S T U D I E S I N T H E

S O U T H A F R I C A N

B U L B O U S L I L I A C E A E

by

JOHN PETER JESSOP

FIGURES

FIG. 1
Plant of *Ledebouria revoluta* showing apparently terminal and axillary inflorescences.

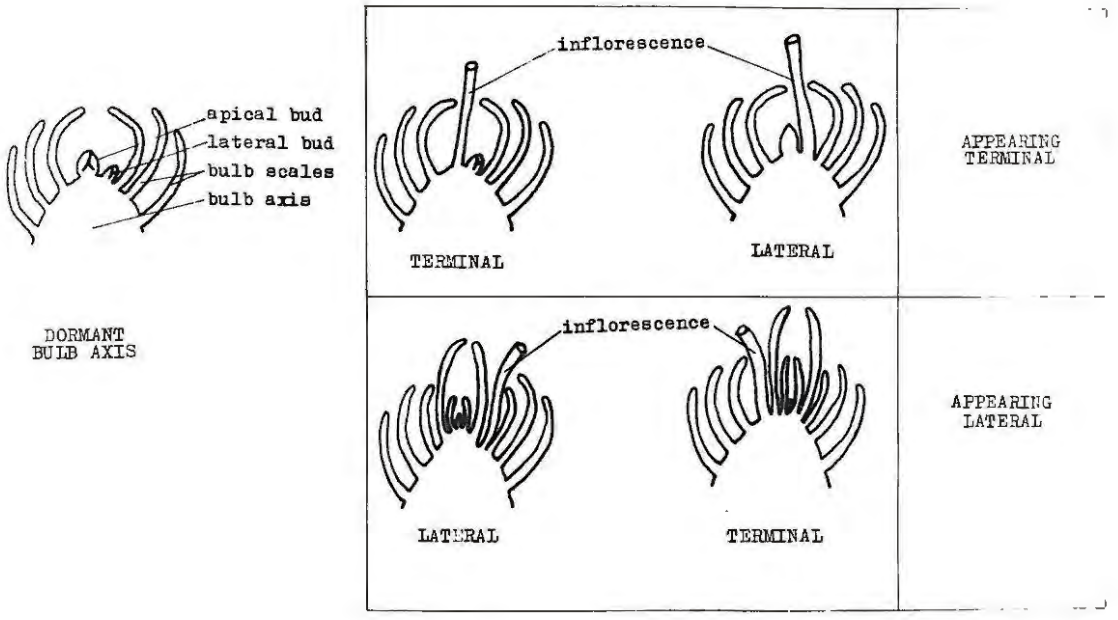


FIG. 2

Longitudinal sections through bulb apex to indicate errors in interpretation of origin of inflorescence if based on external observation only.

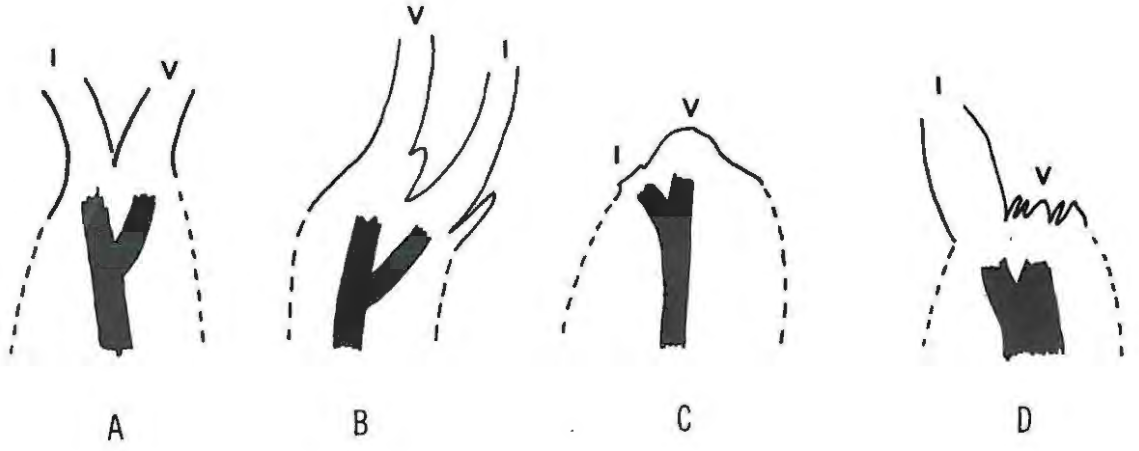


FIG. 3

Longitudinal sections through bulb apices of:-

a) Scilla nervosa; (b) Scilla revoluta; (c) Drimiopsis maculata; d) Lachenalia glaucina.

I-Inflorescence axis.

V-Vegetative axis.

Broken lines indicate region of bulb where scales and portions of the bulb axis have been cut away.

(Not drawn to scale.)

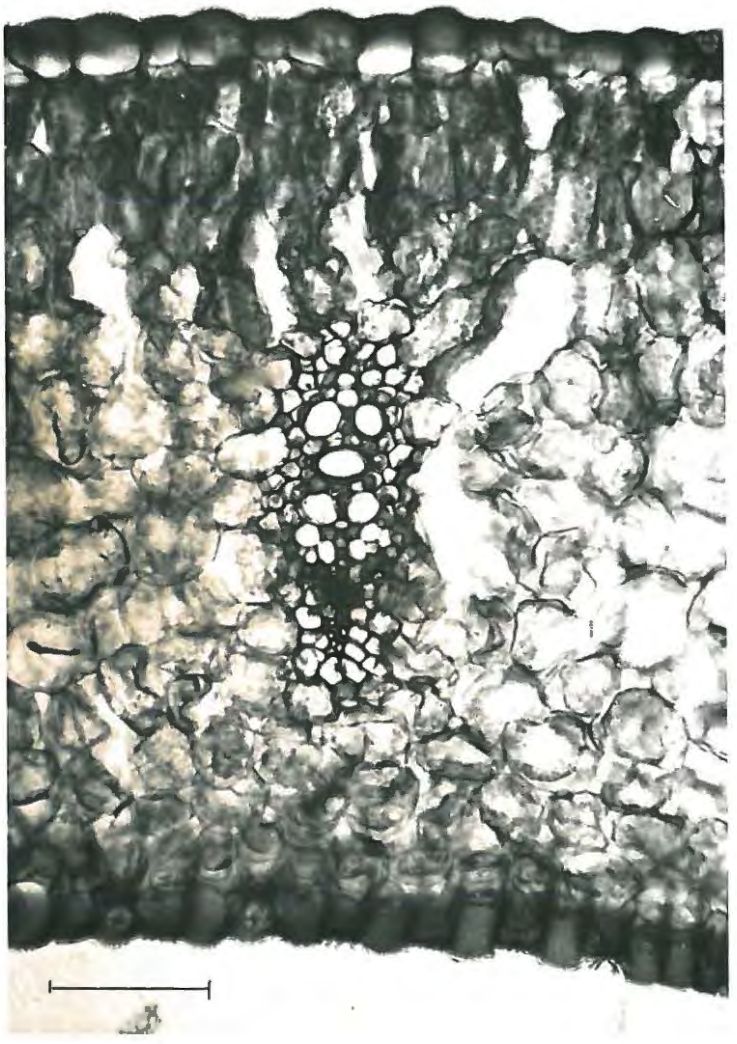


FIG. 4
T.S. of leaf of Scilla revoluta. Scale-0,1 mm.

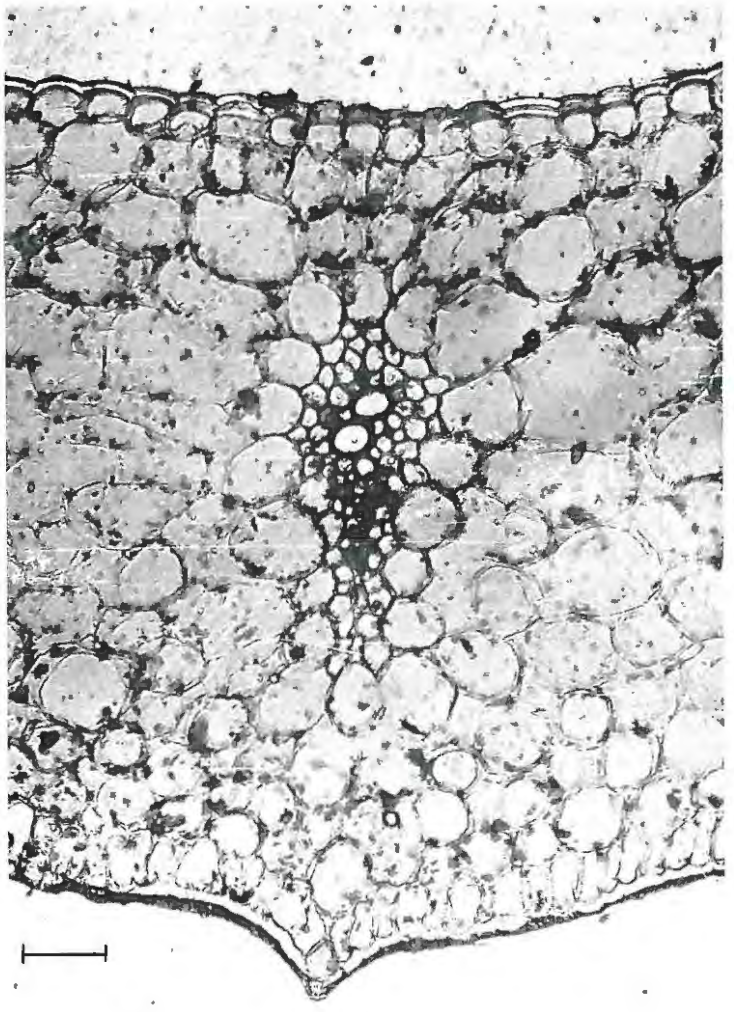


FIG. 5
T.S. of leaf of Drimiopsis maculata. Scale-0,1 mm.

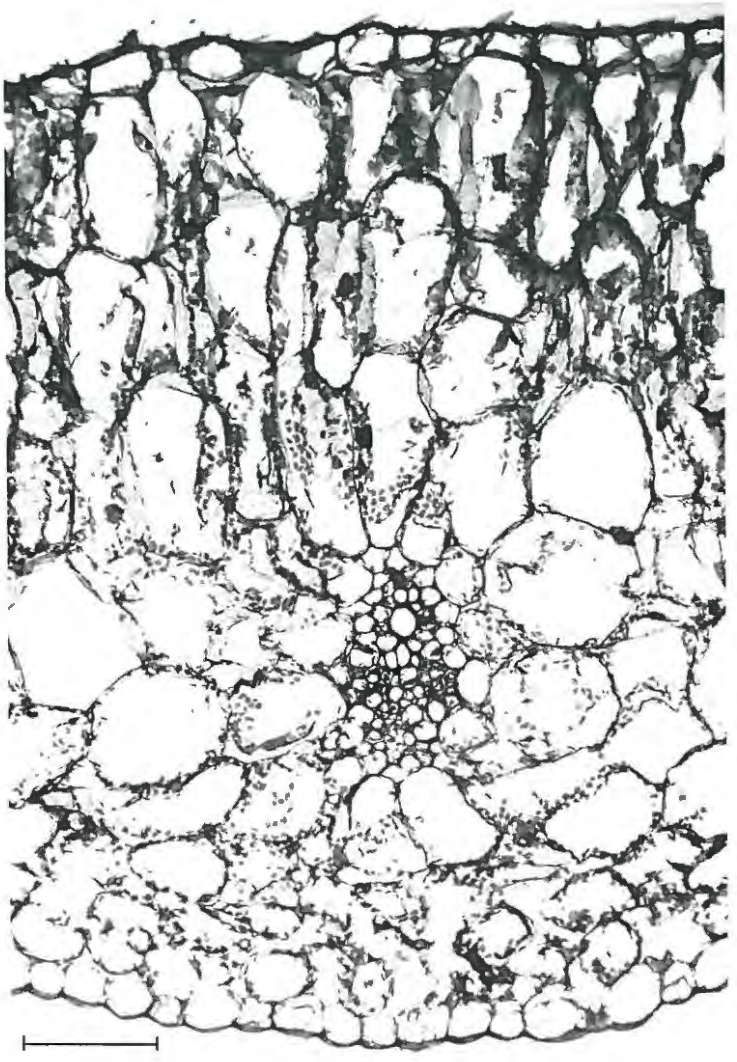
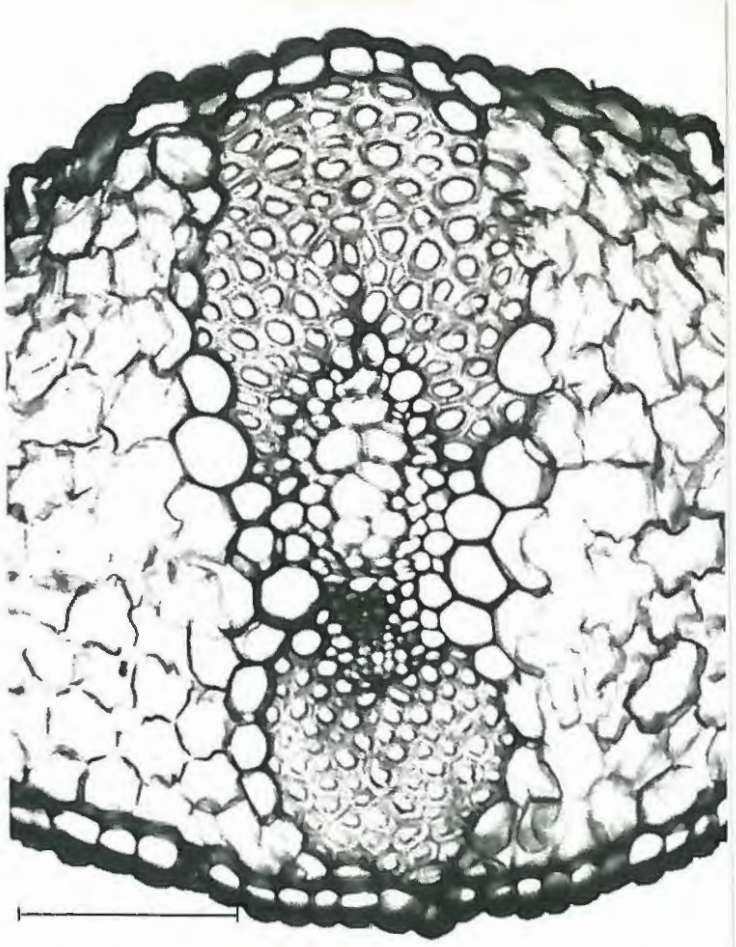


FIG. 6
T.S. of leaf of Massonia depressa. Scale-0,1 mm.



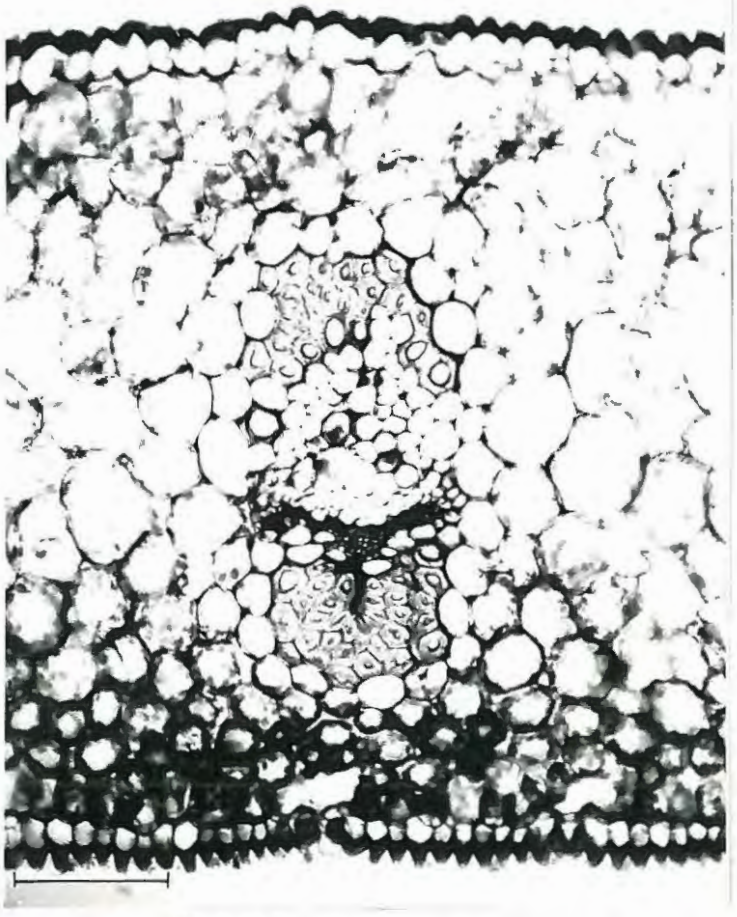


FIG. 7

T.S. of leaves of:-

a) Scilla nervosa;

b) Scilla firmifolia.

Scale-0,1 mm.

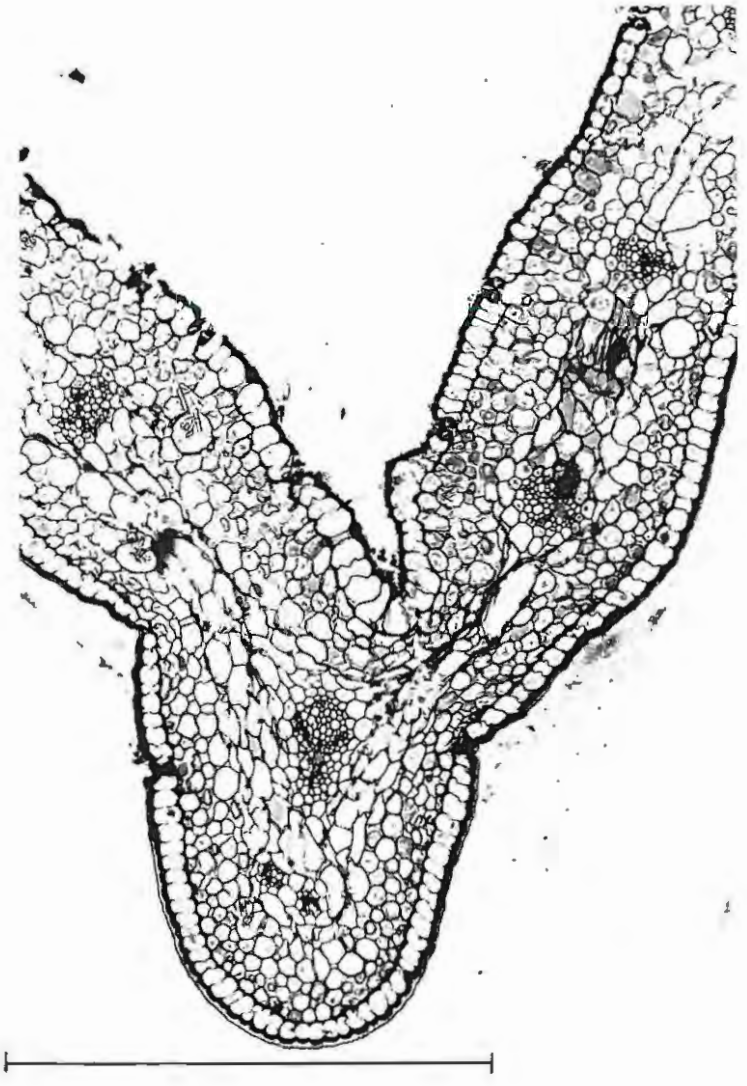


FIG. 8
T.S. of leaf (near middle of lamina) of *Drimia elata*.
Scale-0,1 mm.

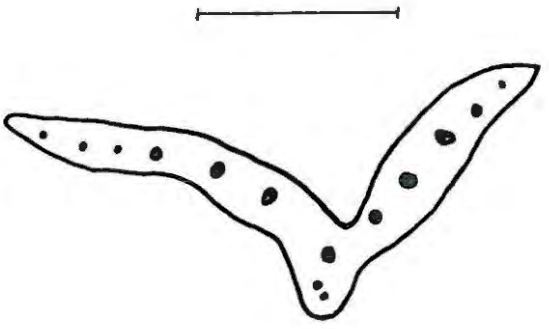
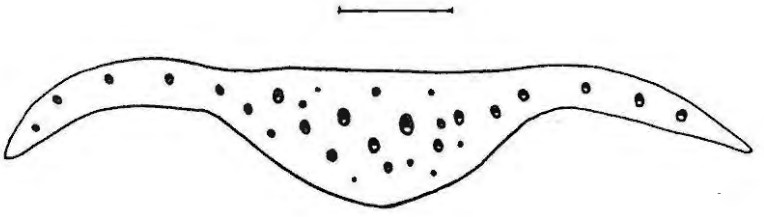


FIG. 9
T.S. of leaf (near middle of lamina) of Drimia elata.-
Scale-1 mm.



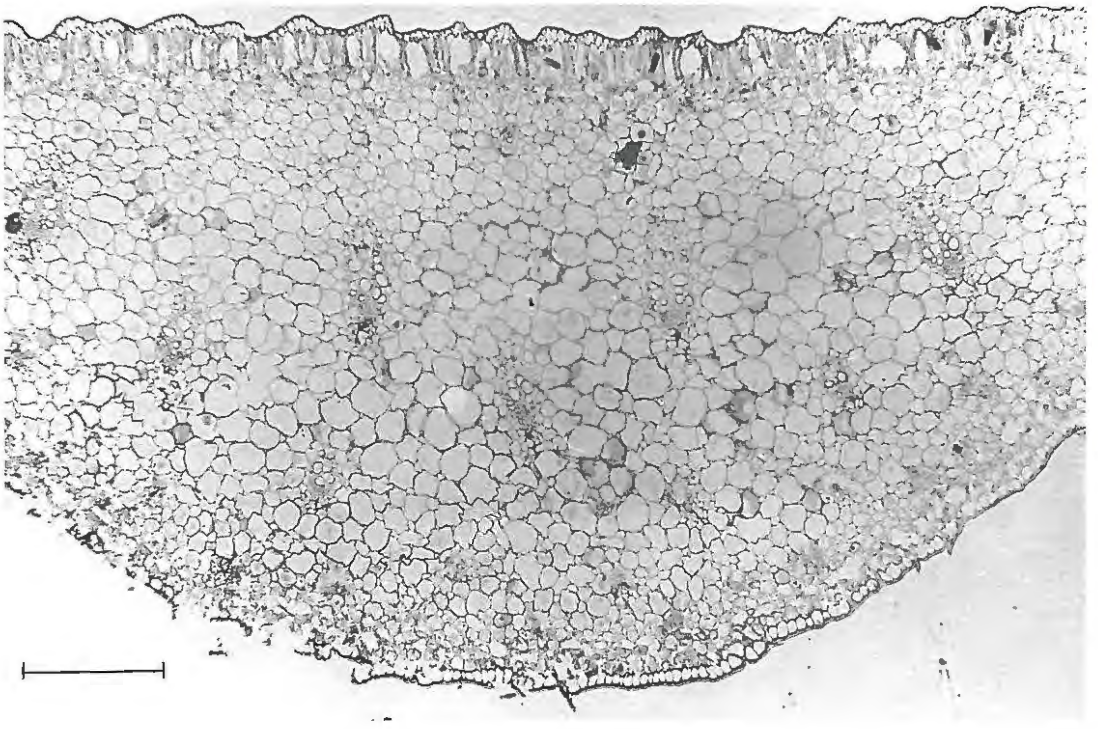


FIG. 10
T.S. of leaf of Urginea altissima:
a) Scale-1 mm.
b) Scale-0,25 mm.

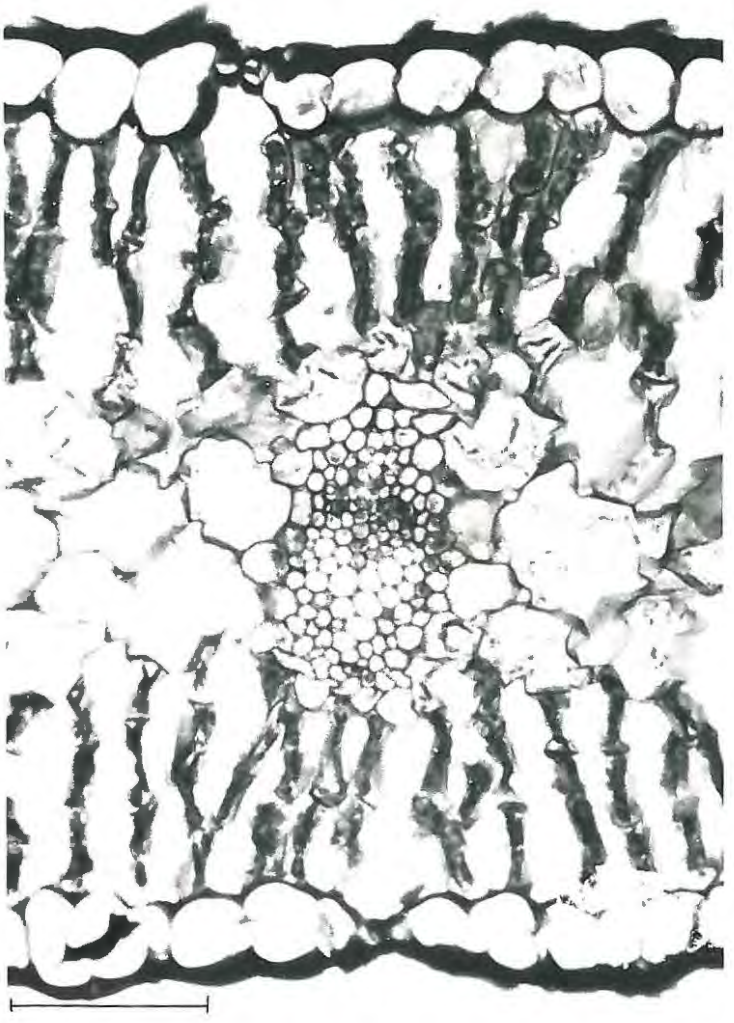


FIG. 11
T.S. of leaf of Urginea pusilla. Scale-0,1 mm.

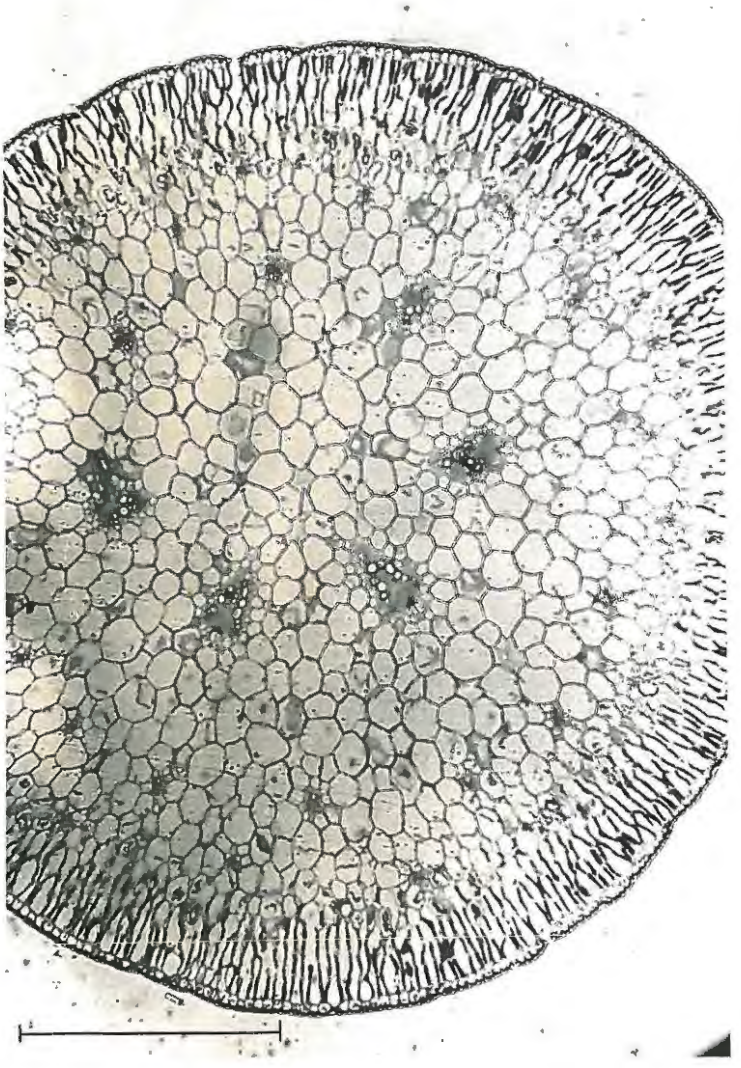


FIG. 12
T.S. of leaf of Drimia anomala. Scale-1 mm.

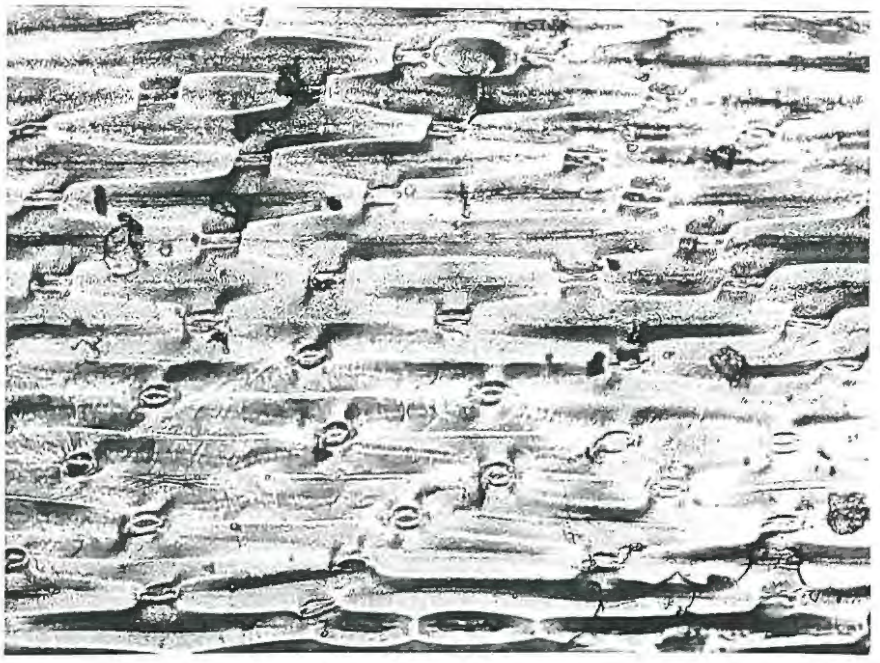


FIG. 13
Adaxial leaf surface of Trachyandra sp. x160.

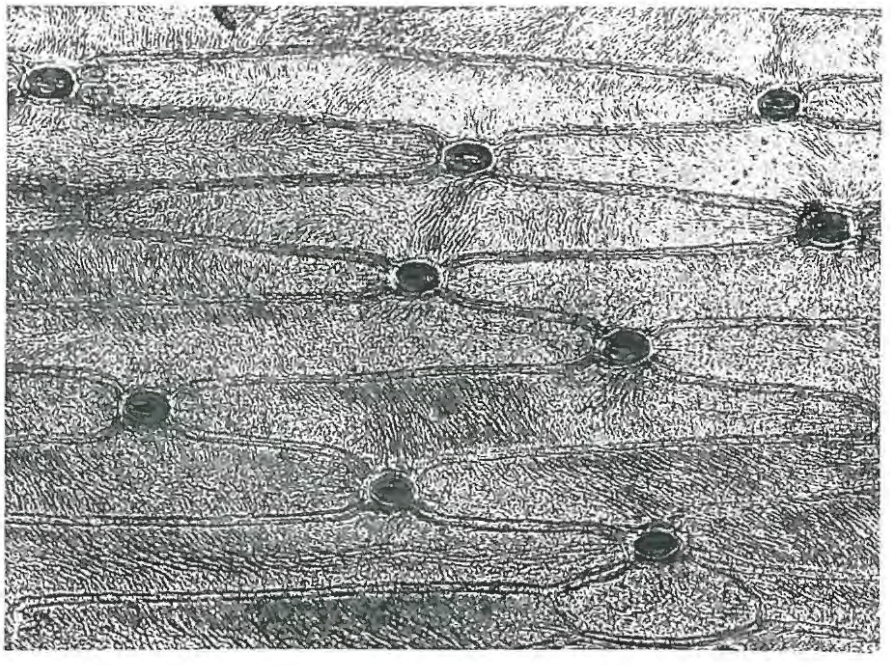


FIG. 14
Adaxial leaf surface of Bulbine asphodeloides. x160.

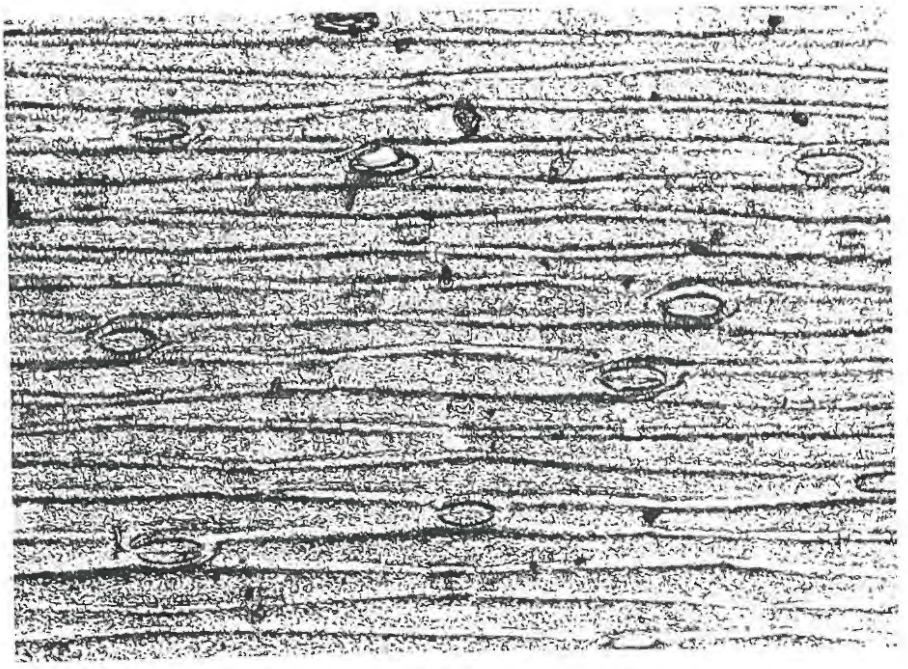


Fig. 15
Adaxial leaf surface of
Albuca setosa. x160.

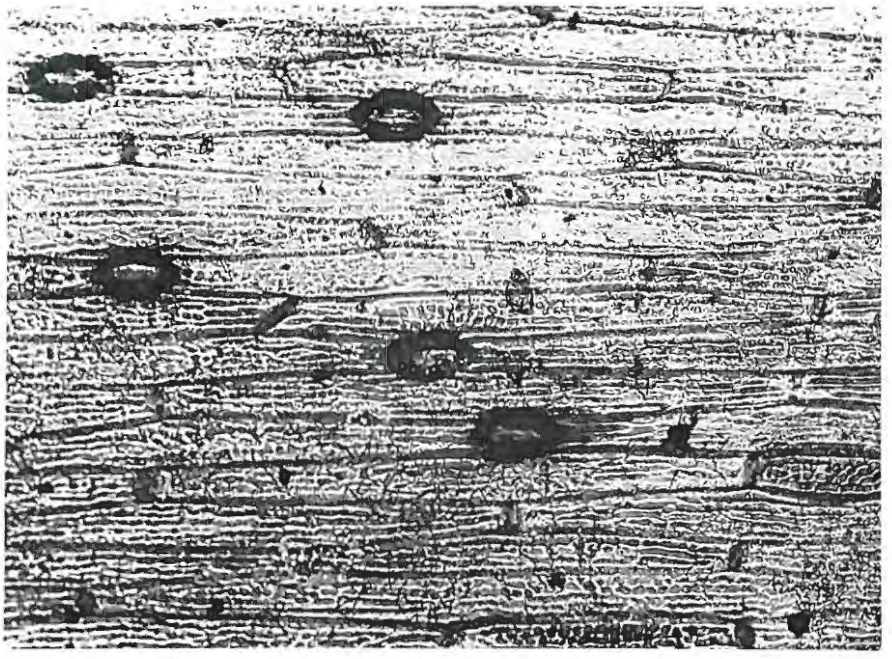


FIG. 16
Adaxial leaf surface of Drimia elata. x160.

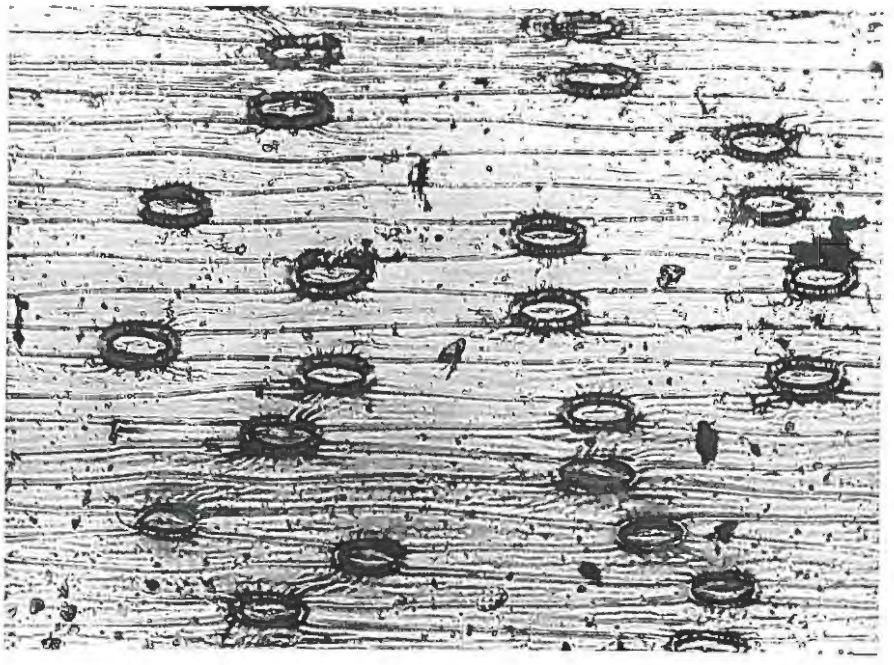


FIG. 17
Adaxial leaf surface of Drimia elata. x160.

