

CORRESPONDENCE.

DENUDATION OF THE WEALD.

SIR,—Mr. Kinahan in his book “Valleys, and their Relation to Fissures, Fractures, and Faults,” robs me of the doctrines of Rain and Rivers, and gives them to Messrs. Foster and Topley. I write to beg space to protest against this. Page 195, he says, “We will specially refer to Messrs. Foster and Topley’s paper on it (the denudation of the Weald), as these observers have carefully examined the geology of the country,” and he quotes the title of their admirable paper “On the Superficial Deposits of the Valley of the Medway with Remarks on the Denudation of the Weald (Quarterly Journal of the Geological Society of London, November, 1865, p. 443).” Page 460 of Messrs. Foster and Topley’s paper commences thus: “Part II. On the Denudation of the Weald. Having now described the chief phenomena connected with the superficial beds of the Medway valley, we will pass on to consider the light which they throw upon the much-disputed question of the ‘Denudation of the Weald.’ We think it will be conclusively shown that ‘rain and rivers’ have been the main agents in producing the present form of the ground.” In the ten remaining pages of Part II., my name on “rain and rivers” is mentioned ten times. And the paper ends as it began. “Conclusion. In conclusion we will revert to the main points discussed in the paper. After describing the gravel of the Medway valley, we have endeavoured to prove that an old river gravel of the Medway occurs 300 feet above its present valley. We have then shown that if this fact be admitted, it follows that so large a denudation has been effected by ‘rain and rivers,’ that there can be but little difficulty in supposing the present form of the ground in the Weald to have been produced entirely by these agents.”

I shall be satisfied, Sir, if you will allow me space for this protest. But I send the following in case it may be thought suitable to your pages:—

Page 200, Mr. Kinahan says, “If the Weald valley was solely due to subærial (so spelt) denudation, there ought to be deposits of chalk flints over the whole area, and not only on the newer beds.” The flints are gone where they ought to have gone, and where by the laws of nature they must go—into the rivers. And they have been carried by the rivers to the sea-shore, or towards the sea-shore. At page 47, “Rain and Rivers,” I have traced them northward, southward, eastward, and westward. But since then, Mr. Mylne has published his beautiful geological map of “London and its Environs.” Mr. Kinahan may see there terraces of flint from 10 to 100 feet above the present level of the Thames. Besides Kensington and Hyde Park, the entire of ancient London, St. Paul’s, the Mansion House, and the Bank, stand on these vast accumulations of river flint. But the bed and the sides of the valley at London should be London-clay. The flints have been brought by the river. And from whence? Part from the Weald Hill, through the gorges

of the Wey and Mole; part from the gorge through the Chiltern Hills which flood Oxford and the soft Oolitic valleys. But for the sea-shore, let Mr. Kinahan examine Romney Marsh, the Delta of the Rother, formed by the wash down of the very highest part of the Weald Hill, Crowborough Beacon, 800 feet high. At Hythe, Dungeness, and Pevensey, he will find the flints with which he would require "the whole area" of the Weald to be covered. But from the top of Crowborough Beacon, the centre of the Weald, how many hundred feet of Hastings sand, Weald clay, Greensands, Gault, Chalk marl and flintless Lower Chalk have been washed away by rain and rivers since the last speck of upper flint-bearing chalk vanished? The flints which remain "on the newer beds" of the Weald (except those from the more recent denudation of the face of the chalk slope) have been *caught* on the low flat soft valleys of the Weald clay behind the hard gorges of the Greensand, and in the soft valleys of the Gault behind the hard gorges of the Chalk. When the beds of these gorges were lowered, the sides of the alluviums, no longer overflowed, were denuded, and the alluviums cut back into terraces. But their flat tops remain till the terraces are entirely cleared away. The formation of these terraces has been always going on at heights decreasing directly as the lowering of the beds of the gorges and valleys. That it is going on now may be seen from the deposit of new alluviums with drift gravel at the levels of the present overflows of the rivers. The same thing may be seen on the *opposite side* of the Greensand hard gorge below Farnham, where the Wey runs *into* instead of *out* of the Weald, and deposits vast quantities of drift gravel and alluvium in the soft valley of the Gault. This, also, is going on now. Rivers are the roads which gravels travel to the sea, though they may be arrested for thousands, nay millions, of years in passing alluviums. Witness the terraces of the Fraser River, etc., which are only gigantic effects of what caused the Medway terraces. That is, throughout the wide wide world, atmospheric disintegration and the erosion of rain form a flat valley in the soft strata behind each harder stratum. Every flood is then checked at the gorge of the hard stratum, and overflows and deposits on the soft flat. When the bed of the hard gorge is lowered, the bed in the soft valley behind is also lowered, and the flooded river, instead of overflowing, cuts back its alluvium, which remains as two terraces. Messrs. Foster and Topley mistake in supposing (pp. 470, 471) that a rise of the land is necessary for the deepening of the river-bed. It would only be necessary for those parts of rivers whose beds are at the level of the sea.

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SUBMERGED FORESTS.

SIR,—Submerged forests and the facts connected with them are important, as offering indications of the latest geological changes. Colonel Greenwood's theory, to which he recalls attention in your last Number, is an attempt to account for them without any sinking