CHROMOSOME NUMBERS IN THE GESNERIACEAE: V

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ABSTRACT. Chromosome numbers are recorded for forty-three species and one hybrid belonging to the Old World Gesneriaceae. The genera represented, with the number of species studied in brackets, are as follows: *Cyrtandra* (3), *Aeschynanthus* (8), *Boea* (2), *Chirita* (6), *Didymocarpus* (2), *Haberlea* (1), *Loxocarpus* (1), *Saintpaulia* (6 & 1 hybrid), and *Streptocarpus* (14). In *Streptocarpus* the counts for the most part conform to the normal pattern: 2n = 32 in subgenus *Streptocarpus* and 2n = 30 in *Streptocarpella*. There are, however, two species of subgenus *Streptocarpus* showing hexaploid and octoploid counts respectively: *S. variabilis* 2n = 96 and *S. hildebrandtii* 2n = 128.

The following paper reports chromosome counts made in Old World species of the family Gesneriaceae. The plants studied are from the collection at the Royal Botanic Garden Edinburgh and are all of known wild origin. Specimens of all collections investigated are in the herbarium of the Royal Botanic Garden under the numbers quoted in Table 1. *Aeschynanthus* species have been identified by Mr P. J. B. Woods whilst all other identifications have been made by Mr B. L. Burtt.

The cytological preparations were either acetocarmine or propionocarmine squashes of material which had been fixed in 3:1 ethanol:acetic acid. In the case of root tips, pretreatment was carried out in a saturated solution of paradichlorobenzene for three to four hours before fixation. Chromosome numbers are listed in Table 1 and illustrated in plate 9 a-f.

DISCUSSION

Discussion has been kept to a minimum as the topic has been given a much greater coverage in a paper reviewing all existing chromosome counts in the Old World Gesneriaceae (Ratter, 1975).

The chromosome number of 2n = 34 has been recorded for both the *Cyrtandra* species listed in Table 1. This appears to be the usual number for the genus as shown by the counts given in Ratter & Prentice (1964), Storey (1966) and Ratter & Milne (1970).

Polysomaty occurred in all root-tips of *Haberlea rhodopensis* examined: a majority of figures had 2n = 44 but others showed numbers varying from 2n = c. 30 to c. 50. The significance of these observations in the light of differing chromosome counts recently recorded in the literature (Borhidi 1968, 2n = 38; Lepper 1970, 2n = 44) is briefly discussed in Ratter, 1975.

Four of the six *Chirita* species show a count of 2n = 18, whilst *C. bimaculata* D. Wood and *C. hamosa* R. Br., both in the section *Microchirita* C.B. Cl. show 2n = 34.

All of the *Saintpaulias* have counts of n = 15 as in most previous records for the genus, possibly indicating a relationship with subgenus *Streptocarpella* of *Streptocarpus* (see Hilliard & Burtt, 1971, p. 44). The hybrid *S. confusus* B. L. Burtt *x orbicularis* B. L. Burtt shows perfect chromosome pairing at meiosis and normal fertility, indicating an absence of barriers to gene exchange between the parental species.

The new chromosome counts in *Streptocarpus* conform to the pattern of 2n = 32 in the subgenus *Streptocarpus* and 2n = 30 in the subgenus *Streptocarpella*, with the exception of two species of subgenus *Streptocarpus* from Madagascar. Both of these show polyploidy of the normal x = 16: *S. variabilis* Humbert is a hexaploid (2n = 96) and *S. hildebrandtii* Vatke is octoploid (2n = 128) and both show a regular meiosis with formation of bivalents.

