

cultivated ultimately assumed a yellow colour. But Bonafous⁶⁰ found that most of those which he sowed for ten consecutive years kept true to their proper tints; and he adds that in the valleys of the Pyrenees and on the plains of Piedmont a white maize has been cultivated for more than a century, and has undergone no change.

The tall kinds grown in southern latitudes, and therefore exposed to great heat, require from six to seven months to ripen their seed; whereas the dwarf kinds, grown in northern and colder climates, require only from three to four months.⁶¹ Peter Kalm,⁶² who particularly attended to this plant, says, that in the United States, in proceeding from south to north, the plants steadily diminish in bulk. Seeds brought from lat. 37° in Virginia, and sown in lat. 43°-44° in New England, produce plants which will not ripen their seed, or ripen them with the utmost difficulty. So it is with seed carried from New England to lat. 45°-47° in Canada. By taking great care at first, the southern kinds after some years' culture ripen their seed perfectly in their northern homes, so that this is an analogous case with that of the conversion of summer into winter wheat, and conversely. When tall and dwarf maize are planted together, the dwarf kinds are in full flower before the others have produced a single flower; and in Pennsylvania they ripen their seeds six weeks earlier than the tall maize. Metzger also mentions a European maize which ripens its seed four weeks earlier than another European kind. With these facts, so plainly showing inherited acclimatisation, we may readily believe Kalm, who states that in North America maize and some other plants have gradually been cultivated further and further northward. All writers agree that to keep the varieties of maize pure they must be planted separately so that they shall not cross.

The effects of the climate of Europe on the American varieties is highly remarkable. Metzger obtained seed from various parts of America, and cultivated several kinds in Germany. I will give an abstract of the changes observed⁶³ in one case, namely, with a tall kind (*Breit-korniger mais*, *Zea altissima*) brought from the warmer parts of America. During the first year the plants were twelve feet high, and a few seeds were perfected; the lower seeds in the ear kept true to their proper form, but the upper seeds became slightly changed. In the second generation the plants were from nine to ten feet in height, and ripened their seed better; the depression on the outer side of the seed had almost disappeared, and the original beautiful white colour had become duskier. Some of the seeds had even become yellow, and in their now rounded form they approached common European maize. In the third generation nearly all resemblance to the original and very distinct American parent-

⁶⁰ Ibid, p. 31.

⁶¹ Metzger, 'Getreidearten,' s. 206.

⁶² 'Description of Maize,' by P. Kalm, 1752, in 'Swedish Acts,' vol.

iv. I have consulted an old English MS. translation.

⁶³ 'Getreidearten,' s. 208.