Number of conjugated accessories	Number of univalent accessories	Number of cells
2	3	13
3	2	6
4	1	6
0	5	5
5	0	4
2 + 2	1	3
3 + 2	0	3

Some of the univalent accessories are usually situated outside the first metaphase plate. Those that have conjugated lie regularly in the equator (Figs. *b*, *c*, *d*, *f*). The anaphase segregation of the accessories takes place irregularly. Individual univalents may be eliminated. The conjugated accessories may also suffer the same fate owing to the delayed division (Fig. *e*). The univalent accessories do not divide in the first division (cf. ref. 3).

In the second-division metaphase, congression of the accessory chromosomes is still more irregular than in the first division. Apparently they all divide in the second division, being, however, rather frequently eliminated.

These observations have so far concerned only one population, most probably comprising a single clone that has arisen by vegetative propagation, and they do not indicate the general distribution and possible numerical variation of the accessories in the species.

The ability of the accessories to form multivalent associations even of ring shape incorporating the whole complement of the five accessories warrants the assumption that all the accessories are isochromosomes identical with one another. The occurrence of isochromosomes among accessories has repeatedly been reported earlier in the *Phanerogams*^{3,4}. The conclusion can be drawn that the accessories in *Dicranum* have arisen at some time by misdivision of the centromere⁵. Owing to its positive selection value the new chromosome has become established in the normal chromosome complement. The number of isochromosomes may be increased during evolution by repeated misdivisions. Since the accessories are identical and probably almost inert, their increasing number is restricted only when their cumulative effect⁶ exceeds the limit of benefit to the general physiology of the plant.

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Effect of Sodium Ribose Nucleate on Meiosis of Grasshoppers

KODANI¹ discovered that in onion root tips treated with solutions of sodium ribose nucleate of certain concentrations for certain lengths of time, morphological changes in the chromosomes and abnormalities in mitotic division were induced. We have studied the chromosomal abnormalities occurring in meiosis of some grasshoppers, into which 5 per cent sodium ribose nucleate solution was injected, after the pH of the solution was raised to 7 by addition of sodium hydroxide solution.

The material was killed twenty-four hours after treatment, and the testes were fixed with Allen-Bouin's solution. The sections were stained with Heidenhain's Iron-haematoxylin or examined by means of the Feulgen reaction. The meiosis proceeds normally up to metaphase; but abnormality appears in anaphase and telophase (see illustration). The abnormality is highly characteristic; some of the chromosomes stick together, and irregular anaphase results. Some daughter chromosomes do not separate normally and produce a kind of chromatin bridge between the daughter nuclei. This irregularity is apparently due to the change in the colloidal state of the chromosomes, so that it is likely that by this treatment the chromosomes as a whole are affected. According to Bauch², the mitotic poisons are classified into two main groups: (1) poisons which do not inhibit nuclear division, but only cell division; (2) karyoclastic or mitotic poisons, which either suppress the formation of the spindle ('spindle poisons'), or cause the chromosomes to stick together ('chromosome poisons').

This investigation reveals that, so far as the morphological features of the chromosomal abnormalities are concerned, sodium ribose nucleate seems to belong to the category of 'chromosome poisons' like trypanflavin, X-rays, high and low temperatures, etc.

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Action of Cyanate on the Bone Marrow of Rats

DUSTIN¹, acting on a suggestion made by Schütz, investigated the action of sodium cyanate on cells in mitosis. He reported that six hours after a dose of 5 mgm. had been given to mice, it was possible to see pycnotic degeneration in cells of the intestinal mucosa, splenic lymphoid tissue and cortical tissue