TABLE I

	Herbarium specimen number	*Meiotic count P.M.C.*	*Mitotic count root tip* 2n
Subfamily **Cyrtandroideae** Endl.			
Tribe CYRTANDREAE			
Cyrtandra aff. multibracteata C.B. Cl.		n = 17 (1 mei. ana.)	
C. sandei De Vries	C. 6463		34
C. sororia Schltr.	C. 7436	n = 17 (1 mei. ana.)	
Tribe TRICHOSPOREAE Nees			
Aeschyanthus albidus (Bl.) Steud.	C. 5475		30
A. ellipticus Lautb. & K. Sch.	C. 4601		32
A. horsfieldii R. Br.	C. 6526		32
A. lineatus Craib	C. 7402		30
A. longicalyx Ridley	C. 7315		32
A. myrmecophilus P. Woods	C. 7401		64
A. papuanus (Schltr.) B. L. Burtt	C. 6434		32
A. guttatus P. Woods	C. 4600		32
Tribe DIDYMOCARPEAE Endl.			
Boea kerrii Craib	C. 6029	17_{II}	
B. reticulata Barnett	C. 5980	9_{II}	
Chirita bimaculata D. Wood	C. 5927	17_{II}	
C. caerulea R. Br.	C. 8252	9_{II}	
C. hamosa R. Br.	C. 8032	n = 17 (1 mei. ana.)	
C. involucrata Craib	C. 8251	n = 9 (1 mei. ana.)	
C. walkeri Gardn.	Theobald & Grupe 2357*	9_{II}	
C. sp. from Thailand	C. 8246	9_{II}	
Didymocarpus biserratus Barnett	C. 6744	28_{II}	
D. floccosus Thw.	C. 8019	n = 16 (1 mei. ana.)	
Haberlea rhodopensis Friv.	C. 4050		44 (and c. 30–50, polysomatic)
Loxocarpus conicapsularis (C.B.Cl.) B. L. Burtt	C. 8271	n = 9 (1 mei. ana.)	
Saintpaulia brevipilosa B. L. Burtt	C. 3827		30
S. difficilis B. L. Burtt	C. 1570	15_{II}	
S. diplotricha B. L. Burtt	C. 3856		30

* Specimen referred to is the wild collection from which the cultivated material originated, there is no cultivated specimen.

