TABLE I

Segregation of desynapsis in F_2 families

Family	Normal	Desynapsis	Expected ratio	χ^2	P
1	42	13	3 : 1	0·0545	·80–·90
2	45	14	3 : 1	0·0508	·80–·90
3	59	18	3 : 1	0·1082	·70–·80
4	51	16	3 : 1	0·0447	·80–·90
5	47	17	3 : 1	0·0833	·70–·80
6	37	14	3 : 1	0·1633	·50–·70
7	41	12	3 : 1	0·1572	·50–·70
8	33	9	3 : 1	0·2857	·50–·70
9	26	8	3 : 1	0·0392	·80–·90
10	21	8	3 : 1	0·1034	·70–·80
11	47	10	3 : 1	1·6900	·10–·20
Total Heterogeneity	449	139	3 : 1	0·5804	·30–·50
				2·8381	·98–·99

were found to segregate into 449 normal pairing: 139 desynapsis. The segregation showed a good fit to the expected ratio of 3 normal pairing: 1 desynapsis ($\chi^2_1\ df = 0{\cdot}5804$; P·30–·50). The segregation of F_2's suggests the monogenic control of desynapsis. The mutant locus controlling the pairing of chromosomes at meiosis of *C. olitorius* is a new one and hence the gene symbols proposed for the pair of alleles are *Ds* (normal pairing) and *ds* (desynapsis).

Genetically controlled desynapsis described above has led to the production of a considerable amount of aneuploid gametes due to anomalous distribution of univalents during anaphase I. Thus the progenies of desynaptic plants in *C. olitorius* could be utilised effectively as a useful source of different types of aneuploids including the primary trisomics and/or monosomics as has been demonstrated in Nicotiana[4].

Jute Agricultural Research Institute, Barrackpore, West Bengal,
May 23, 1978.

P. PARIA.
M. S. BASU.
S. CHATTOPADHAYA.
S. L. BASAK.

1. Basak, S. L. and Biswas, P. K., *Cytologia*, 1968, **33**, 53.
2. Beadle, G. W., *Cornell Univ. Agric. Exp. Sta. Mem.*, 1930, p. 129.
3. —, *Cytologia*, 1933, **4**, 269.
4. Goodspeed, T. H. and Avery, P., *J. Genet.*, 1939, **33**, 382.
5. Mitra, G. C. and Singh, D. P., *Genet. Iber.*, 1971, **23**, 43.

IDIOBLASTS TYPOLOGY ON THE TAXONOMY OF *CAPPARIS SPINOSA* COMPLEX

THIS study illustrates both usefulness and limitations of the data on idioblasts typology in taxonomic studies. Furthermore, they emphasize the importance of idioblasts, especially sclereids and tracheoids in understanding taxonomic problems. Some of the interesting data on *Capparis spinosa* and its allies have been investigated in a detailed manner.