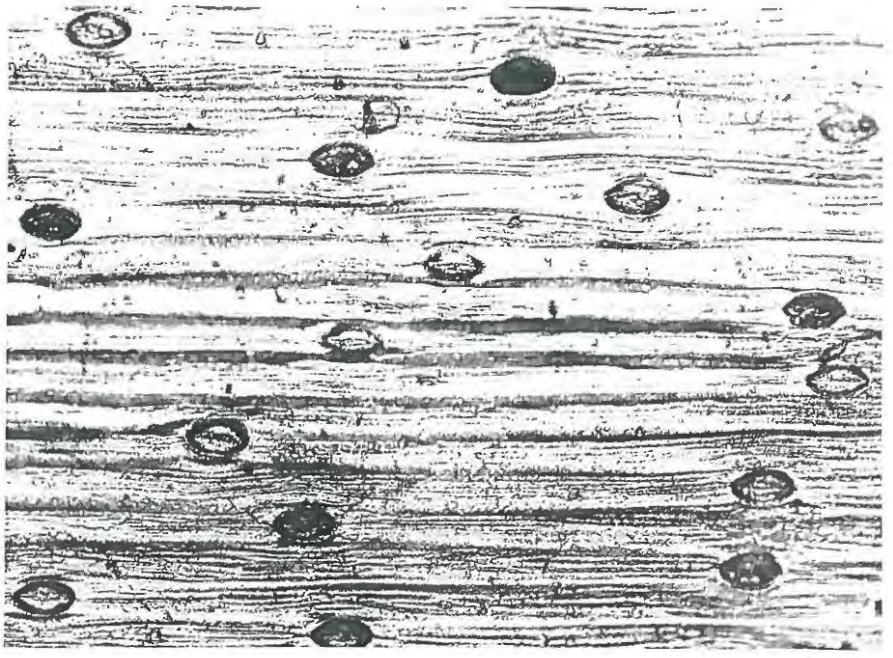


FIG. 18
Adaxial leaf surface of Drimia elata. x160.

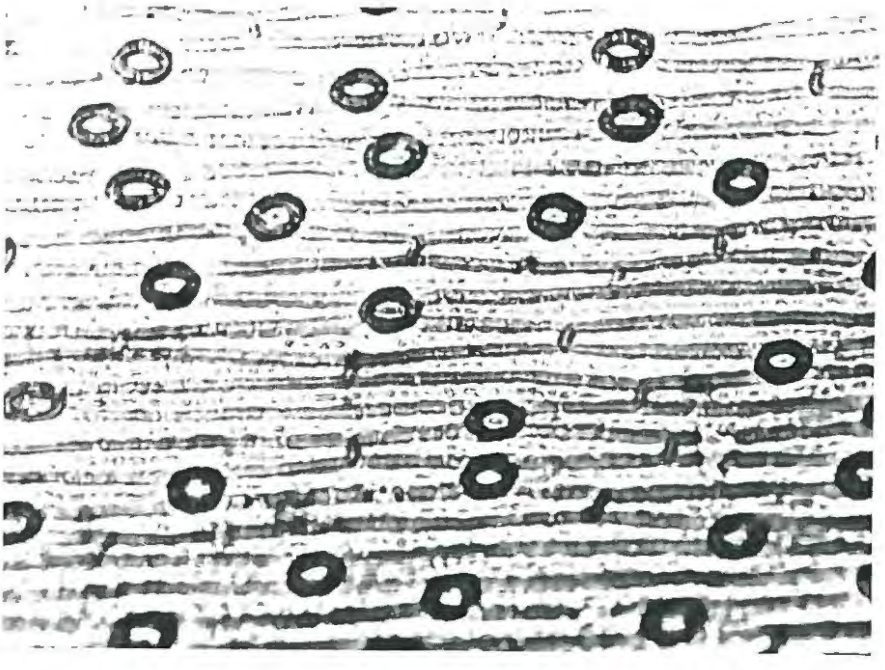


FIG. 19
Adaxial leaf surface of Urginea altissima. x160.

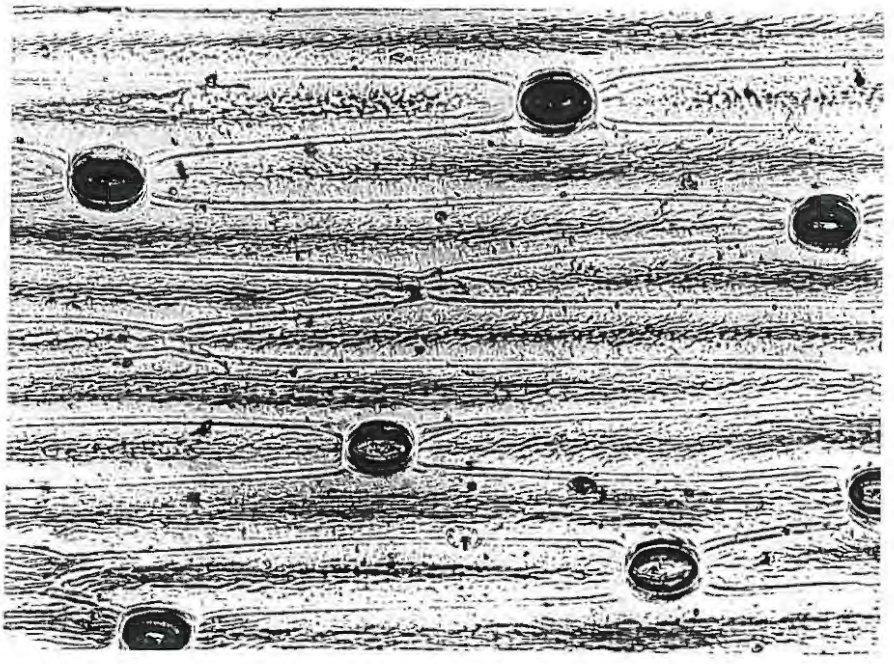


FIG. 20
Adaxial leaf surface of
?Rhadamanthus sp. x160.

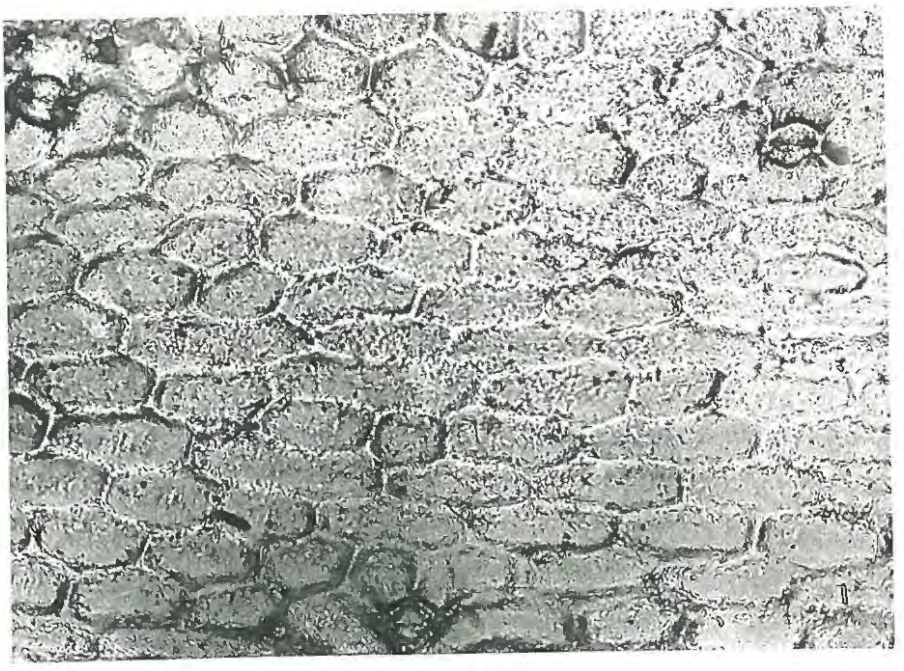


FIG. 21
Adaxial leaf surface of Scilla natalensis. x160.

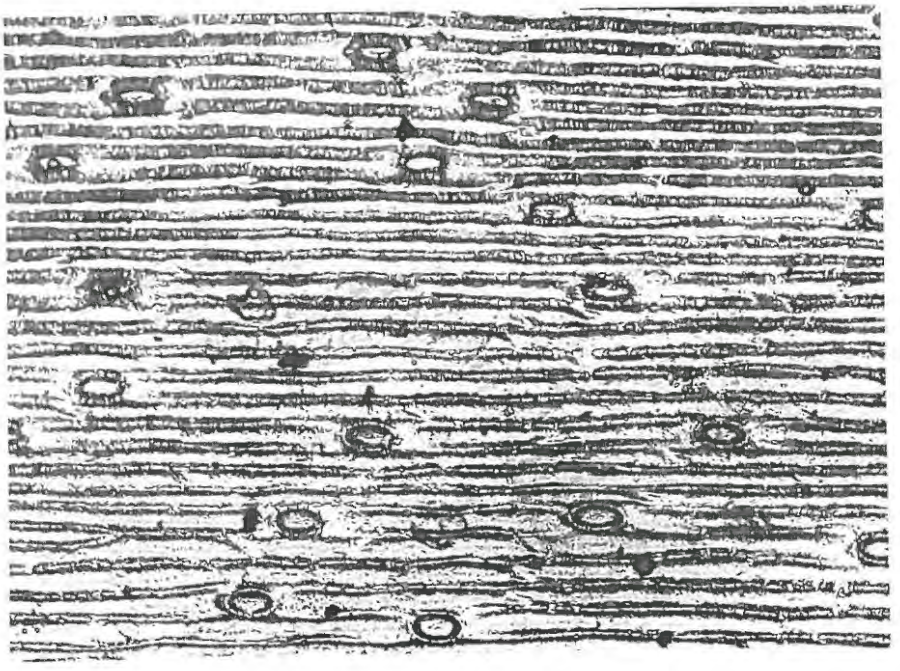


FIG. 22
Adaxial leaf surface of Scilla firmifolia. x160.

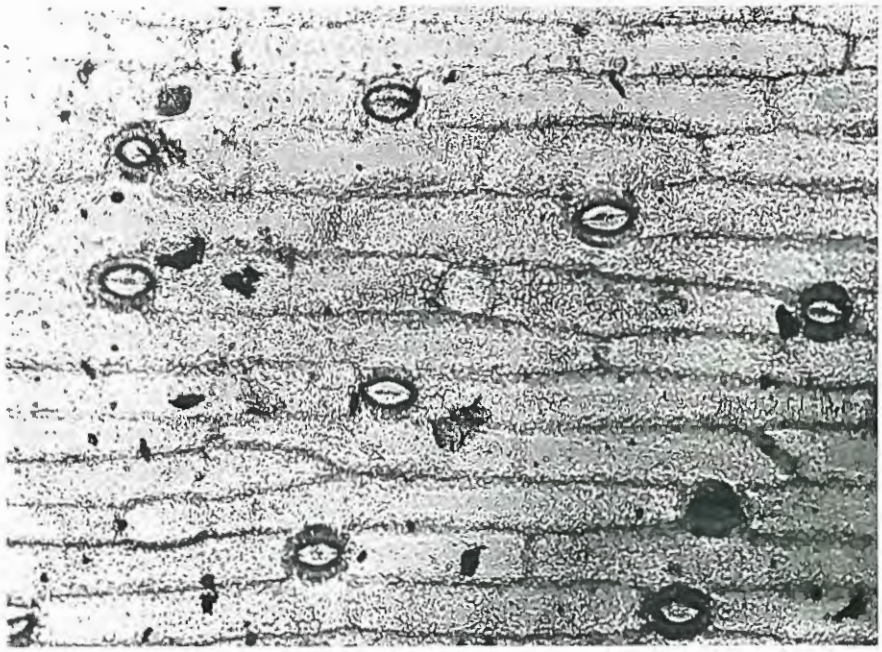


FIG. 23
Adaxial leaf surface (near margin) of *Scilla megaphylla*. x160.

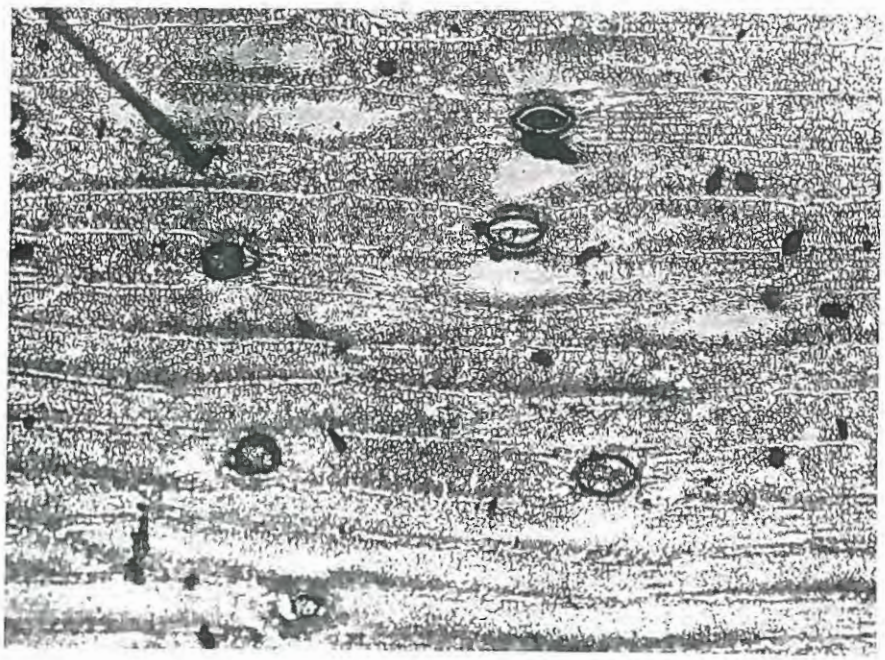


FIG. 24
Adaxial leaf surface (near midrib) of *Scilla megaphylla*. x160.

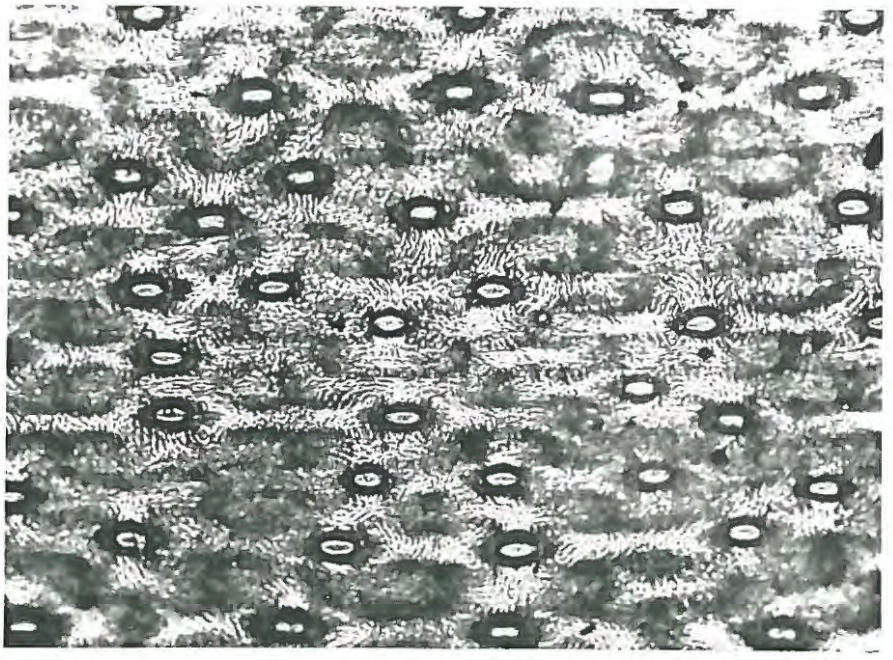


FIG. 25
Adaxial leaf surface of Scilla lanceaefolia. x160.

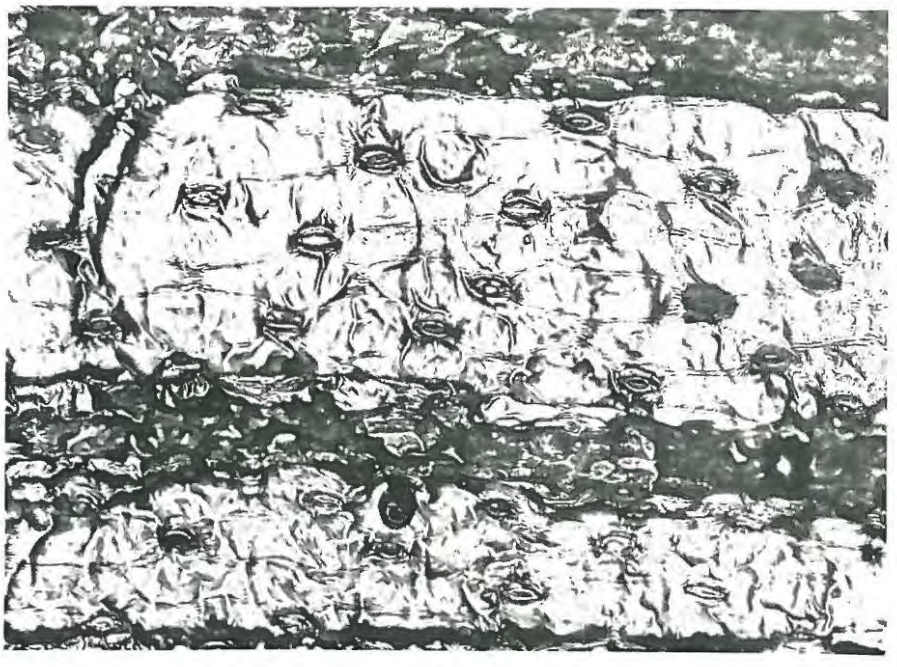


FIG. 26
Adaxial leaf surface of Scilla ovatifolia. x160.

FIG. 27
Adaxial leaf surface of
Scilla socialis. x160.

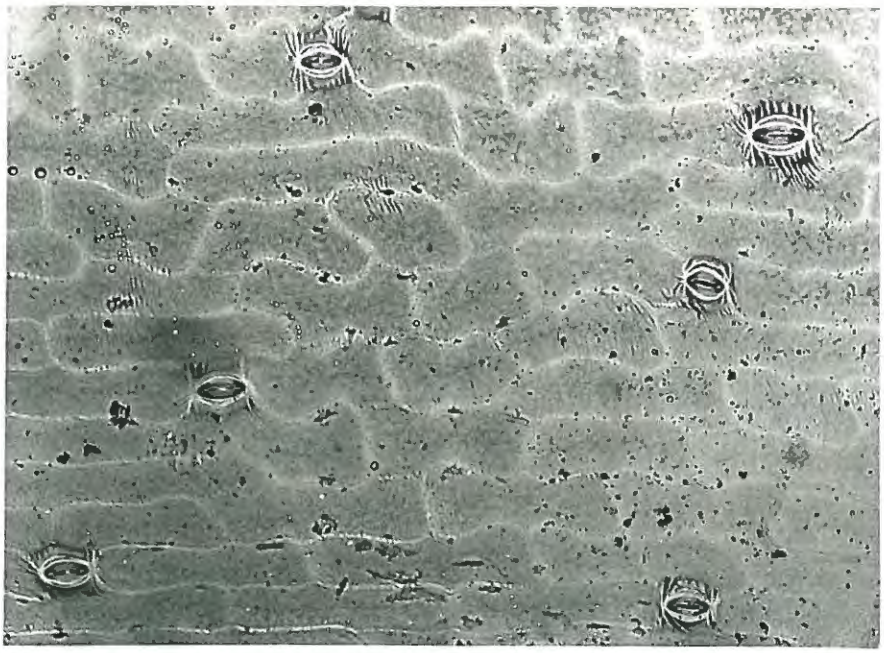


FIG. 28
Adaxial leaf surface of Drimiopsis maculata. x160.

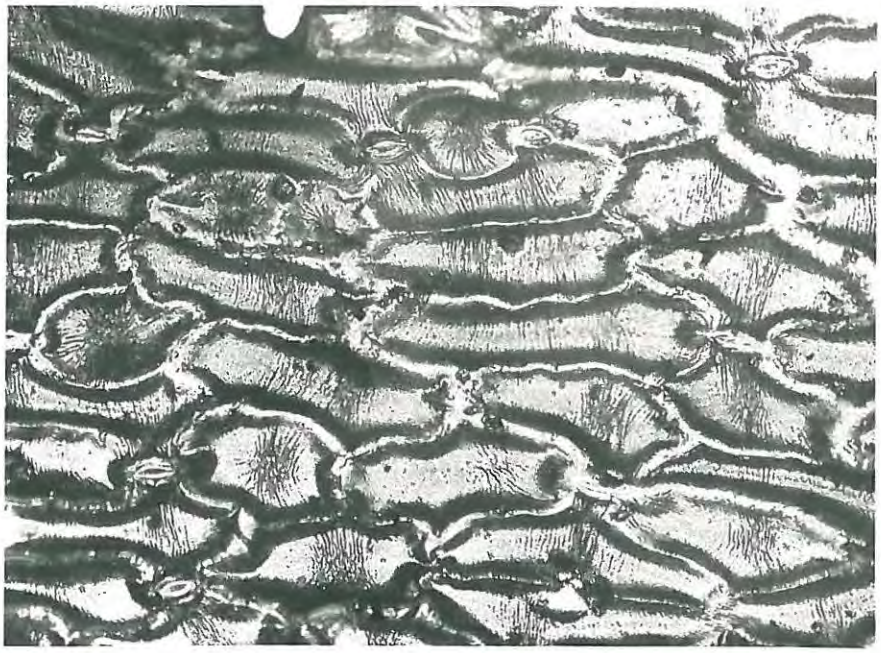


FIG. 29
Adaxial leaf surface of Drimiopsis maculata. x160.

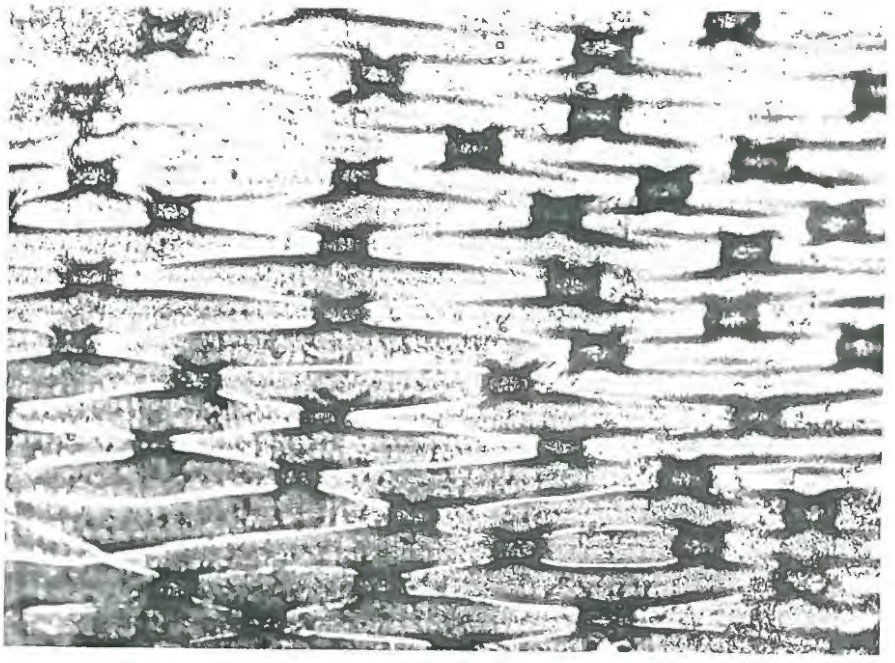


FIG. 30
Adaxial leaf surface of Ornithogalum maculatum. x160.

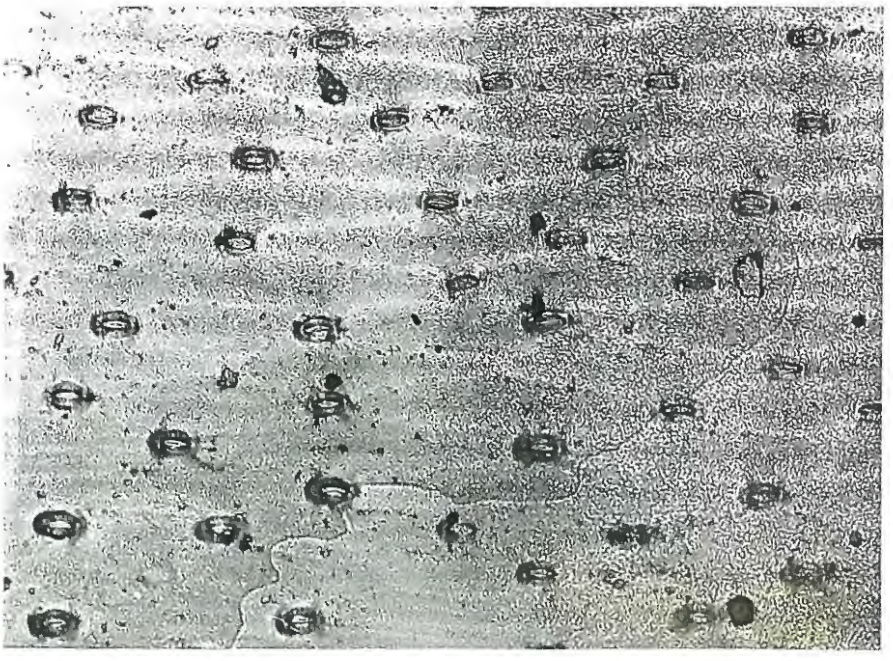


FIG. 31
Adaxial leaf surface of Ornithogalum sp. nr fimbrimarginatum. x160.

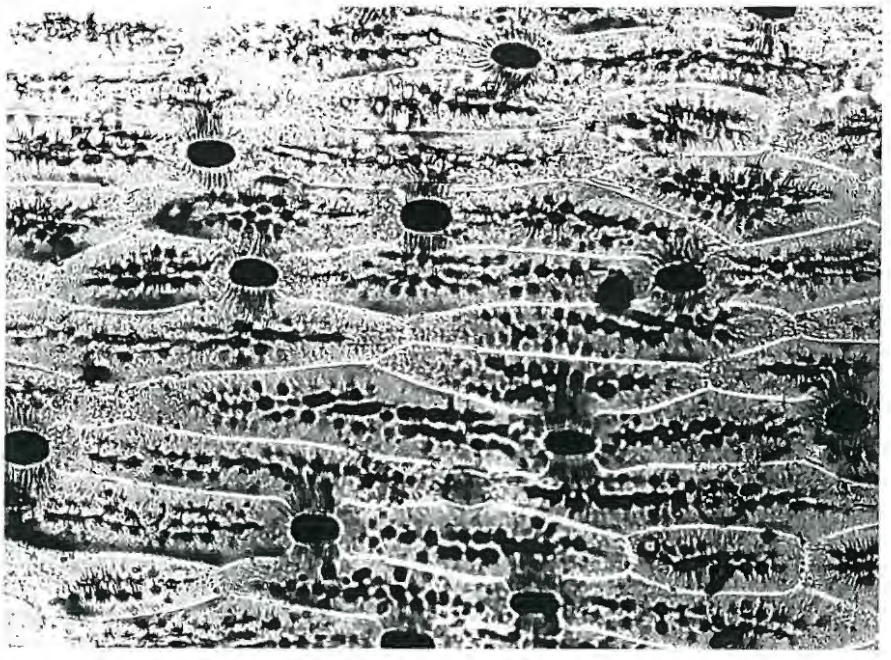


FIG. 32
Adaxial leaf surface of Ornithogalum longibracteatum. x160.

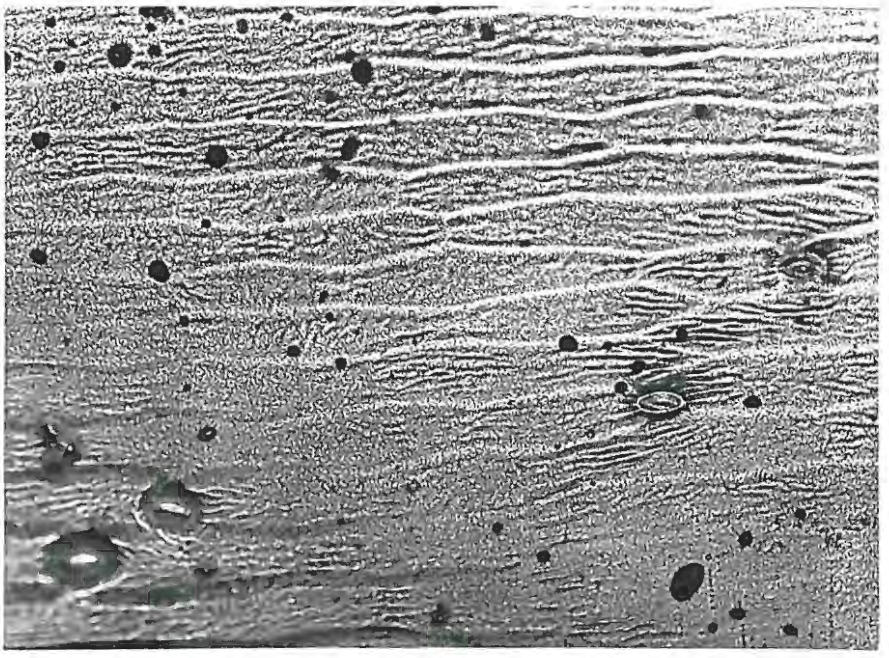


FIG. 33
Adaxial leaf surface of Veltheimia viridifolia. x160.

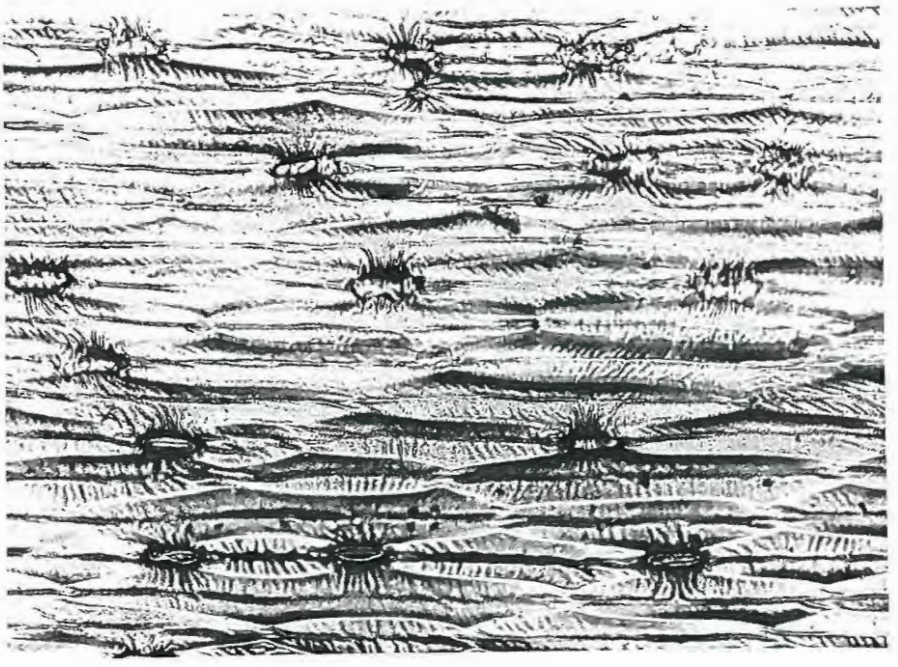


FIG. 34
Adaxial leaf surface of Lachenalia pendula. x160.

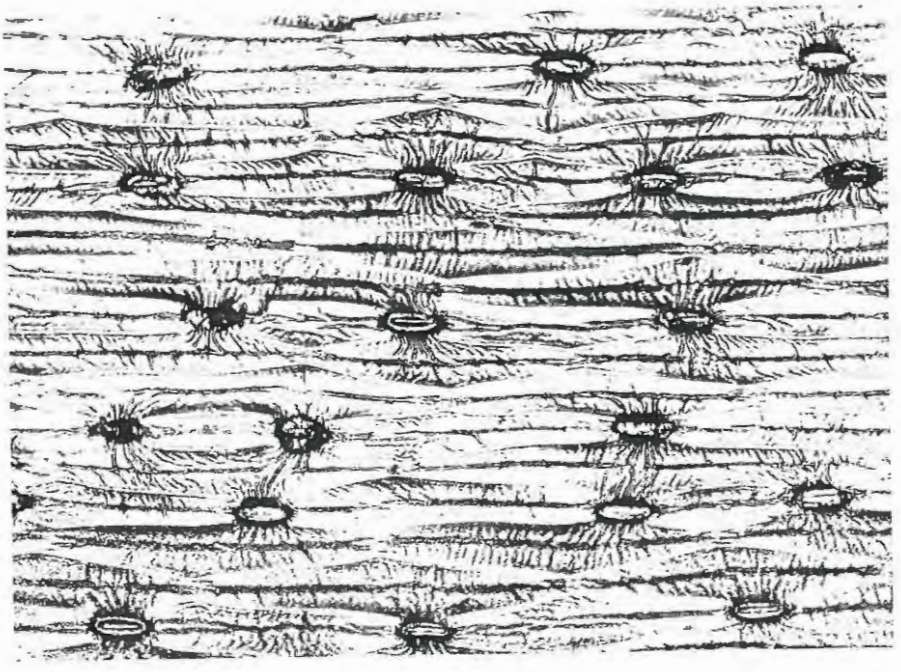


FIG. 35
Adaxial leaf surface of Lachenalia pendula. x160.

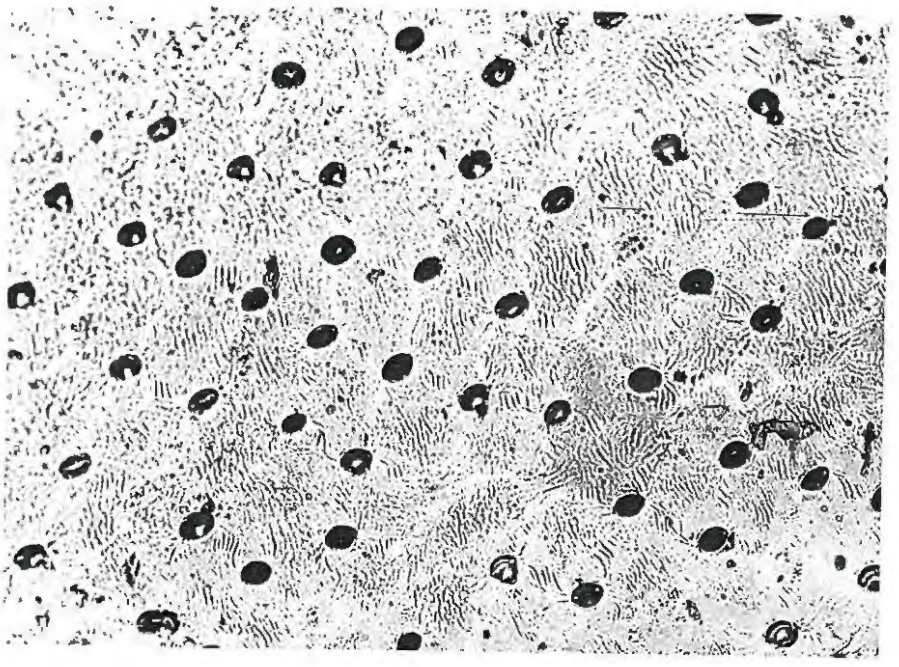


FIG. 36
Adaxial leaf surface of Massonia depressa. x160.

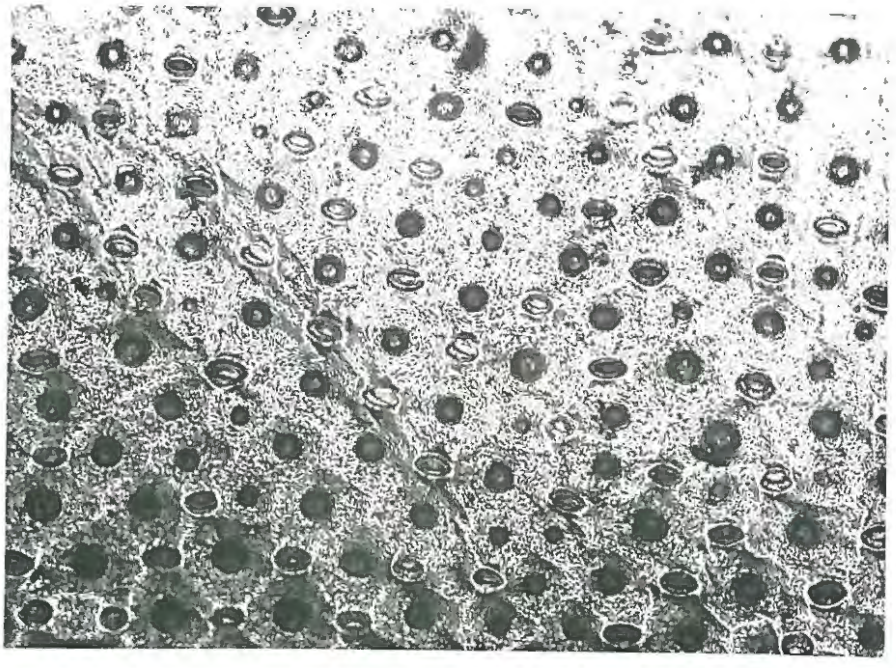


FIG. 37
Adaxial leaf surface of Massonia depressa. x160.

