of light has also been thrown on the complicated question of the metamorphism of rocks, and from the investigations now being carried on, both by Mr. Logan and Mr. Hunt, much more may be shortly expected. There can be no doubt also, that when the complete investigation of our Canadian rocks is accomplished, so far as to justify minute comparison with rocks of the same age in the United States and Europe, many important generalisations will be arrived at, leading in the end to a revised grouping and nomenclature. Finally, it should be borne in mind, that the chief attention of the survey has been hitherto bestowed on economic questions, the scientific investigation of the geology of the Province having been made in a great degree subservient to these. As the survey progresses therefore, its science will be necessarily more fully developed."

Alluding, towards the close of his attack, to the first part of the above answer, my anonymous assailant affects great indignation at the omission of certain economic substances from my list;* although it will be seen I stated to the Committee that I spoke in general terms, and also that the phrase "and other valuable materials" occurs at the end of my enumeration. It was at the same time distinctly understood in the committee-room that the question of economics was to be taken up in full by Mr. Logan, and hence the comparative brevity of my reply. The "serpentine" and "soapstone", and the "bringing to light the existence of valuable beds of peat," seem, from their inverted commas, to be thought fair game for the critic's irony. But what do we find, in relation to these matters, in Mr. Logan's evidence, given the day after mine. I quote from that gentleman's answer to question 89:—

"Soapstone is a material pointed out as existing in abundance. There are many establishments in the States whose business is devoted to the manufacture of it alone, and the Canadian localities are coming into operation. From what we have reported of peat and from the dearness of domestic fuel, a person in Montreal has commenced preparing and selling it for house use, at $5 per cord of 128 cubic feet unpressed, and $12½ for the same bulk pressed. I tells me that braziers and blacksmiths have been using some of it to their satisfaction, and I am aware that some enquiry has been making about it for the smelting of iron. It is used for such a purpose in France and other countries. It is known that 40,000 people are employed in France in the preparation of peat in various ways."

The serpentine, white-brick clay, &c., are spoken of in other answers. Here then, I have at least the satisfaction to know, that if my reference to the peat have anything ridiculous about it, Mr. Logan has kindly placed himself in a similar dilemma.

In conclusion, I would observe, that a mode of assault commonly followed in hostile criticism, is first to ferret out errors or imperfections in the subject-matter—or to create such, if they chance to exist only in the wish or distorted imagination of the critic—and then to base on these real or imaginary shortcomings, a system of inferences, worked out in a sarcastic spirit with a view to irritate the feelings or affect the reputation of the writer. This latter element constitutes the main part of the attack upon me in the anonymous article admitted into the last number of our Journal; and it must be evident to the impartial reader, that if I were disposed to retaliate in a similar spirit, I have abundance of materials at command to enable me to do so with success. In my reply, I have necessarily limited myself as closely as possible, to a bare refutation of the charges and insinuations brought against me. I have thus shewn:—

First, that my past labors in practical geology, although certainly not comprising a survey of 300,000 square miles, have been amply sufficient to enable me to give legitimate evidence on the working of our Canadian Survey, on the best means of bringing its results before the country, and on the future requirements of Mr. Logan's staff.

Secondly, that after a good opportunity, during my constant inter-

* These, it will be noticed, he gleans from an answer in Mr, Logan's evidence.