Histologically, two regions are discernible at the absorptive zone of the cotyledon. The outer part is highly lobed and consists of lightly stained cells having fine granular contents, without much of ergastic materials. The inner region includes one to four subepidermal layers, the cells of which acquire relatively denser contents than those of the outer part (figures 4–7).

The cotyledon is known to take over the nutritive function from the suspensor which ultimately breaks down. Contrary to the predominantly uniform cotyledonary surface among angiosperms, *S. foliosa* revealed the papillate nature of the absorptive surface of the cotyledon, this increases the surface area of the cotyledon lying in contact with the endosperm, thereby increasing its absorptive efficiency. Furthermore, the glandular appearance of the cells of papillae, the embedding of lobated umbonate apex into the endosperm and early depletion of food contents in the central region of the latter indicate the aggressiveness of the cotyledon in terms of haustorial activity.

In contrast, *S. alata*[2], *S. stocksiana*[4] and *S. hebecarpa*[5] have revealed non-papillate nature of the cotyledon. However, the mature embryo in *S. lithosperma* and *S. pergracilis* is in accordance with *S. foliosa*. Papillate cotyledons may also occur in the species studied earlier, if reexamined, using mature embryos. The presence of papillate cotyledon would then provide an additional diagnostic feature of taxonomic value in this family.

27 December 1982; Revised 2 March 1983

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CHROMOSOME INTERLOCKING IN SOME SPECIES OF GENUS *CROTALARIA* L.

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CHROMOSOME interlocking is known in very few plant species[1]. Notable examples are *Dendrocoeium*[2], *Viviparous*[3] and *Allium*[3]. In some cases it persists even up to metaphase. Although known in very few taxa, chromosome interlocking has been used as cytological evidence for crossing over[1].

The phenomenon is hitherto unknown in legumes. The present note records it for three species of *Crotalaria*, a large genus of over 550 species. The three taxa, *C. retusa* L., *C. spectabilis* Roth. and *C. laburnifolia* L. belong to sections *Crotalaria* and *Chrysocalycinae* of the genus[4].

Bivalent interlocking is very common in *C. retusa*. Most of the plants screened for meiosis had some interlocked associations in pollen mother cells. The phenomenon is comparatively less frequent in *C. spectabilis*; only about 30% of the test sample contained the interlocked associations. In *C. laburnifolia* chromosomes interlocking is a mere freak taking place once in a while.

Figures 1–5. 1. A PMC of *C. retusa* at prometaphase bearing 8II. **2.** A PMC of *C. retusa* bearing 8II; four of them involved in two interlocked associations. **3.** A PMC of *C. retusa* showing 8II of which five are involved in two interlocked associations. **4.** A PMC of *C. retusa* showing delayed disjunction of two interlocked bivalents. **5.** Anaphase I in *C. retusa* showing distribution of 8 chromosomes to either pole.

TABLE 1
Frequency and pollen viability of Crotaloria

Species	Normal plants			Plants showing interlocking		
	Chiasmata frequency		% pollen viability	Xta frequency		% pollen viability
	Diplotene	Metaphase		Diplotene	Metaphase	
C. retusa	23	15	96	22	15	98
C. spectabilis	22	16	99	21	16	97
C. laburnifolia	21	13	98	21	13	99

Frequency of PMC's with interlocked bivalents at diplotene and diakinesis is 40% each in *C. retusa* and *C. spectabilis* and 35% in *C. laburnifolia*. These cells do not constitute separate sector within the microsporangium but keep intermixed with normal cells. Chromosome number in the three species under discussion is $2n=16$ (figure 1). At prophase and metaphase-I, the majority of the cells carry eight distinct bivalents in all the three species. In some cells two or three bivalents keep interlocked, with each individual bivalent of the association bearing two chiasmata, one at each end. Cells with two interlocked associations, each comprised of two bivalents, are also common (figure 2). Associations of three bivalents are restricted to *C. retusa* (figure 3). Break-up of pmc's with an association of 2 interlocked II's, 3 interlocked II's and two associations of 2 interlocked II's each is 60, 10 and 30% respectively in the case of *C. retusa*. In *C. spectabilis*, more than two bivalents are never involved in interlocking. PMC's may have one or two interlocked associations. Frequency of cells with one and two interlocked associations is 60 and 40% respectively. In *C. laburnifolia* all the 35% cells which exhibit the phenomenon of interlocking have a single interlocked association of two bivalents.

Interlocking continues throughout prophase and persists even up to metaphase. The interlocked bivalents aggregate with others at the equatorial plate. Disjunction of chromosomes from interlocked associations is delayed (figure 4), with the result they are still in the process of separation when other chromosomes have already reached the poles. Except for this anomaly interlocking does not effect any other aspect, including chiasmata frequency and chromosome distribution (figure 5). Pollen viability and seed set also do not suffer any change (table 1).

Since interlocking is extremely infrequent, having been recorded in less than a dozen species, nothing is known about its causative factors. It is believed to represent accidental entanglement of bivalents during early prophase when chromosomes are least spiralized. Should this be so, interlocking would be more common in organisms with long chromosomes. Crotalarias, like other legumes, do not fall in this category. Plants of *C. retusa* were checked for three consecutive years and each time this anomaly appeared in a sizable number of pollen mother cells, which indicates that interlocking of bivalents may be gene controlled.

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OCCURRENCE OF MAIZE DWARF MOSAIC VIRUS IN INDIA

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DURING a survey for virus diseases of graminee in July 1980 a virus was found on maize (*Zea mays* L.) in a maize cultivating area of Faizabad, India. The disease showed stunting of plants with bunching of upper internodes forming a spike-like appearance (figure 1). The leaves of the infected plants showed clear mosaic symptoms consisting of yellowish blotches and flecks intermingled with greenish patches of the lamina (figure 2). The incidence of the disease was about 20%.

In the preliminary transmission experiments the disease was transmitted mechanically to *Zea mays*, thus proving its viral nature. Further it was transmitted to *Dactyloteniurn aegyptiacum, Digitaria sanguinalis, Echinochloa colonum, Euchlaena mexicana,*