

my feeble powers of comprehension that all I can do is reverentially to take off my hat to these several gentlemen, and subside; maintaining, nevertheless, that the delineation given by Mr. Harmer and myself in 1871 of the beds of the Cromer Cliff is (subject to the clearing up of what may be involved in the unconformity in the midst of the Lower Glacial of the cliff at Hasborough, and eastwards of that place, to which we called attention by sections and remarks) quite correct, Mr. Reid's many subdivisions notwithstanding; as is also the age and position of the beds of the Cromer Cliff section, relatively to the chalky clay that we assigned to them. As regards the mode in which the morainic clay was laid over the sand, I have in a paper sent in to the Geological Society, and now awaiting its turn for reading, given my view.

SEARLES V. WOOD, jun.

DR. CROLL'S ECCENTRICITY THEORY.

SIR,—May I be allowed to suggest to Dr. Croll that he should offer some explanation how the glaciation of North America, as compared with that of Europe, is to be reconciled with his theory. The difference between the Eastern side of North America and that of the west of Europe is admitted to be the result of the ocean currents now existing; but the glaciation of the two regions was merely an equal increase of the cold in both, without change in their relative proportions; the same differences which now exist being shown by the limit to which glacial evidences extend in both regions to have obtained during that glaciation.

This, as I have on more than one occasion observed, appears to me to be a conclusive objection to Dr. Croll's theory, which he admits to be baseless unless there were a complete diversion of the warm ocean currents from the hemisphere glaciated; and its satisfactory removal would to my mind be worth any amount of those subtle reasonings on the physics of heat in which Dr. Croll is so fertile, but which seem to me to be obnoxious to the reproach often levelled at figures, viz. that they may be made to prove anything.

SEARLES V. WOOD, jun.

ECCENTRICITY AND GLACIAL EPOCHS.

SIR,—Dr. Croll in his article in February last speaks of an erroneous assumption, that if the annual receipt of heat be far more than sufficient to melt the annual snow-fall, then such snow must be melted.

He does not point out wherein the error lies, and I feel very doubtful whether I understand what he is referring to. The assumption, he says, is totally opposed to the known facts of Greenland. This statement seems rather too strong. He quotes Meech's calculation that the heat received there, neglecting that cut off by the atmosphere, is enough to melt 50 feet of ice. We must make allowance for the great thickness of air traversed by the sun's rays, and for the loss of heat by the great obliquity of reflexion. A very rude calculation, with no pretence to accuracy, brings out that these reduce the heat received by the ground, to sufficient for melting only some 16 feet of ice. Since to vaporize ice requires $7\frac{1}{2}$ times as much heat as to melt it, this would dissipate by evaporation only little more than two feet