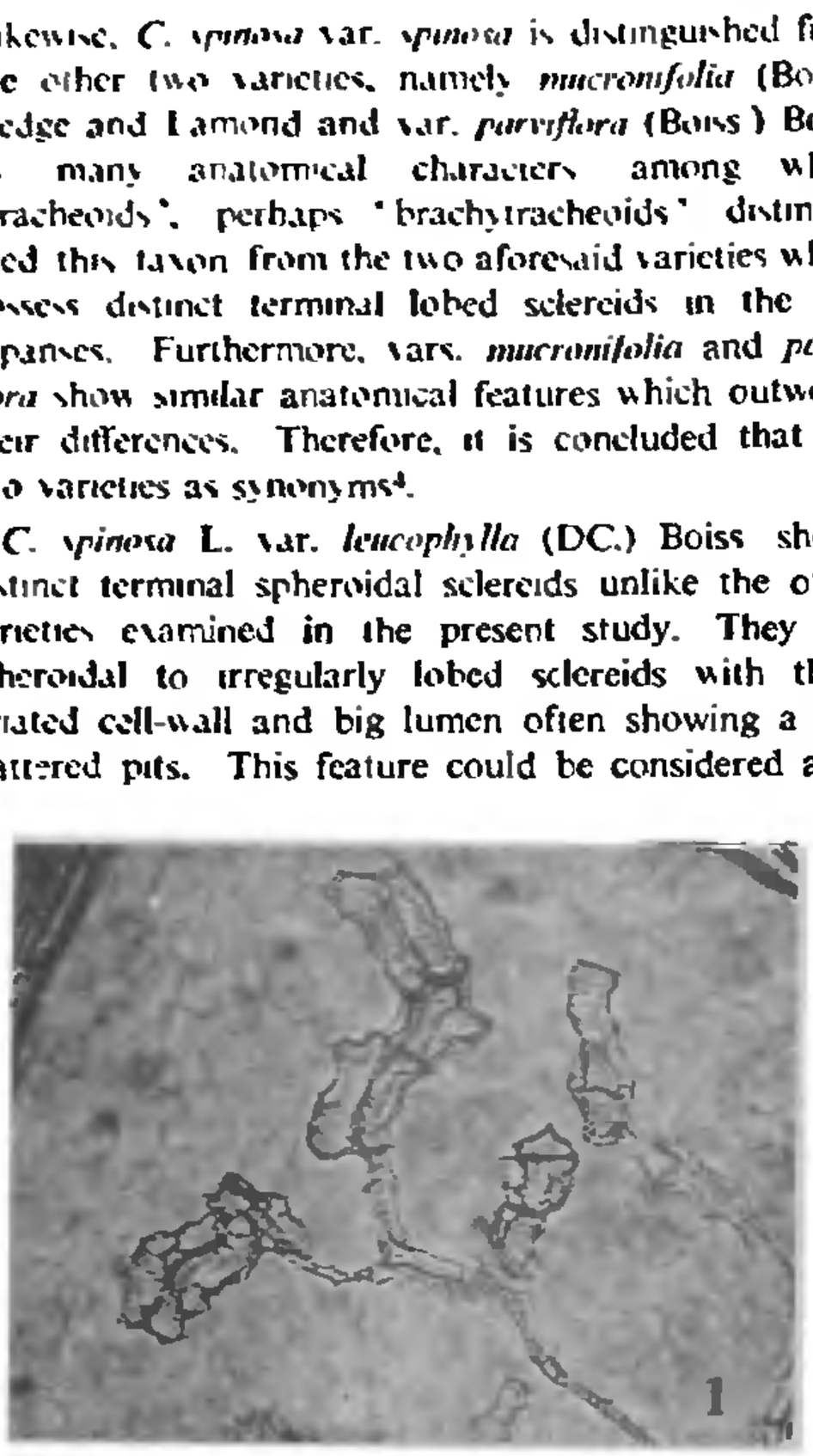
Capparis spinosa L. is a species complex with a wide range distribution from Mediterranean to Australia. The existence of morphological variations with many intergrading forms has led in the past as well as in the present to recognise as many varieties as possible leading to rather an unsatisfactory working classification[1–3]. Recently[4] an attempt has been made anatomically to throw some light on the taxonomic status of 4 taxa under this species complex.

As indicated in Table I the clear laminae of this species complex exhibit vein-endings with idioblasts of two categories, namely tracheoids and sclereids. Tracheoids are in the form of Brachytracheoids or Sclerotracheoids[5] and sclereids of the monomorphic grouping[6] showing spheroidal or lobed vesiculose base forms at the vein-endings. These features seem to be quite constant and characterise within the species complex. This is illustrated as follows:

