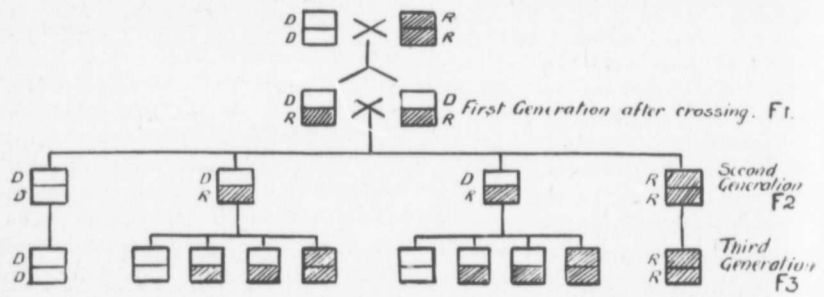
part of Mendel's discovery; indeed, it is not present in every case, the first generation of the hybrids being sometimes intermediate in character. We must bear in mind that an individual animal or plant is the product of the union of two marrying cells, or *gametes*, as they are called, the one derived from the male parent, and the other from the female parent. Thus an individual is of double origin.

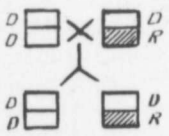
Now the essential part of Mendel's discovery, recognized by the discoverer himself, is that the gametes are pure in respect of either of the characters in each of the pairs of alternative characters we have been considering; in other words, that a gamete can carry one of the characters of a pair, but not both.

In Mendelian language the individual animal or plant is called a *zygote*. If the two gametes that go to make a zygote carry the same character, the zygote is called a *homozygote*. If they carry opposite characters it is called a *heterozygote*.

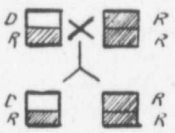
By applying this theory to the results obtained from crossing the tall and the dwarf peas, we see how perfectly it accounts for them. The individuals of the first generation contain and produce gametes bearing the elements representing tallness and shortness in equal numbers, and the results we get in the second generation are simply due to the segregation of these elements. As Bateson has remarked, the most striking consequence of Mendelian inheritance is the paradox that pure individuals may be bred from impure ones. Once the opposite character has been eliminated the individuals remain pure for any number of generations. Recent investigation suggests that the dominant may owe its dominance to a *factor*



ILLUSTRATING THE MENDELIAN SCHEME OF INHERITANCE



Dominant × Hybrid



Recessive × Hybrid

which is absent in the recessive; therefore we are not concerned with two opposing factors, but the presence or absence of a single factor. When the heterozygote is intermediate, we have no means of knowing in which of the two pure kinds of individuals the factor resides.

The Mendelian scheme of inheritance has been found to hold good for a great diversity of characters in plants and animals, such as the absence or presence of horns in cattle, the pea comb and the single comb in fowls, the absence or presence of the waltzing habit in mice,