

might lay me open to a charge of self-laudation—with my replies. Were Mr. Logan now in Canada, I am quite sure that he would give me such a testimonial as would refute in itself to the full, these unworthy attacks. One thing at least must strike us as rather curious, if we be inclined to adopt the conclusions of my anonymous assailant. How came it, I would ask, that, after I made this lamentable exhibition of myself at Quebec, Mr. Logan was so wanting in judgment as actually to request me, to undertake in his name, on account of the survey, a geological inquiry into the pretended occurrence of coal in this part of the country. The inquiry, as things turned out, was certainly not a very difficult one; but that has nothing to do with the question. The bare fact of my having been asked to undertake it, is a sufficient recognition of my capability by Mr. Logan: more especially when he subsequently had the kindness to declare himself well pleased with the manner in which I performed his commission. I trust that I may not be accused here of egotism; but, even at that risk, I am induced to bring this matter prominently forward, as a direct answer to the anonymous imputations attempted to be cast upon me. I stated above, that only a portion of my reply to the question at issue, No. 53, was given, I now take the liberty to subjoin the remainder:—

"The study of organic remains, again, is sometimes thought by persons unacquainted with the whole bearings of the question, to have little or no connexion with the practical applications of Geology; but this is altogether an erroneous conclusion. Fossils or organic remains have a two-fold value; first, in revealing to us the history of past creations, and many of the physical changes which our Planet has gone through: and, secondly, in enabling us to determine the relative position of rock groups; each group, within certain limits, holding its own peculiar forms. Now, it is well known that certain economic products are confined over wide areas, either wholly or principally, to certain rocks. To fix the exact positions of these rocks, therefore, in the entire series of strata, becomes a problem of the highest importance, and one, it may be safely affirmed, that in nine cases out of ten, can only be solved by the study of organic remains. In North America, for instance, we have many bands of rock stretching far and wide across the continent. One of these is remarkable for its richness in brine springs and gypsum beds; and by the fossil forms in the bands above and below this, it can be ascertained at points far distant from one another, if we be above or below, near or distant from, the salt and gypsum yielding rock; whereas, if mineral characters alone were attended to, no reliance could be put on any decisions of the kind. In like manner, the position of the Mountain limestone, so rich in many countries in veins of lead ore, of the coal-bearing rocks, again, and of all the other rocks in the series, however closely resembling one another in structure and mineral composition, can be determined with perfect confidence if sufficient Palaeontological data be afforded. We thus see that a study apparently only of scientific value, and one worked out in the first instance by scientific researches, has become of the highest importance in a purely practical point of view. In England, as in all other countries indeed, many striking examples may be found of what the study of organic remains has effected for practical science. In rocks far beneath the coal measures, as well as in others far above them, I have seen old shafts, for instance, which must have swallowed up thousands of pounds, still remaining as memorials of futile researches after coal, before geology was prosecuted as a science."

The next question adverted to by my anonymous assailant, is Question 47 of the Minutes of Evidence. In his remarks on my answer to this question, he betrays in a remarkable manner either the greatest obtuseness, or a degree of uncharitableness that no law of criticism can excuse. My character for veracity is here seriously impeached, and in the most wanton manner. The question runs as follows:—

"47. Have you had an opportunity of ascertaining the progress that has been made in the Geological Survey of this Province; and what is your opinion of that progress?—*Ans.* I have devoted several days to a very careful examination of the work already performed, and the materials collected under Mr. Logan's direction; and I can only express my wonder that so much should have been done; considering more especially the small means hitherto at Mr. Logan's disposal, the want of Topographical maps, and other difficulties incidental to a new country."

To this the anonymous reviewer appends the following remarks:—"No one would suppose that a just appreciation of the value of the results already obtained by the survey, could be derived from an inspection even during broad day-light of the minerals collected, as they may have been obtained from localities commercially inaccessible. but, when they lie in a great measure, buried in packing-cases

in the vaults and sheds of the Survey Office, (see Report of Committee) the difficulty is proportionately increased. It is only by a study of the published reports of the work already done, that correct impressions can be obtained of the real value of the Survey. We confess, therefore, to some degree of surprise at finding Mr. Chapman state in the continuation of his evidence, that "several of Mr. Logan's valuable reports, moreover, are out of print, and I have been quite unable to obtain copies of them."

Answering the last allusion first, I may observe that it is one thing not to be able to obtain copies of these Reports, and another not to have seen them.* It was in answer to quite a different question (No. 49) that I expressed the desirableness of having these Reports revised and republished in a single volume; and to show how scarce they had become, I stated my inability to procure copies of several of them. But what has this to do with my appreciation of Mr. Logan's labours? All of the Reports were at my disposal at Montreal; and, if I be not greatly mistaken, we had them with us in the waiting-room attached to the committee-room at Quebec.

The main question here turns, however, on my ability to speak to the value of the actual labours and achievements of the Survey. "No one," says the sagacious reviewer, "would suppose that a just appreciation of the results already obtained by the Survey, could be derived from an inspection even during broad day-light, of the minerals collected, as they may have been obtained from localities commercially inaccessible; but, when they lie in a great measure buried in packing-cases in the vaults and sheds of the Survey Office, the difficulty is proportionately increased." From whence did the anonymous reviewer derive his authority that my appreciation of the value of the Survey was drawn from this source? He would here manifestly imply that I had given false evidence, or what is the same thing, that I had borne testimony to the value of the Survey without knowing anything that had been done upon it.

I feel, certainly, a keen sense of degradation in being obliged to reply at all to such a charge. But how did I obtain my knowledge? Simply thus, by a close and laborious examination of plans, sections, field-books, and other documents, both published and unpublished, laid before me, and carefully and minutely explained by Mr. Logan in person. If it be any satisfaction to my assailant, I am not too conceited to confess, that I gleaned a rich harvest of geological facts, apart from those more especially belonging to our subject of inquiry. Such, then,—not omitting also a general examination of a large portion of the materials collected on the Survey, and at that time under process of arrangement in different rooms belonging to the Museum—was the way in which my knowledge was obtained. If we add to this my acquaintance with the mode of procedure adopted on the Geological Survey of Great Britain (see my answers to Questions 45 and 46, and part of Mr. Logan's answer to Question 70), it must be evident to every impartial person that I was perfectly qualified to reply on these points to the inquiries of the Committee.

My anonymous assailant then proceeds to a discussion of my answer to Question 54. He says:—

"Mr. Chapman is asked by the Committee to state some of the new Scientific Truths which have been derived from the Survey, and he enumerated among others the following:—"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." Had Mr. Chapman enjoyed the opportunity of studying Mr. Logan's admirable Report for 1851 and '52 he would have known the name and designation of the real discoverer; or had he met with the fourth edition (1852) of Sir Charles Lyell's Manual of Elementary Geology he would have found the following circumstantial notice of the "tracks," with the date of the discovery, and thus avoided leading the Committee into error on a subject familiar to every amateur geologist in Canada."

Here follows the quotation from Lyell's book, with the accompanying remarks at its close:—"We may here remark that Professor Owen first inferred (1851) that the tracks were those of a fresh water or estuary tortoise. Agassiz supposed that they were crustacean, in

* In illustration of this, one would think, self-evident assertion, I may remark, that before I left England I procured a copy of the second volume of Hall's Palaeontology of New York, and that I am still trying, but without success, to get a copy of the first volume. At the same time we have the work in our College Library; so that without actually possessing it I have become perfectly familiar with its contents.