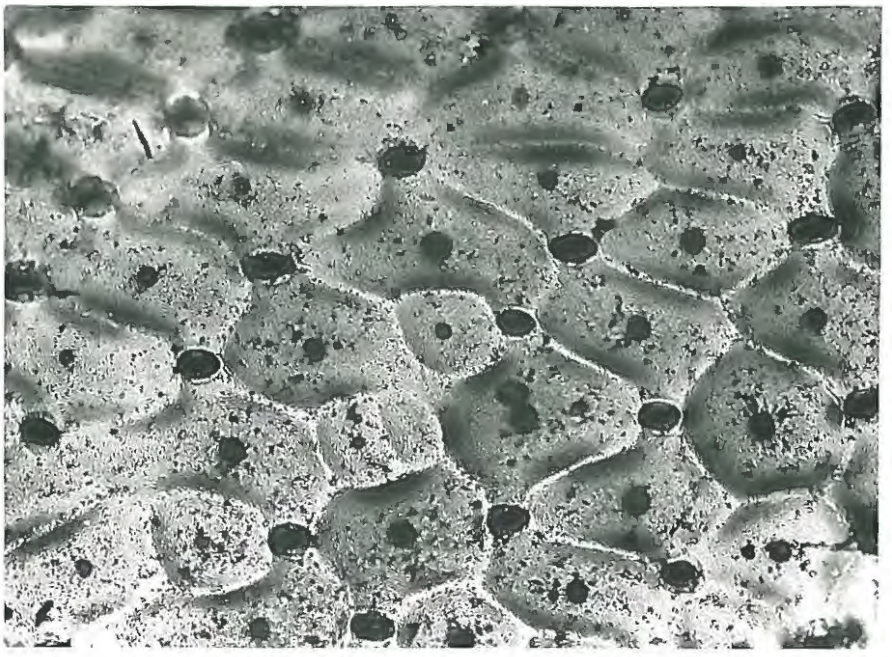


FIG. 38
Adaxial leaf surface of Massonia echinata. x160.

FIG. 39
Adaxial leaf surface of Massonia pustulata x160.

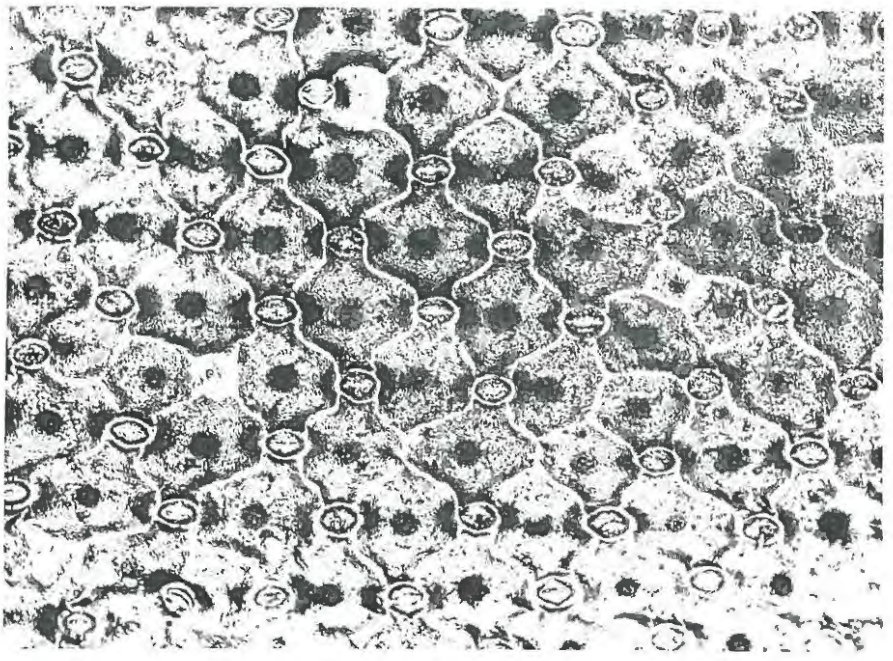


FIG. 40
Adaxial leaf surface of Massonia jasminiflora. x160.

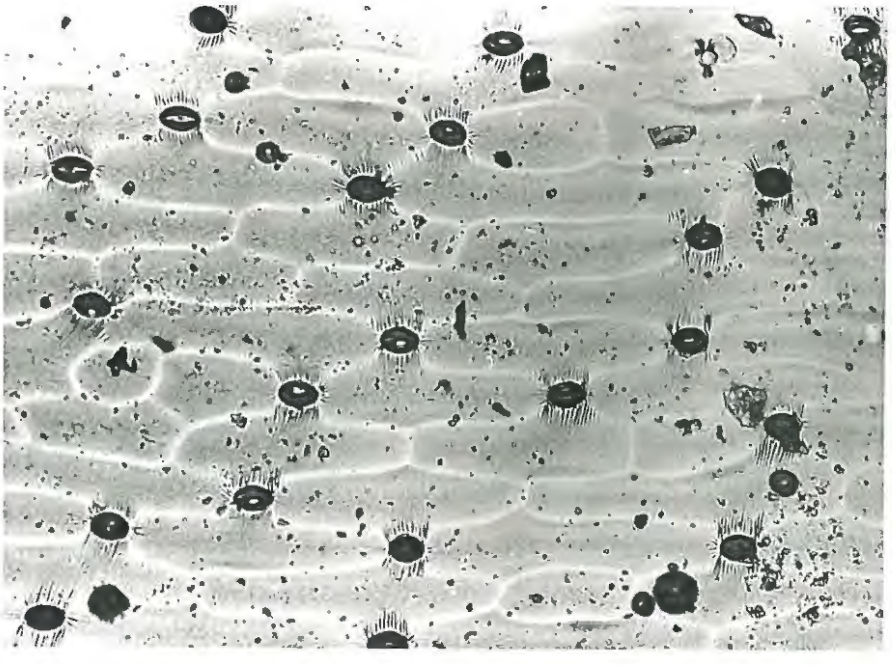


FIG. 41
Adaxial leaf surface of Neobakeria sp. x160.

FIG. 42
Pollen of Massonia echinata. x2000

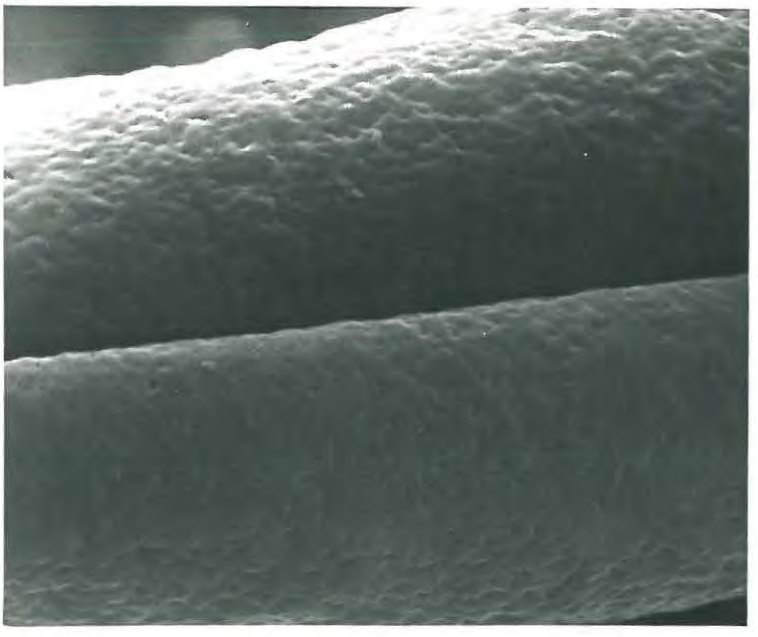


FIG. 43
Pollen of Massonia echinata. x6000

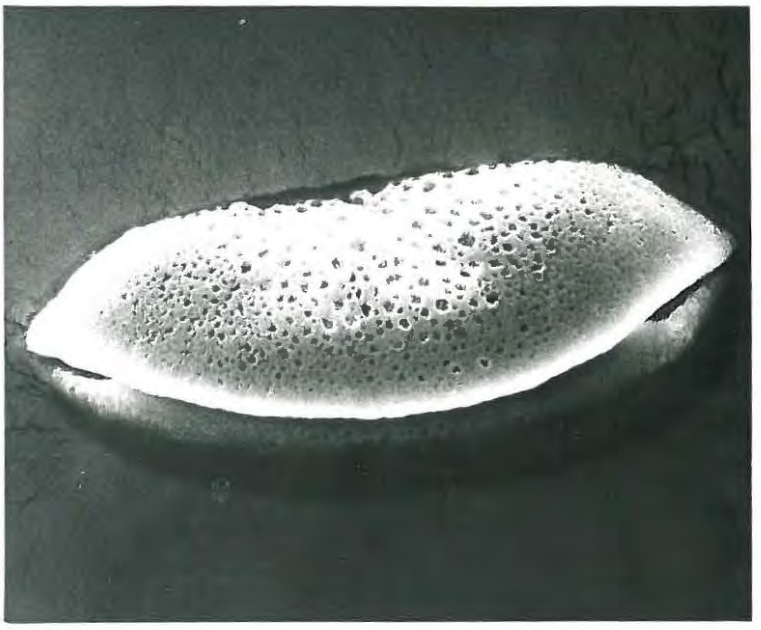


FIG. 44
Pollen of Massonia angustifolia. x1800.

FIG. 45
Pollen of Massonia angustifolia. x5000.

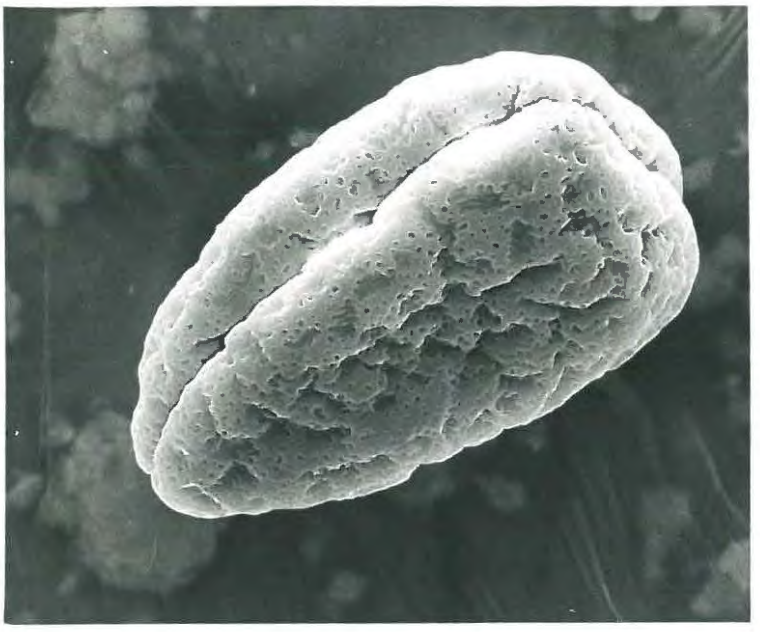


FIG. 46
Pollen of Massonia depressa. x2000.

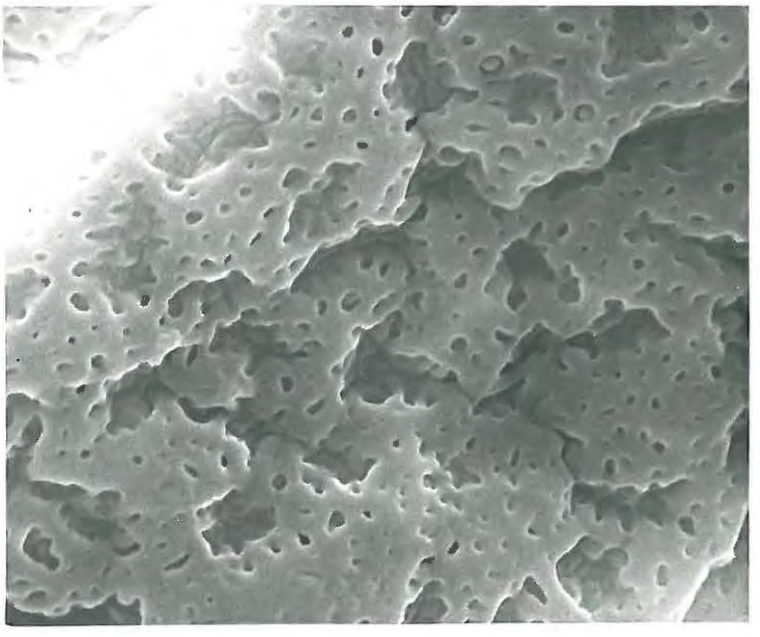


FIG. 47
Pollen of Massonia depressa. x6000.

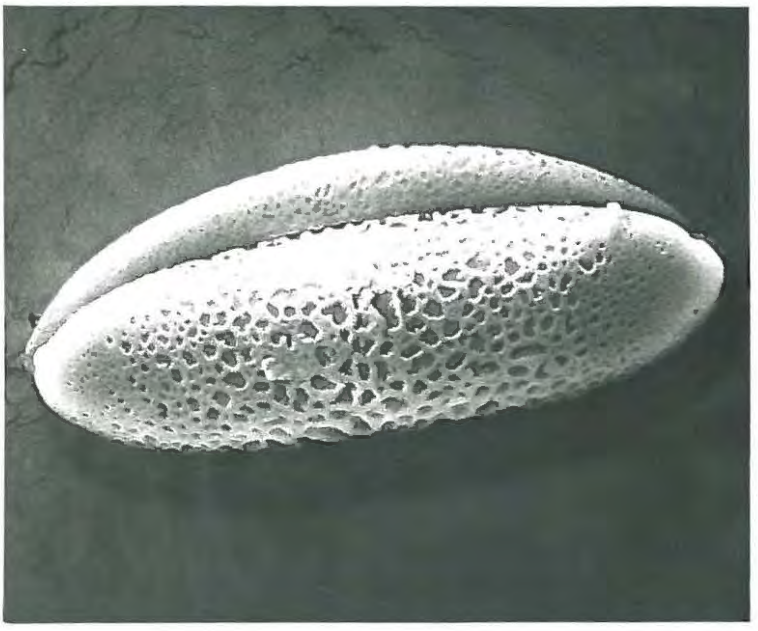


FIG. 48
Pollen of Daubenya aurea. x1800.

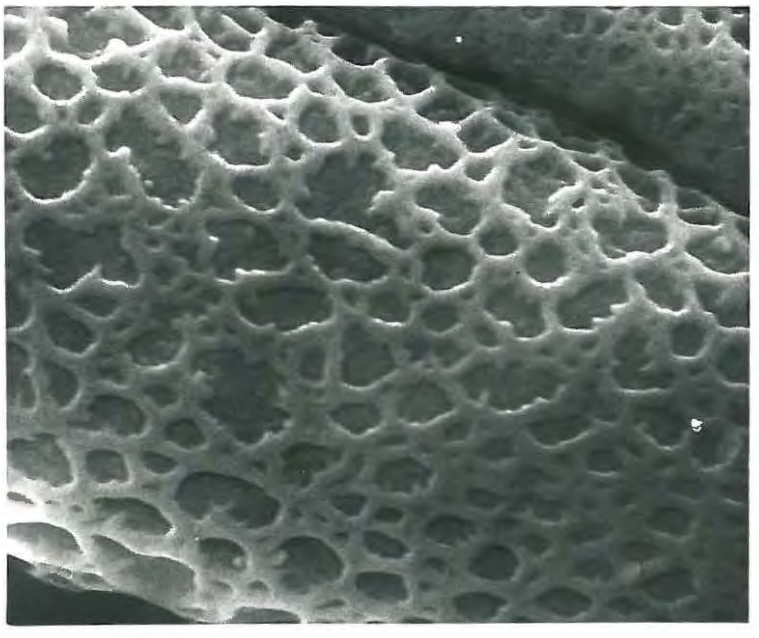


FIG. 49
Pollen of Daubenya aurea. x5000.

FIG. 50
Pollen of Whiteheadia bifolia. x500.

FIGS 51 & 52
Pollen of Whiteheadia bifolia. x3000.

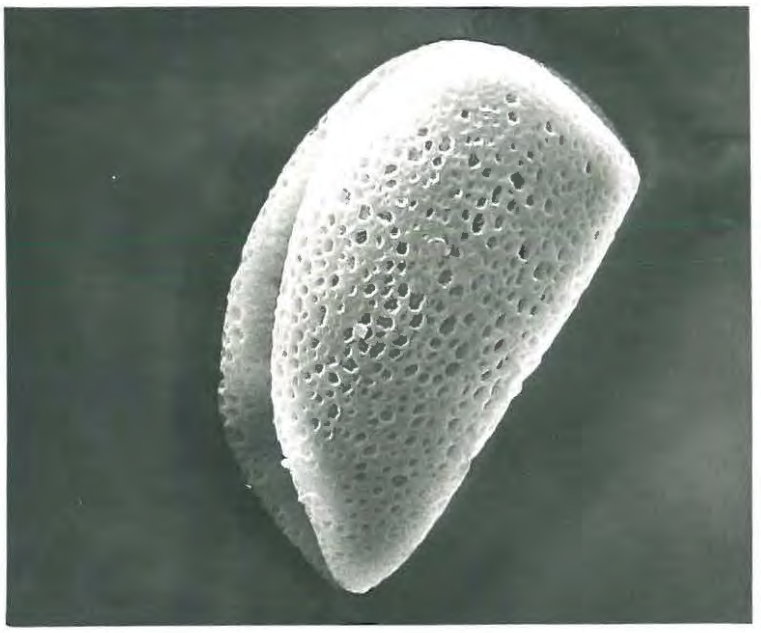


FIG. 53
Pollen of Lachenalia sp. (Jessop s.n.). x2000.

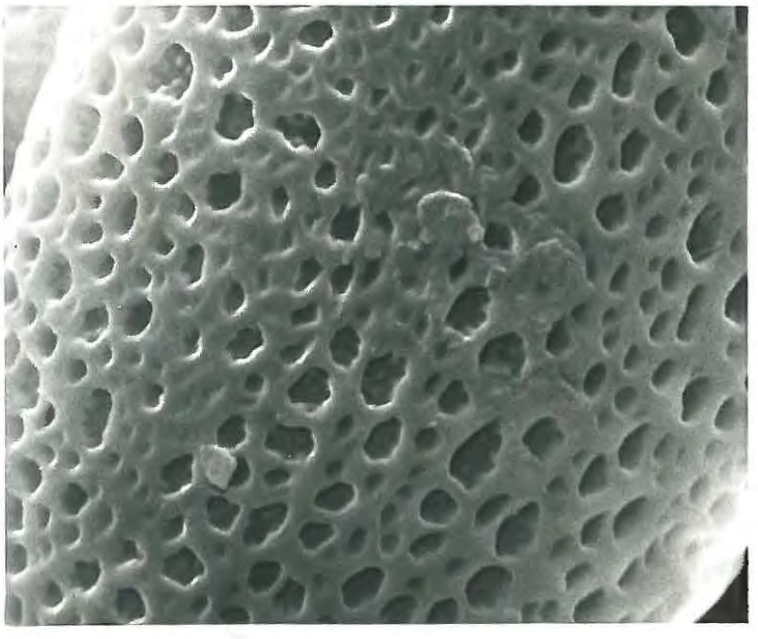


FIG. 53
Pollen of Lachenalia sp. (Jessop s.n.). x2000.

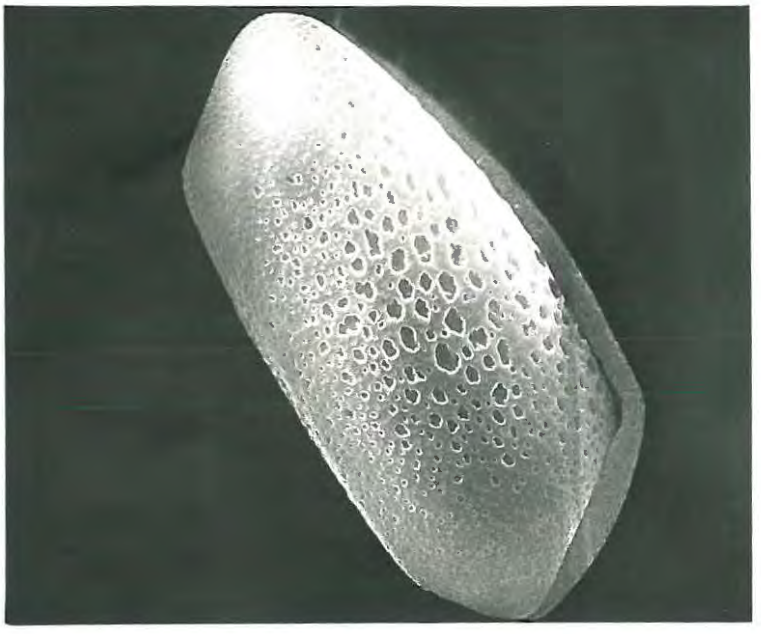


FIG. 55
Pollen of Lachenalia pendula. x2000.

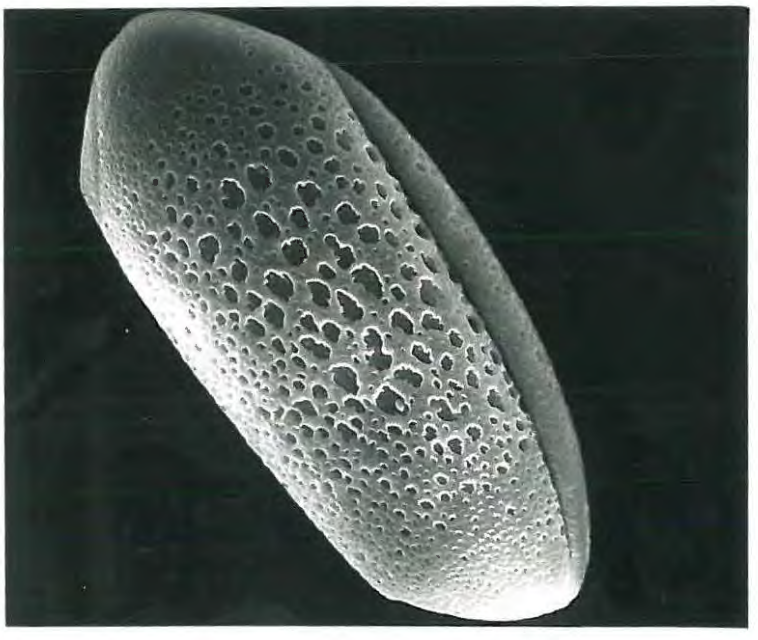


FIG. 56
Pollen of Lachenalia sp. (Barker 10228). x2000.

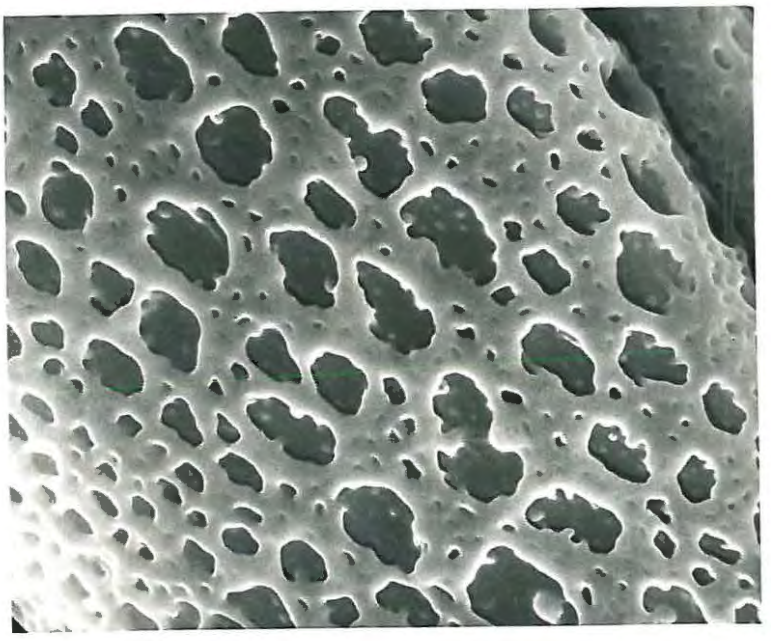


FIG. 57
Pollen of Lachenalia sp. (Barker 10228). x6000.

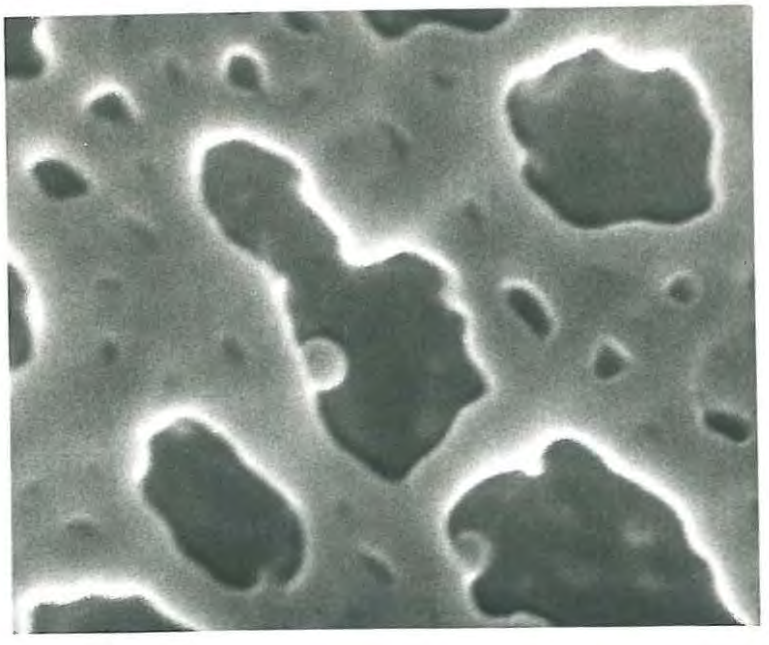


FIG. 58
Pollen of Lachenalia sp. (Barker 10228). x20 000.

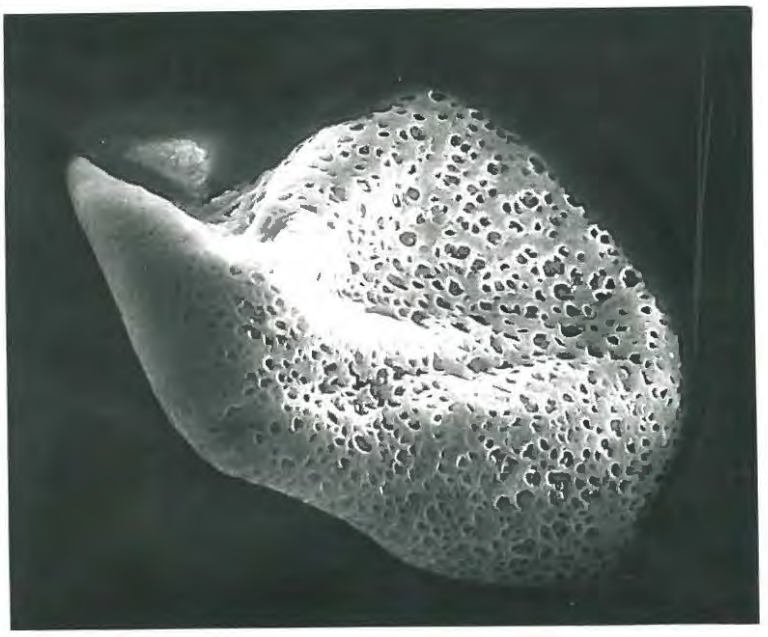


FIG. 59
Pollen of Lachenalia aloides var quadricolor.
x2000.

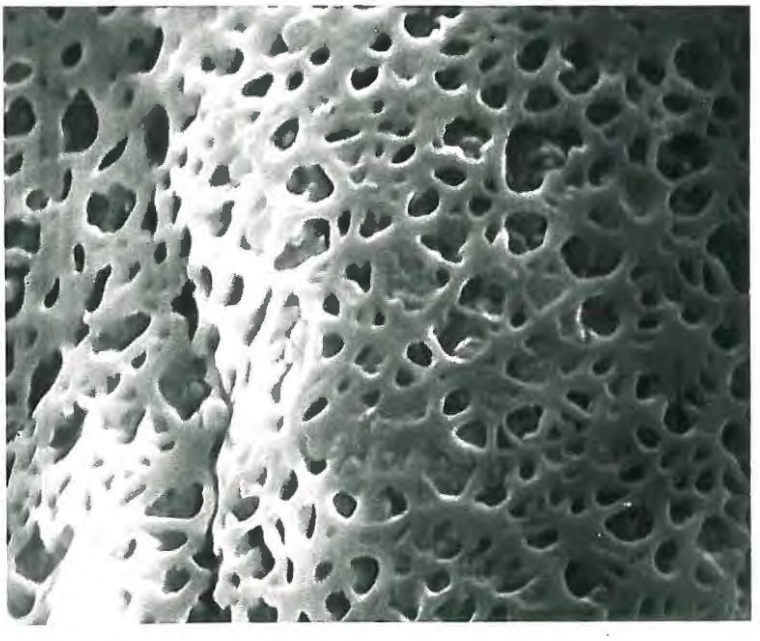


FIG. 60
Pollen of Lachenalia aloides var quadricolor.
x6000.

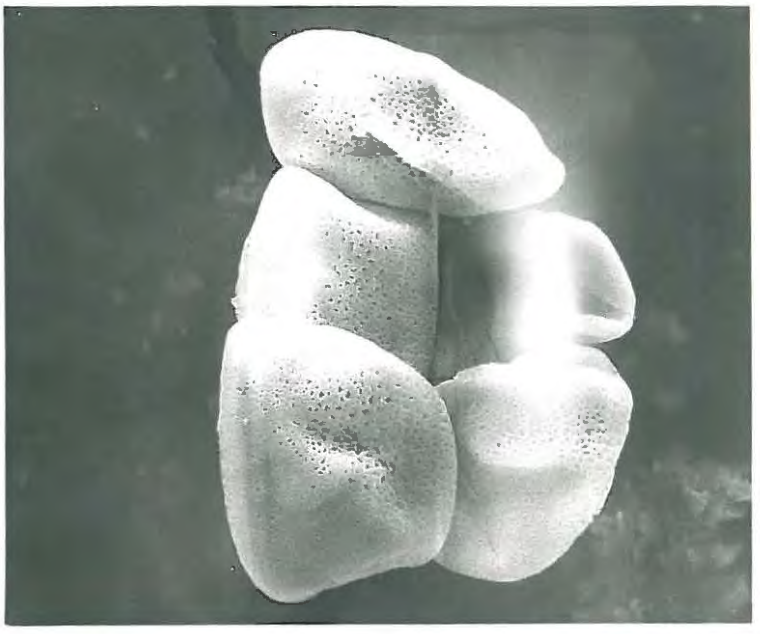


FIG. 61
Pollen of Eucomis autumnalis var clavata.
x1000.

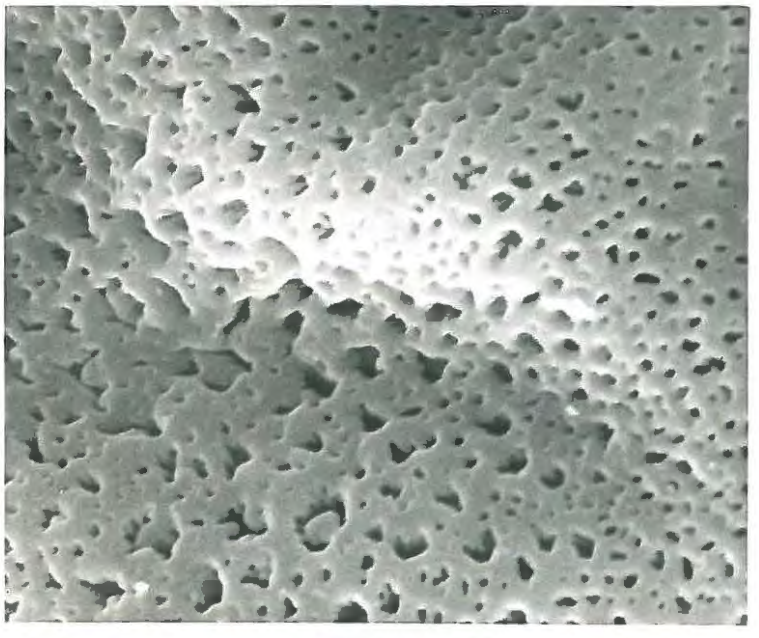


Fig. 62
Pollen of Eucomis autumnalis var clavata.
x6000.

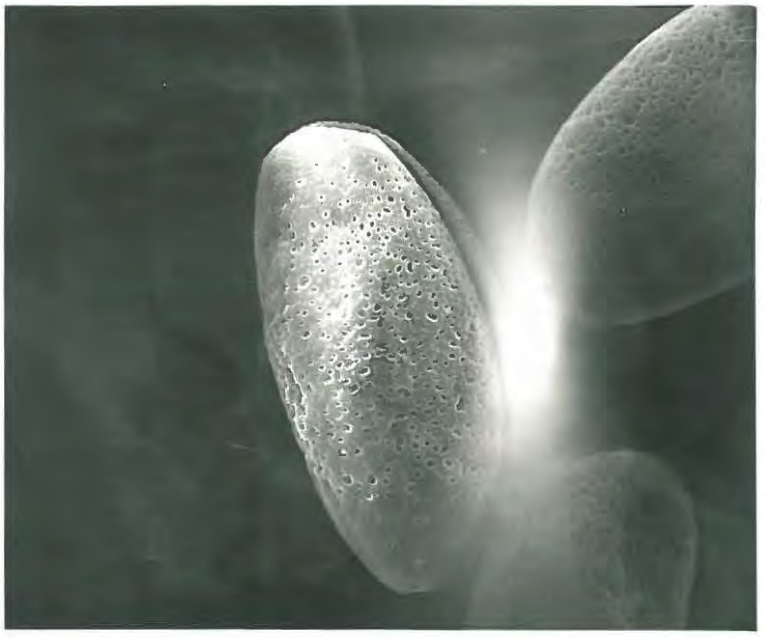


FIG. 63
Pollen of Veltheimia viridifolia. x1000.

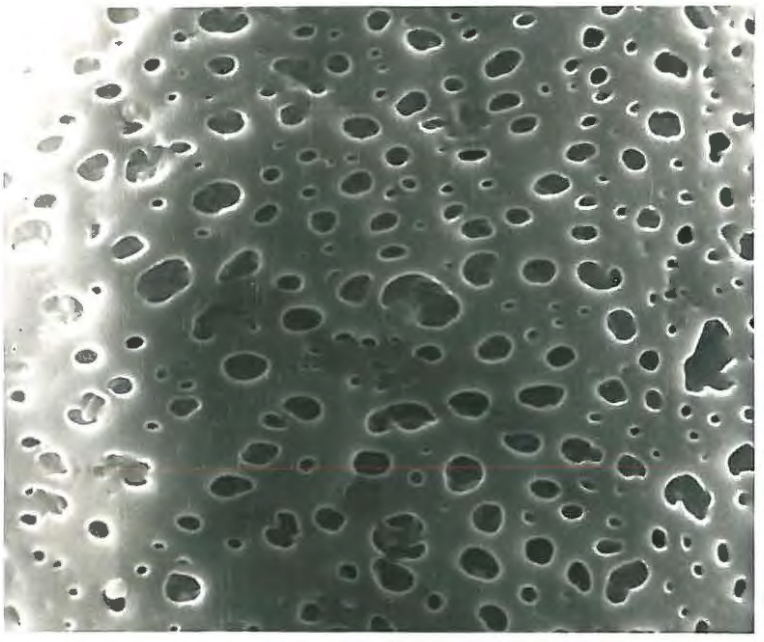


FIG. 64
Pollen of Veltheimia viridifolia. x5000.

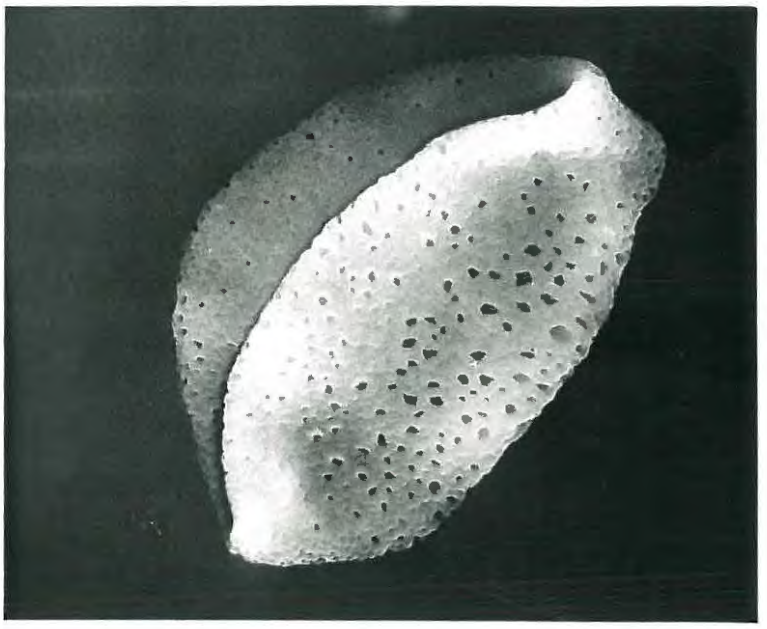


FIG. 65
Pollen of Urginea altissima. x2000.

FIG. 66
Pollen of Urginea capitata. x1000.

FIG. 67
Pollen of Urginea capitata. x6000.

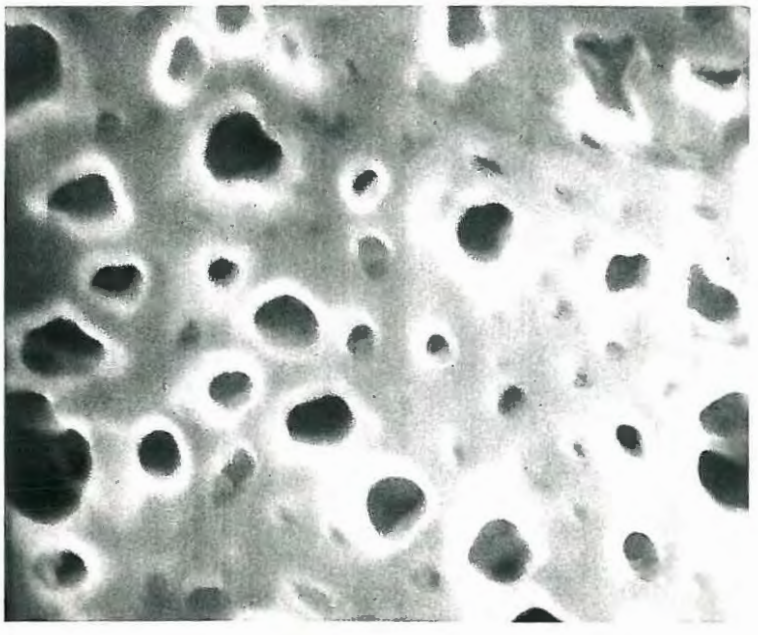


FIG. 68
Pollen of Urginea capitata. x15 000.