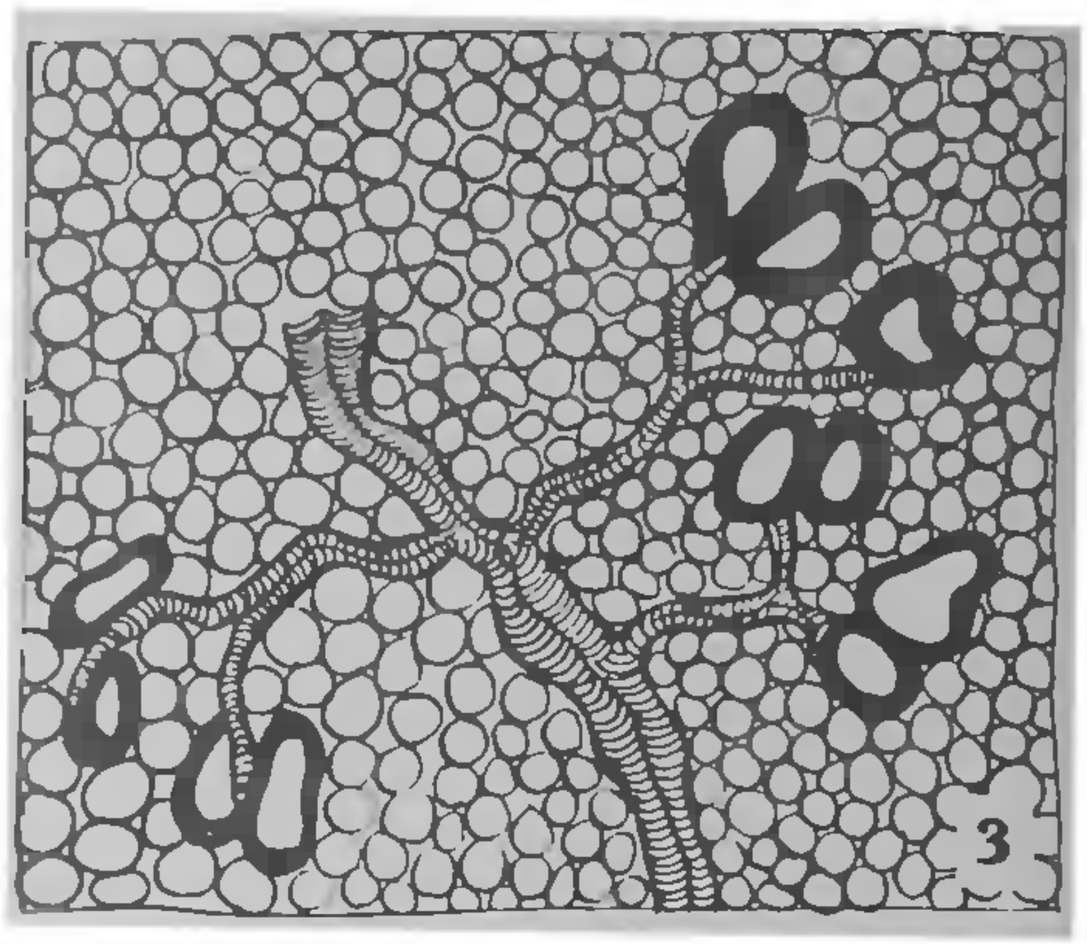
C. cartilaginea Decne. regarded by Jacobs[2] as a variety of *C. spinosa* L. but considered as an independent species in a recently published flora[3] and anatomically supported by Bokhari and Hedge[4],

