

THE "BEDFORD LEVEL" EXPERIMENTS.

To the Editor of the Zetetic.

SIR,—I beg to protest against the gross mis-statements which appear in your first number, and to which attention is specially called as being "a carefully prepared statement of facts" about the Scientific Wager.

It is *not true*, as therein stated, that it was "at the suggestion of Mr. Wallace" that the Bedford Canal was chosen as the place of experiment. I suggested Bala Lake, as may be seen in my first letter published by Mr. Hampden. He then suggested the Bedford Canal, in a letter still in my possession, and I accepted that suggestion.

Again it is stated that Mr. Wallace expressed his opinion that "a good signal at each end, and one the same height in the centre, would answer every purpose." This is put in inverted commas as a quotation, but it is a quotation not from me, but from Mr. Carpenter's "Water not Convex," p. 10: yet this "carefully prepared statement of facts" neither gives the source of this quotation, nor adds that the proposal was "agreed to unanimously"—which is to be found in the very next line!

Still worse than this, is the assertion that Mr. Walsh decided that "taking into consideration the theory of the Earth's rotundity," Mr. Wallace was entitled to the stakes. What is this a quotation from? It represents Mr. Walsh as expressing a foregone conclusion founded on theory, not a decision founded on evidence. It is a gross misstatement and a libel, and unless you unreservedly withdraw this "statement" in your next issue as an *erroneous and unfair statement of facts*, and give in its place a strictly accurate one, with no sham quotations, but with references to authorities, and Mr. Walsh's decision in his own words, I must decline to make any further communication to what, will, in that case, be stamped as an unfair and prejudiced periodical.

ALFRED R. WALLACE.

[The fact of the proposed discussion being now finally abandoned to a certain extent removes any necessity for comment upon the foregoing epistle. But for the satisfaction of Mr. Wallace, and for that of our readers, we shall offer a reply, which, from want of space, we are compelled to defer, in the next issue of our "unfair and prejudiced periodical."—Ed. Zetetic.]

THE EARTH A PLANE.

(OBJECTIONS ANSWERED.)

In reply to the argument which the appearance of the marine horizon presents to us, it has been urged (1). Since the fall of eight inches for the first mile, and eight inches multiplied by the square of the distance for every succeeding mile, exist in every direction around the observer, it is utterly impossible for one part of the horizon to be higher than another. (2). It is quite true that the depression of one part of the horizontal line below the other does exist, but it is too minute, in comparison with the distance observed, to be taken in by the naked eye. These two pleas are so delightfully consistent, that they recall to our mind a well-known instance of the 'cuteness of Yankee

'attorneyship.' It is recorded, that a Texas lawyer having to defend a client in an action brought by the plaintiff to recover the value of a kettle which had been lent to the defendant, who irreparably damaged it, set up the three following pleas in his defence:—1, My client never had the kettle. 2, It was entirely whole when he sent it back again. 3, The damage was done when he borrowed it.

(1.) In regard to the first objection, we would, before criticising it, remove an erroneous impression which it is calculated to convey. It is quite true that, if the earth were a globe, it would, mathematically speaking, be impossible for one part of it to be, in relation to itself, higher than another, because all parts are equidistant from the centre. But in our argument the words "higher" and "lower" are used in relation to the observer, and therefore the remark is inapplicable. On a globe every part is an "arc of a circle," the horizontal line, on such a supposition, is a part; and therefore the horizontal line must form an arc—which it doesn't. Let anyone take an artificial globe, and select any spot as the position of an observer: let him mark this by inserting a pin (so as to coincide with the immediate radius of the globe), and he will find that the surface of the latter 'falls away' both to the right and to the left of it. But as this appearance is never presented to an observer on earth, it necessarily follows that no amount of convexity exists, and therefore that the Earth is, what it appears to be, a circular plane.*

(2.) The second objection, previously narrated, is equally fallacious, but possesses a greater degree of plausibility. It is admitted that the incline and decline, referred to, do exist, but it is asserted that they are too small to be appreciable. A distance of twenty miles, it is said, such as can be seen over a straight edge, or string, of, say, 12ft. in length, when erected on the beach, = 1,267,200 inches. But 66ft. 8in., the amount of decline existing in either direction from the centre of the distance referred to = 500 inches only! "That is, we must be asked to show the existence of 1 inch in a distance of 1584 inches, which is absurd!" Now this is all very well in its way, but it is contradictory of demonstrated truth! for, by reference to a work by Mr. Mayhew, we find that "when an object is removed from the eye, 3000 times its own diameter, it will only be just distinguishable; consequently, the greatest distance at which we can behold an object like a shilling, of an inch in diameter, is 3000 inches, or 250 feet." But what is the *smallest* diameter of the convex body of water referred to? Why, 66ft. 8in. Consequently, it would be visible at a distance

* It is a demonstrated truth in mathematics, that a straight or level line can touch a circle at one point only, but the arcual line at sea may be proved to be level, in all parts of the world, for any distance. Hence, in whatever light this objection is viewed, its absurdity becomes apparent.