FIG. 69
Pollen of Urginea delagoensis. x1000.

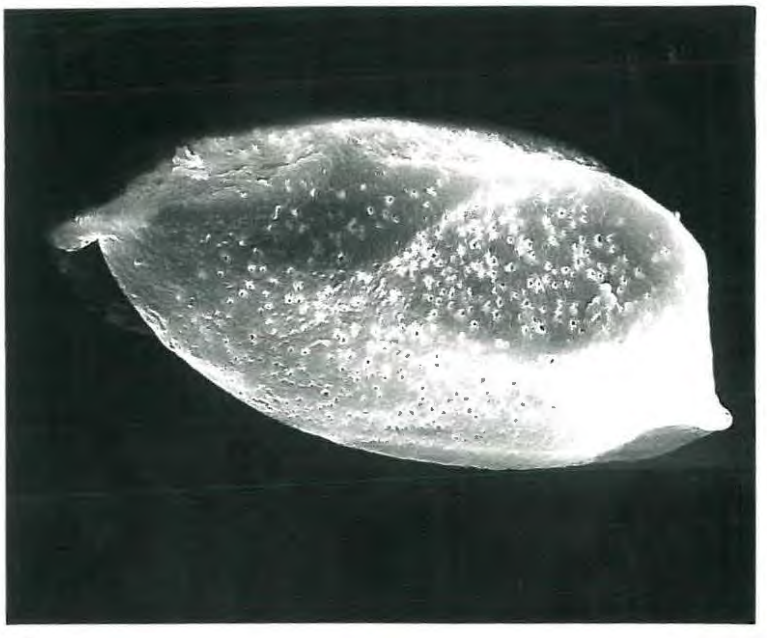


FIG. 70
Pollen of Urginea delagoensis. x2000.

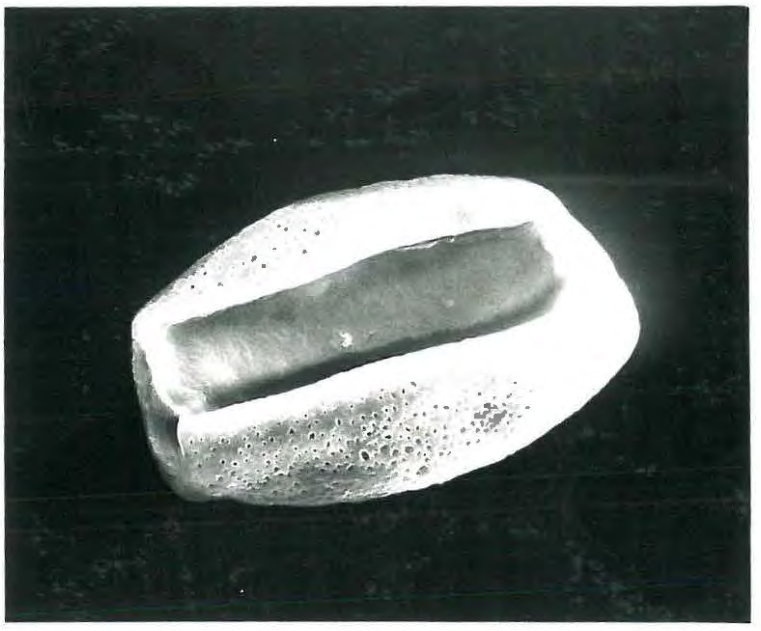
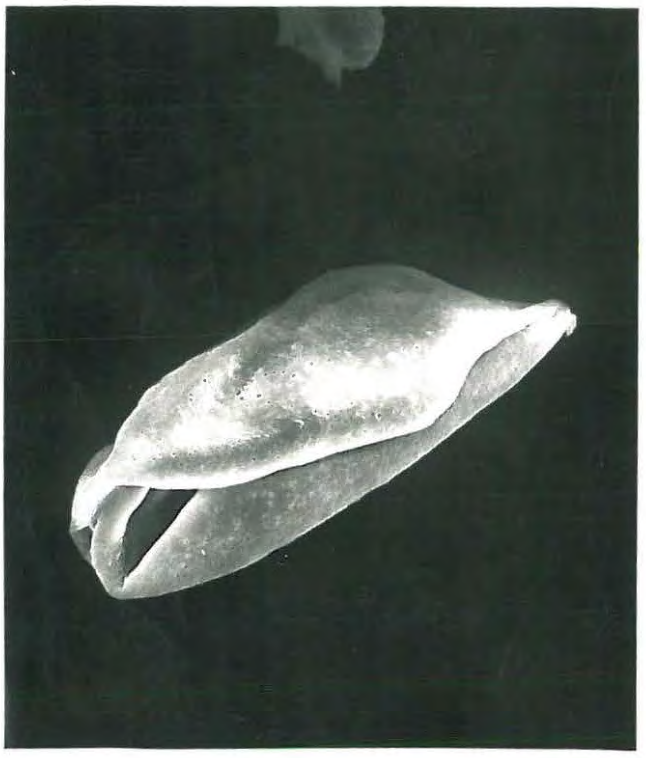
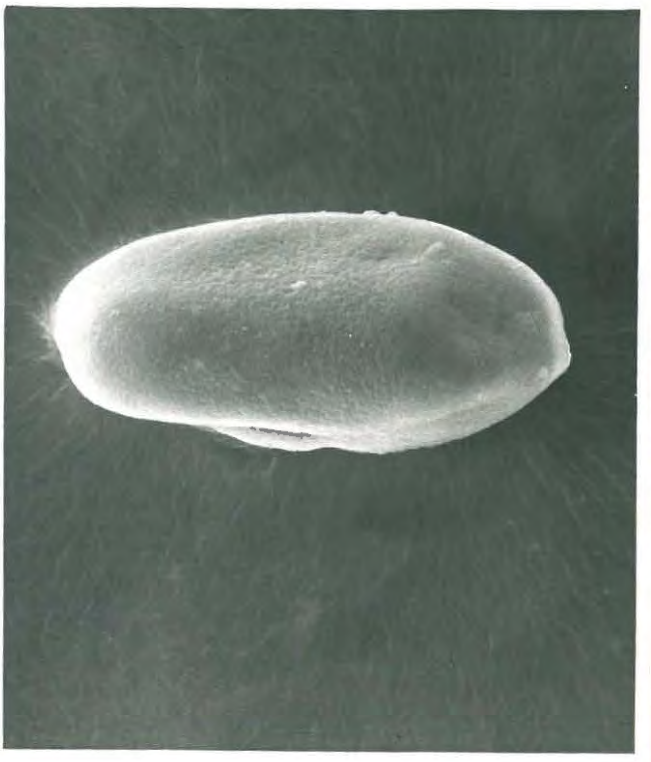


FIG. 71
Pollen of Urginea fragrans. x1000.

FIG. 72
Pollen of Urginea fragrans. x1000.





FIGS 73 & 74
Pollen of Drimia hyacinthoides. x1000.

FIG. 75
Pollen of Drimia hyacinthoides. x3000.

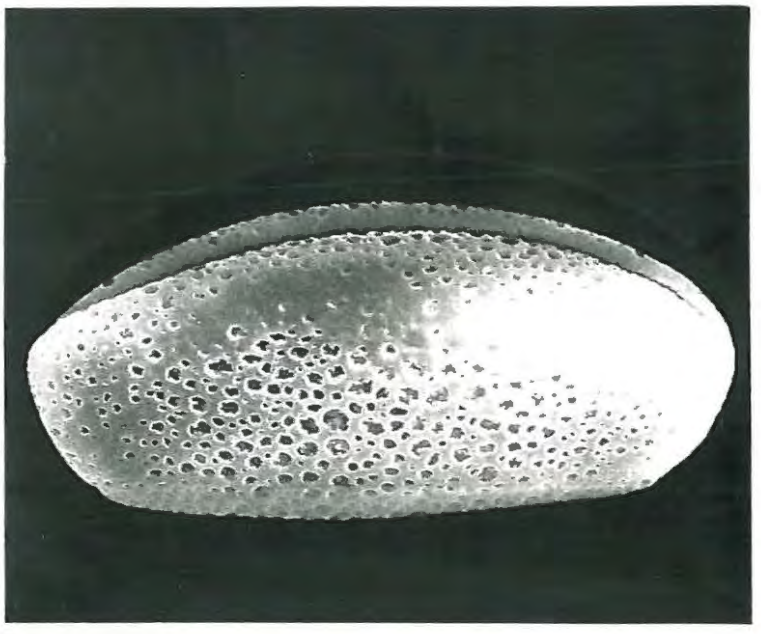


FIG. 76
Pollen of Scilla natalensis. x2000.

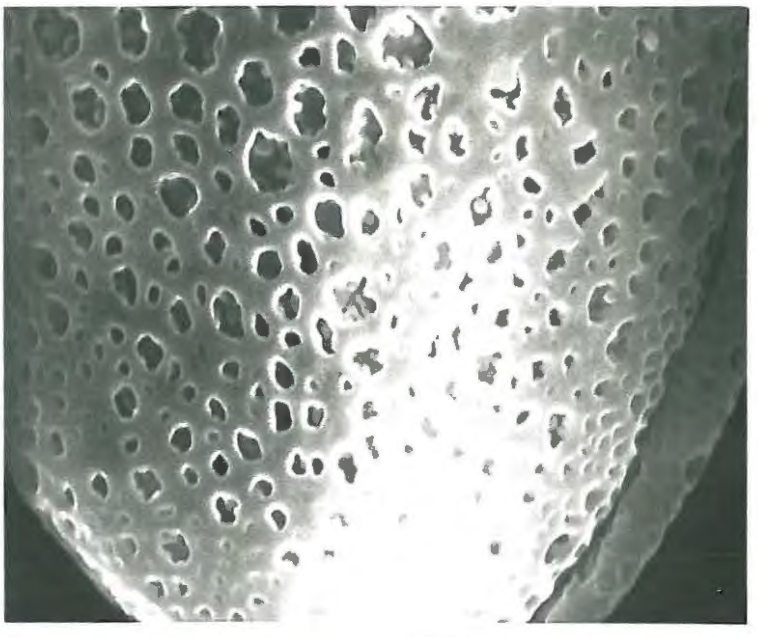


FIG. 77
Pollen of Scilla natalensis. x6000.

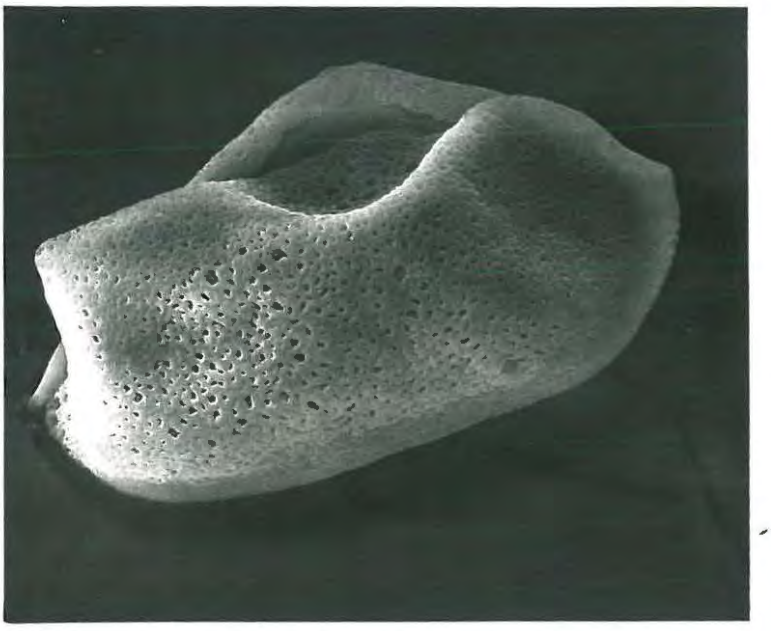


FIG. 78
Pollen of Scilla nervosa. x1800.

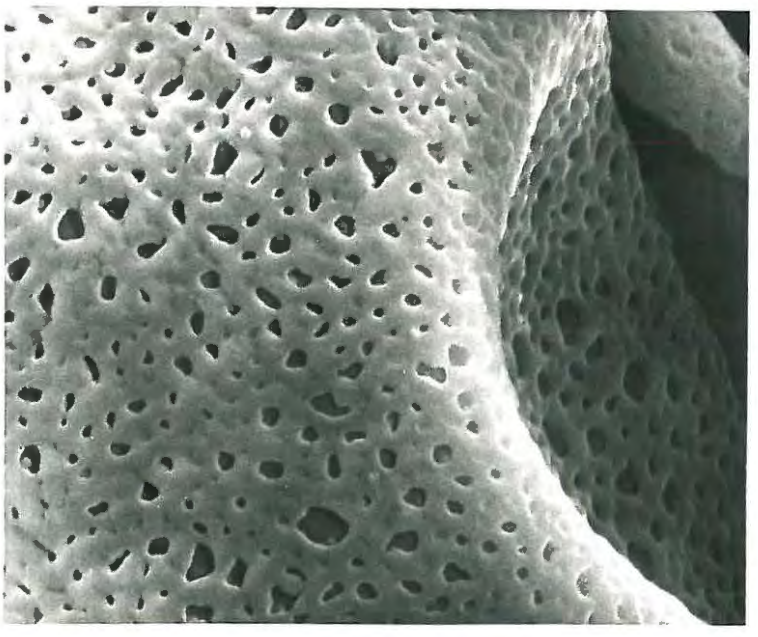


FIG. 79
Pollen of Scilla nervosa. x5000.

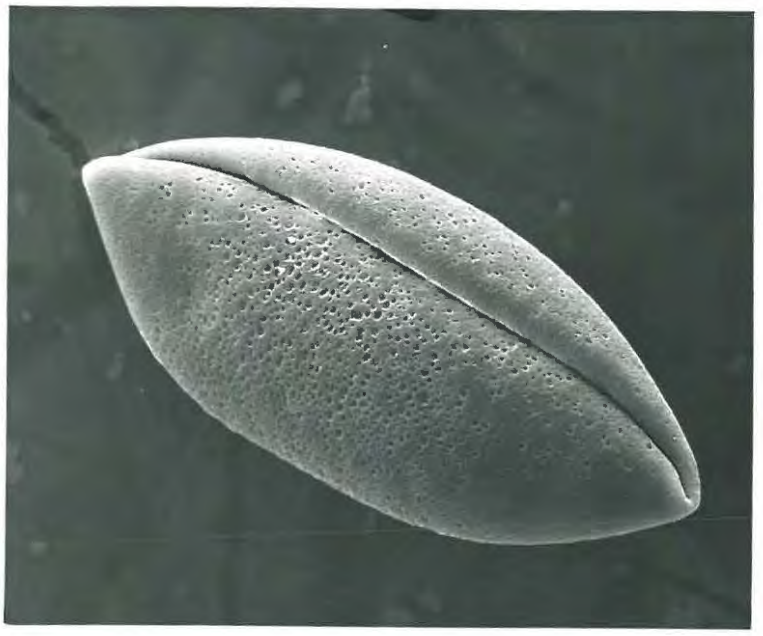


FIG. 80
Pollen of Ornithogalum longibracteatum. x1000.

FIG. 81
Pollen of Ornithogalum longibracteatum. x3000.

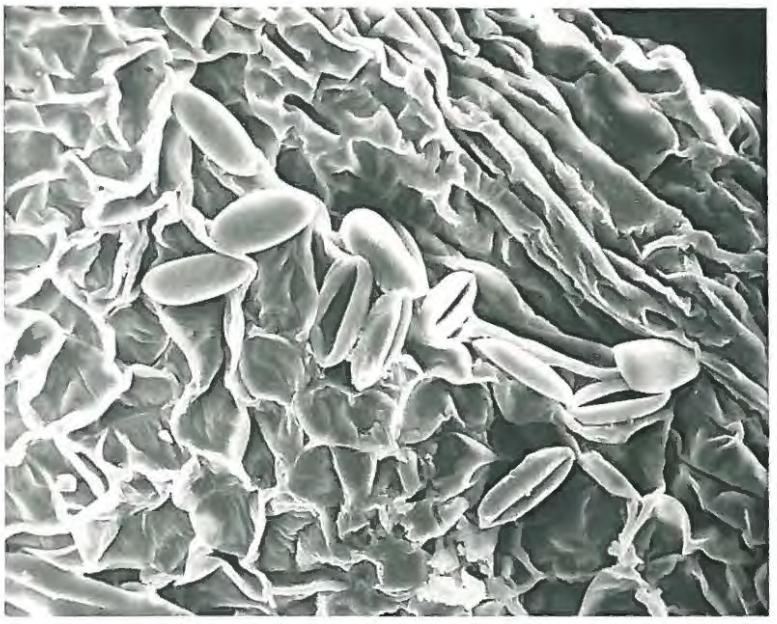


FIG. 82
Pollen of Bulbine frutescens. x300.

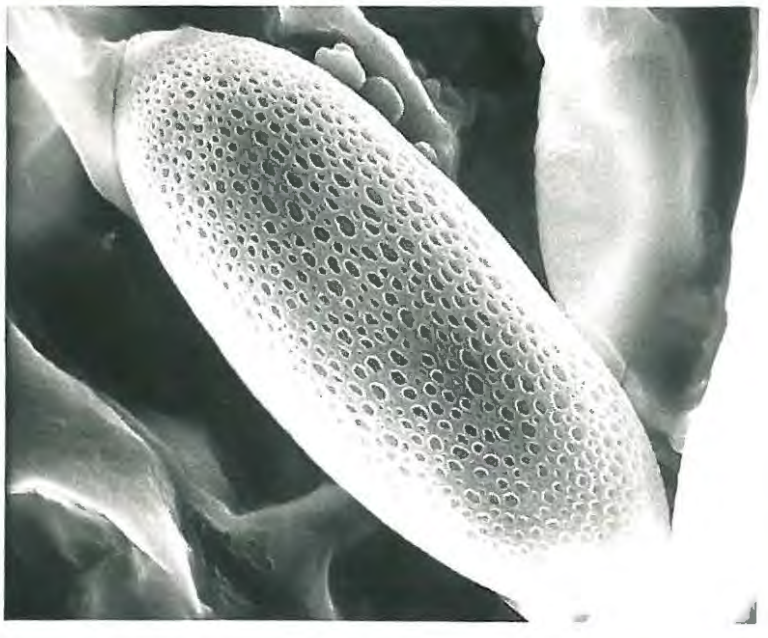
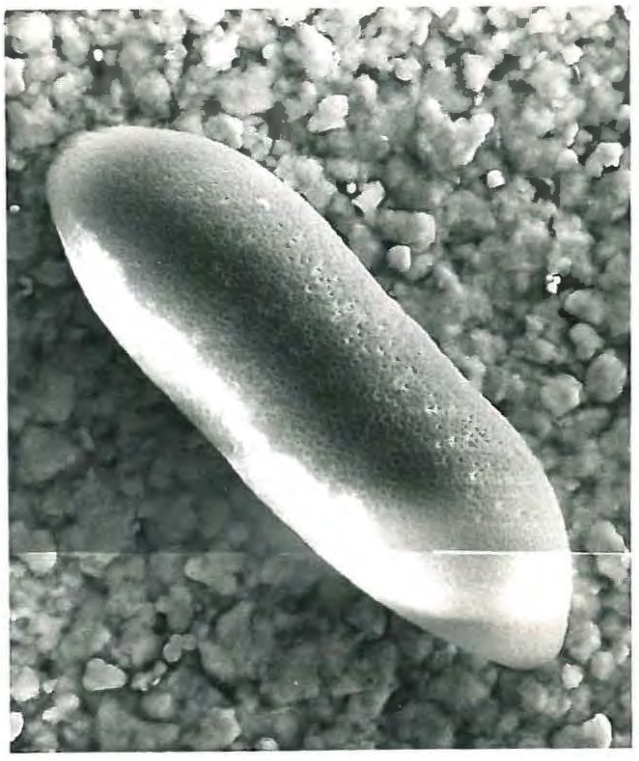
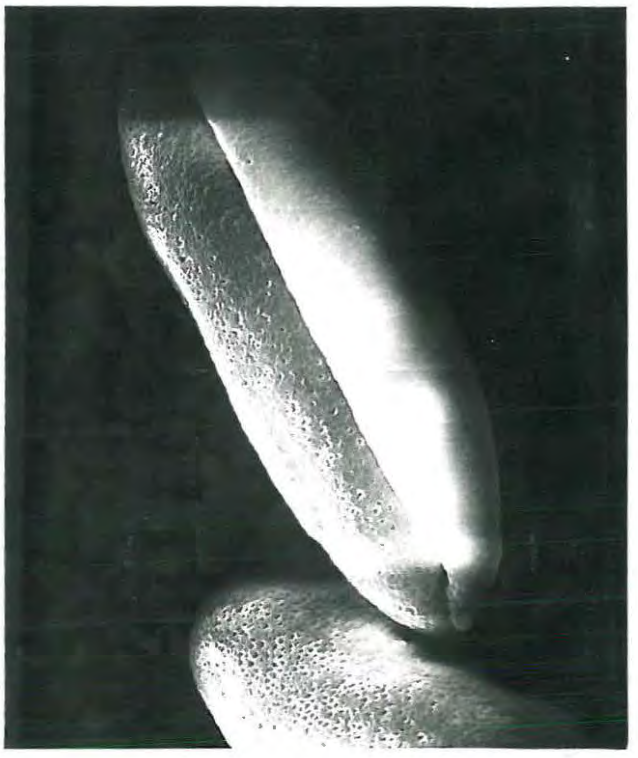


FIG. 83
Pollen of Bulbine frutescens. x2000.





FIGS 84 & 85
Pollen of Chlorophytum comosum. x2000.

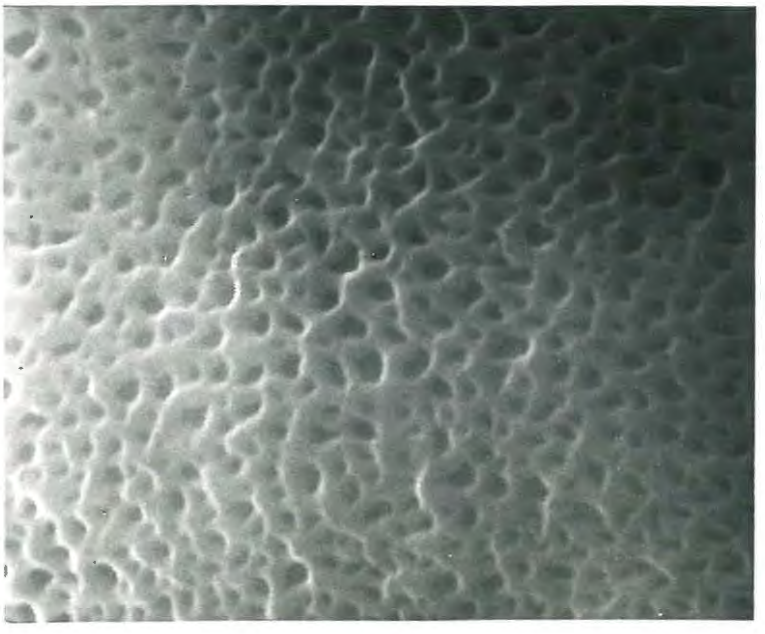


FIG. 86
Pollen of Chlorophytum comosum. x10 000.

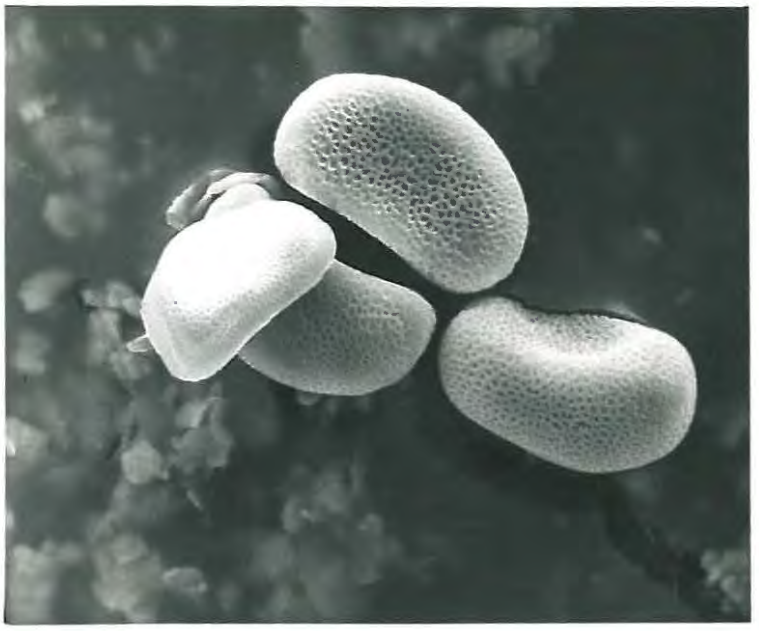


FIG. 87
Pollen of Androcymbium sp. x2000

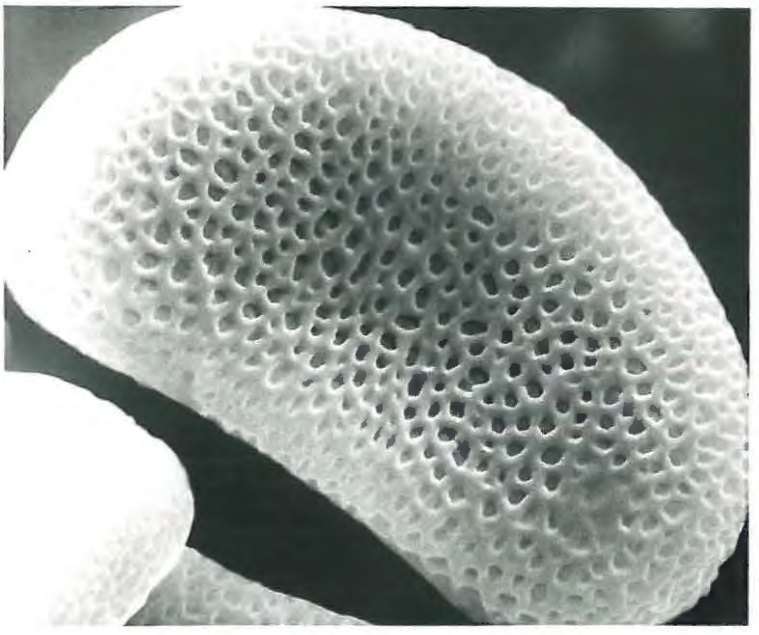


FIG. 88
Pollen of Androcymbium sp. x6000.

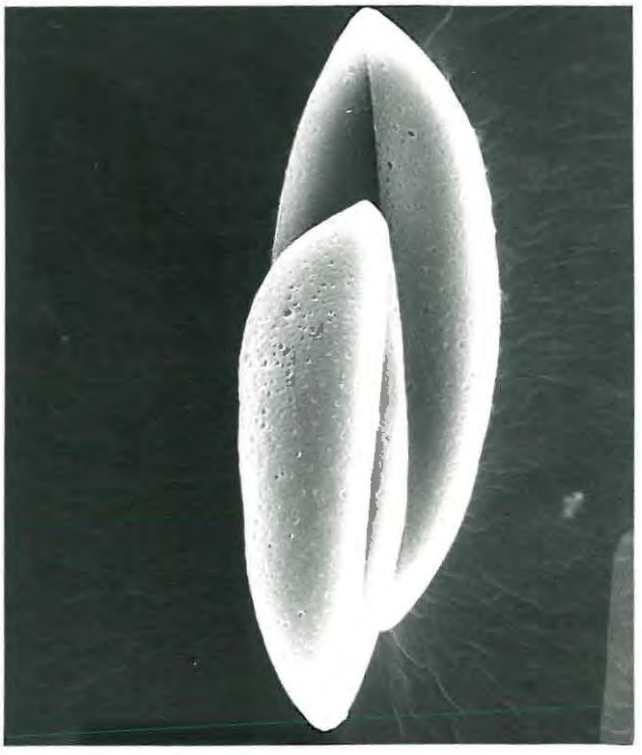


FIG. 89
Pollen of Asparagus asparagoides. x1400.

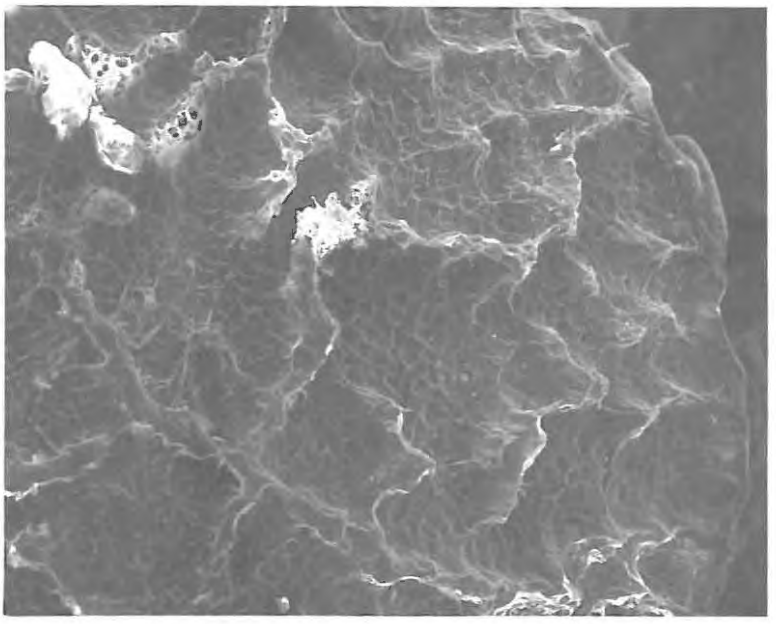


FIG. 90
Seed of Bulbine frutescens. x100.

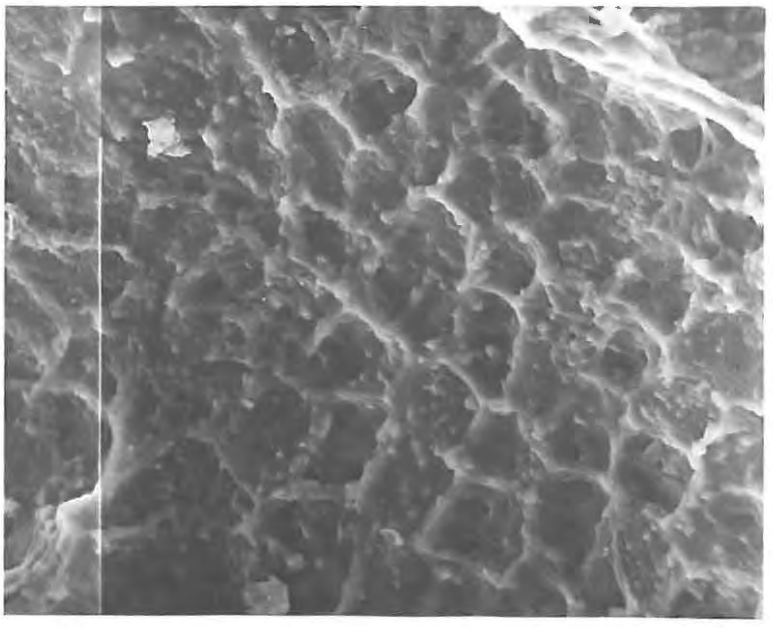


FIG. 91
Seed of Bulbine frutescens. x500.

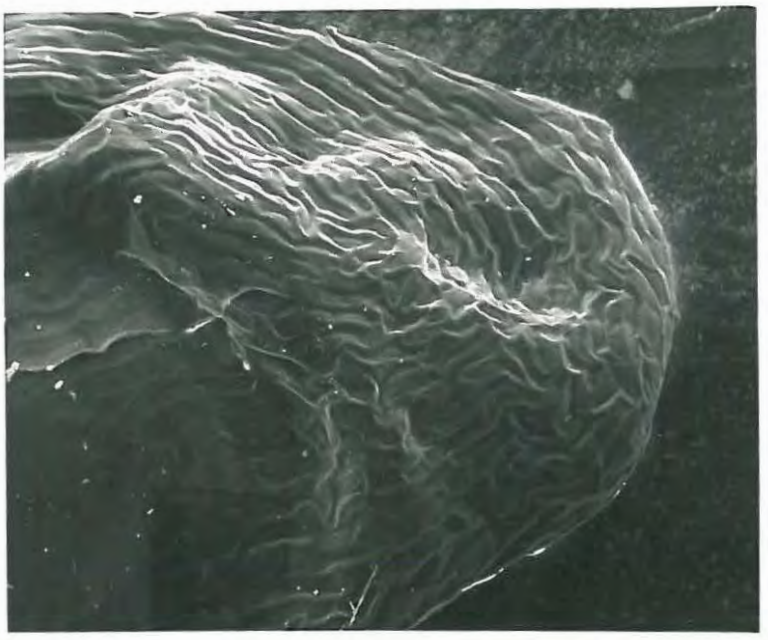


FIG. 92
Seed of Schizobasis intricata. x100.

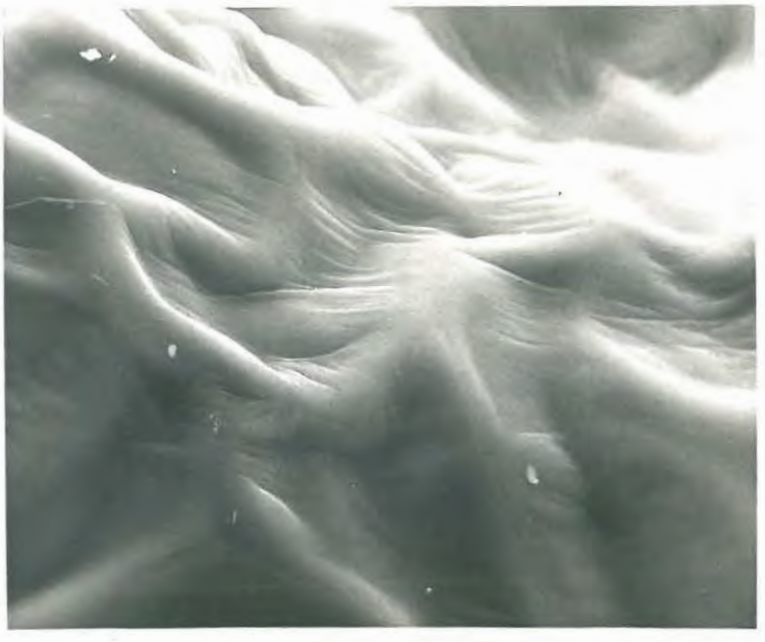


FIG. 93
Seed of Schizobasis intricata. x1000.

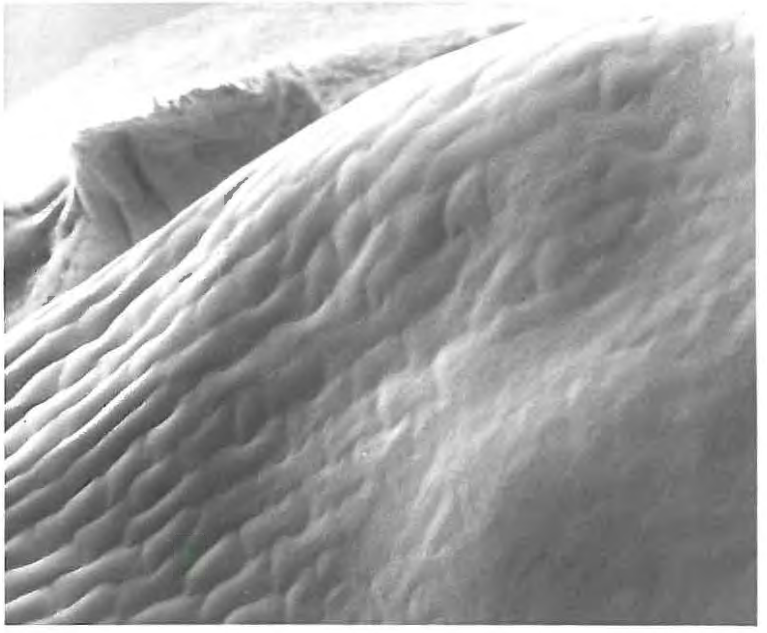


FIG. 94
Seed of Bowiea volubilis. x100.

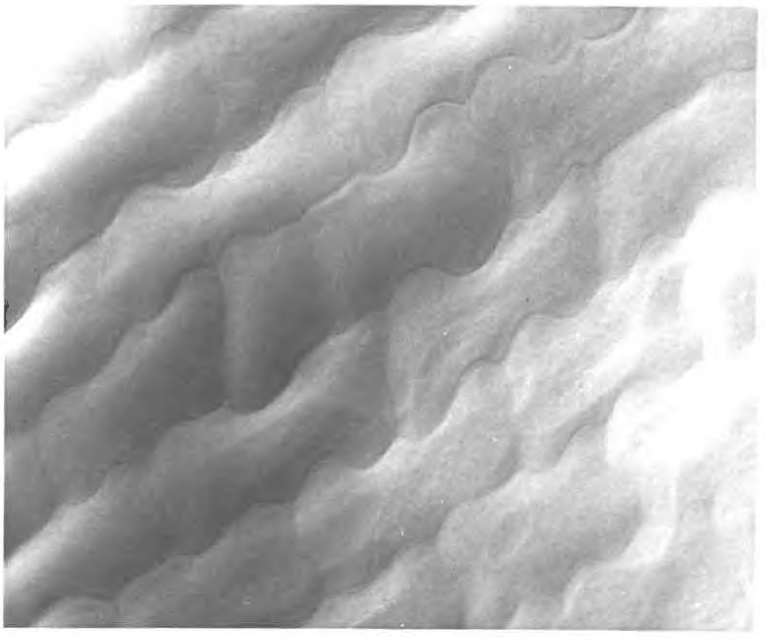


FIG. 95
Seed of Bowiea volubilis. x300.