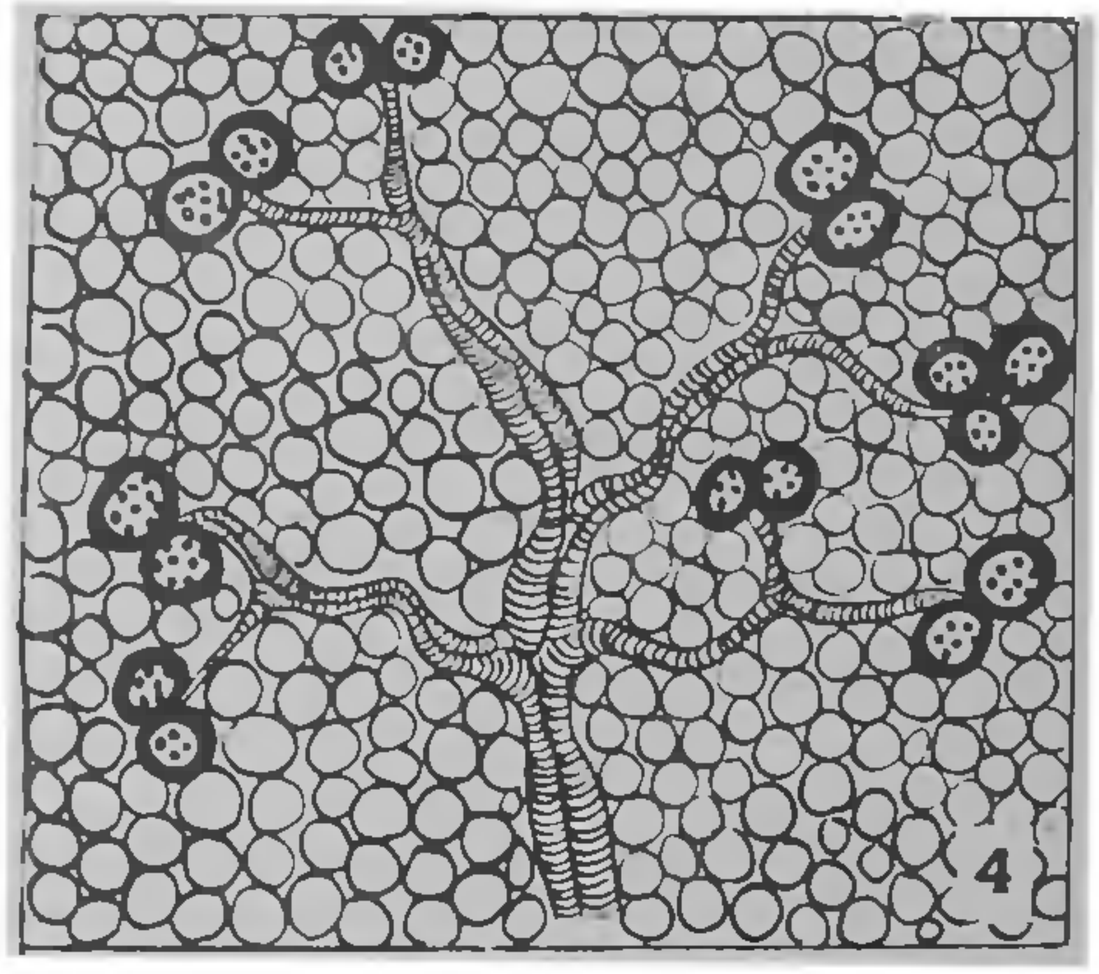
Likewise, *C. spinosa* var. *spinosa* is distinguished from the other two varieties, namely *mucronifolia* (Boiss.) Hedge and Lamond and var. *parviflora* (Boiss.) Boiss. by many anatomical characters among which 'tracheoids', perhaps 'brachytracheoids' distinguished this taxon from the two aforesaid varieties which possess distinct terminal lobed sclereids in the leaf expanses. Furthermore, vars. *mucronifolia* and *parviflora* show similar anatomical features which outweigh their differences. Therefore, it is concluded that the two varieties as synonyms[4].

