

## INTRODUCTION.

---

THE DIFFUSION OF PLANTS over the surface of the earth is regulated chiefly by climate, embracing in that word, temperature and humidity.

Climates are modified by latitude, by ocean and aerial currents, vicinity to or distance from the ocean, position on the continents, elevation above the sea, &c

Heat and humidity are the chief elements favourable to the growth and maturity of plants. In the tropics these two elements of climate are at a maximum. In certain positions on both continents there are immense regions with high summer temperatures, but with a deficiency of rain. These regions, beginning on both continents on western coasts and near the same latitude, extend in the direction of the prevailing winds, north-eastward in the northern, and south-eastward in the southern hemispheres. North of these desert and semi-desert areas are the zones of summer rains and moderate summer temperatures, and hence the parts of the earth yielding in the greatest abundance and in the highest excellence the staples of the temperate zones, such as the grains, grasses, vegetables, fruits and other food plants; and the home of those domestic animals most useful to man. These zones are represented in the old world by western and north-western Europe, and in the new by Canada.

The plants of the temperate zone have their northern limits fixed chiefly by the mean temperature of the summer months; but the northern limits of many annuals correspond more closely with the isothermal lines of July and August. Maize, for example, will not ripen in a summer under 65° with one month at 67° Fahrenheit. Again, the polar range of perennials, such as the vine and peach, is decided by the temperatures in summer and winter, being limited in the north by the amount of summer heat requisite to ripen their fruit, or by the cold of winter being so great as to destroy the plants.

Cultivation extends the limits of plants over a larger area under an equal climate, and increases the capacity of the plant to mature under varied climatic conditions, at the same time often increasing its productiveness. Amongst vegetables, cultivation has extended the potato over a wide area where it was not grown before; and maize, a tropical plant, has, under careful culture, advanced northward to the 56th degree of latitude in the interior of the continent. Wheat, which a century ago was a novelty at Edinburgh, now matures as high as Moray Firth. Flax is a summer crop in northern climates, but a winter crop in climates like Egypt. The same is true of wheat. It is a summer crop in the higher temperate zones, and a winter crop in Egypt, Australia, California, and countries of similar climates, where it is grown in the winter months, ripening its grain before the heat of summer. For such plants the summer heat of low latitudes is too great.

The excessive heat of tropical and sub-tropical countries is injurious, and in many cases destructive,