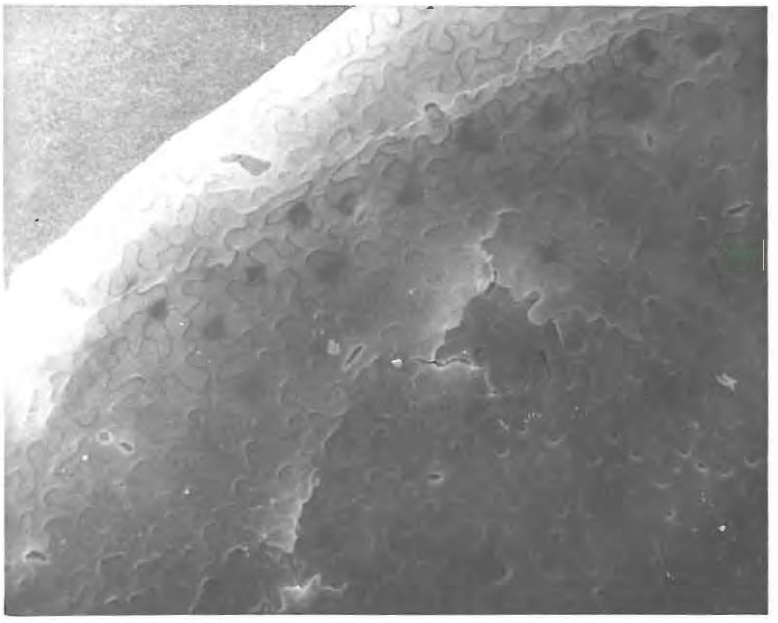


FIG. 96
Seed of Albuca canadensis. x100.

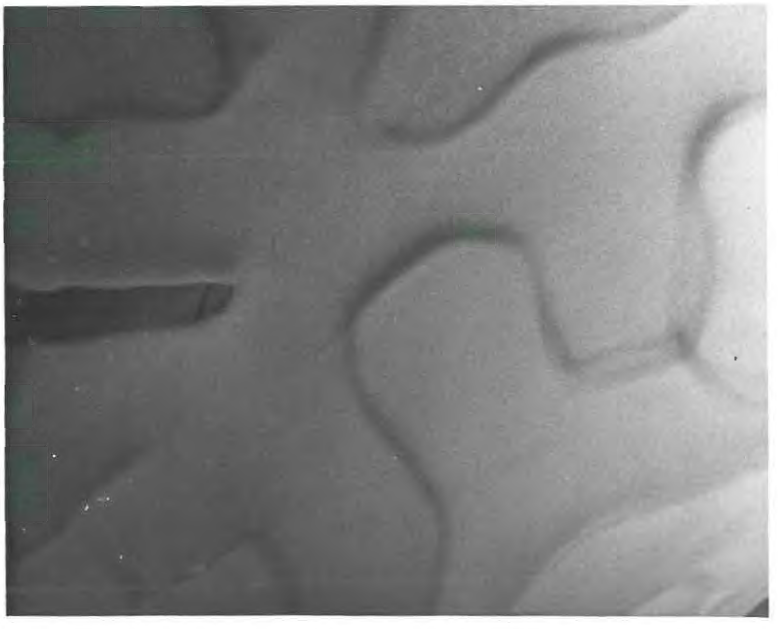


FIG. 97
Seed of Albuca canadensis. x1000.

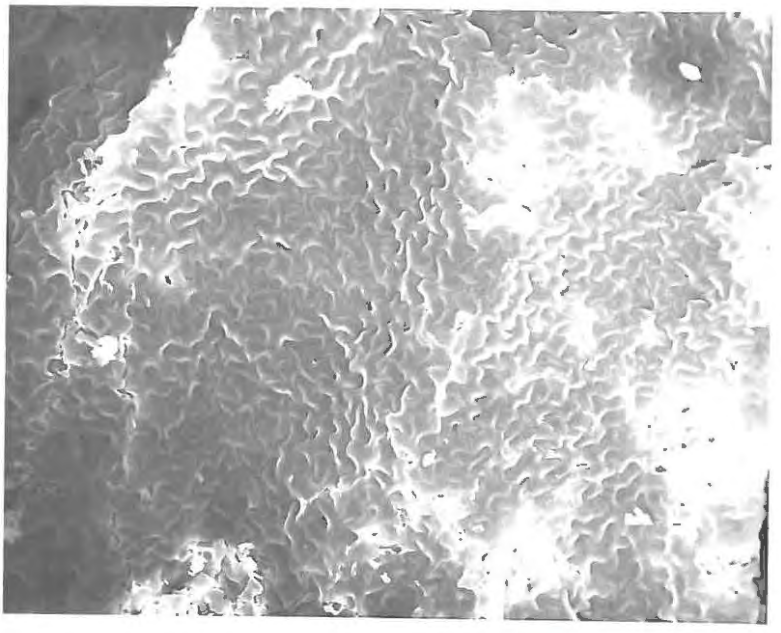


FIG. 98
Seed of Albuca patersonii. x100.

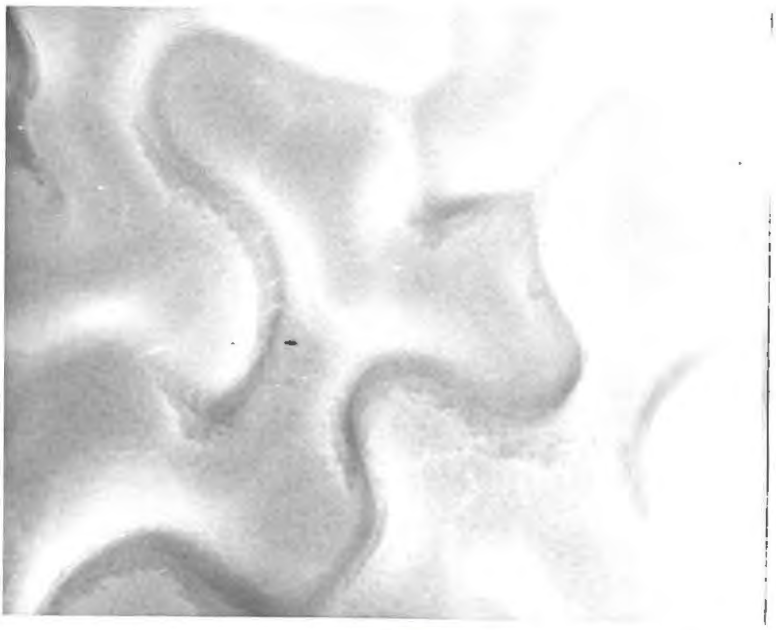


FIG. 99
Seed of Albuca patersonii. x1000.

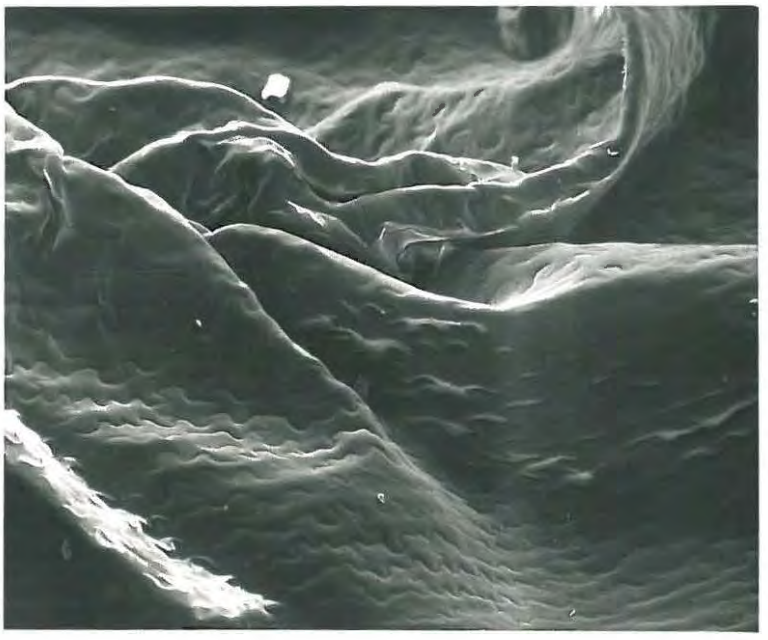


FIG. 100
Seed of Galtonia princeps. x100.

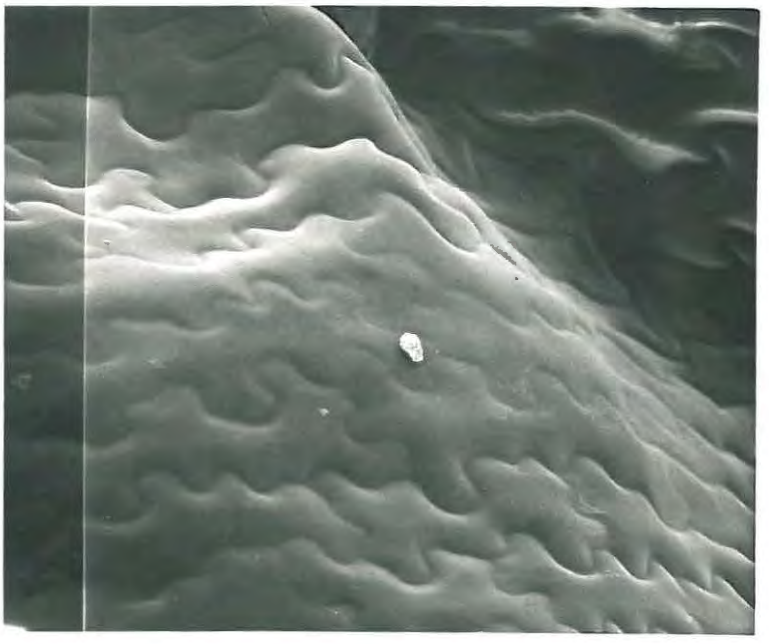


FIG. 101
Seed of Galtonia princeps. x300.

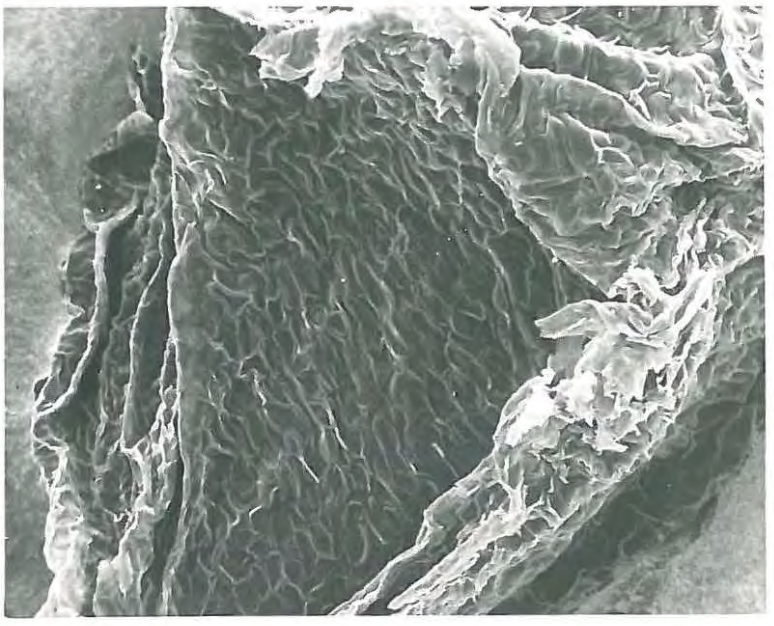


FIG. 102
Seed of Drimia anomala. x100.

FIG. 103
Seed of Drimia anomala. x1000.

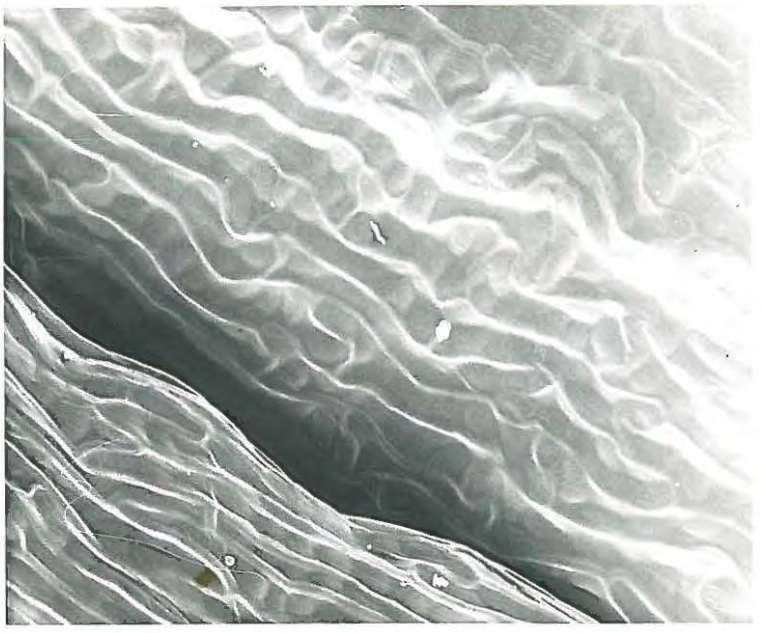


FIG. 104
Seed of Urginea delagoensis. x100.

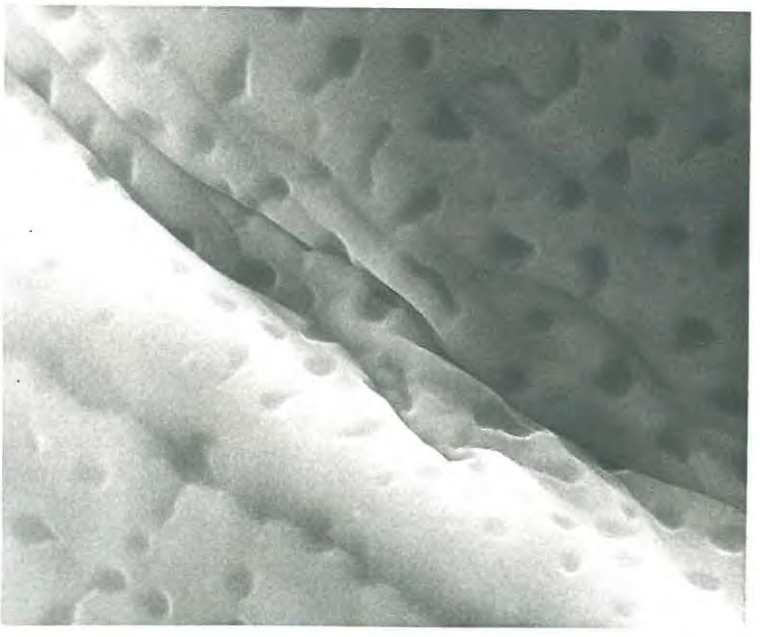


FIG. 105
Seed of Urginea delagoensis. x3000.

FIG. 106
Seed of Urginea basutica. x100.

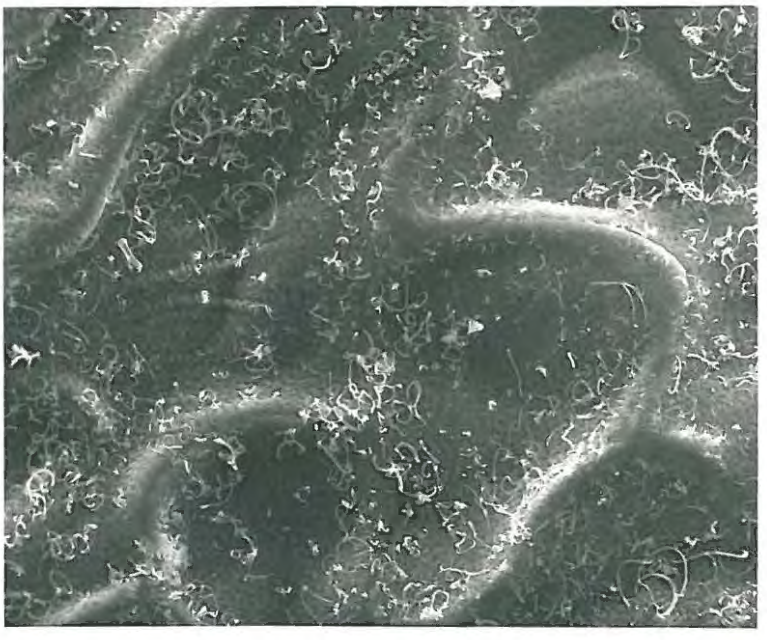


FIG. 107
Seed of Urginea basutica. x300.

FIG. 108
Seed of Urginea fragrans. x100.

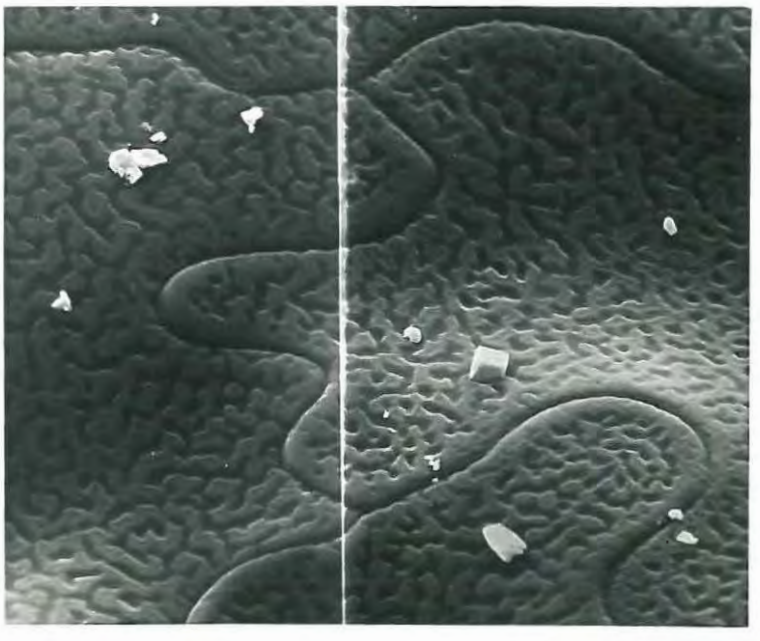


FIG. 109
Seed of Urginea fragrans. x1000.

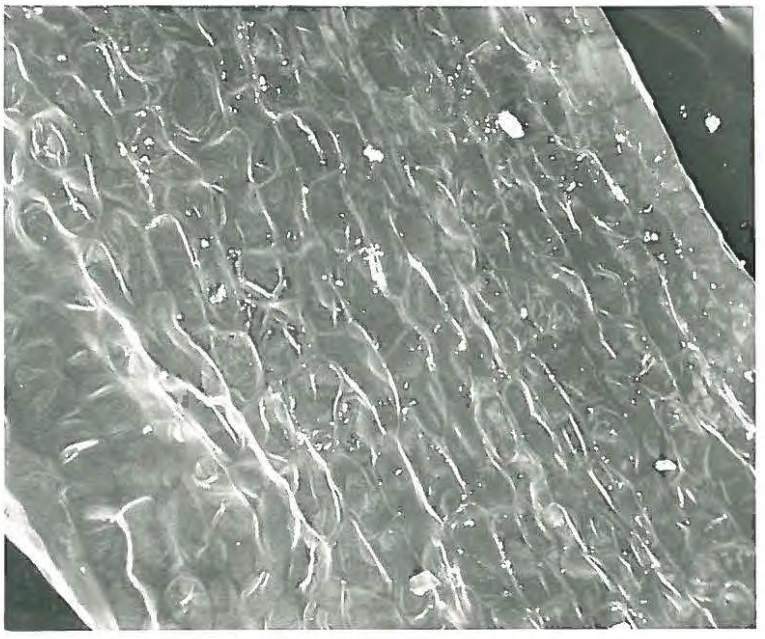


FIG. 110
Seed of Drimia media. x100.

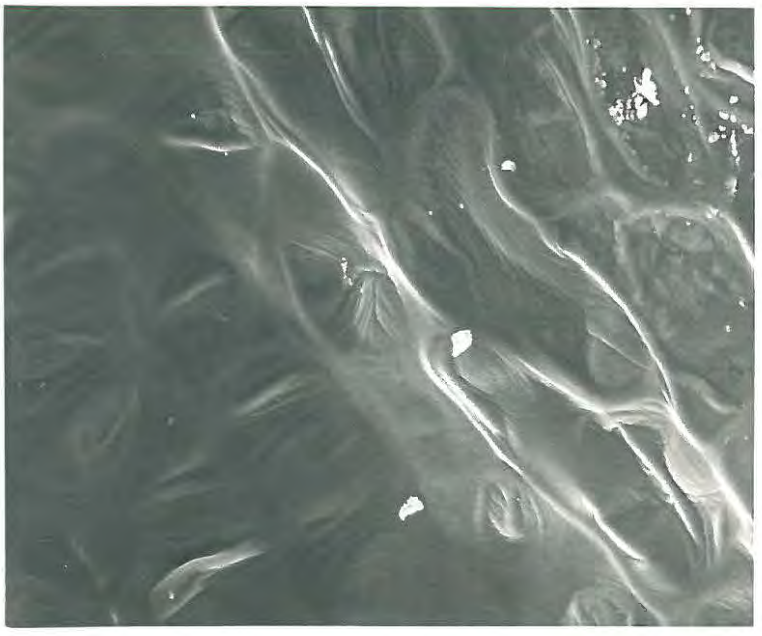


FIG. 111
Seed of Drimia media. x300.

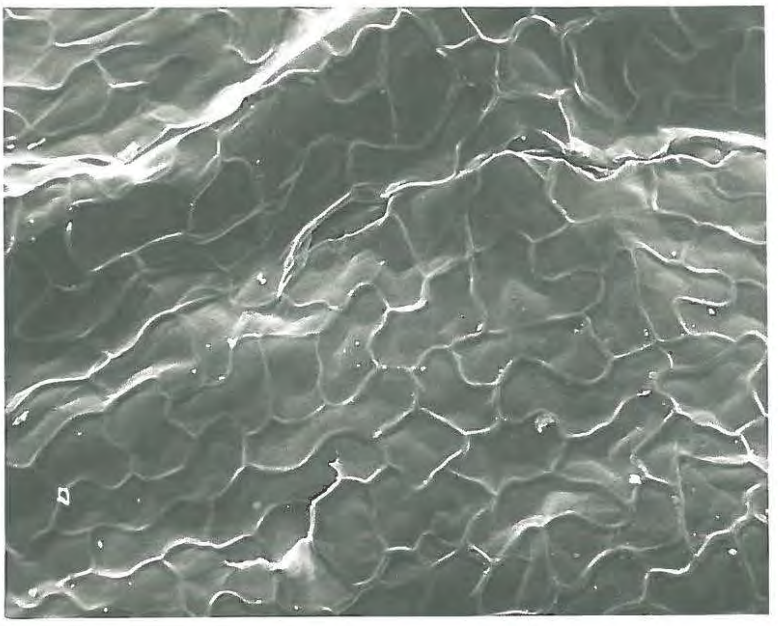


FIG. 112
Seed of Urginea pusilla. x100.

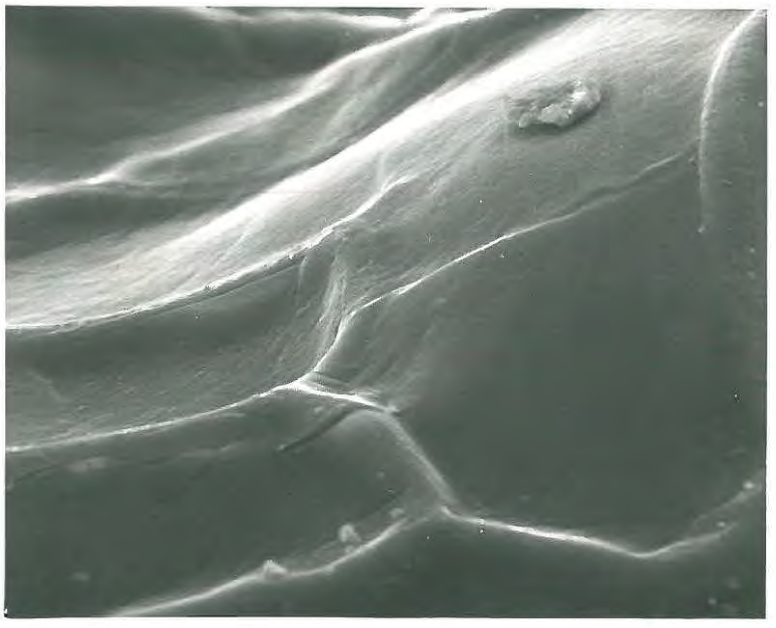


FIG. 113
Seed of Urginea pusilla. x1000.

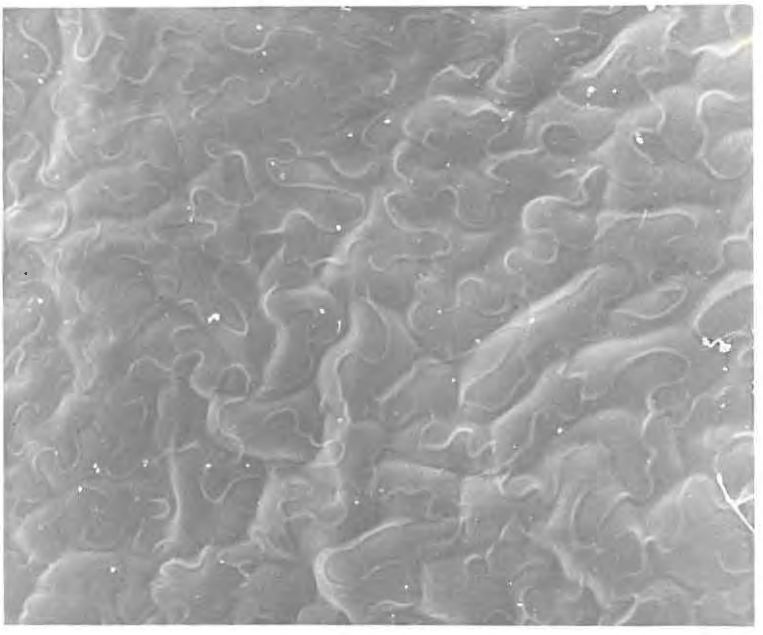


FIG. 114
Seed of Urginea sanguinea. x100.

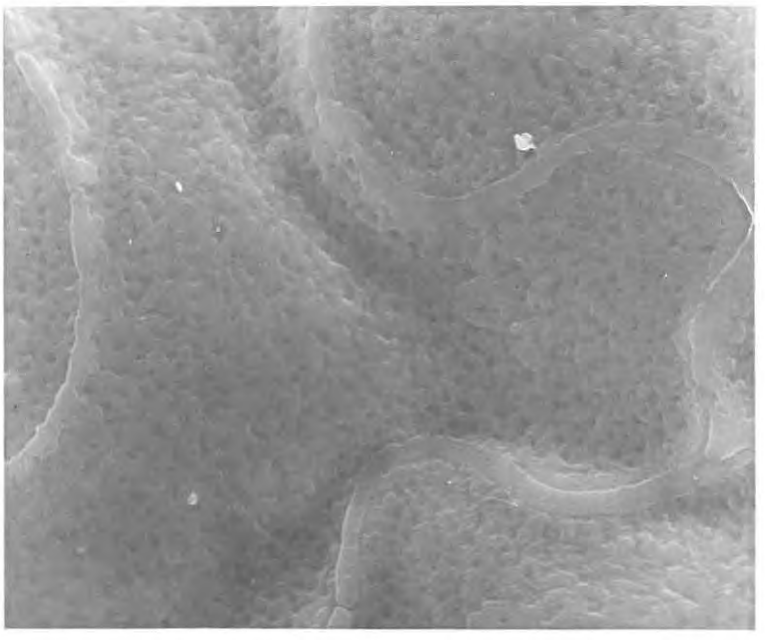


FIG. 115
Seed of Urginea sanguinea. x1000.

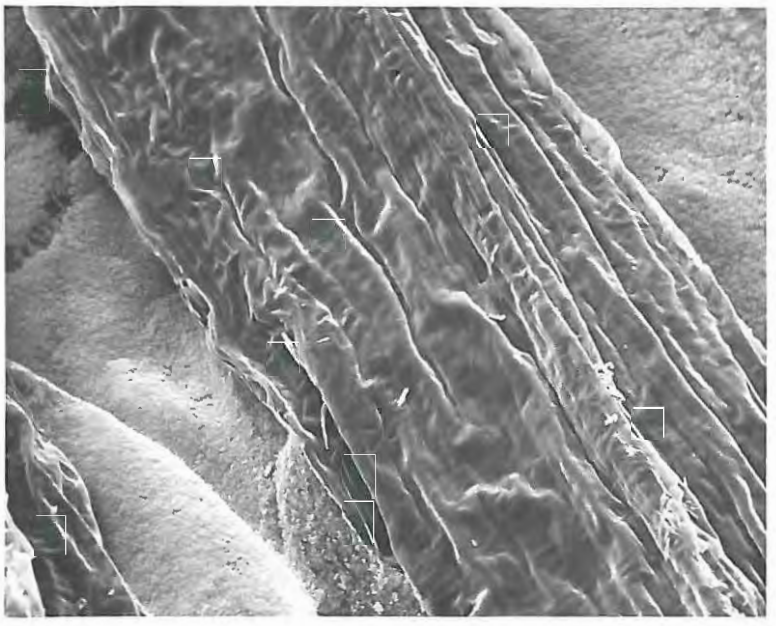


FIG. 116
Seed of Urginea modesta (Twl. Mus 32493). x100.

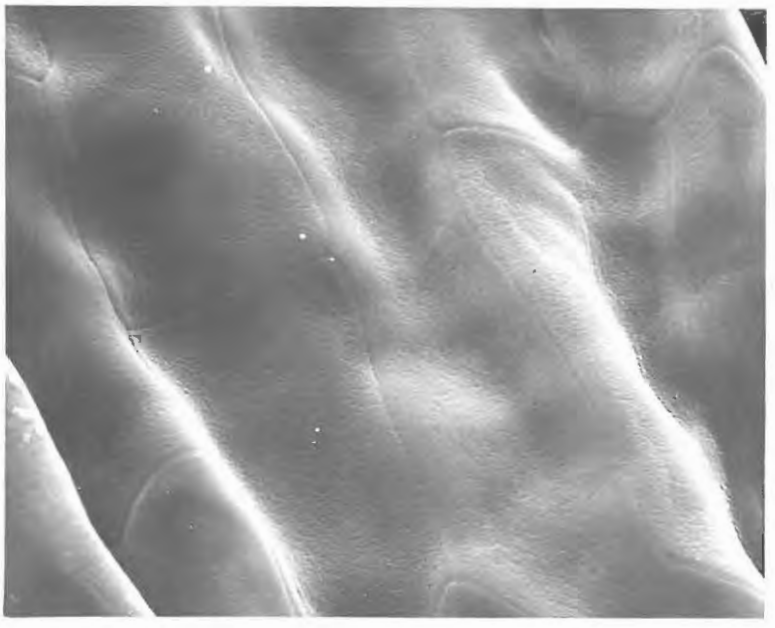


FIG. 117
Seed of Urginea modesta (Twl. Mus 32493). x1000.

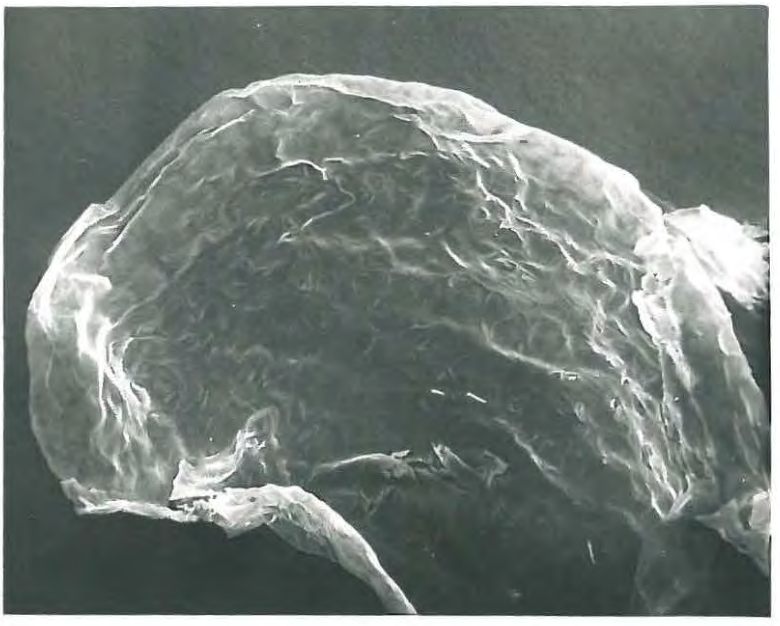


FIG. 118
Seed of Urginea modesta (Jessop 853). x100.

FIGS 119 & 120
Seed of Urginea modesta (Jessop 853). x1000.

FIG. 121
Seed of Urginea multisetosa (Strey 3054). x100.

FIG. 122
Seed of Urginea multisetosa (Strey 3054). x1000.

FIG. 123
Seed of Urginea multisetosa (Scheepers 686). x100.

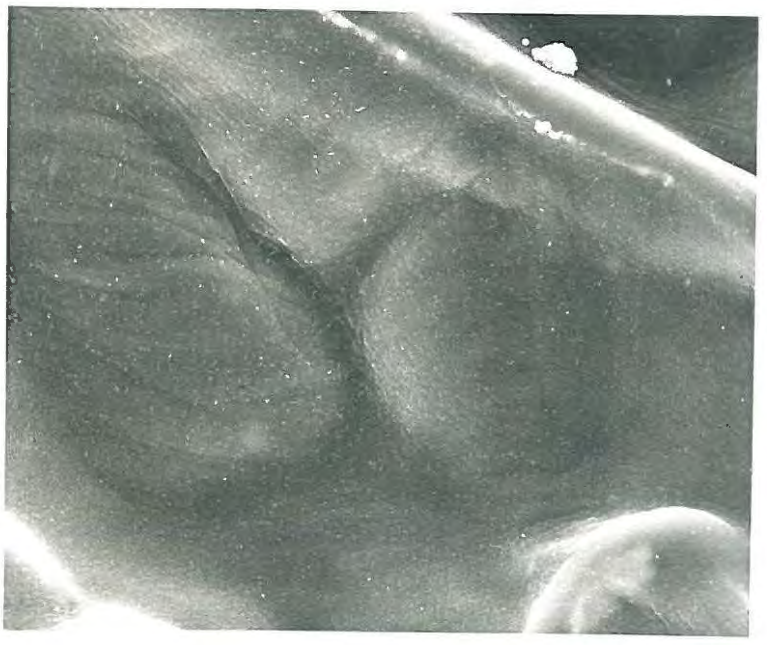


FIG. 124
Seed of Urginea multisetosa (Scheepers 686). x1000.

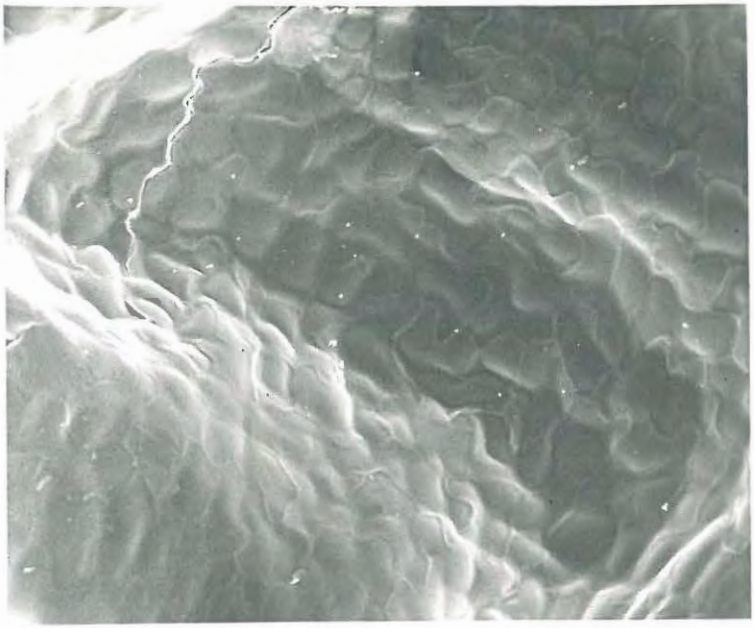
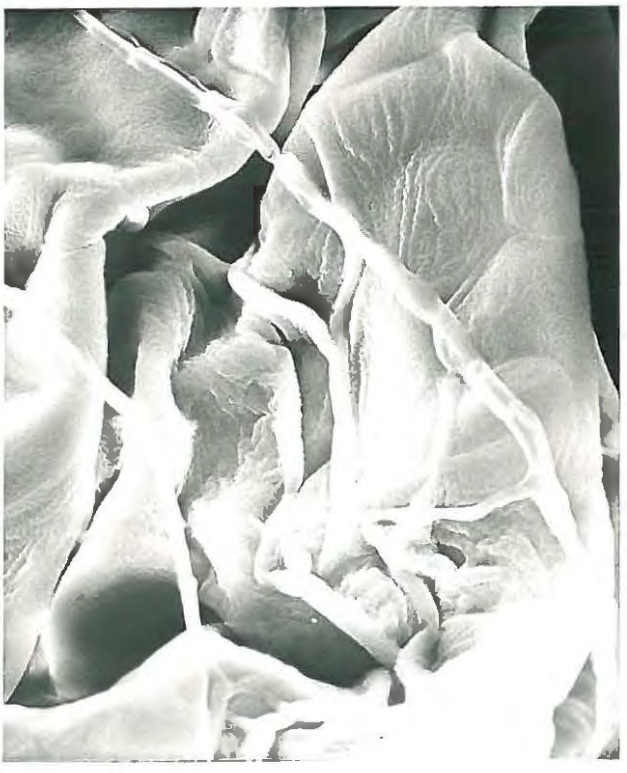


FIG. 125
Seed of Urginea marginata. x100.