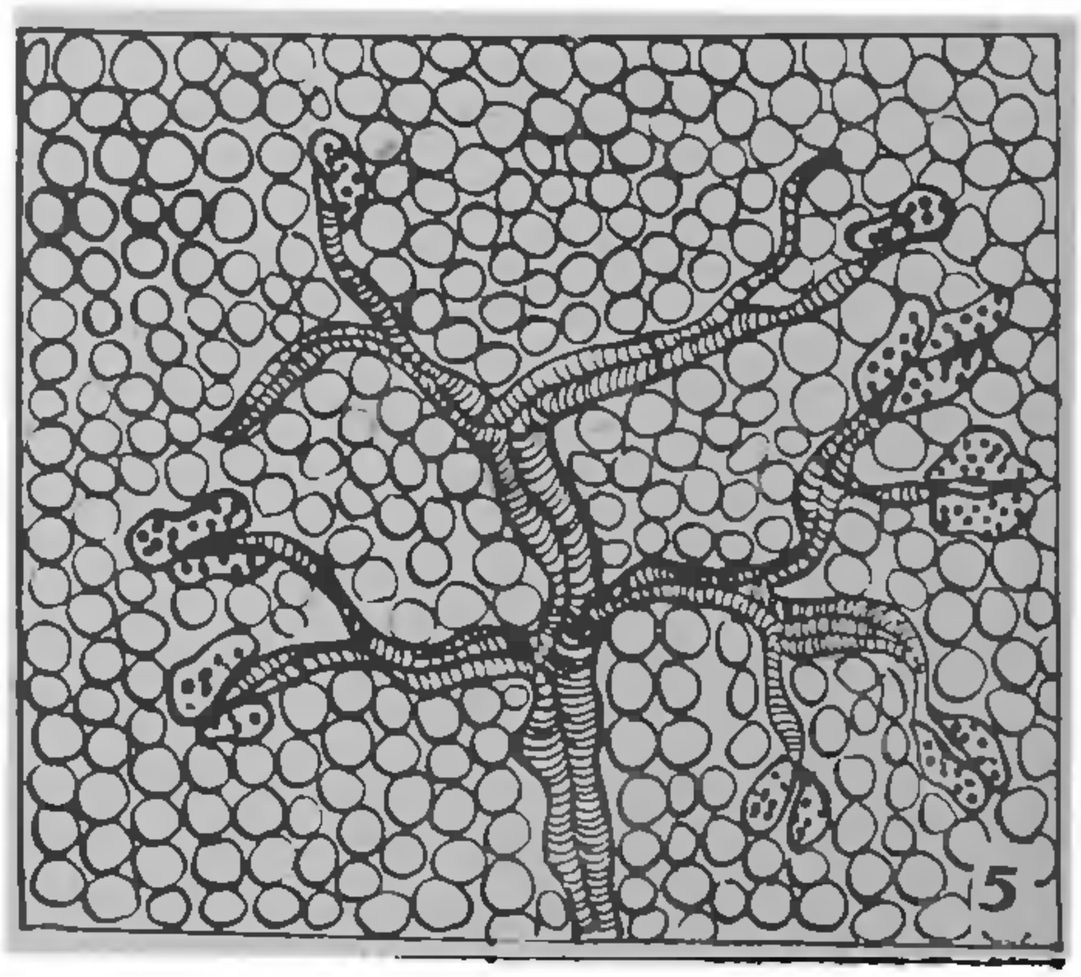
C. spinosa L. var. *leucophylla* (DC.) Boiss shows distinct terminal spheroidal sclereids unlike the other varieties examined in the present study. They are spheroidal to irregularly lobed sclereids with thick striated cell-wall and big lumen often showing a few scattered pits. This feature could be considered as a



FIGS. 1–2. Cleared laminae of *Capparis aegyptica* Lamk. showing differential wall thickening of sclerotracheoids and brachytracheoids, × 600.







FIGS. 3–5. Semi-diagrammatic sketches; Terminal idioblasts. Fig. 3. *C. spinosa* L. var. *leucophylla* DC. (*N. C. Nair* 22077 BSD) showing spheroidal sclereids. Fig. 4. *C. spinosa* L. var. *himaleyensis* (Jefrey) Jacobs (*N. C. Nair* 35750 BSD) showing sclerotracheoids. Fig. 5. *C. spinosa* L. (*T. A. Rao* 7768 BSD) showing brachytracheoids.

