

from the great number of seedlings which spring up there in the woods. I infer that this is the case from a remark made by a French gardener,<sup>18</sup> who regards it as a national calamity that such a number of pear-trees are periodically cut down for firewood, before they have borne fruit. The new varieties which thus spring up in the woods, though they cannot have received any excess of nutriment, will have been exposed to abruptly changed conditions, but whether this is the cause of their production is very doubtful. These varieties, however, are probably all descended<sup>19</sup> from old cultivated kinds growing in adjoining orchards,—a circumstance which will account for their variability; and out of a vast number of varying trees there will always be a good chance of the appearance of a valuable kind. In North America, where fruit-trees frequently spring up in waste places, the Washington pear was found in a hedge, and the Emperor peach in a wood.<sup>20</sup>

With respect to wheat, some writers have spoken<sup>21</sup> as if it were an ordinary event for new varieties to be found in waste places; the Fenton wheat was certainly discovered growing on a pile of basaltic detritus in a quarry, but in such a situation the plant would probably receive a sufficient amount of nutriment. The Chidham wheat was raised from an ear found on a hedge; and Hunter's wheat was discovered by the roadside in Scotland, but it is not said that this latter variety grew where it was found.<sup>22</sup>

Whether our domestic productions would ever become so completely habituated to the conditions under which they now live, as to cease varying, we have no sufficient means for judging. But, in fact, our domestic productions are never exposed for a great length of time to uniform conditions, and it is certain that our most anciently cultivated plants, as well as animals, still go on varying, for all have recently undergone marked improvement. In some few cases, however, plants have become habituated to new conditions. Thus, Metzger, who cultivated in Germany during many years numerous varieties of wheat, brought from different countries,<sup>23</sup> states that some kinds were at first extremely variable, but gradually, in one instance after an interval of

<sup>18</sup> Duval, 'Hist. du Poirier,' 1849, p. 2.

<sup>19</sup> I infer that this is the fact from Van Mons' statement ('Arbres Fruiti-ers,' 1835, tom. i. p. 446) that he finds in the woods seedlings resembling all the chief cultivated races of both the pear and apple. Van Mons, however looked at these wild varieties as

aboriginal species.

<sup>20</sup> Downing, 'Fruit-trees of North America,' p. 422; Foley, in 'Transact. Hort. Soc.,' vol. vi. p. 412.

<sup>21</sup> 'Gard. Chronicle,' 1847, p. 244.

<sup>22</sup> 'Gardener's Chronicle,' 1841, p. 383; 1850, p. 700; 1854, p. 650.

<sup>23</sup> 'Die Getreidearten,' 1843, s. 66, 116, 117.