FIG. 126
Seed of Urginea marginata. x1000.



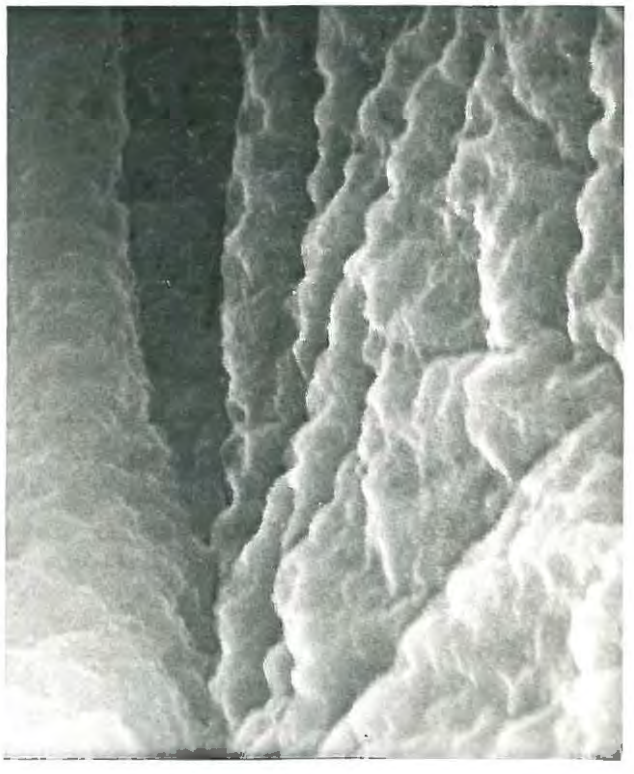


FIG. 127
Seed of Litanthus pusillus. x100.

FIG. 128
Seed of Litanthus pusillus. x1000.

FIG. 129
Seed of Litanthus pusillus. x10 000.

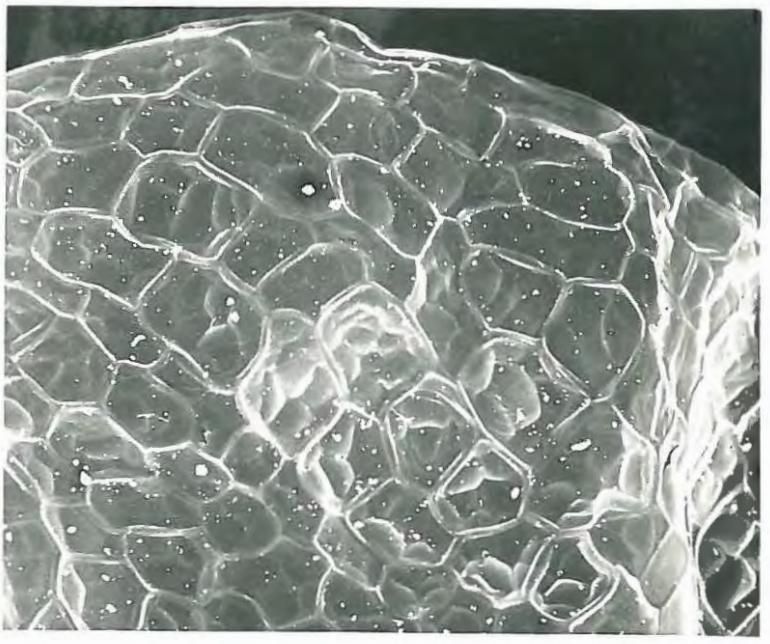


FIG. 130
Seed of Rhadamanthus platyphyllus. x100.

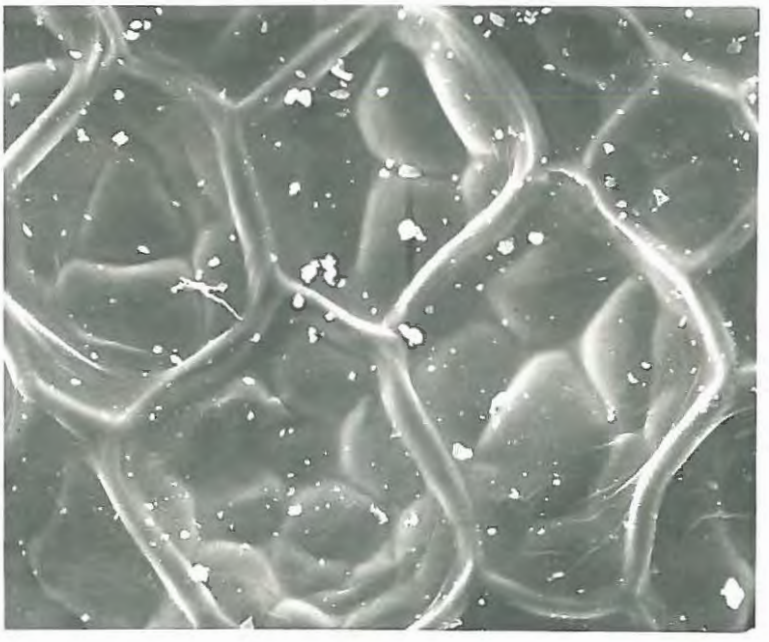


FIG. 131
Seed of Rhadamanthus platyphyllus. x300.

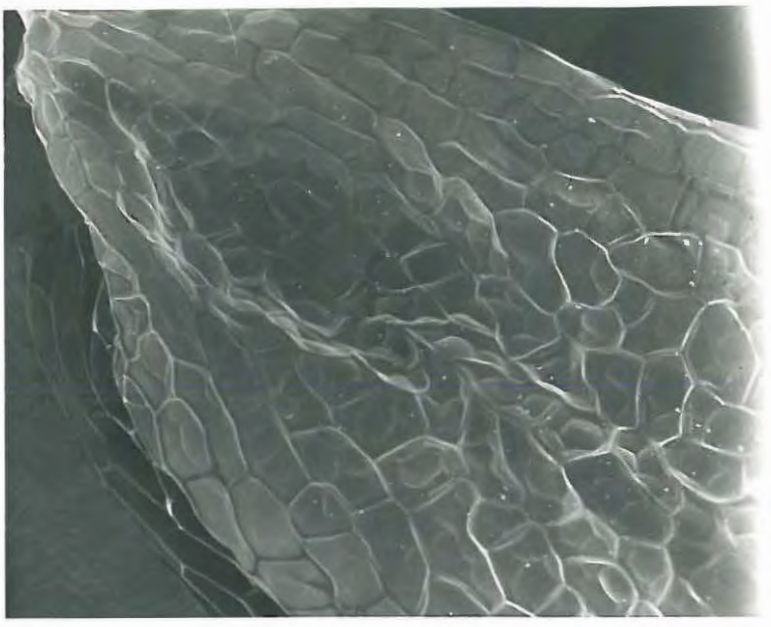


FIG. 132
Seed of Rhadamanthus sp. x100.

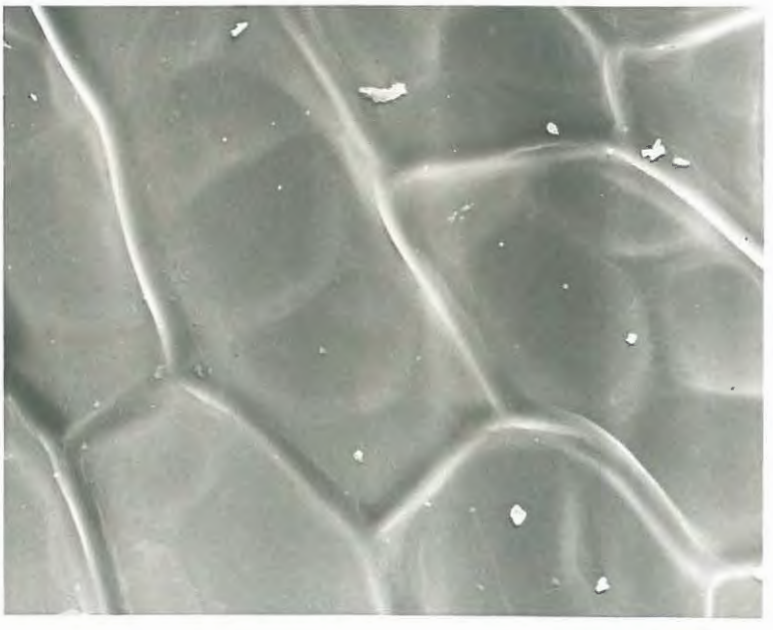


FIG. 133
Seed of Rhadamanthus sp. x500.

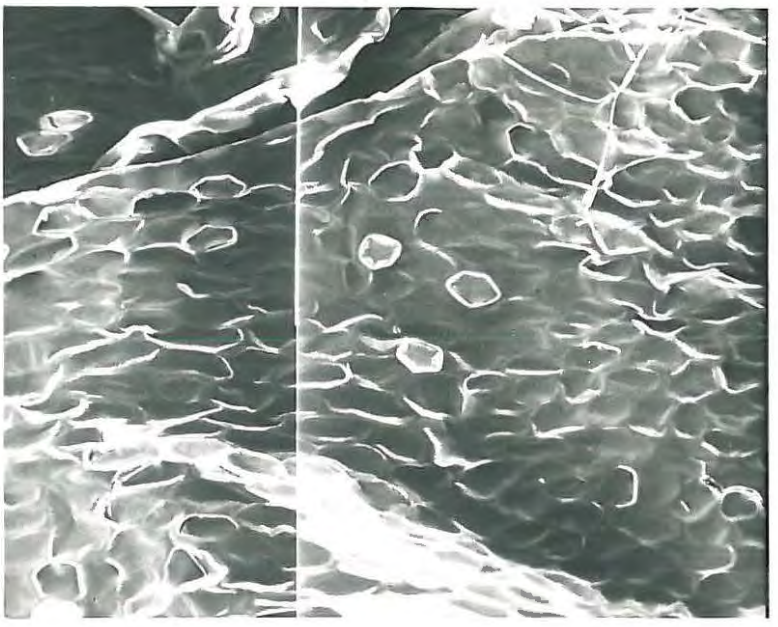


FIG. 134
Seed of Dipcadi ciliare. x100.

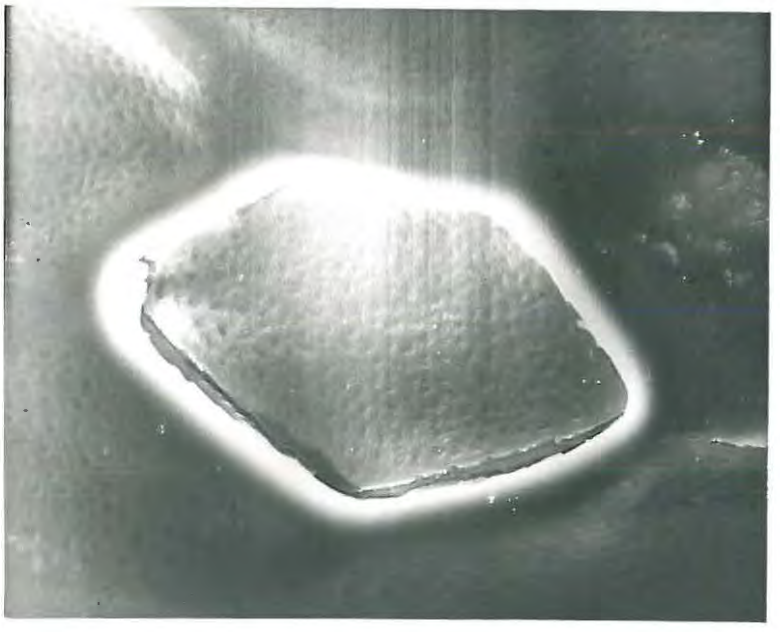


FIG. 135
Seed of Dipcadi ciliare. x1000.

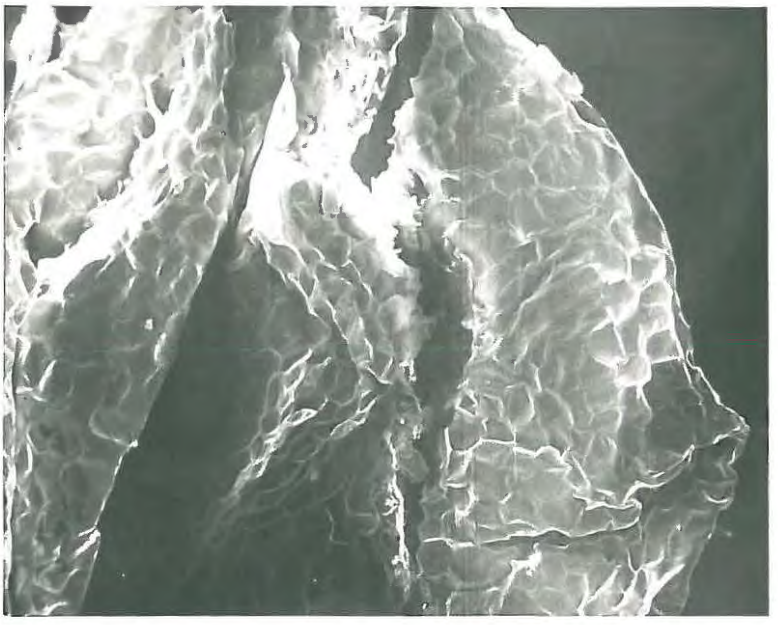


FIG. 136
Seed of Dipcadi viride. x100.

FIG. 137
Seed of Dipcadi viride. x1000.

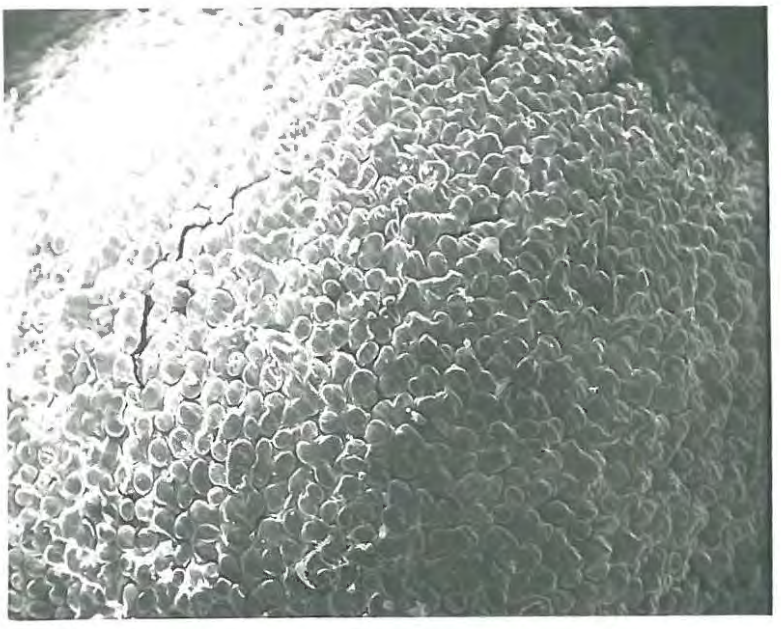


FIG. 138
Seed of Scilla firmifolia. x100.

FIG. 139
Seed of Scilla firmifolia. x1000.

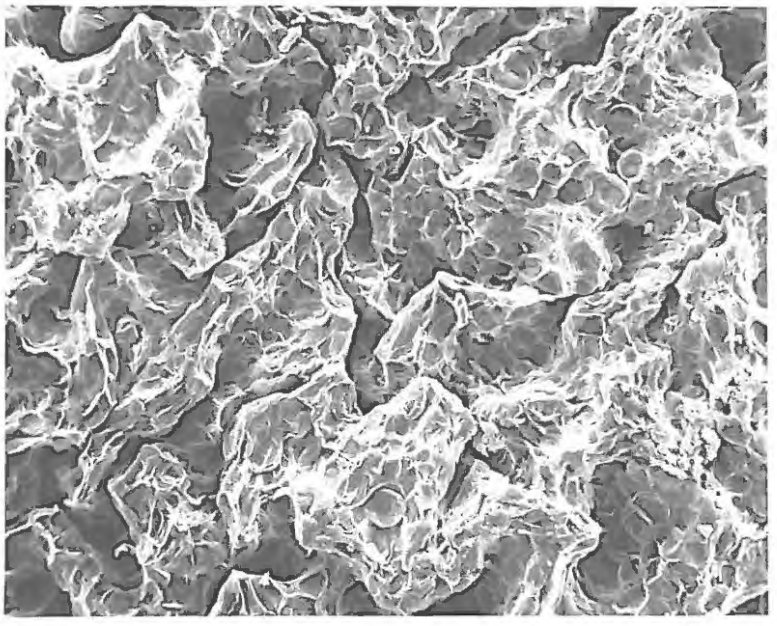


FIG. 140
Seed of Scilla nervosa. x100.

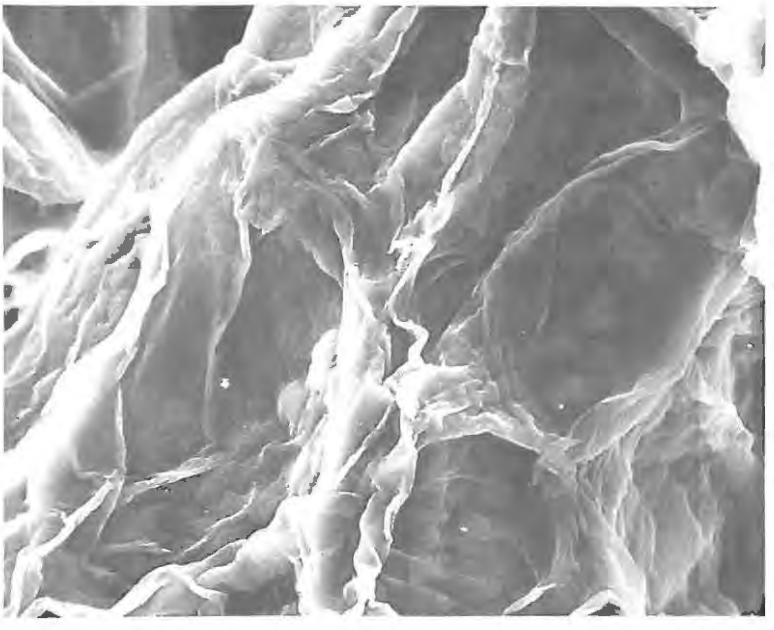


FIG. 141
Seed of Scilla nervosa. x1000.

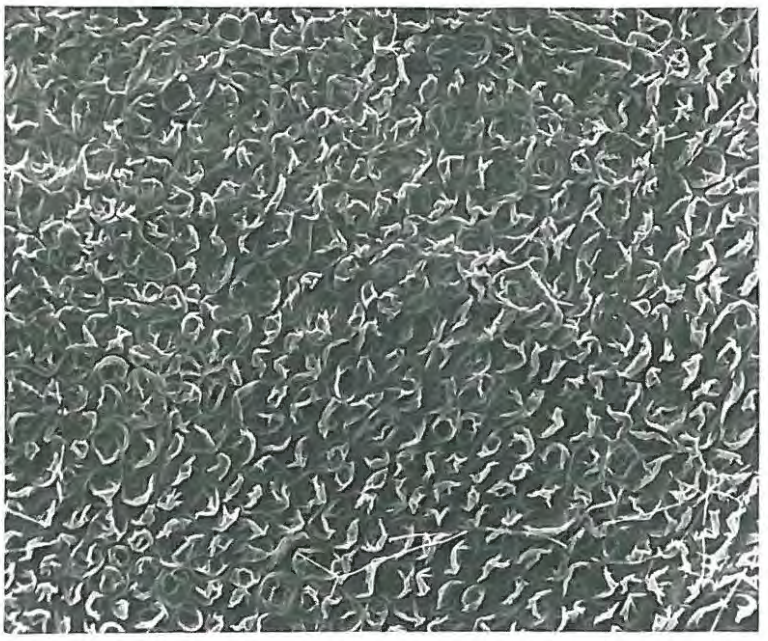


FIG. 142
Seed of Scilla natalensis. x100.

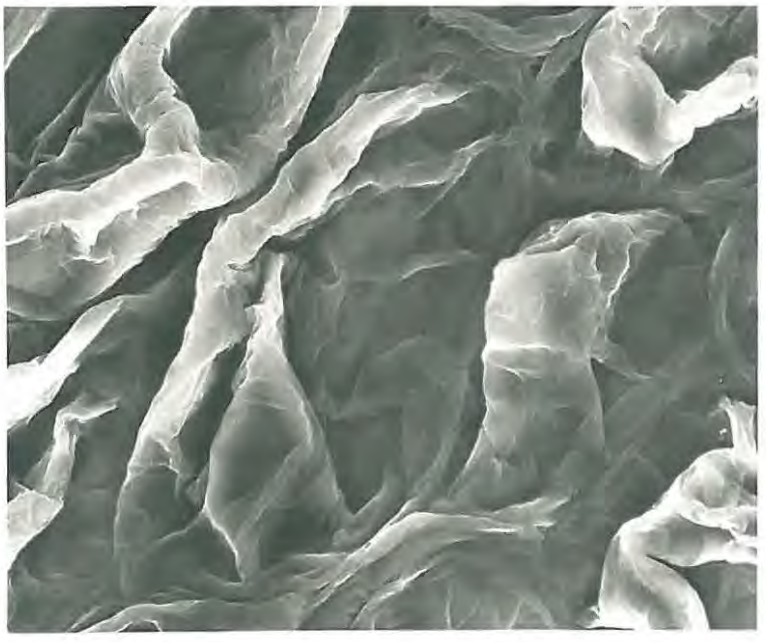
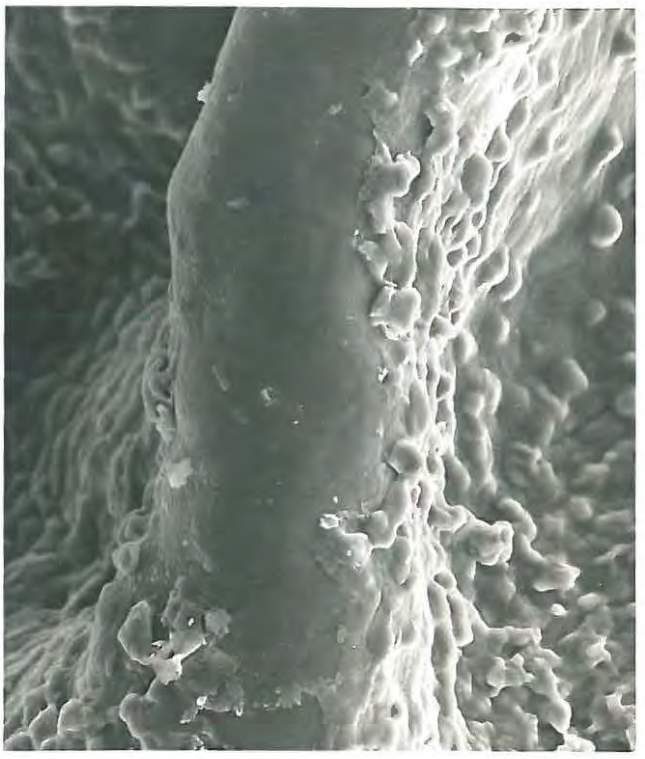


FIG. 143
Seed of Scilla natalensis. x1000.



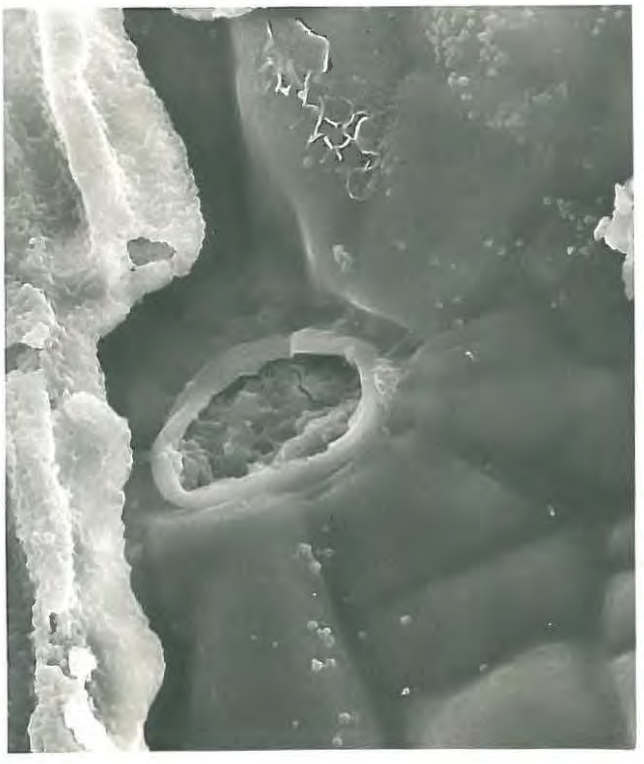


FIG. 144
Seed of Scilla megaphylla.
x100.

FIG. 145
Seed of Scilla megaphylla.
x300.

FIG. 146
Seed of Scilla megaphylla. x1000.

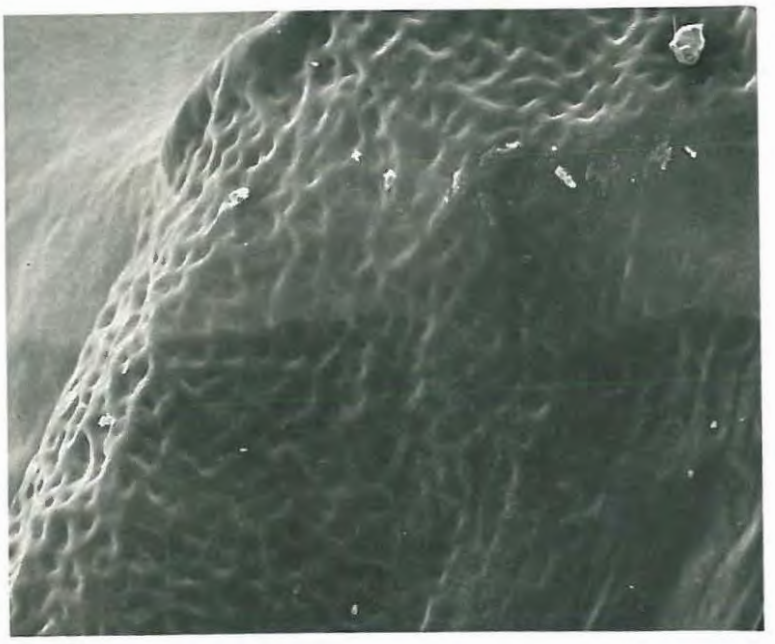


FIG. 147
Seed of Eucomis autumnalis var clavata. x100.

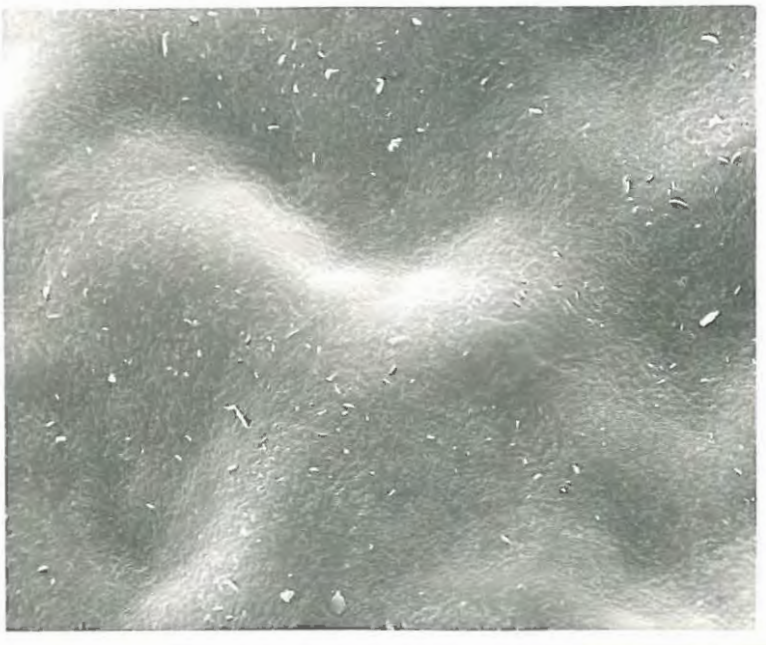


FIG. 148
Seed of Eucomis autumnalis var clavata. x1000.

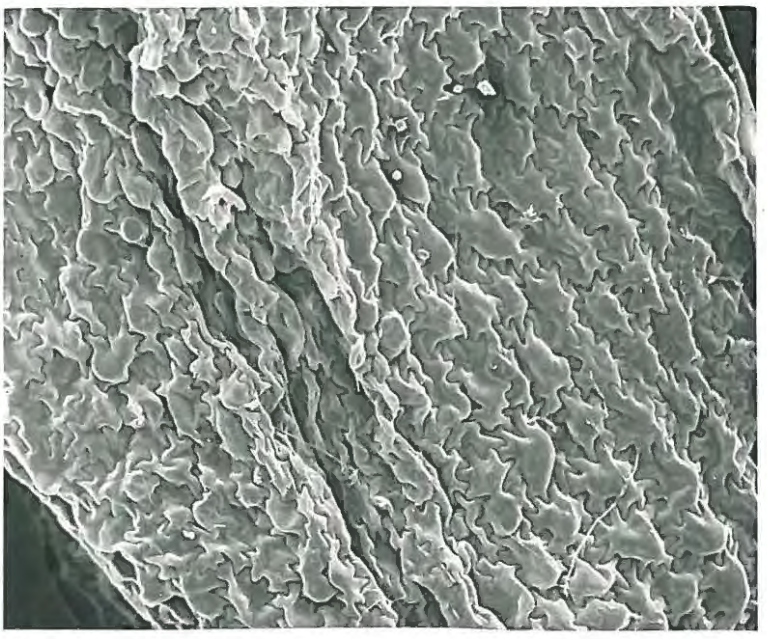


FIG. 149
Seed of Ornithogalum thyrsoides (Bolus 4919). x100.

FIG. 150
Seed of Ornithogalum thyrsoides (Bolus 4919). x1000.

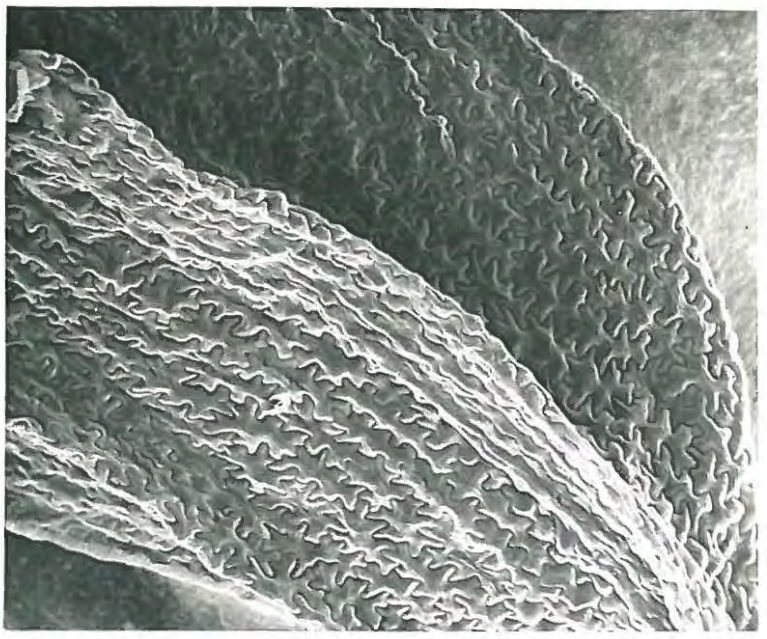


FIG. 151
Seed of Ornithogalum thyrsoides (Houtbay). x100.

FIG. 152
Seed of Ornithogalum thyrsoides (Houtbay). x1000.

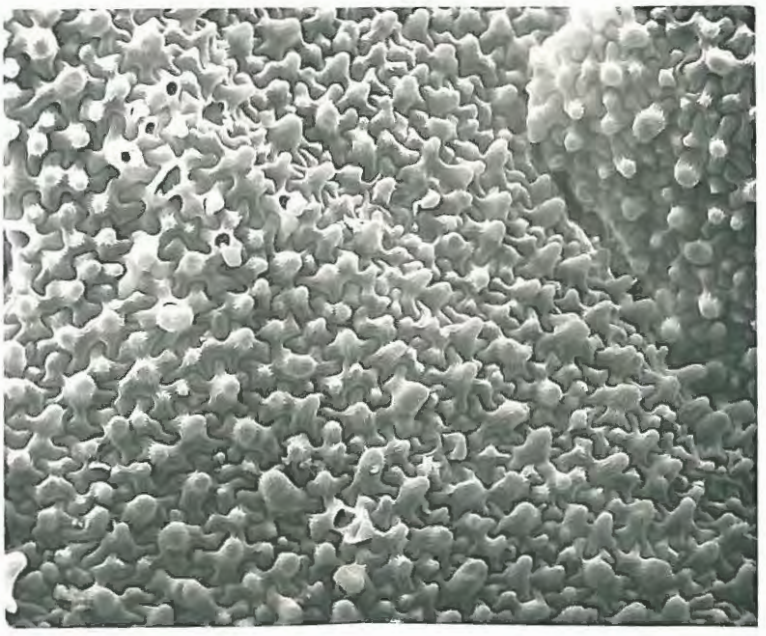


FIG. 153
Seed of Ornithogalum conicum. x100.

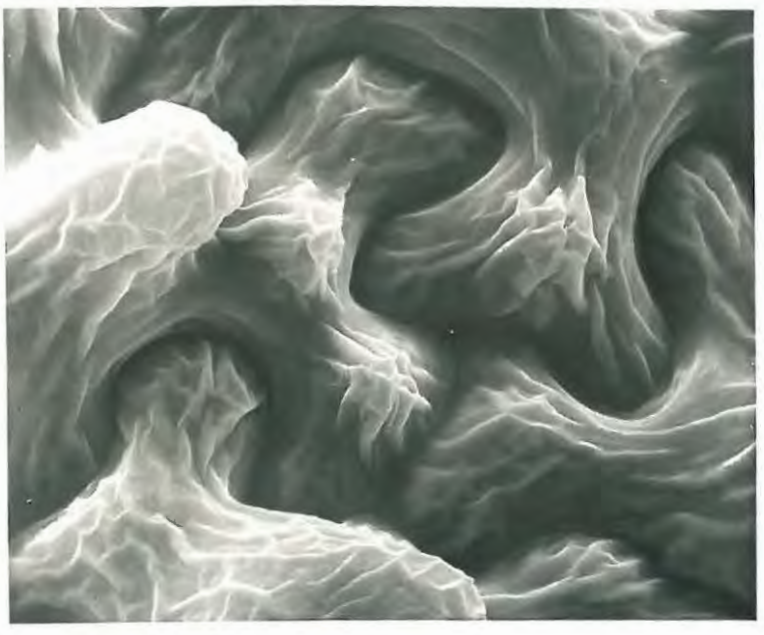


FIG. 154
Seed of Ornithogalum conicum. x1000.

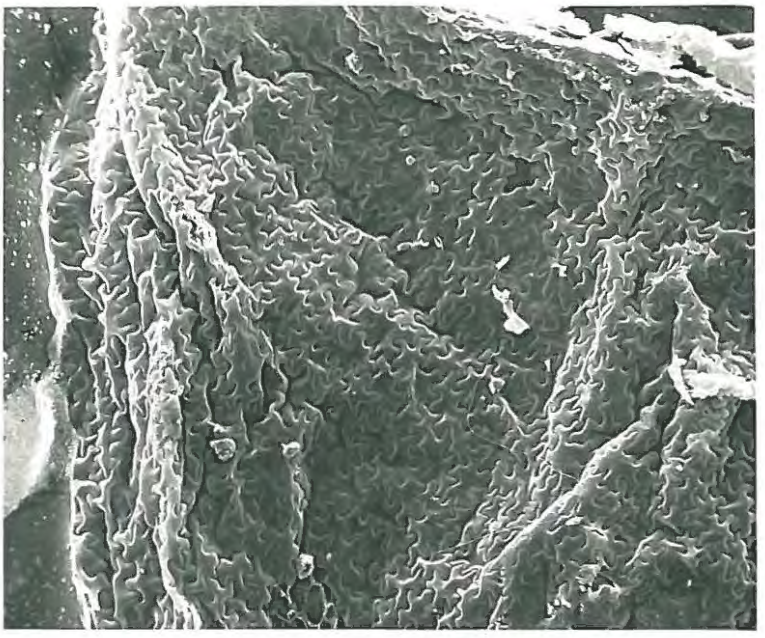


FIG. 155
Seed of Ornithogalum ceresianum. x100.

FIG. 156
Seed of Ornithogalum ceresianum. x1000.

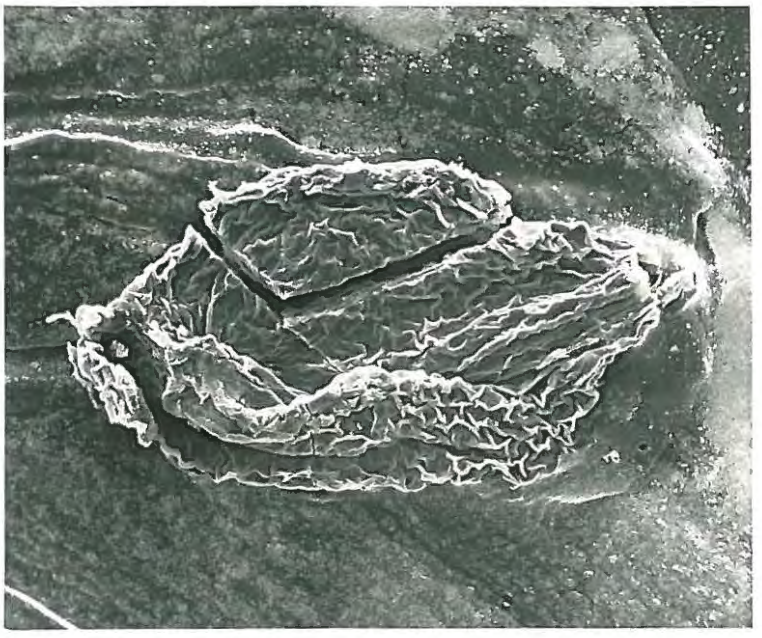


FIG. 157
Seed of Ornithogalum maculatum. x100.