TABLE I

Idioblast typology for species complex of Capparis spinosa *L.*

Idioblasts of diagnostic value	Name of taxa	Taxonomic status
Brachytracheoids	1. *C. spinosa* L. (Fig. 5)	1. *C. spinosa* L.
	2. *C. spinosa* L. var. *spinosa*	2. *C. spinosa* L.
Sclerotracheoids and also infrequently	3. *C. spinosa* L. var. *galeata* (Fress) Hook. f.	3. *C. cartilaginea* Decne.
Brachytracheoids	4. *C. spinosa* L. var. *himalayensis* (Jafrey) Jacobs (Fig. 4)	4. *C. himalayensis* Jafrey
	5. *C. spinosa* L. var. *marina* (Jacq.) K. Sch.	5. *C. sandwitchiana* DC.
	6. *C. spinosa* L. var. *nummularia* (DC.) F. M. Bailey	6. *C. nummularia* DC.
	7. *C. spinosa* L. var. *canescens* Coss.	7. *C. canescens* Coss.
	8. *C. spinosa* L. var. *aravensis* Zohary	8. *C. aegyptica* Lamk. (Figs. 1–2)
Spheroidal sclereids	9. *C. spinosa* L. var. *leucophylla* (DC.) Boiss. (Fig. 3)	9. *C. leucophylla* DC.
Vesiculose sclereids	10. *C. spinosa* L. var. *mucronifolia* (Boiss.) Hedge and Lamond	10. *C. mucronifolia* Boiss.
	11. *C. spinosa* L. var. *parviflora* (Boiss.) Boiss.	11. *C. parviflora* Boiss.

diagnostic feature for this taxon and holds well as an independent taxon, namely *C. leucophylla* DC. Further, anatomical differences, if discovered, there is a good reason to regard this taxon as a good species[2].

The treatment of *C. nummularia* DC. as synonymous to the proper taxa, namely *C. spinosa* L. and further into its variety, namely *C. spinosa* L. var. *nummularia* (DC.) holds well. The idioblasts in *C. nummularia* DC. (*Pritzel* 284, CAL) are of terminal Sclerotracheoid type whereas in *C. spinosa* L., they represent terminal Brachytracheoid type. The same consideration may be given weightage in treating. *C. sandwitchiana* DC. (*Fischer, s.n.*, LE) as a variety[2], namely *C. spinosa* L. *marina* (Jacq.) K. Sch. due to the presence of distinct terminal sclerotracheoids. In this connection, it is worthwhile to quote Jacobs[2]—'*Pritzel* 284 from North-Western Australia, which Jacobs alleged to var. *marina*, should actually be placed under var. *nummularia*'—Their separation and placement under two varieties based on exomorphic feature seems to be correct and further clearly separates them from the proper taxon *C. spinosa* L. which has only brachytracheoids in the lamina.

Botanical Survey of India, T. ANANDA RAO.
Sibpur, Howrah 711 103, MRS. SILPI DAS.
April 16, 1978.

1. Zohary, M., *Bull. Res. Counc. Israel*, **8D**, 49.
2. Jacobs, M., *Blumea*, 1965, **12**, 385.
3. Hedge, I. C. and Lamond, J., *Fl. Iranica*, **68**, Graz. Austria.
4. Bokhari, M. H. and Hedge, I. C., *Notes Royal Bot. Gard.*, 1975, **34**, 231.
5. Rao, T. A. and Bhattacharya, J., *Proc. Indian Sci. Congress Bot. Sec. (Abstracts)*, 1976.
6. — and Bhupal, O. P., *Proc. Indian Acad. Sci.*, 1973, **B77**, 41.