of chromosomal diversification within each of them.

8.27. Attempt on the Biological Significance of the Chromosome Numbers. MIHAI SERBAN and CANTEMIR RISCUTIA (Bucharest, Rumania).

In a paper read at the XVI International Congress of Zoology, Washington, 20-27 August 1963, we analyzed the distribution of the chromosomes, from the grandparents (P_2) in the genome of a certain grandchild (F) using the "indicators of stability" (I.S.), calculated with the formula (1) for even, and (2) for odd numbers of chromosomes.

$$2/2^N \sum_{m=0}^{N/2-1} m/n. \left(\frac{C}{N}\right)^m + 1/2N. \left(\frac{C}{N}\right)^{N/2}; (1) \text{ in which } m + n = N$$

$$2/2^N \sum_{m=0}^{[N/2]} m/n. \left(\frac{C}{N}\right)^m; (2) \text{ in which } (N/2) \text{ means whole part of } N/2$$

A table of the I.S. values is given calculated for the numbers N=2-25. We analyzed the distribution of frequency of the haploid chromosome numbers (N) for 2374 species of flowering plants (Dobzhansky, 1937) using the I.S. and the values of I.S. generalized for the generations P_4 and P_6. We found a significantly greater frequency of numbers N divisible by 8 than by 4, divisible by 4 than by 2, and generally a greater frequency of even numbers compared to odd ones.

The species in which the interactions between organism and environment are more complex have generally a greater number N, of chromosomes, which assures a greater stability. The growth of the stability can be explained by the I.S. values, which augment with the increase of N.

8.28. Chromosomes of Swiss Ants. E. HAUSCHTECK (Zürich, Switzerland).

Chromosome sets of a number of ant species from the subfamilies Myrmicinae, Formicinae and Dolichoderinae have been investigated. Diploid numbers between 8 and 40 to 50 have been found. The diploid numbers of the Formicinae are usually higher than those of the Myrmicinae. There is only one genus of the Dolichoderinae studied which has 22 chromosomes. Species with low chromosome numbers have longer chromosomes than species with high chromosome numbers. For instance, *Lasius niger* has 30 small chromosomes in metaphase, each one to two microns. In *Stenamma brevicorne* there are only 8 chromosomes but these are five microns or longer. *Leptothorax* is intermediate. It has 18 chromosomes, each two to six microns. The karyotype of *Leptothorax* exhibits two striking constrictions on one pair of chromosomes. In the genus *Lasius* four species have a diploid number of 30, and one a diploid number of 28 chromosomes.

8.29. Hybrid Population Analysis by means of Differential Staining of Chromosomes. HUMIHIKO ONO, and BUNZO SAKAI (Tokyo, Japan).

Crepidiastrum keiskeanum (Compositae) is distributed along the Pacific coast of southern Japan. In Izu Peninsula, the northern limit of its distribution, many hybrids of this species and some allied ones are found. To analyse the karyotypes of the hybrids, the differential staining method using cold treatment was applied. This treatment reveals special beaded patterns in the chromosomes of *Lactuca squarrosa* and faintly staining segments in the chromosomes of *Paraixeris denticulata*. In the hybrids each chromosome or its segments are clearly identified. Analysis of minor karyotypes of these hybrids revealed the following extraordinary characteristics:

1. The karyotypes of the hybrids are not always the sum of the genomes of their presumed parents. The maternal chromosomes remain intact in the hybrid karyotypes. Marked diminutions in number and length are often observed in the paternal chromosomes. Many hybrids of *Crepidiastrum keiskeanum* (n=5) and *Lactuca squarrosa* (n=9) had 10 chromosomes. But minor karyotypes revealed by the differential staining showed individual differences.

2. Some of these hybrids were observed to be mixtures of the cells with different karyotypes. Fragmentation and elimination of paternal chromosomes cause the alteration of karyotypes. Such alterations occur among the somatic cells of a single individual. With the lapse of time, cells with the most balanced karyotype overgrow less balanced ones. This phenomenon is ascertained by observing the karyotype of a single plant at different ages and by measuring the pollen fertility of each stem of an individual. The pollen fertility is remarkably divergent according to the position of the stem even in a single plant, although it recovers considerably in successive years.