off the coast of Cork, etc., all of which would be (according to the charts), if the land was elevated 1000 feet, "isolated rocky pillars on hills," and yet at the present day they are being formed by Marine action.

G. Henry Kinahan.

FAULTS IN THE DRIFT AND "TRAIL."

To the Editor of the Geological Magazine.

Dear Sir,—Mr. S. V. Wood, jun., in your last number, questions the correctness of an observation made by me in the pit at the east end of Chillesford Church. He says, "The capping of Boulder-clay, which rests on the Chillesford beds at Chillesford, and which Mr. Fisher, in his paper read before the Geological Society, brought into his evidence of 'trail,' I believe is nothing but an oblique throw of the Upper Drift on to the Chillesford beds;" and his reason for this belief is, because "in a pit only a furlong and a half north of this section, there occurs one of the junction of the Upper and Middle Drift," showing signs of disturbance.

Such proximity of the Boulder-clay, *in situ*, would seem to be a requisite condition for the presence of trail derived from it, but I entirely deny that its being there in a disturbed state proves my explanation of its appearance at this spot to be wrong. The trail of Boulder-clay here lies in a dish, or trough, eroded out of perfectly horizontally bedded Chillesford clay. The trail is five feet thick in the centre, and thins out to nothing at its edges. The Chillesford beds occupy a thickness of nine feet beneath it. I saw no indications whatever of this small bit of Boulder-clay being let in by a fault; and I am not inexperienced in faulted clays and sands, knowing well all the Weymouth, Bridport, and Purbeck districts.

In reference to the subject of what I have called "trail," I take this opportunity of mentioning a fact, which I omitted to notice in my paper before the Society. It is, that I have in several instances observed in the New Forest, trail containing fossil shells derived from neighbouring fossil beds. Yet the out-crop of these fossil beds is not discoverable by any shells in the warp. They are either entirely dissolved or else converted into selenite. This shows that the agency, which transported the trail, acted to a depth, removed from the effects of ordinary atmospheric causes.

As regards faults in the Drift, there seems much difficulty in rightly distinguishing among these beds between true faults, arising from disturbance at a subsequent geological period, and the disturbances of deposition simulating faults, such as abound in the Norfolk cliffs. Erosion has often laid beds side by side, in a way which looks like faulting, and though unwilling to differ from Mr. Wood, who has so extensive an acquaintance with these deposits, I must confess that I suspect the instance at Bulchamp to be one of that character, because sand occurs beneath the Boulder-clay, seemingly continuous with that against which it abuts. It is unusual to meet with any true fault which does not alter the relative levels of

stratification on either side of it. But I do not perceive that Mr. Wood attributes this effect to the supposed faults, either at Bulchamp or at Hitchin.—I am, yours faithfully,

O. FISHER.

ELMSTEAD RECTORY, COLCHESTER.

ARE THE CORALLINE CRAG OF SUFFOLK AND THE BLACK CRAG OF BELGIUM CONTEMPORANEOUS DEPOSITS?

To the Editor of the GEOLOGICAL MAGAZINE.

DEAR SIR,—In 1864 I communicated a short paper to your excellent Magazine on the Crags of Suffolk and Belgium. I was led from a comparison of the lists of Mollusca, mainly, I confess, by the "percentage method," to associate the Red and Coralline Crags of Suffolk with the Yellow Crag of Antwerp, regarding the Grey Crag and Black Crag as anterior deposits. Mr. Godwin-Austen, in a most instructive memoir published in the Quart. Journ. Geol. Soc. No. 87, August, 1866, deals with the question of the Crags in a comprehensive and philosophical manner, rejecting conclusions derived from percentage calculations, and regarding rather the conditions and relations indicated by the nature of the deposits and general aspect of the fauna, which he has lately examined himself in Belgium. I have read this memoir with great pleasure and profit, and am quite prepared to regard the Grey Crag of Belgium as owing its apparent distinctness from the Yellow Crag to the presence of redeposited Black Crag fossils. But there is one point on which I would ask for further elucidation. Mr. Godwin-Austen says (p. 238), "The corresponding conditions on the English and Belgian areas of the Crag sea are the Red Crag and the Scaldésien (Yellow and Grey Crags); both are 'remanié' accumulations." "The Red Crag was from the break up of a neighbouring Bryozoan sea-zone, the Scaldésien from ooze depths. Any comparison of the fossil contents of the 'Coralline Crag' and of the 'Crag noir' must be subject to the consideration of differences which result from depth and condition of sea-bed." From this I gather that the Coralline Crag in Suffolk is considered to represent the Black Crag of Belgium, and to be contemporaneous with it. If this is the case (apart from the objection that the fauna of the Black Crag has an aspect so distinct from that of the three other Crags—explained by Mr. Godwin-Austen as the result of differences of depth), how is the occurrence of the teeth of species of sharks and Cetacea in a "remanié" condition in *both* of our Crags to be accounted for? Specimens of the teeth of *Carcharodon megalodon* and *Rhinoceros* in a worn condition have been obtained from the *base* of the Coralline Crag. No specimens of fish or Cetacean remains occur in our Coralline Crag in an unworn, unrolled condition as they do in the Black Crag. Whence, then, did the abundant "remanié" Cetacean and shark fauna of our Red Crag come? from what deposits are they derived? The answer which I have before suggested to these questions, which I do not think are considered by