

bivalve of if it be removed from the stone or shell to which it adheres, since the under valve is a mere layer of shelly matter insaperably united to the substratum) is common in the deeper parts in and outside of Lamash Bay. I have also taken it, though less frequently, to the west of Cumbræ, and in other parts. The largest examples from the Clyde do not exceed half an inch in diameter.

Errata in the previous Part. — Page 5711, line 5, for "*Apatinidæ*" read "*Anatinidæ*"; line 22, for "*Amphidesma convexa*" read "*Amphidesma convexum*." Page 5712, line 15, for "*pellucidens*" read "*pellucidus*." Page 5713, line 31, dele "I have" to "appears scarce"; line 34, for "*compressa*" read "*compressum*."

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Kibworth, Leicestershire,
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(To be continued).

Note on the Theory of Permanent and Geographical Varieties.

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As this subject is now attracting much attention among naturalists, and particularly among entomologists, I venture to offer the following observations, which, without advocating either side of the question, are intended to point out a difficulty, or rather a dilemma, its advocates do not appear to have perceived.

The adoption of permanent and geographical varieties has this disadvantage, that it leaves the question "What is a *species*?" more indeterminate than ever; for if permanent characters do not constitute one when those characters are minute, then a species differs from a variety in degree only, not in nature, and no two persons will agree as to the amount of difference necessary to constitute the one, or the amount of resemblance which must exist to form the other. The line that separates them will become so fine that it will be exceedingly difficult to prove its existence. If, however, the two things are of essentially distinct natures, we must seek a qualitative not a quantitative character to define them. This may be done by considering the permanence, not the amount, of the variation from its nearest allies, to constitute the specific character, and in like manner the instability, not the smaller quantity, of variation to mark the variety. In this way you define the two things by a difference in their nature; by the other, you assert that they are of exactly the same nature, and differ only in degree.

Now the generally adopted opinion is that species are absolute independent creations, which during their whole existence never vary from one to another, while varieties are not independent creations, but are or have been produced by ordinary generation from a parent species. There does, therefore (if this definition is true), exist such an absolute and essential difference in the nature of these two things that we are warranted in looking for some other character to distinguish them than one of mere degree, which is necessarily undefinable. If there is no other character, that fact is one of the strongest arguments against the independent creation of species, for why should a special act of creation be required to call into existence an organism differing only in degree from another which has been produced by existing laws? If an amount of permanent difference, represented by any number up to 10, may be produced by the ordinary course of nature, it is surely most illogical to suppose, and very hard to believe, that an amount of difference represented by 11 required a special act of creation to call it into existence.

Let A and B be two species having the smallest amount of difference a species can have. These you say are certainly distinct; where a smaller amount of difference exists we will call it a variety. You afterwards discover a group of individuals C, which differ from A less than B does, but in an opposite direction; the amount of difference between A and C is only half that between A and B: you therefore say C is a variety of A. Again you discover another group D, exactly intermediate between A and B. If you keep to your rule you are now forced to make B a variety, or if you are positive B is a species, then C and D must also become species, as well as all other permanent varieties which differ as much as these do: yet you say some of these groups are special creations, others not. Strange that such widely different origins should produce such identical results. To escape this difficulty there is but one way: you must consider every group of individuals presenting permanent characters, however slight, to constitute a species; while those only which are subject to such variation as to make us believe they have descended from a parent species, or that we know have so descended, are to be classed as varieties. The two doctrines, of "permanent varieties" and of "specially created unvarying species," are inconsistent with each other.

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