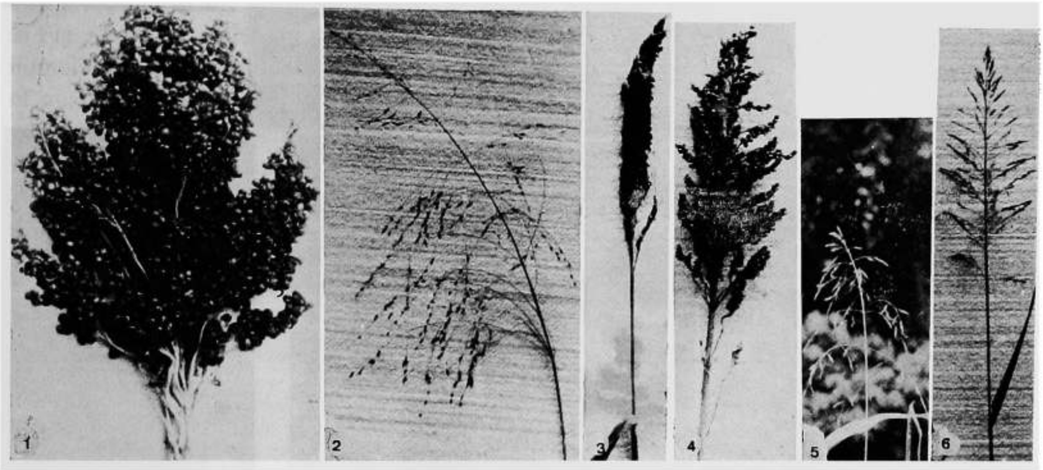
nature. Such segregants, in nature, would then be subjected to disruptive selection as described by Thoday (1972). Doggett and Majisu (1968) also stressed the importance of the gene flow between wild and cultivated sorghums in the diversification of this crop.

Cytology

All three collections investigated showed twenty chromosomes at the mitotic metaphase. Fig. 7 is a mitotic metaphase cell in collection TH2 showing twenty chromosomes. A diploid chromosome number 2n=20 was also recorded in each of the hybrids between the collections.

