

could see the long line of ancestors of a first-rate greyhound up to its wild wolf-like progenitor, we should behold an infinite number of the finest gradations, sometimes in one character and sometimes in another, but all leading towards our present perfect type. By small and doubtful steps such as these, nature, as we may confidently believe, has progressed, on her grand march of improvement and development.

A similar line of reasoning is as applicable to separate organs as to the whole organisation. A writer⁹¹ has recently maintained that "it is probably no exaggeration to suppose that in order to improve such an organ as the eye at all, it must be improved in ten different ways at once. And the improbability of any complex organ being produced and brought to perfection in any such way is an improbability of the same kind and degree as that of producing a poem or a mathematical demonstration by throwing letters at random on a table." If the eye were abruptly and greatly modified, no doubt many parts would have to be simultaneously altered, in order that the organ should remain serviceable.

But is this the case with smaller changes? There are persons who can see distinctly only in a dull light, and this condition depends, I believe, on the abnormal sensitiveness of the retina, and is known to be inherited. Now if a bird, for instance, receive some great advantage from seeing well in the twilight, all the individuals with the most sensitive retina would succeed best and be the most likely to survive; and why should not all those which happened to have the eye itself a little larger, or the pupil capable of greater dilatation, be likewise preserved, whether or not these modifications were strictly simultaneous? These individuals would subsequently intercross and blend their respective advantages. By such slight successive changes, the eye of a diurnal bird would be brought into the condition of that of an owl, which

⁹¹ Mr. J. J. Murphy, in his opening address to the Belfast Nat. Hist. Soc., as given in the 'Belfast Northern Whig,' Nov. 19, 1866. Mr. Murphy here follows the line of argument against my views previously and more

cautiously given by the Rev. C. Pritchard, Pres. Royal Astronomical Soc., in his sermon (Appendix, p. 33) preached before the British Association at Nottingham, 1866.