

south-east. Three hundred feet would not only cover the major part of the Weald with the sea, but would also convert the south-east of England into an archipelago, in which the extent of the land-area would be intermediate between that shown in my restoration-map No. I., and that shown in No. II.; and it is to the period intermediate between these two restorations that I have assigned the upthrow of Portsdown Hill and the Hogsback.

The President connects the bed in question with the Brighton raised-beach; and if that connexion be well founded, we have this preponderance of the westerly upcast shown to the extent of nearly 300 feet in 40 miles, the Brighton beach being but little above the sea-level.

SEARLES V. WOOD, jun.

CIRQUES AND TALUSES.

SIR,—The paper on Cirques and Taluses in your last number (p. 10), wherein my friend Mr. Fisher notices my theory of the formation of Cirques, seems to call for a few remarks on my part. I feel much indebted to him for the kind manner in which he has expressed his divergence of opinion from myself, and regret that, notwithstanding his able plea for glaciers, I must hold to my words.

He concludes that “a cirque, though not excavated by a glacier, is strictly a glacial phenomenon,” while I have stated that, “the completeness of the cirque as a whole forbids us—unless we assign it entirely to glacial action—to suppose that it was more than slightly altered by this.” To some extent the difference between us is more a question of words than anything else. I hold that atmospheric and stream action made the cirques; Mr. Fisher thinks that, by whatever agent they were made (probably as I have suggested), a glacier cleaned out the rubbish which must have accumulated in them prior to the Glacial epoch, and that, instead of saying “in not a few corries and cirques the transporting power (of stream) can *hardly* keep pace with the excavatory,” I should have said can *not* keep pace. With regard to the former point, the glacier would most probably clear out the cirques, but I do not know that there is any evidence to show that they were formerly more choked up than they now are. As to the latter, I used the “word of doubtful signification” deliberately; because, although I think that not seldom the débris is on the whole accumulating, the increase is so slight as to be almost imperceptible; so that any unusually heavy storm may in an hour wash away the accumulation of a century. Débris strewn over iceworn slopes below the cliffs and screes masking the junction between these two (as in the case referred to) do not necessarily prove that the cirque is filling up; they only mark a stage in the quarry work of nature. The sawing of streamlets, aided by frost, etc., brings down the stone from the face of the cliff in fragments of various sizes; these, often broken smaller by their fall, lie on the slopes below, subjected to the same action of rain, heat, frost, until they are reduced to yet smaller fragments or even to fine dust, or are swept away by some swelling of

the mountain burns. It must not be supposed that, when the stone is resting on the slope beneath a cliff, the work of destruction is over. I suspect that in many cases, could we watch it, we should find it proceeded with increased rapidity. A cube of stone in a cliff will at most only offer three or four faces to the corroding action of air and water, to the destructive influences of heat and cold; the same, when detached, will offer five or even six. As every mason knows, there are not a few building stones that must not be used for corners. I do not of course question Mr. Fisher's remark, "If the talus grows, the inevitable result must be that the vertical face will become in time a slope;" but I am not sure that the talus *does* grow; at any rate, I do not think that we can readily lay down a general rule; each case will have to be judged separately; the growth will depend upon the nature of the rock, the magnitude of the streams, the climate of the locality, and many other causes which will greatly complicate the question. Taluses may increase in one age, diminish in another; or at the same time be growing in one country, while dwindling in another. With regard to that particular cirque in Skye of which I spoke, I believe that a few able-bodied men could clear out in a short day's work all the débris that has accumulated since the Glacial epoch. It must not be forgotten, in the case of many rocks, the destruction of the talus will not be confined to the surface; the streams often more or less sink into it, and wherever the water makes its way, there disintegration will proceed. I believe therefore, as I have said, that a talus does not *necessarily* mark more than a stage in Nature's quarrying operation, and that she may be, and sometimes is, quite competent to remove all her 'spoil' without the intervention of a glacier. With regard to the mode of formation of cirques, I can only say that I have never seen one where there have not been many small convergent streams, and that I believe the two will be found as inseparable as cause and effect usually are. A quaquaversal dip would, no doubt, be favourable to the production of a cirque, but I have no reason to suspect its existence in most of those cases which I described in my communication to the Geological Society.

T. G. BONNEY.

ON THE LIMESTONE AT CANNINGTON PARK,¹ NEAR BRIDGWATER.

SIR,—As some doubts have been entertained as to the date of the Limestone occurring at Cannington Park, it may be worth mentioning that I have lately had an opportunity of examining the corals that have been collected from that locality by the Earl of Cavan, by Mr. J. D. Pring, of 22, Hampton Park, near Bristol, and by the late Mr. William Baker, F.G.S., of Bridgwater; the specimens collected by the latter being now in the Taunton Museum.

They consist of the following Carboniferous genera and species:—

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| 1. <i>Lithostrotion Martini</i> . | 4. <i>Clisiophyllum turbinatum</i> . |
| 2. <i>Lithostrotion irregulare</i> . | 5. <i>Clisiophyllum, sp. ?</i> |
| 3. <i>Lithostrotion aranea</i> . | 6. <i>Syringopora ramulosa</i> . |

¹ See Proceedings of Somersetshire Archæological and Nat. History Society. Vol. for 1850, p. 129; 1852, p. 125; 1854, p. 105.