The Present Status of the Chromosome Controversy.

By D. M. Mottier.

(Abstract.)

Cytologists are now agreed that the first mitosis in the spore mother-cells of higher plants is a "reducing" or qualitative division, the chromosomes being bivalent, and that the second mitosis is equational. Two views, however, are held concerning the manner in which the bivalent chromosomes are formed. Gregoire and his associates; Allen, and Strasburger and his students, maintain that the double chromatin thread appearing after synapsis is not the result of a longitudinal splitting of a single spirem, but the approximation of two spirems, one presumably paternal and the other maternal. On the other hand, Farmer and Moore and others, among whom is the writer, assert that the double spirem is due to a longitudinal splitting, which, as the spirem shortens and thickens, becomes indistinguishable except in certain cases. Parallel portions of the spirem, or a part of the same, now approximate, forming loops, the parallel sides of which are twisted upon each other. This looping or approximation of parallel portions of the spirem is accompanied by a second contraction resembling a partial synapsis. The result is that near the center of the nucleus there is formed a closely entangled or balled up mass of the spirem from which extend somewhat radially the loops or approximated parts of the spirem having a straighter course. Each parallel part of a loop is, for example, a chromosome, the two forming a bivalent chromosome. The spirem now segments transversely, and in case the parallel sides of the loops or the otherwise approximated parts of the spirem adhere at one end, as is very frequently true, the spirem may be said to segment into pieces equal to the length of two chromosomes. These two chromosomes, each of which is split lengthwise, now come to lie side by side, or to form rings, loops, X's, Y's, etc. (Lilium, Podophyllum.) The longitudinal splitting of the daughter segments observed during the meta, or anaphase, is, according to this view, the original longitudinal fission of the early prophase.

Assuming the individuality of the chromosomes, and that one-half is paternal and one-half maternal, Gregoire, Allen, Strasburger and others claim that the double spirem, developing in the prophase of the first mitosis, consists of the paternal and maternal spirems which have been brought together side by side during synapsis. But according to the view of Farmer and Moore and the writer, the double spirem is produced by a longitudinal splitting, and that it is composed of paternal and maternal chromosomes united end to end.

The Blooming of Cercis Canadensis in September.

By D. M. Mottier.

(Abstract.)

A small tree of Cercis Canadensis, or common red bud, growing on the campus of Indiana University was observed bearing many perfect blossoms upon three or four of its larger branches, September 20. The flowers were perfectly normal both as to structure and color. They remained on the tree for about the same length of time as in the spring. No fruits were formed however.

A Peculiar Monstrosity in the Seedling of Zea Mays.

By D. M. Mottier.

(Abstract.)

A seedling of Zea Mays was exhibited, which consisted of two perfectly developed shoots about eight centimeters long and two primary roots. Each primary root bore several secondary roots, and secondary roots had also put in an appearance at the lower nodes of each shoot. The double members arose just above and below the first node of the embryo, and apparently by the respective bifurcation of the shoot and primary root.