glaciers great power of cutting out and deepening their valleys. But this is evidently an error, just as it would be an error to suppose the flour of a grist mill ground out of the mill stones. Glaciers, it is true, groove and striate and polish the rocks over which they move, and especially those of projecting points and slight elevations in their beds; but the material which they grind up is principally derived from the exposed frost-bitten rocks above them, and the rocky floor under the glacier is merely the nether mill stone against which those loose stones are crushed. The glaciers, in short, can scarcely be regarded as cutting agents at all, in so far as the sides and bottoms of their beds are concerned, and in the valleys which the old glaciers have abandoned, it is evident that the torrents which have succeeded them have far greater cutting power.

The glaciers have their periods of advance and of recession. A series of wet and cool summers causes them to advance and encroach on the plains, pushing before them their moraines, and even forests and human habitations. In dry and warm summers they shrink and recede. Such changes seem to have occurred in bygone times on a gigantic scale. All the valleys below the present glaciers present traces of former glacier action. Even the Jura mountains seem at one time to have had glaciers. Large blocks from the Alps have been carried across the intervening valley and lodged at great heights on the slopes of the Jura, leading the majority of the Swiss and Italian geologists to believe that even this great valley and the basin of Lake Leman were once filled with glacier ice. But, unless we can suppose that the Alps were then vastly higher than at present, this seems scarcely to be physically possible, and it seems more likely that the conditions were just the reverse of those supposed, namely, that the low land was submerged, and that the valley of Lake Leman was a strait like Belle-Isle, traversed by powerful currents and receiving icebergs from both Jurassic and Alpine glaciers, and probably