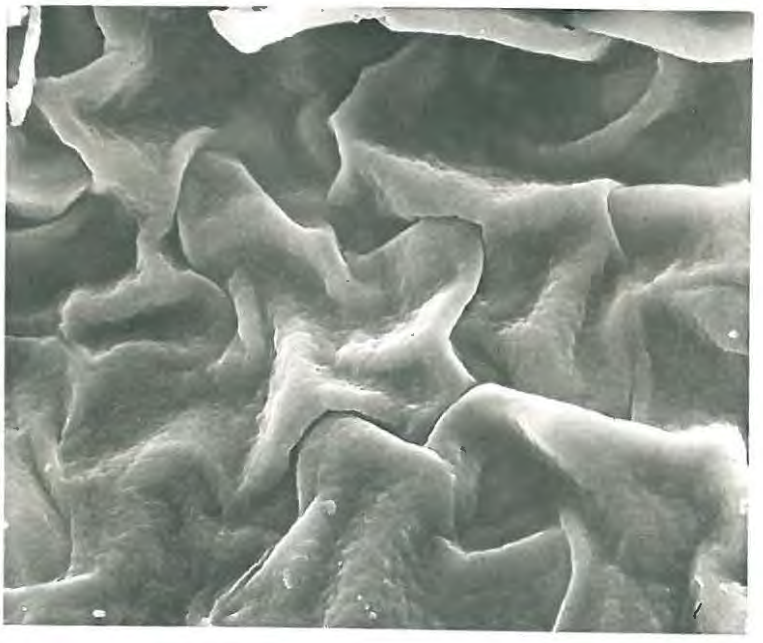


FIG. 158
Seed of Ornithogalum maculatum. x1000.

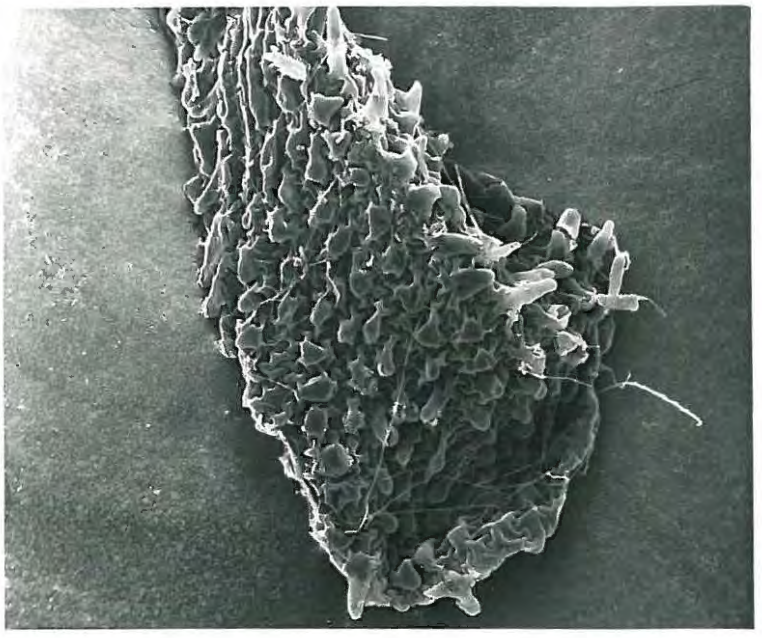


FIG. 159
Seed of Ornithogalum miniatum (Muir 2988). x100.

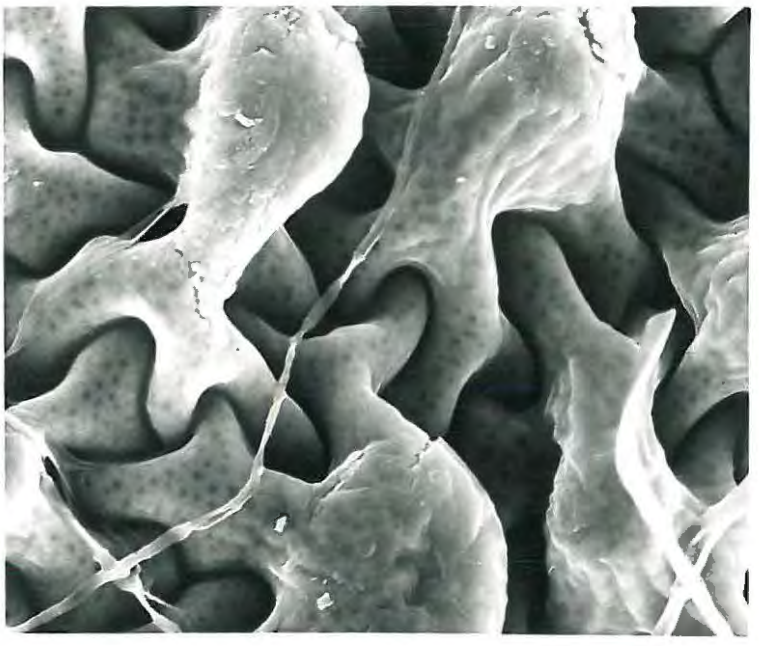


FIG. 160
Seed of Ornithogalum miniatum (Muir 2988). x1000.

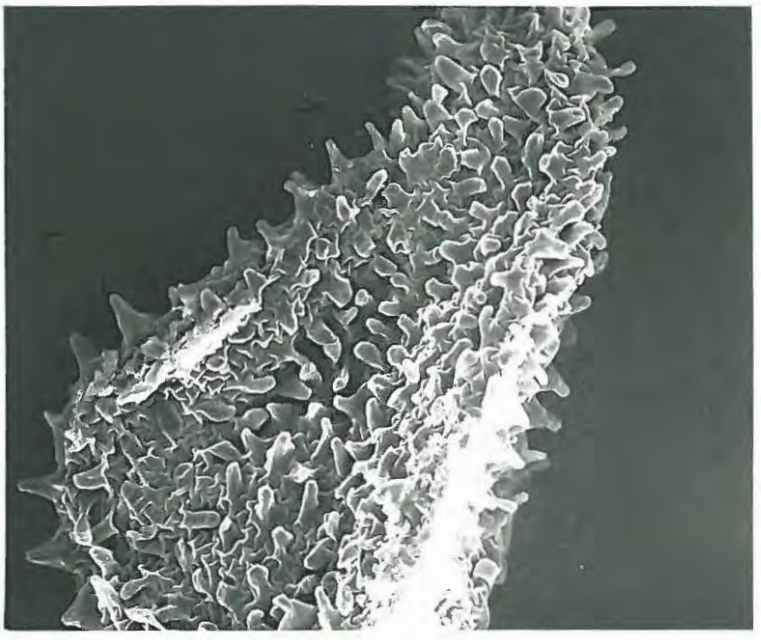


FIG. 161
Seed of Ornithogalum miniatum (STE Hort. 3983). x100.

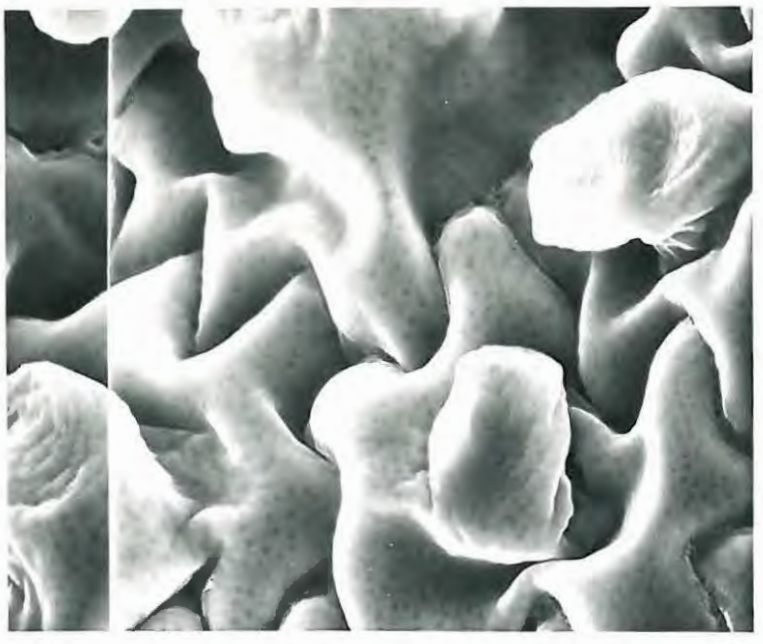


FIG. 162
Seed of Ornithogalum miniatum (STE Hort. 3983). x1000.

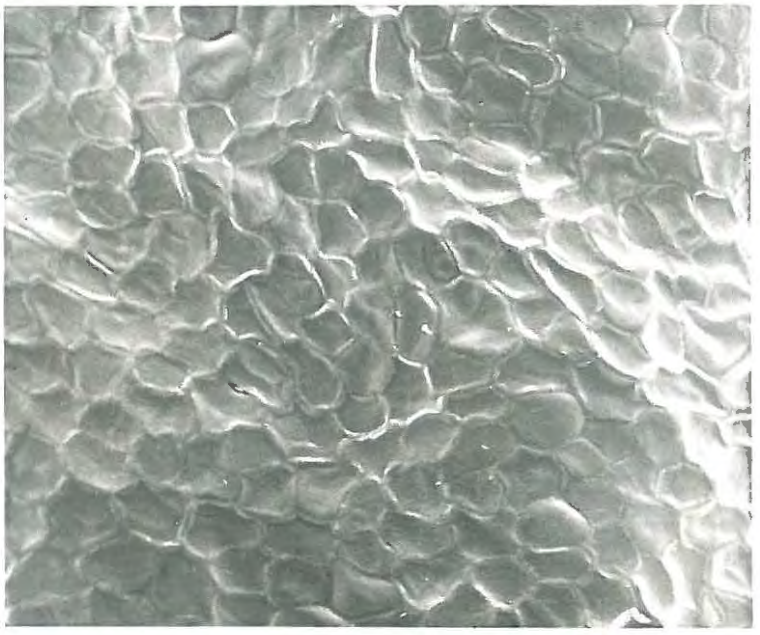


FIG. 163
Seed of Pseudogaltonia clavata. x100.

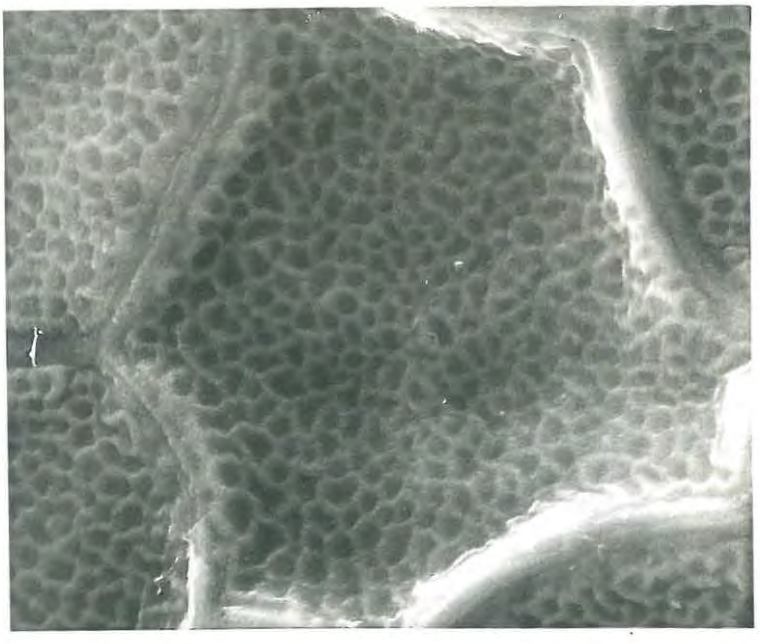


FIG. 164
Seed of Pseudogaltonia clavata. x1000.

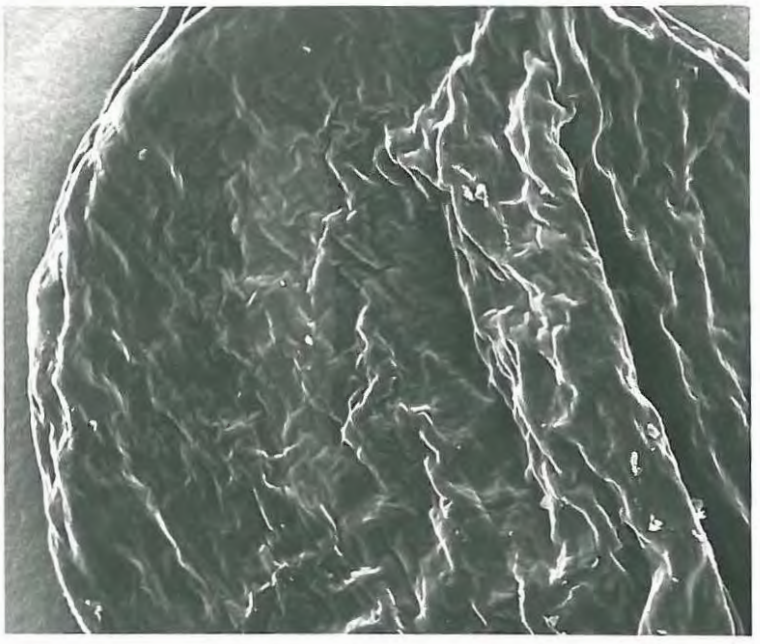


FIG. 165
Seed of Lachenalia monophylla. x100.

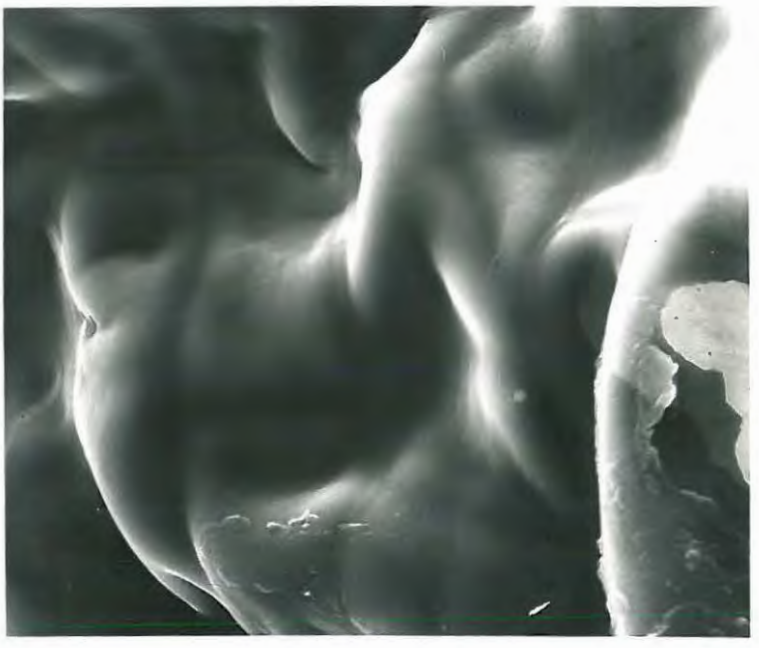
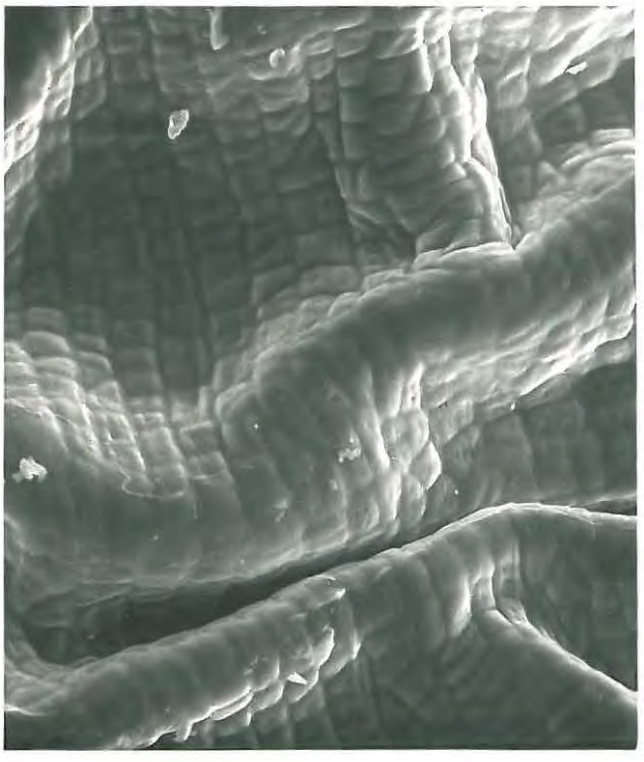


FIG. 166
Seed of Lachenalia monophylla. x1000.



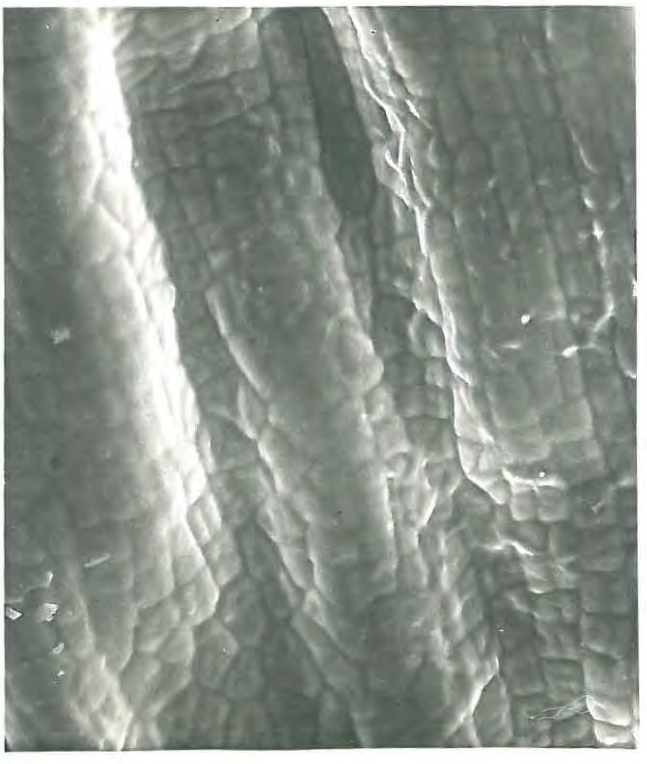


FIG. 167
Seed of Whiteheadia bifolia. x100.

FIGS 168 & 169
Seed of Whiteheadia bifolia. x300.

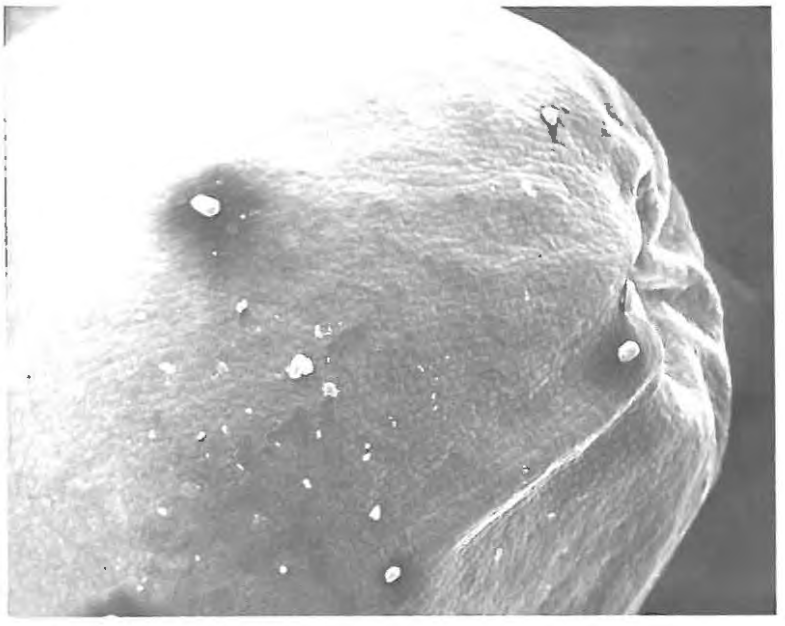


FIG. 170
Seed of Massonia depressa. x100.

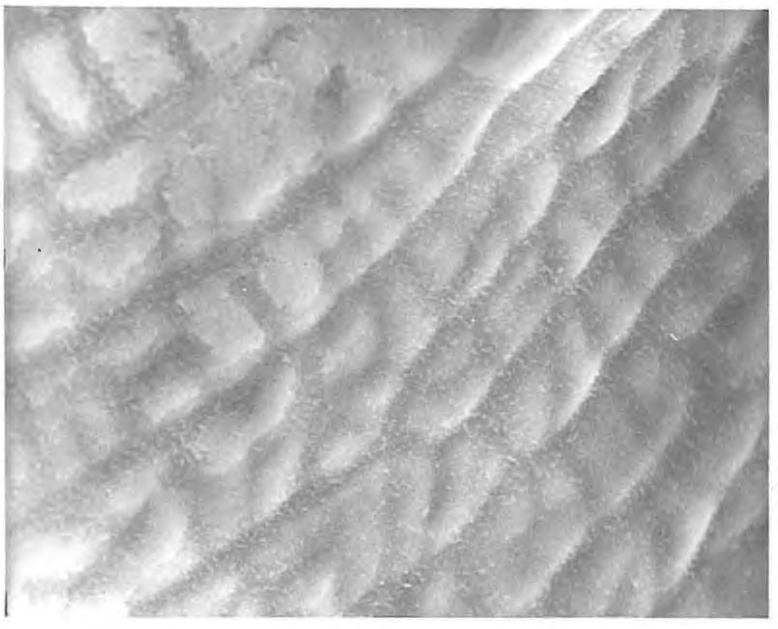


FIG. 171
Seed of Massonia depressa. x1000.

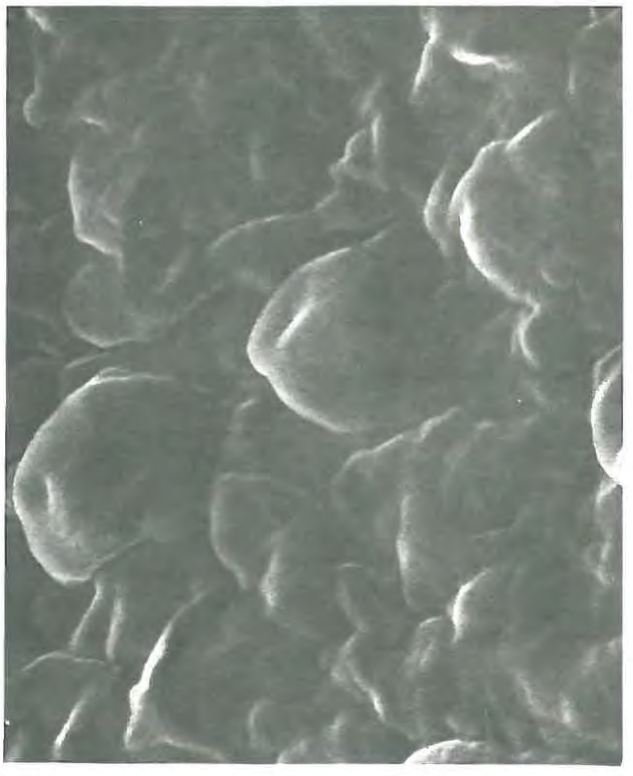
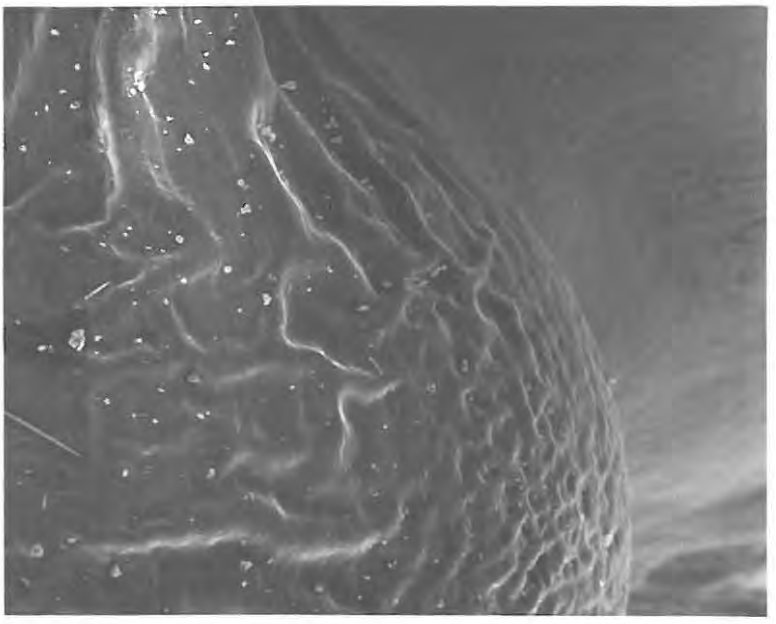


FIG. 172
Seed of Massonia echinata. x100.

FIG. 173
Seed of Massonia echinata (Bayliss 4868). x5000.

FIG. 174
Seed of Massonia echinata (Rayliss 4868). x18 500.



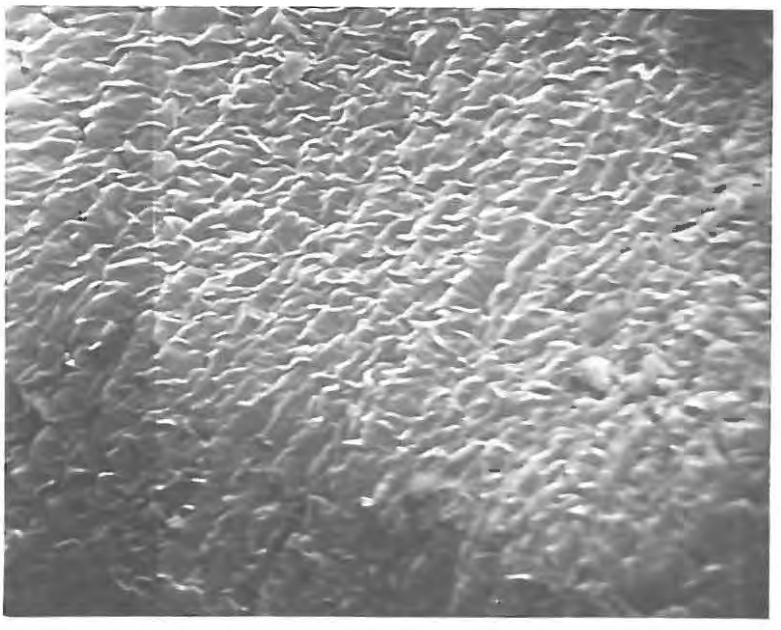


FIG. 175
Seed of Massonia echinata (Bayliss 4890). x100.

FIG. 176
Seed of Massonia echinata (Bayliss 4890). x5000.

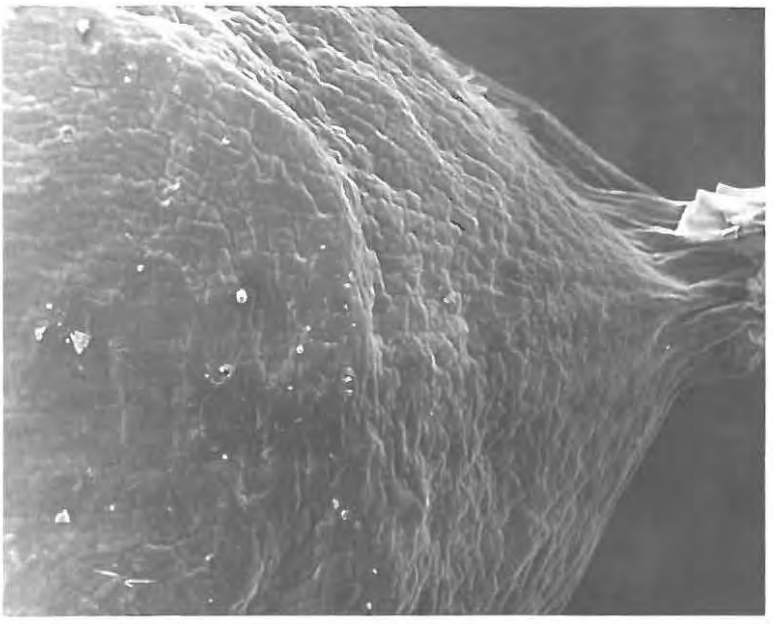


FIG. 177
Seed of Massonia pustulata. x100.

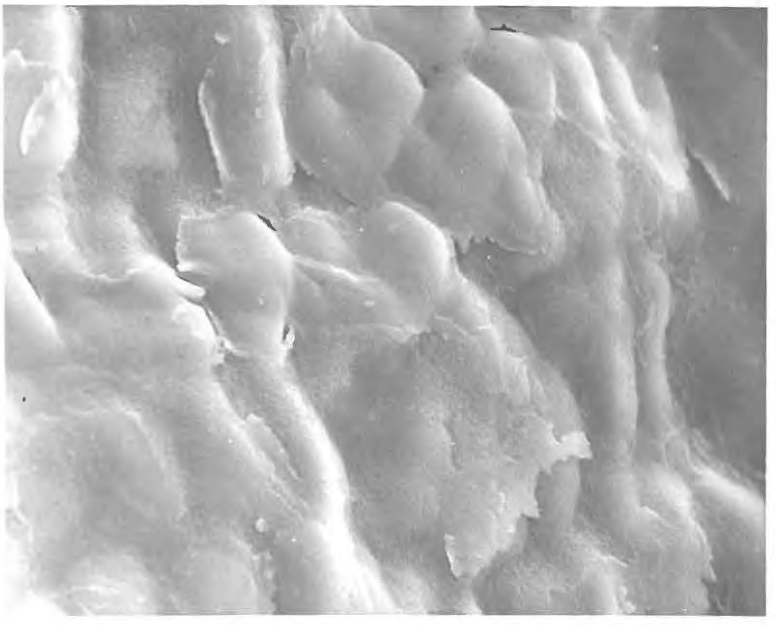


FIG. 178
Seed of Massonia pustulata. x1000.

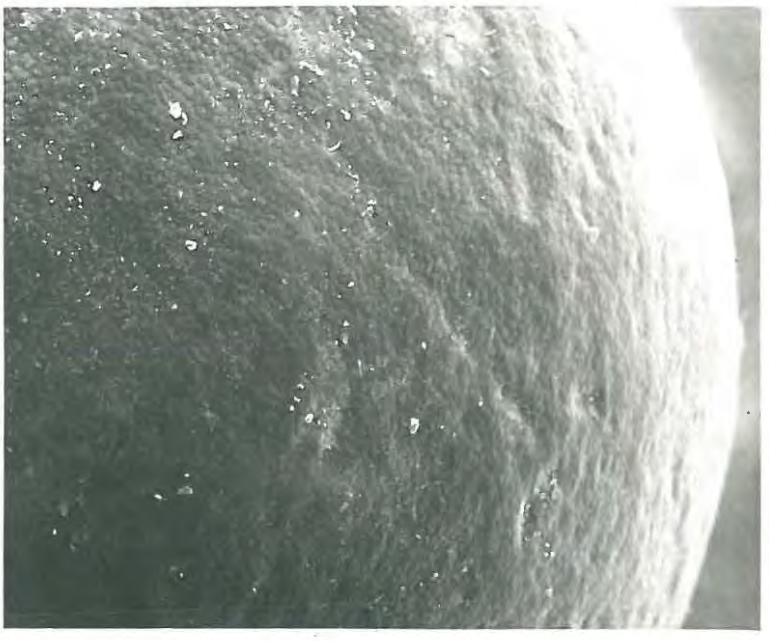


FIG. 179
Seed of Massonia angustifolia. x100.

FIG. 180
Seed of Massonia angustifolia. x1000.

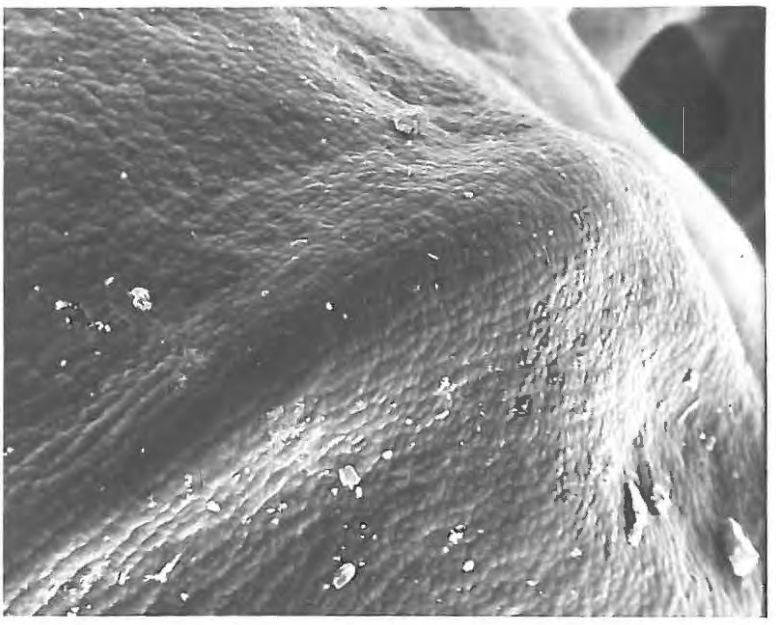


FIG. 181
Seed of Daubenya aurea. x100.

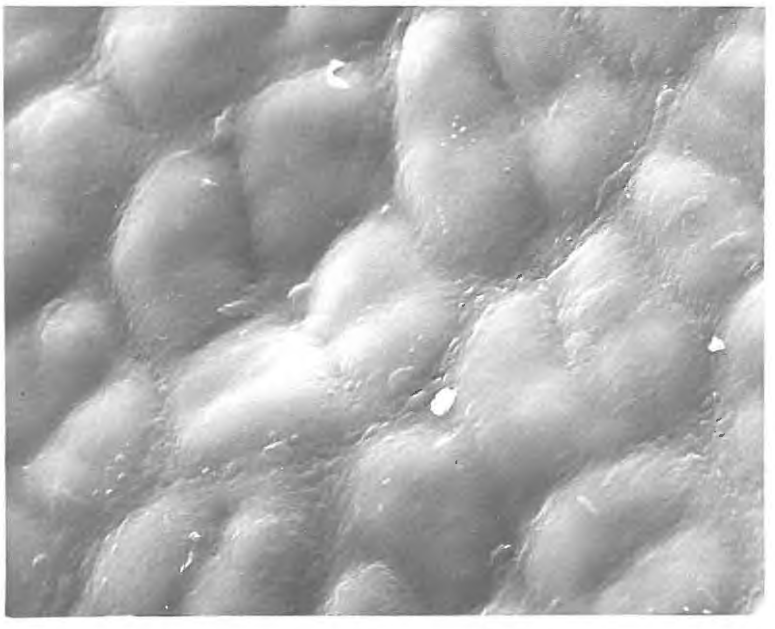
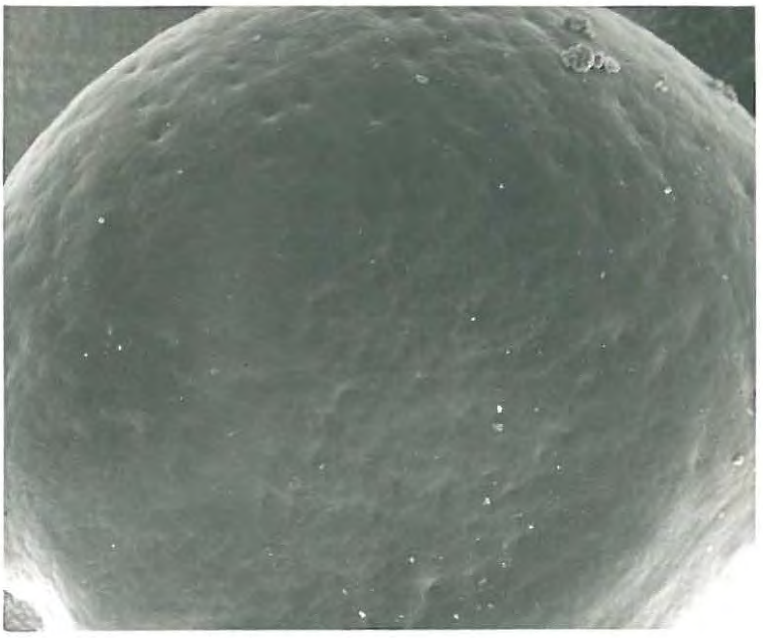


FIG. 182
Seed of Daubenya aurea. x1000.

FIG. 183
Seed of Androsiphon capense. x100.

FIG. 184
Seed of Androsiphon capense x1000.

FIG. 185
Seed of Androsiphon capense. x3000.



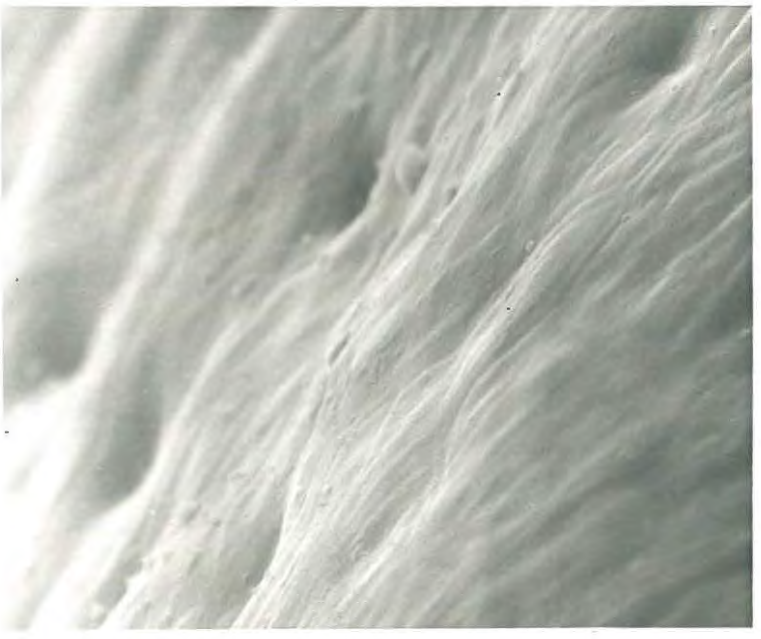


FIG. 186
Seed of Polyxena ensifolia. x100.

