The objection started is a serious one, for, if the deductive method is wrong at all, it is so absolutely, and must on no occasion be allowed a place in scientific reasoning, but—without any half-measure allowances—must be excluded altogether as a false and dangerous element of philosophy. If, on the other hand, we take exception, as I think we may do, to the exponent's opening expression,—"having formulated a few fundamental assumptions, to spin out from these explanations of what we see in the world about us . . . is merely a literary performance,"—as misleading in its main idea, we may still hold the method to be a perfectly scientific one.

The evolutionist, who has once ascertained by various careful experiments and extensive researches that there is a direct natural sequence of events in connection with certain phenomena, may be allowed to adopt set principles as recognised laws of action, fully as much as Euclid in the demonstration of problems from his formulated axioms. But perhaps Prof. Dyer's argument rests in reality upon his use of the word "assumptions," and thus his objection is merely urged against the false method assumed in his premise, rather than against deductive biology as a method of procedure, as he would have us believe. And so far, of course, every one will readily enough accept Prof. Dyer's remark as it stands.

But the conclusion that "the deductive method is a bad way of solving morphological problems" is opposed to all the evidence of Darwin himself, who constantly applied those well-tested principles which he had discovered even by this very method, and upon the basis of such fundamental truths it was that he reared his wonderful system. Are not the studies of comparative embryology and osteology, of comparative histology and biology, each founded entirely upon the method of deductive analogy?

As another sufficient witness, Mr. Wallace may be quoted as having adopted the same course with such remarkable results, and throughout his writings bears testimony to the value of deductive inference as a method of procedure, and I will deduce a couple of sentences taken from his work on "Island Life," bearing directly upon our point.

"On the theory of evolution," he says, "nothing can be more certain than that groups now broken up and detached were once continuous, and the fragmentary groups and isolated forms are but the relics of once widespread types which have been preserved in a few localities where physical conditions were especially favourable, or where organic competition was less severe. The true explanation of all such remote geographical affinities is that they date back to a time when the ancestral group of which they are the common descendants had a wider or a different distribution," &c., p. 296. And, in summary of the chapters on Madagascar, Mr. Wallace remarks: "The method we have followed in these investigations is to accept the results of geological and palæontological science, and the ascertained fact as to the powers of dispersal of the various animal groups; to take full account of the laws of evolution as affecting distribution, and of the various ocean depths as implying recent or remote union of islands with their adjacent continents; and the result is that wherever we possess a sufficient knowledge of various classes of evidence we find it possible to give a connected and intelligible explanation of all the most striking peculiarities of the organic world" ("Island Life," p. 419). We may then assuredly decide that the deductive system of logic,—the use without abuse of certain known factors,—instead of being in any way "bad," is (granting always that the general laws of Nature applied are sufficiently trustworthy) found to be even superior to the older and tardier processes of induction, to which the mere collectors of the facts dealt with have limited themselves, and has proved itself to be the only means of elucidating many of those abstruse problems, the solution of which has been conducive of such immense gain to the scientific philosophy of our day.

WILLIAM WHITE

Science and Art

As a rule it would be the extreme of absurdity for me to venture an adverse remark on the criticism of an art critic on paintings, yet there is one single exception regarding which I may perhaps be permitted to say a word or two.

In the very interesting critique on some pictures in the Royal Academy, written evidently by a master-hand, there is one picture—No. 764, "a snowstorm" (see NATURE, vol. xxviii. p. 76), not only somewhat severely, but I think unjustly or

incorrectly, commented upon, because "there is not a single snowflake to be seen in the first twenty yards."

I have witnessed and been in the midst of many snowstorms in America, and some in Scotland. In a large proportion of these not a snowflake was to be seen, the snow being in very minute particles, so fine as to penetrate all openings in the clothing, however small. Snowstorms of this kind are the most dismal, bitter, and chilling of any.

On looking at Mr. Farquharson's picture, I was struck with its resemblance to a most unpleasant evening and night spent in the hills between the Coppermine River and Great Bear Lake, about 50 miles north of the Arctic circle. It being early winter, the weather was not very cold, but there was a combination of fog, fine snow (no snowflake-), and snowdrifts, which produced one of the most dismal and dreary scenes imaginable.

4, Addison Gardens, May 29

JOHN RAE

Transit Instrument

In your issue of the 17th ult. (vol. xxviii. p. 51) you notice a cheap form of transit instrument introduced by me, and you point out the defect that no means are provided for placing the cross wires truly vertical. In all the most recent instruments which have been made this difficulty has been met by an arrangement which answers so effectively that I think it may interest others beyond those who are likely to use the instrument in question.

I employ the ordinary diaphragm with the usual four stretching screws, and the collimation is corrected in the usual manner by these screws. Into this diaphragm I insert a tube with a very fine screw, on the outside of which is fixed a plate carrying the cross hairs; by screwing this tube in or out the focus may be perfectly adjusted for objects at an infinite distance, while a slight additional movement to the right or left enables one at the same time to adjust the cross hairs truly vertical.

LATIMER CLARK

Sea-Shore Alluvion, Dungeness

REVERTING to an article in your journal of July 28, 1881, and a letter of mine in that for April 20, 1882, the following at the present time may be of interest:—

As regards the local wasting away in the bays east and west of Dungeness and the redistribution of the materials at Lighthouse Point;—on the west side the whole margin from Rye Bay to "Denge Marsh Gut," a distance of eight miles, has receded of late years; this is shown by the fact that the Denge Marsh authorities have recently erected a clay counter sea-wall at the back of the modern shingle "full," in front of the "Midrips" and "Wicks" (small land-locked pools of water) to check the overflow of the sea in south-west gales. This action is felt to the eastward in front of the "Holmstone," the Lydd coast-guard station, and up to "Denge Marsh Gut," eastward of which we have modern "fulls,"—the resultant in part of this waste, overlapping and adding to the south-east outline of the "Ness" or extreme projection of this natural mole of shingle, and thence travelling northward until reaching "Great Stone End," which forms the southern boundary of Romney "Hoy" or Bay, northward of which Dymchurch Wall, an artificial stone-faced sea-wall three to four miles in length, is sufficient evidence of the modern local waste and necessity for sea-defences to the rich grazing district of Romney Marsh. Still further northward the sea-wall recently constructed by the municipal authorities of Hythe is equally suggestive of this recession. Going no further back than Cole's survey of 1617, we have a *status quo ante* very nearly, as regards outline from Rye Bay to within two miles of the lighthouse, and this accompanied by a local south-east increase and movement around the lighthouse,