

In the unbalanced polyploid species there is of course considerable chromosome irregularity but in some of the sterile hybrids between 13 chromosome species the chromosomes usually pair and divide with little or no irregularity, but a large proportion of the pollen grains do not develop completely. In the two unbalanced polyploid hybrids there is a tendency for trivalents to be formed so that the total number of paired chromosomes is usually less than that of the parent with the larger number.

Table II.

	Species of <i>Deutzia</i>	Chromosome number
Sect. I.		
1.	<i>D. gracilis</i>	13 ¹
2.	<i>D. scabra</i>	65 ¹
3.	<i>D. Schneideriana</i>	65
4.	<i>D. Sieboldiana</i>	13
5.	<i>D. purpurascens</i>	13?
6.	<i>D. discolor</i>	52
7.	<i>D. reflexa</i>	52
8.	<i>D. Vilmorinae</i>	52
Sect. II.		
9.	<i>D. mollis</i>	39
10.	<i>D. parviflora</i>	13
11.	<i>D. parviflora ovatifolia</i>	39
12.	<i>D. hypoglauca</i>	13
Hybrids.		
13.	<i>D. candelabrum</i> (1 × 4).....	13
14.	<i>D. rosea</i> (1 × 5).....	13
15.	<i>D. magnifica</i> (2 × 8).....	52 _{II} + 13 _I
16.	<i>D. Wilsonii</i> (S) (6 × 9).....	42 - 44
17.	<i>D. Lemoinei</i> (10 × 1).....	13
18.	<i>D. candida</i> (17 × 4).....	13
19.	<i>D. maliflora</i> (17 × 5).....	13
20.	<i>D. Kalmiaeflora</i> (5 × 10).....	13

Decumaria is a small genus with only two species, one in southeastern United States and the other in China. The chromosome number of the American form, *D. barbara*, is 14.

There are about 35 species of *Hydrangea* distributed in North and South America and in Asia. Few natural hybrids are found in this group. The haploid chromosome number is 18 for the American species, *H. cinerea*, *H. quercifolia*, *H. arborescens*, and *H. radiata*. Of the three Asiatic species studied two, *H. Xanthoneura* and *H. petiolaris*, are diploid forms with 18 pairs of chromosomes, while the other, *H. paniculata praecox*, is a tetraploid with 36 chromosomes. According to the recent work of Schoennagel, *H. arborescens*, *aspera*, and *radiata* all have 36 somatic chromosomes.

¹ Recently reported by Schoennagel (1931).

There are 3 species of *Schizophragma*, all of Asiatic origin. The chromosome number of *S. hydrangeoides* is 14, the same as that found in *Decumaria*.

Itea is the only genus of Escalloniaceae available for study in the Arboretum. This genus is represented by about 10 species in Asia and one in southeastern United States. The American species *I. virginiana* has 11 pairs of chromosomes as reported by Schoenagel (1931).

Ribes has been separated into a third family, the Grossulariaceae (Hutchinson). This genus contains about 150 species widely distributed in the northern hemisphere and in South America. Meurman (1928) has found only 8 pairs of chromosomes in this genus although about 20 species were studied. The same counts were also obtained by Tischler (1927) and by Darlington (1927). Mr. Dermen of this laboratory found 8 pairs of chromosomes in each of the following species: *R. Giraldii*, *R. Grossularia*, *R. missouriense*, *R. cynosbati*, and *R. fasciculatum*. In certain species hybrids Meurman finds more or less irregularity in pairing which would indicate that there may be a genetic differentiation of chromosome sets in certain species. In many species hybrids, however, there is normal chromosome pairing at meiosis.

DISCUSSION

The chromosome numbers found in the Saxifragaceae are not closely correlated with the taxonomic grouping. In the Hydrangeaceae, where the genera seem to constitute a natural group, the basic chromosome numbers are 11 in *Fendlera*, 13 in *Philadelphus* and *Deutzia*, 14 in *Decumaria* and *Schizophragma*, 16 in *Jamesia*, and 18 in *Hydrangea*. This variation in chromosome number does not necessarily mean, however, that these genera have not had a common origin because a single genus may include species with different chromosome numbers. In fact the species of the genus *Saxifraga* have 11, 14, 16 or 28 chromosomes (Schoennagel 1931).

Both the taxonomic and cytological evidence indicate that *Philadelphus* and *Deutzia* are closely related as are *Decumaria* and *Schizophragma*, but *Fendlera* and *Itea* with the same chromosome numbers differ considerably in morphological characters.

Pollen grain measurements do not show much difference for the various genera, with the exception of *Ribes*. The pollen grains of *Ribes* are more than twice as large as those of the other genera, which may be some indication that this genus forms a rather distinct group of plants. (Hutchinson 1926).

In this family there are two large genera which show no variation



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