his life in Eastbourne, and occupied "Hodeslea," which is now the residence of the Union's treasurer. The house was built by Huxley in 1890 and he lived there until 1895 whilst his widow remained there until her death in 1914. Mr. Adkin has recently placed a bronze tablet on the house relating these facts.

Genetic Segregation.¹

By W. BATESON, F.R.S.

LATER developments of genetics have been, in the main, attempts to discover the nature and scope of segregation. Mendel proved that certain characters are determined by unit-factors. Their integrity is maintained by segregation, the capacity, namely, to separate unimpaired after combination with their opposites. We have been trying, first, to ascertain specifically what characters behave in this way, whether there is any limit to the scope of segregation or any classes of characters otherwise transmitted. Among characters known to be subject to segregation are illustrations of most of the features by which plants and animals are distinguished. In regard to two classes of characters the evidence for segregation is, nevertheless, rather noticeably imperfect. No quite clear proof exists that differences in number—*meristic* characters in the strict sense—are governed by factors comparable with those that control, for example, colour. The extra toe of the fowl and the single leaflet of the monophyllous strawberry are perhaps the best examples, but reservations may be entertained. Also, though segregation can be demonstrated in regard to *quantitative* characters, parental types thus distinguished often fail to re-appear, and the inheritance is subject to special complications.

Groups or complexes of factors are now recognised as sometimes segregating whole. Were it not that on occasion elements of the complex become independent, the group would pass for one unit-factor. The sex-complex is an obvious example. Intermediate flower-colours, like those of modern sweet peas, probably arise by this process. The plausible suggestion that the new terms are only rare cross-overs in a closely linked series does not fit the evidence. A striking illustration appears in *Oenothera*, in which, as Renner lately showed, several groups of characters normally segregate as single factors. These complexes are in several forms not borne equally by the two sexes of the plant, and most of them cannot exist in the homozygous state. By these discoveries the *Oenothera* problem is greatly elucidated.

The second question is to determine when in the life-cycles segregation can occur. Admittedly it is a phenomenon of cell-division. If we knew the animals only we might confidently adopt the view of Morgan that normal segregation happens during the maturation process at the stage of synapsis, when the maternal and paternal chromosomes are believed to conjugate in pairs. Most of the facts of linkage may be thus well represented, but the absence of crossing-over in the sex-heterozygote (*Drosophila* and silk-worm) is not readily explicable, nor is there as yet extensive evidence that the number of linkage-systems agrees with that of the chromosomes—a primary postulate of Morgan's theory. The evidence for an orderly anastomosis, or even of any exchange of materials between chromosomes, is weak; and the visible features of chromosomes are scarcely suggestive of the prodigious heterogeneity requisite. Even if the linkage-systems correspond with the chromosomes,

which is a most attractive conjecture, exchange of material between chromosomes need not be essential to crossing-over. It may be doubted, however, whether the general course of cytological evidence does not point to the rôle of the chromosomes being rather passive than active.

That in plants segregation even in its normal course is not limited to the reduction-division is now certain. In *Matthiola*, *Campanula*, *Begonia*, and *Oenothera* the genetic composition of the male and female organs may be normally different, and segregation cannot have happened later than the constitution of these organs. This kind of segregation must result in *Campanula carpatica* (experiments of C. Pellew) and in *Begonia Davisii* from the peculiar genetic properties of the female complex, for it re-appears in offspring derived from the female side for several generations at least, but not among those derived from the male side. Collins's evidence from *Funaria* proves further that sex-segregation may happen during the growth of a haploid form.

Periclinal chimæras and the production of distinct types from adventitious buds prove that segregation may take place during somatic development, whether in the differentiation of the layers or of the root. In the genetic properties of the tare-like rogues of peas there are features which not only illustrate the occurrence of gradational change in genetic properties, following somatic differentiation, but also show that this gradation affects the male and female organs differently. From these facts it must be concluded that normal and orderly segregation (apart from chance sporting) can occur at various cell-divisions, and not exclusively at reduction. Not impossibly these somatic segregations may be accompanied by some visible cytological differentiation, but that question must not be prejudged.

Having regard to the fundamental distinctions between the morphological relations of the germ-cells to the soma in animals and in the flowering plants, it is not surprising that the processes of segregation should be differently effected in these two groups of organisms.

Colour Index of the British Isles.

AT a meeting of the Royal Anthropological Institute held on June 15, Prof. Arthur Keith, ex-president, in the chair, Prof. F. G. Parsons read a paper on "The Colour Index of the British Isles." He first reviewed the different ways of constructing an index of nigrescence, and directed attention to what he considered their weak points. Prof. Parsons proposed as a simple and workable index that the percentage in any group of individuals with dark brown and black hair should be added to the percentage with eyes in which any brown pigment is present, and the result divided by two. For practical purposes he found it better to record the percentages of dark hair and dark eyes separately. He then proceeded to examine the large mass of statistics collected by Dr. Beddoe in the middle of the last century, and pointed out that the first deduction was that women are in the mass darker than men, and that where the people are fairest the difference between the sexes is greatest, as the following table shows:

	No. of records	Index		Diff.
		Men	Women	
4 Northern Counties	1767	26.2	33.5	7.3
3 Eastern "	1563	34.4	38.2	3.8
2 Western "	4057	45.5	46.7	1.2

It therefore became necessary to exclude those

¹ Abstract of the Croonian Lecture delivered before the Royal Society on June 17.