

view to the several species of wheat, if such ever existed in a state of nature.

Although few of the varieties of wheat present any conspicuous difference, their number is great. Dalbret cultivated during thirty years from 150 to 160 kinds, and excepting in the quality of the grain they all kept true; Colonel Le Couteur possessed upwards of 150, and Philippar 322 varieties.<sup>31</sup> As wheat is an annual, we thus see how strictly many trifling differences in character are inherited through many generations. Colonel Le Couteur insists strongly on this same fact. In his persevering and successful attempts to raise new varieties, he found that there was only one "secure mode to ensure the growth of pure sorts, namely, to grow them from single grains or from single ears, and to follow up the plan by afterwards sowing only the produce of the most productive so as to form a stock." But Major Hallett<sup>32</sup> has gone much farther, and by the continued selection of plants from the grains of the same ear, during successive generations, has made his 'Pedigree in Wheat' (and other cereals) now famous in many quarters of the world. The great amount of variability in the plants of the same variety is another interesting point, which would never have been detected except by an eye long practised to the work; thus Colonel Le Couteur relates<sup>33</sup> that in a field of his own wheat, which he considered at least as pure as that of any of his neighbours, Professor La Gasca found twenty-three sorts; and Professor Henslow has observed similar facts. Besides such individual variations, forms sufficiently well marked to be valued and to become widely cultivated sometimes suddenly appear: thus Mr. Shirreff has had the good fortune to raise in his lifetime seven new varieties, which are now extensively grown in many parts of Britain.<sup>34</sup>

As in the case of many other plants, some varieties, both old and new, are far more constant in character than others. Colonel Le Couteur was forced to reject some of his new sub-varieties, which he suspected had been produced from a cross, as incorrigibly sportive. On the other hand Major Hallett<sup>35</sup> has shown how wonderfully constant some varieties are, although not ancient ones, and although cultivated in various countries. With respect to the tendency to vary, Metzger<sup>36</sup> gives from his own experience some interesting facts: he describes three Spanish sub-varieties, more especially one

<sup>31</sup> For Dalbret and Philippar, see Loiseleur-Deslongchamps, 'Consid. sur les Céréales,' pp. 45, 70. Le Couteur on Wheat, pp. 6, 14-17.

<sup>32</sup> See his Essay on 'Pedigree in Wheat,' 1862; also paper read before the British Association, 1869, and other publications.

<sup>33</sup> 'Varieties of Wheat,' Introduction, p. vi. Marshall, in his 'Rural

Economy of Yorkshire,' vol. ii. p. 9, remarks that "in every field of corn there is as much variety as in a herd of cattle."

<sup>34</sup> 'Gardener's Chron.' and 'Agric. Gazette,' 1862, p. 963.

<sup>35</sup> 'Gardener's Chron.' Nov. 1868, p. 1199.

<sup>36</sup> 'Getreidearten,' 1841, s. 66, 91, 92, 116, 117.