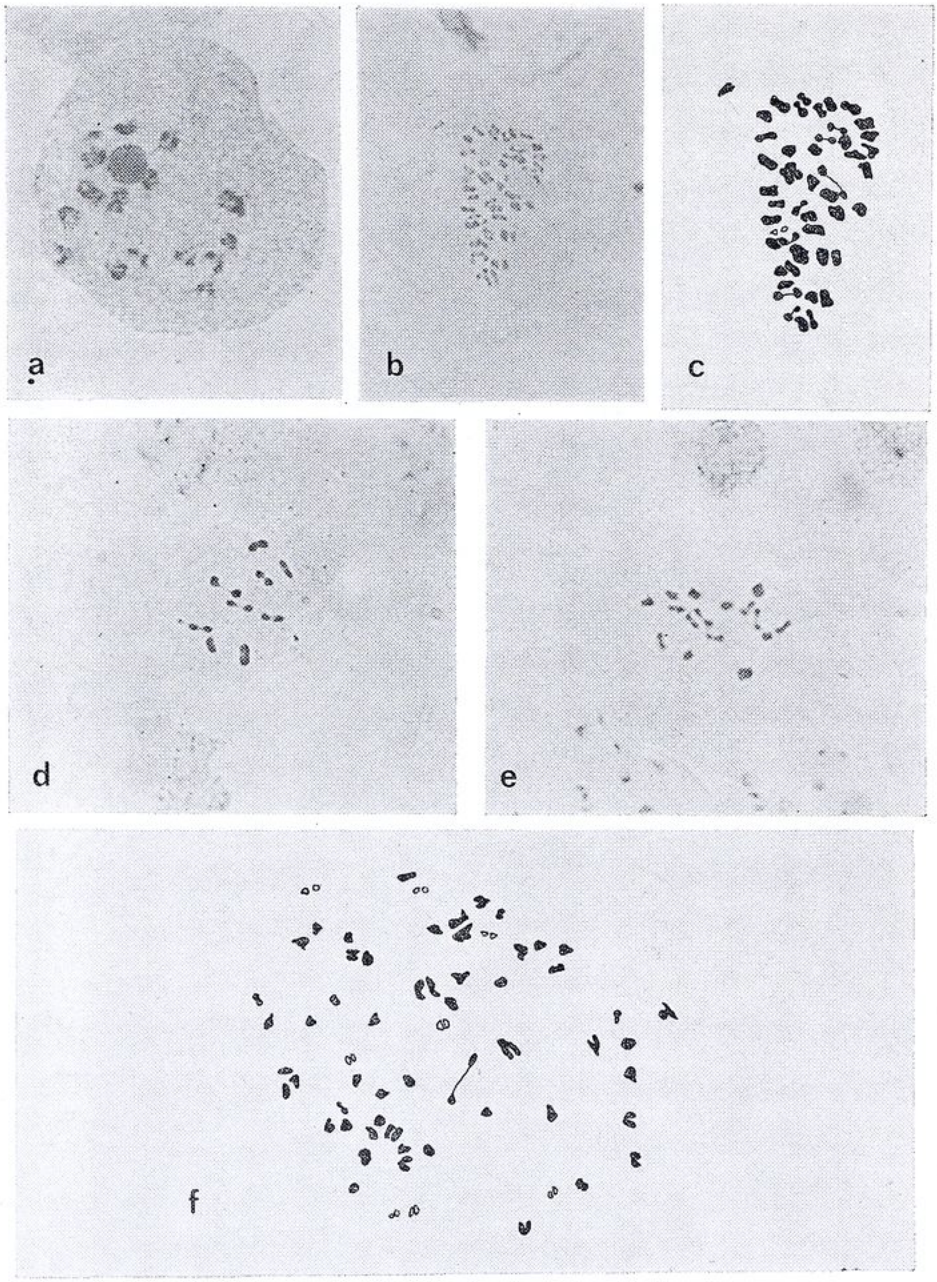

PLATE 9. Squash preparations of: a, *Aeschynanthus ellipticus* C. 4601, P.M.C. diakinesis, 16_{II}; b, *Streptocarpus variabilis* C. 6748, P.M.C. M1, 48_{II}; c, explanatory diagram of b; d, *Chirita sp.* (Thailand) C. 8246, M1, 9_{II}; e, *Streptocarpus rexii* C. 6232, P.M.C. M1, 16_{II}; f, *Streptocarpus hildebrandtii* C. 8037, P.M.C. M1, 64_{II}, inked-in photograph. a, b, d & e × 1100; f × 1200.

S. grandifolia B. L. Burtt	C. 2958	15_{II}	
S. orbicularis B. L. Burtt	C. 3787	15_{II}	
S. velutina B. L. Burtt	C. 3815	15_{II}	
S. confusus B. L. Burtt x orbicularis B. L. Burtt	C. 3831	15_{II}	
Streptocarpus subgenus *Streptocarpella* K. Fritsch			
S. caulescens C.B.Cl. var. pallescens Engl.	C. 8016	15_{II}	
S. glandulosissimus Engl.†	C. 4955	15_{II}	
S. kirkii Hook f.	C. 8336	n = 15 (1 mei. ana.)	
S. muscosus C.B.Cl.	C. 8062	15_{II}	
S. oliganthus B. L. Burtt	C. 8237	n = 15 (1 mei. ana.)	
S. stomandrus B. L. Burtt	C. 8236	15_{II}	
S. thompsonii R. Br. var. bojeri (R. Br.) C.B.Cl.	C. 8332	n = 15 (1 mei. ana.)	
S. thysanotus Hilliard & Burtt subgenus *Streptocarpus***	C. 8094	15_{II}	
S. hildebrandtii Vatke	C. 8037	64_{II}	
S. kungwensis Hilliard & Burtt	C. 4022	16_{II}	
	C. 8371 (different stock)	16_{II}	
S. polyanthus Hook. forma	C. 8323	n = 16 (1 mei. ana.)	
S. rexii (Hook.) Lind.	C. 6232	16_{II}	
S. variabilis Humbert	C. 6748	48_{II}	
Genus anomalum			
Jerdonia indica Wight	C. 5117	14_{II}	

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** Since this was written, counts of 16_{II} have been made in *S. schliebenii* Mansf. (C. 8423). This confirms morphological observations made when the seed germinated, that the species should be placed in subgenus *Streptocarpus*.

† Erroneously published in Ratter & Milne (1970) as 16_{II}.