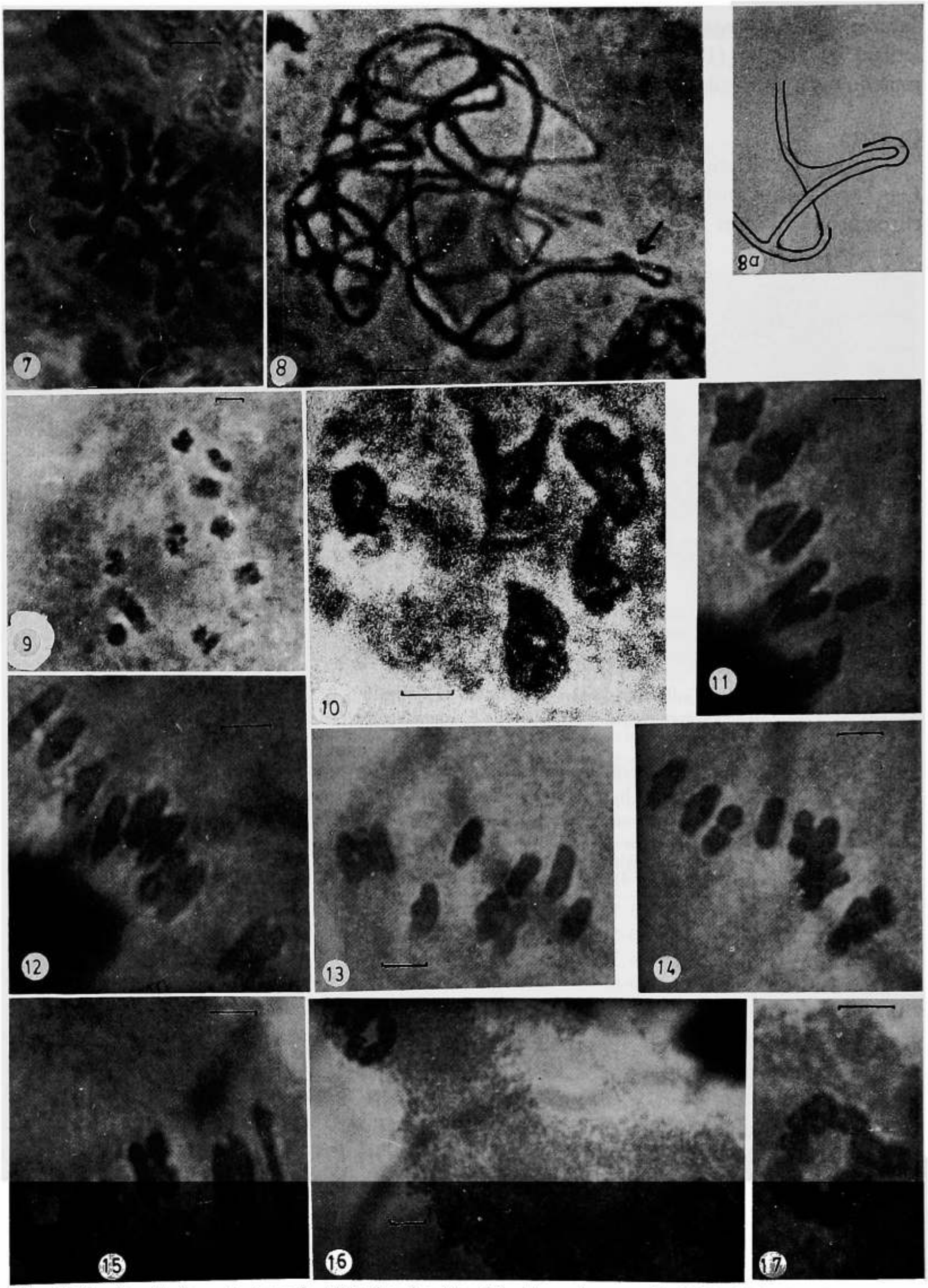


Figs. 1–6. 1, panicle of Collection TH2. 2, panicle of Collection IB2. 3, panicle of Collection IB17. 4, panicle of TH2×IB2. 5, panicle of TH2×IB17. 6, panicle of IB2×IB17.

Table 3. Diakinesis chromosome associations in *Sorghum bicolor* collections and their hybrids (ranges are given in parentheses and scores are averages based on 30 cells per plant)

Plant	I	Ring II	Rod II	Rod IV	Rod VI	Rod VIII	Rod X
TH2	0.50	5.70	1.70	1.00	0.10		
(2n=20)	(0–4)	(0–5)	(0–3)	(0–5)	(0–1)		
IB17	0.38	6.31	1.00	1.20	0.03		
(2n=20)	(0–2)	(0–6)	(0–4)	(0–5)	(0–1)		
IB2		4.45	4.45	0.55			
(2n=20)		(0–8)	(0–4)	(0–5)			
TH2×IB2	0.12	3.15	3.80	1.23	0.13	0.03	0.04
(2n=20)	(0–2)	(0–6)	(0–4)	(0–5)	(0–1)	(0–1)	(0–1)
TH2×IB17	1.38	3.50	3.75	1.00	0.02		
(2n=20)	(0–4)	(0–6)	(0–4)	(0–5)	(0–1)		
IB2×IB17		4.08	2.92	1.50			
(2n=20)		(0–8)	(0–6)	(0–5)			

The meiotic chromosome behaviours in the three collections and their hybrids are summarized in Figs. 8–17 and Table 3. They were all characterized by multivalent pairing at pachynema. Fig. 8 shows pachynema chromosomes in TH2×IB2. The arrowed part of Fig. 8 is interpreted in Fig. 8a to show allosyndesis. This pairing was common to all materials investigated. Fig. 9 is a diakinesis cell in collection IB2 showing ten bivalents. Such cells with 10 II were also observed in collection IB17. Metaphase I cells with quadrivalents were observed in all collections and their hybrids. Figs. 10 and 11 are metaphase



Figs. 7–17. 7, mitotic metaphase in TH2 showing 2n=20. 8, pachynema in TH2×IB2 showing allosyndetic pairing of homoelogous chromosomes. 8a, an interpretative diagram of the part arrowed in figure 8. 9, diakinesis in IB2 showing 10 II. 10, metaphase I in TH2 showing 5 IV. 11, metaphase I in TH2×IB17 showing 4 IV+2 II. 12–15, metaphase I in TH2×IB2. 12, shows 3 IV+4 II. 13, shows 2 VI+4 II. 14, shows 1 VIII+1 IV+4 II. 15, shows 1 X+2 IV+1 II. 16, metaphase II in TH2×IB2 showing ring formation at each pole. 17, enlargement of the chromosome ring at one pole to show 9 chromosomes forming the ring and the 10th chromosome sticking out. Scale line represents 1 μm.