FIG. 187
Seed of Polyxena ensifolia. x1000.

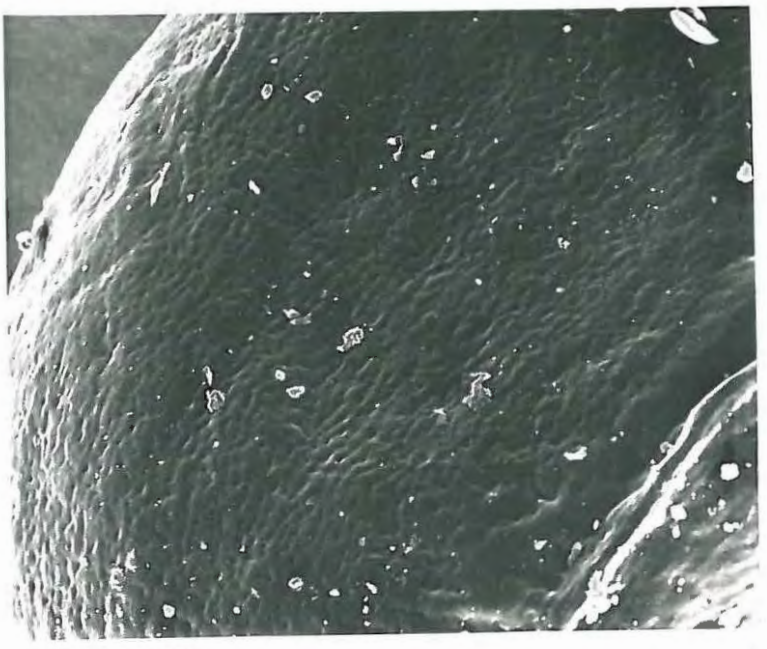


FIG. 188
Seed of Polyxena corymbosa. x100.

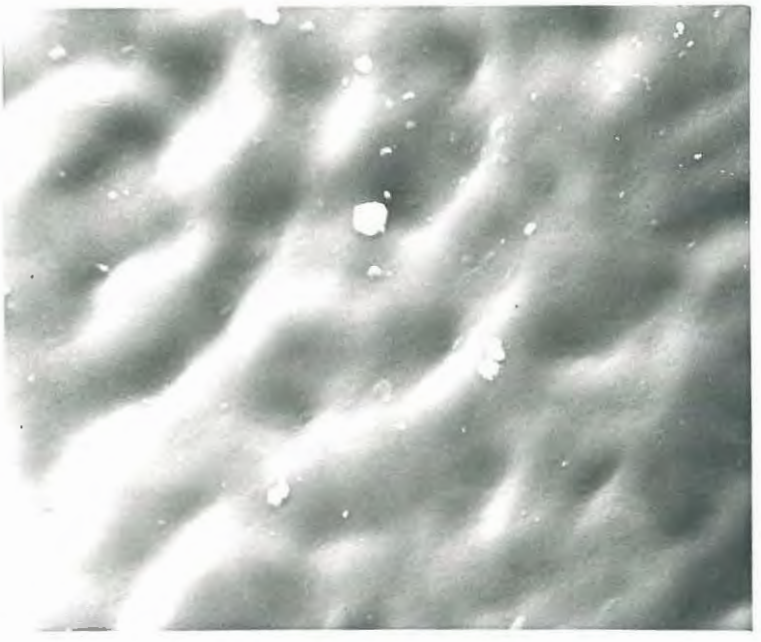


FIG. 189
Seed of Polyxena corymbosa. x1000.

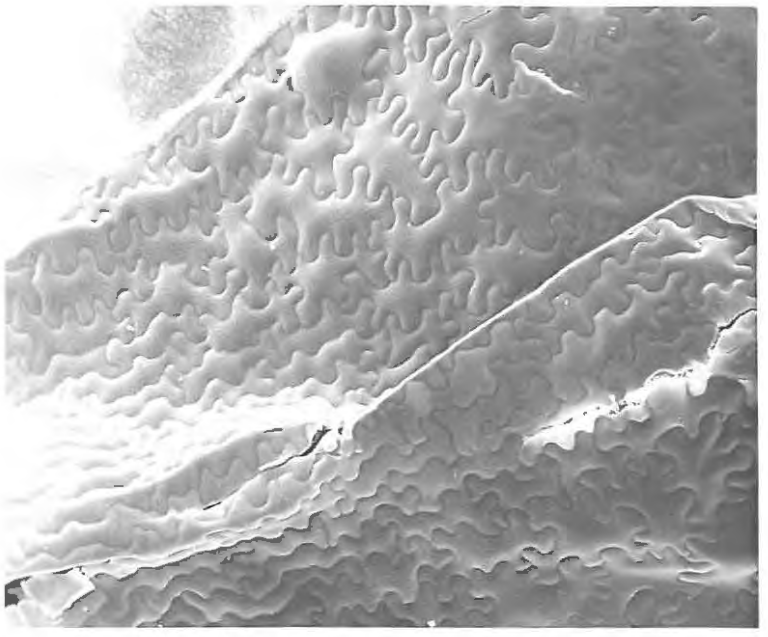


FIG. 190
Seed of Neopatersonia uitenhagensis. x100.

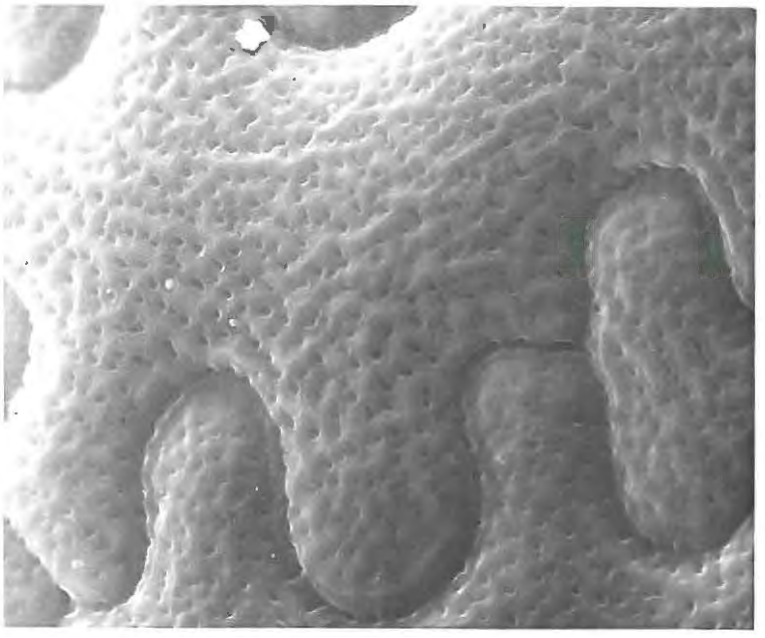
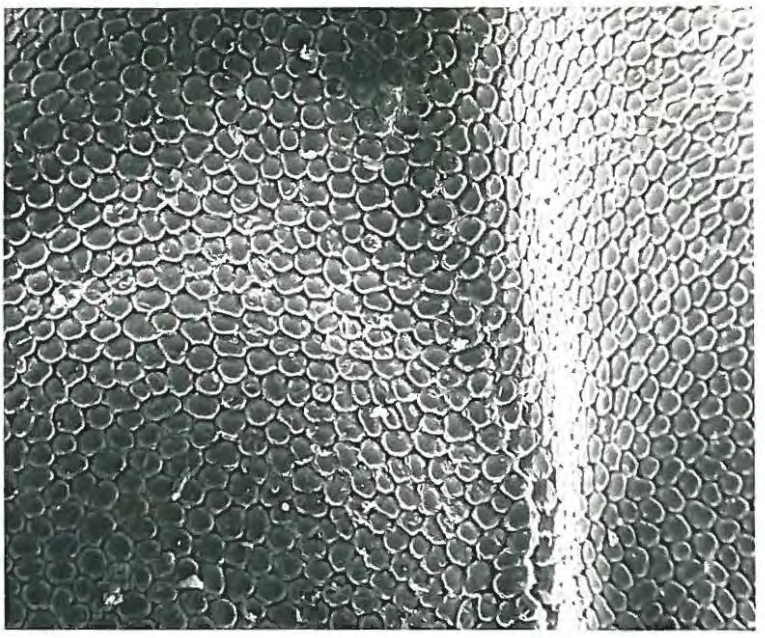
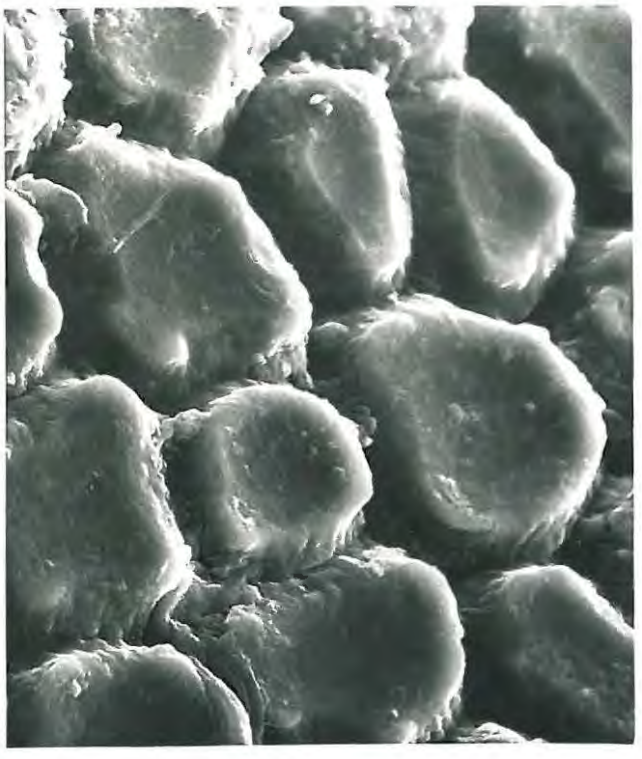


FIG. 191
Seed of Neopatersonia uitenhagensis. x1000.





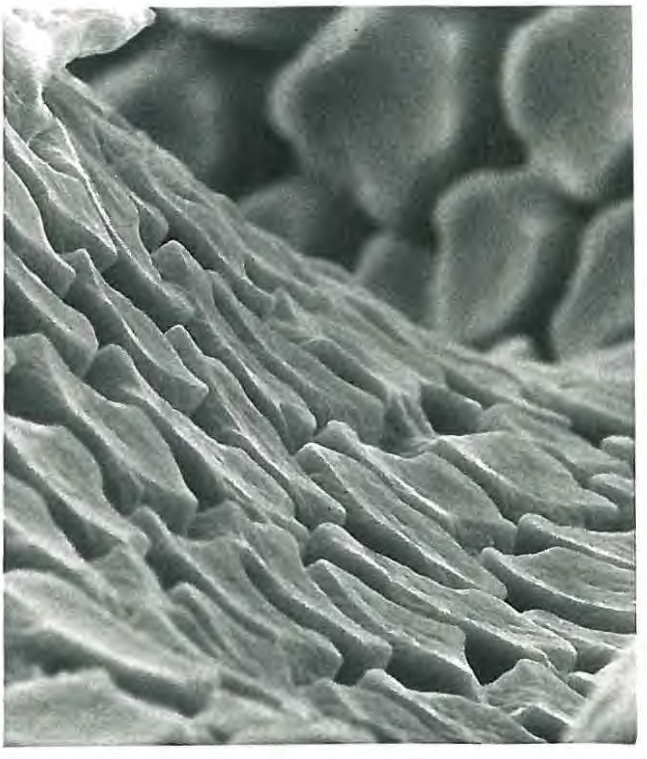


FIG. 192
Seed of Asparagus virgatus. x100.

FIGS 193 & 194
Seed of Asparagus virgatus. x1000.

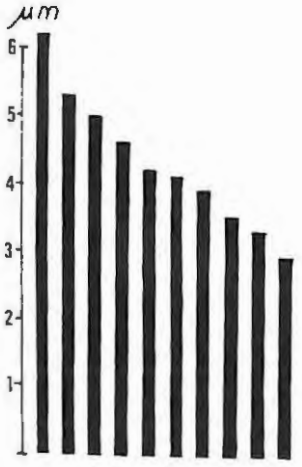
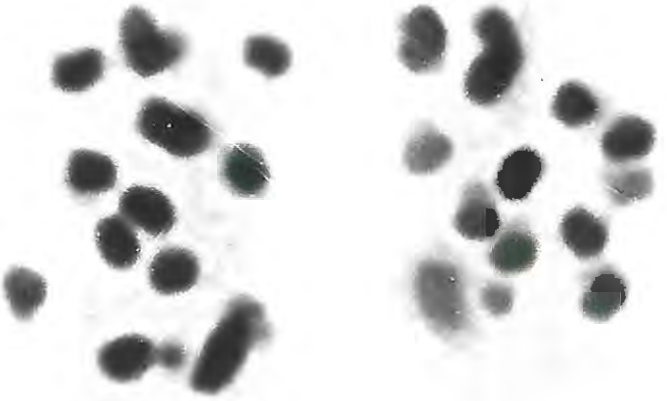
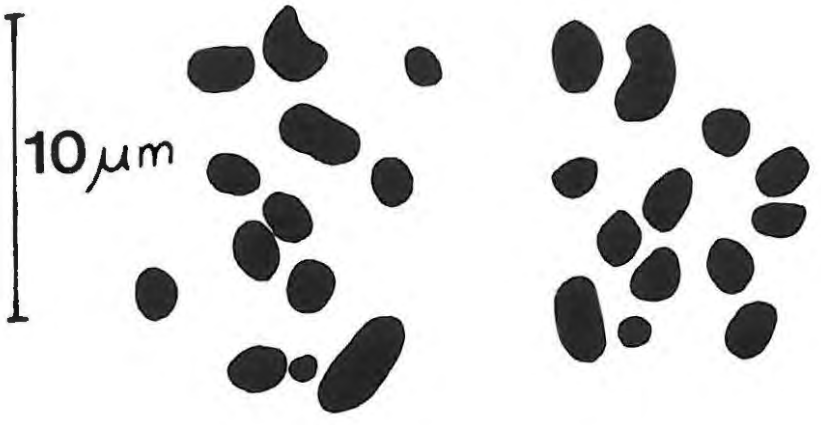
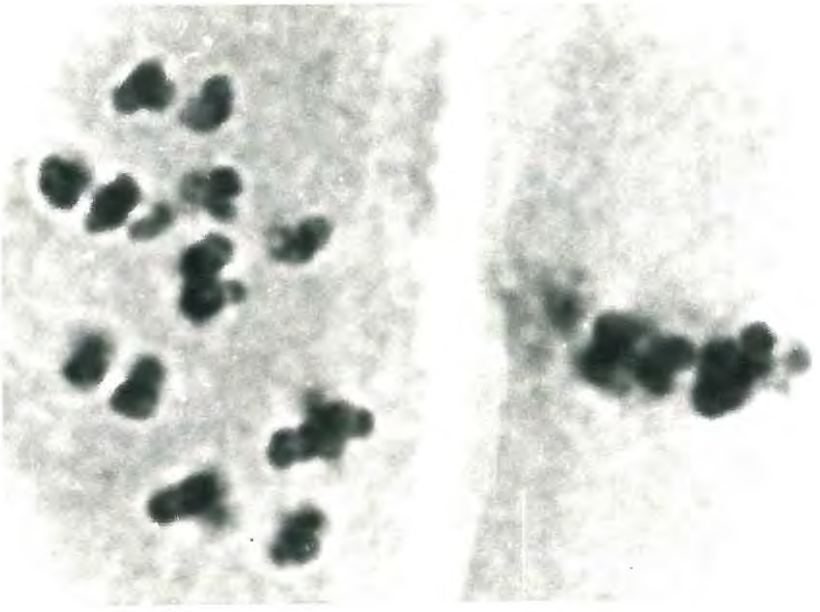


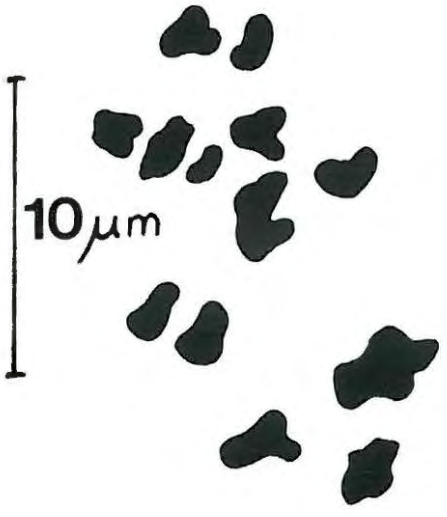
FIG. 196
Idiogram of meiotic chromosomes of Scilla cooperi (Jessop 1061).





FIGS 197 (above) & 198
Meiotic chromosomes of Scilla cooperi (Strey 9291).





FIGS 199 (above) & 199a
Meiotic chromosomes of Scilla cooperi (Strey 9291).

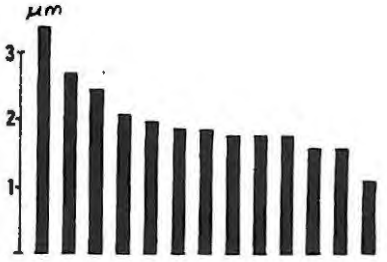
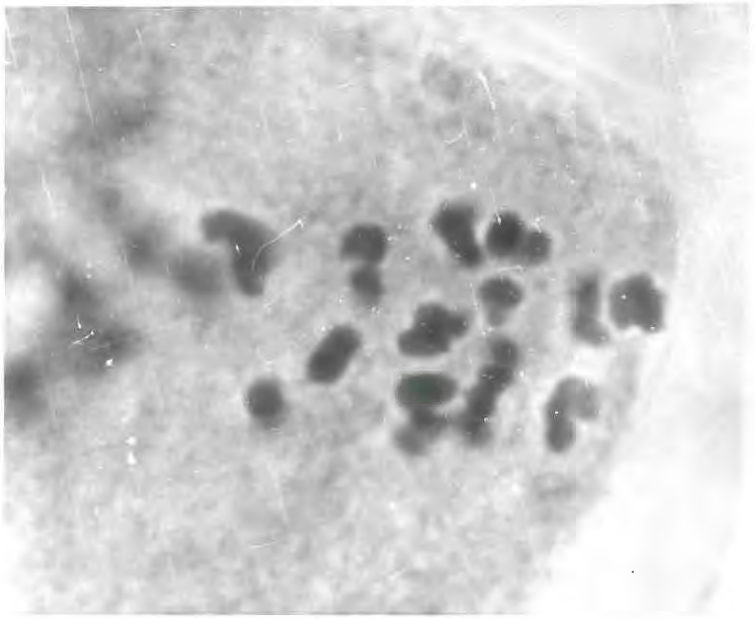
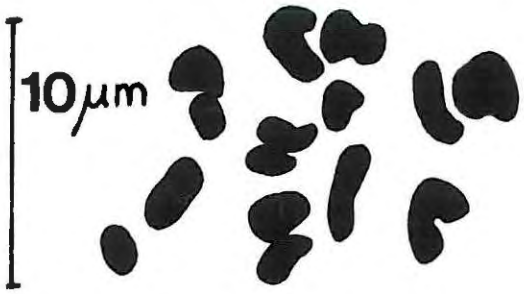


FIG. 200
Idiogram of meiotic chromosomes of Scilla cooperi (Strey 9291).





FIGS 201 (above) & 202
Meiotic chromosomes of Scilla cooperi (Strey 9203).

FIG. 203
Idiogram of meiotic chromosomes of Scilla cooperi (Strey 9203).

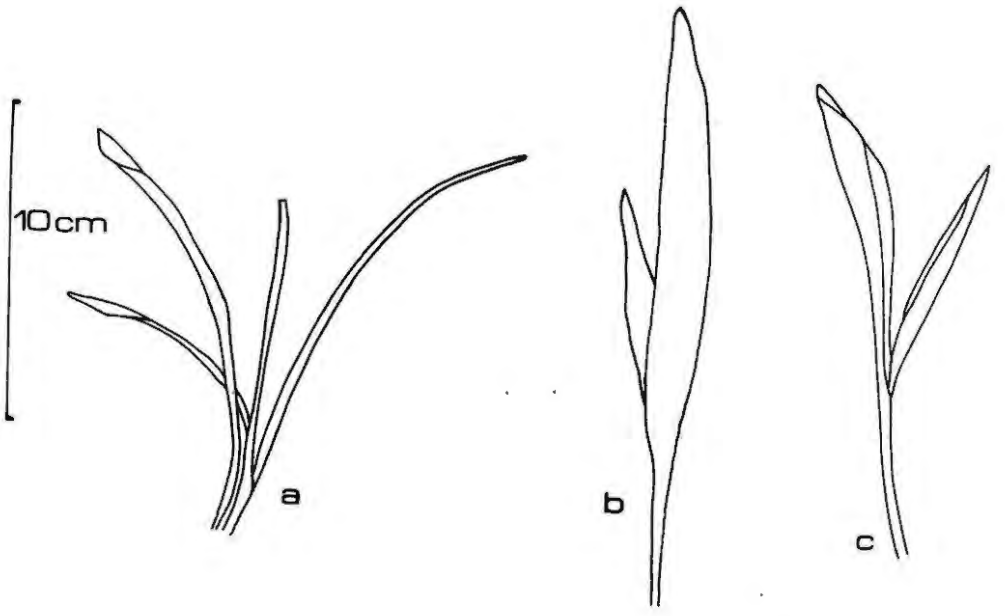


FIG. 204
Leaves of Scilla cooperi - (a) Jessop 1061; (b) Strey 9291; (c) Strey 9203.

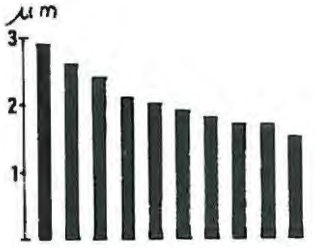


FIG. 205
Idiogram of meiotic chromosomes of Scilla floribunda (Bayliss BS/3920).

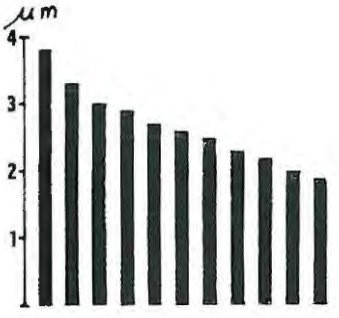


FIG. 206
Idiogram of meiotic chromosomes of Scilla floribunda (Jessop 1062).

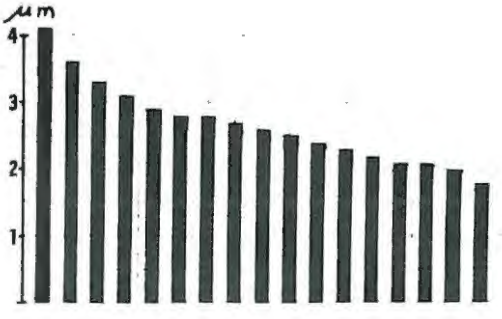
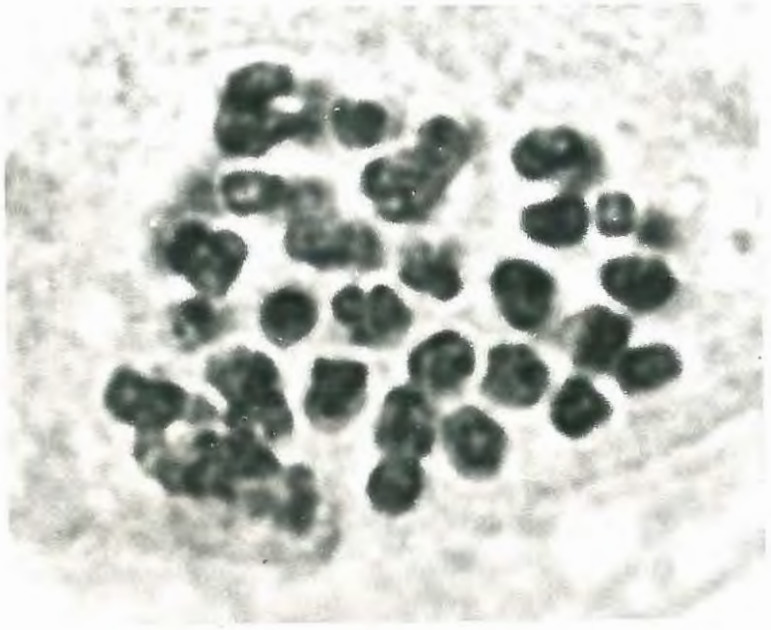
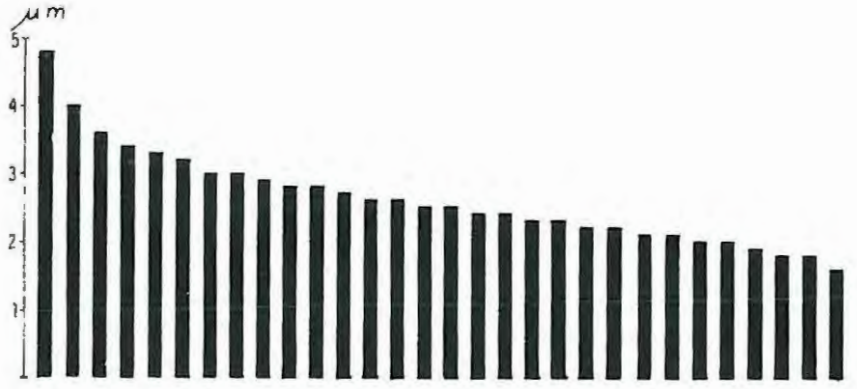


FIG. 207
Idiogram of meiotic chromosomes of Scilla floribunda (Jessop 1063).



FIGS 208 (above) & 209
Meiotic chromosomes of Scilla floribunda (Strey 9234).



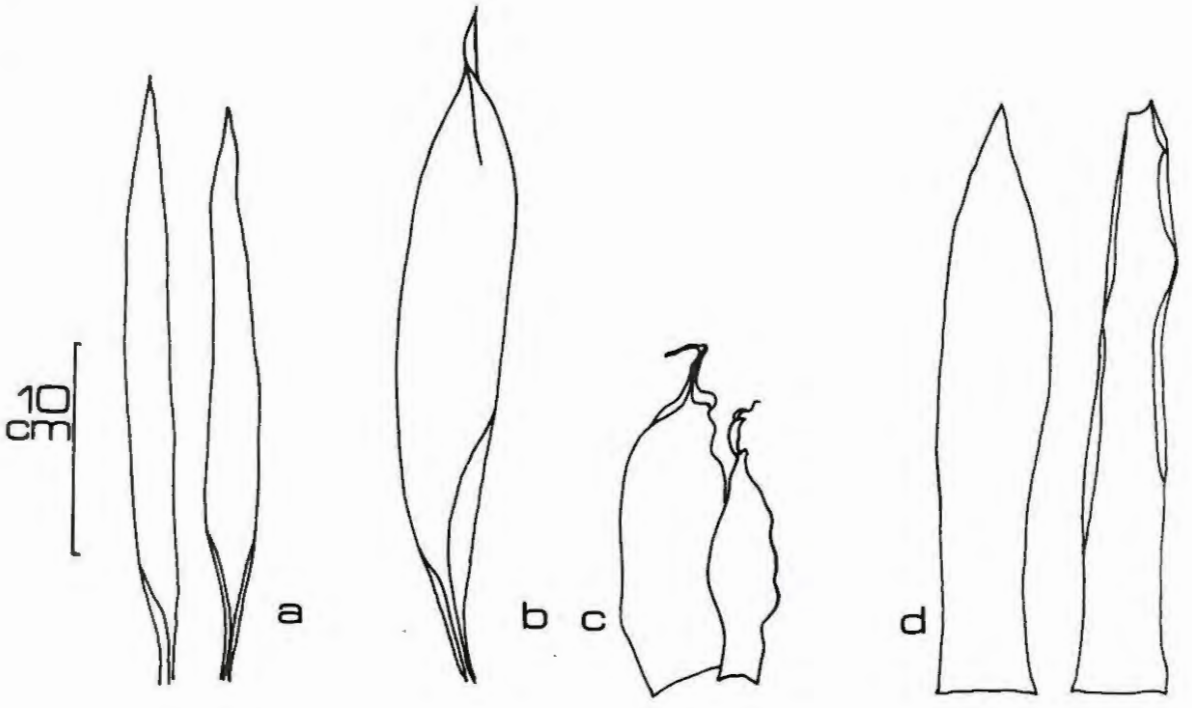
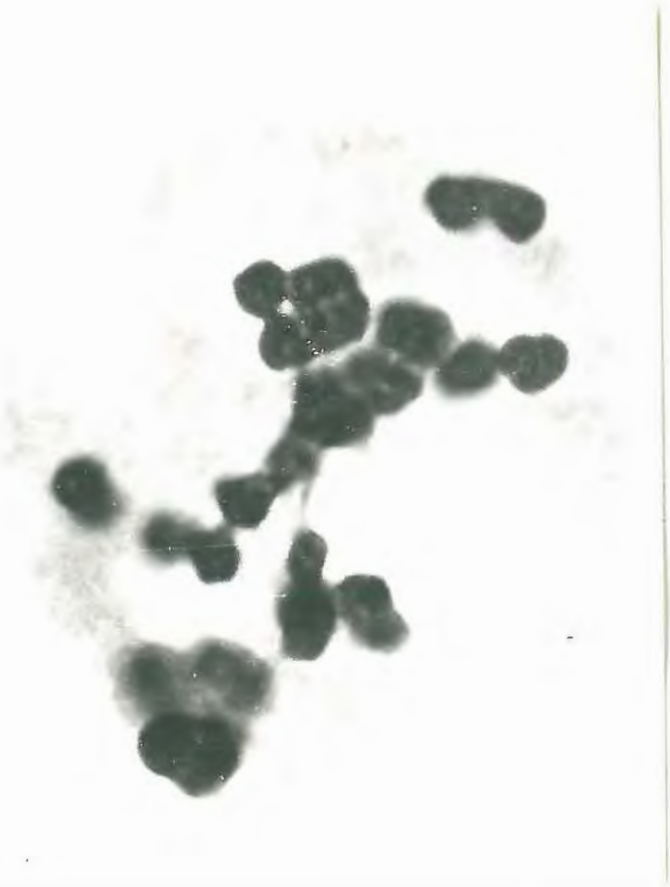
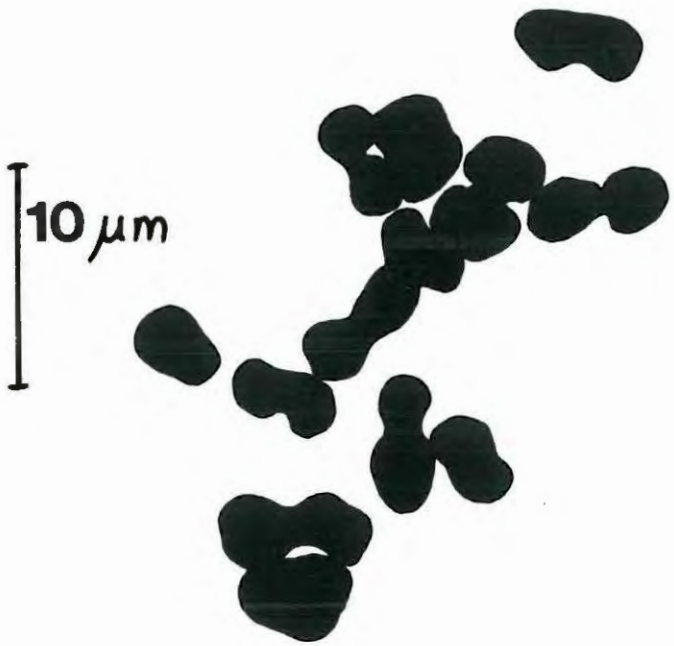


FIG. 210
Idiogram of meiotic chromosomes of Scilla floribunda (Strey 9234).

FIG.211
Leaves of Scilla floribunda - (a) Bayliss BS/3920; (b) Jessop 1062; (c) Jessop 1063 (d) Strey 9234.





FIGS 212 (above) & 213
Meiotic chromosomes of Scilla socialis (Tim s.n.).

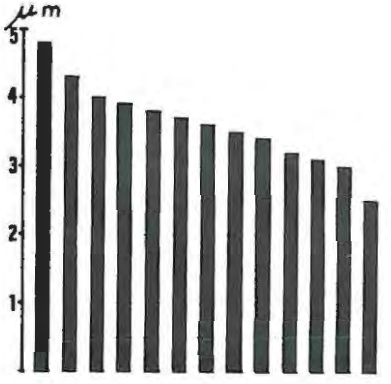
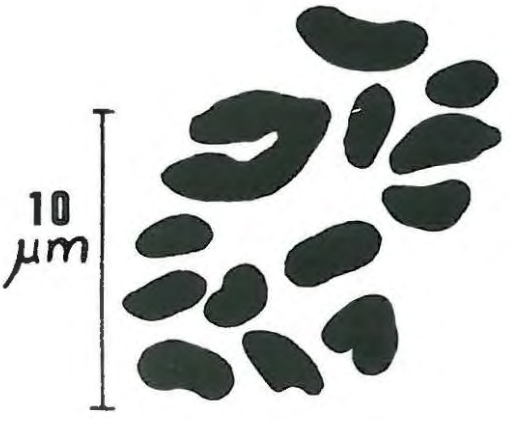


FIG. 214
Idiogram of meiotic chromosomes of Scilla socialis (Tim s.n.).



FIGS 215 (above) & 216
Meiotic chromosomes of Scilla socialis (Bayliss BS/3806).

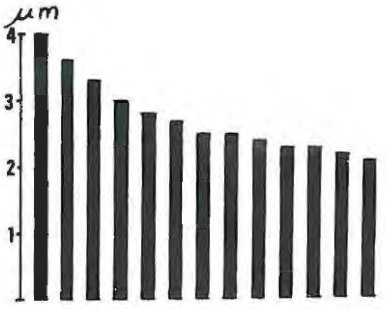
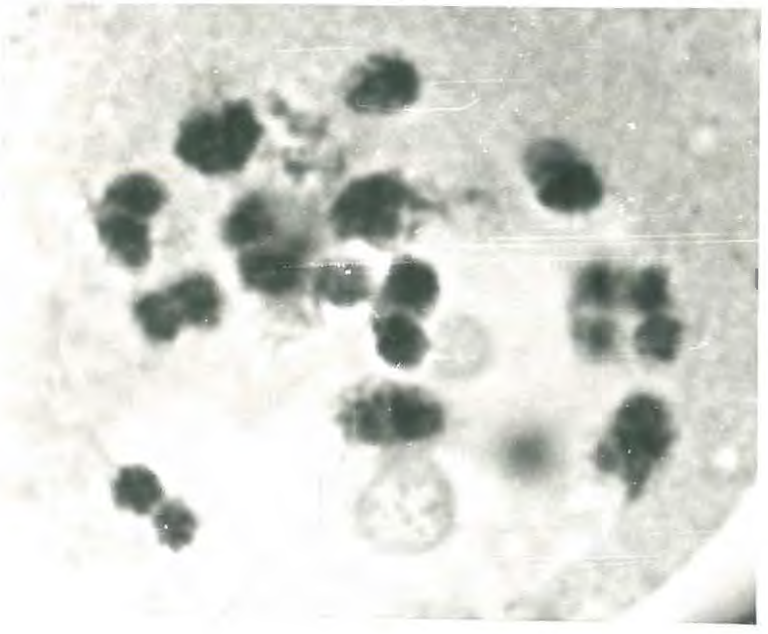
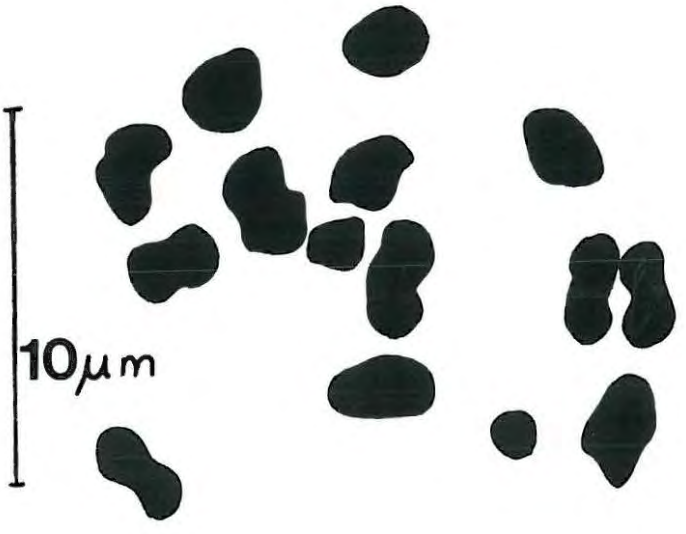


FIG. 217
Idiogram of meiotic chromsomes of Scilla socialis (Bayliss BS/3806).





FIGS 218 (above) & 219
Meiotic chromosomes of Scilla socialis (Bayliss BS/3327).

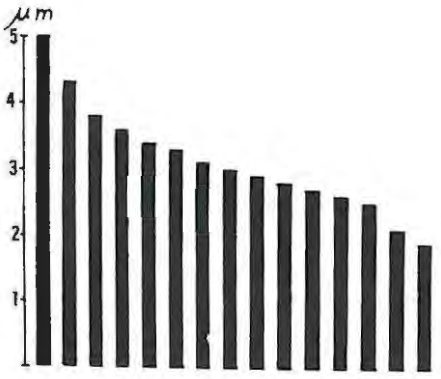


FIG. 220
Idiogram of meiotic chromosomes of Scilla socialis (Bayliss BS/3327).

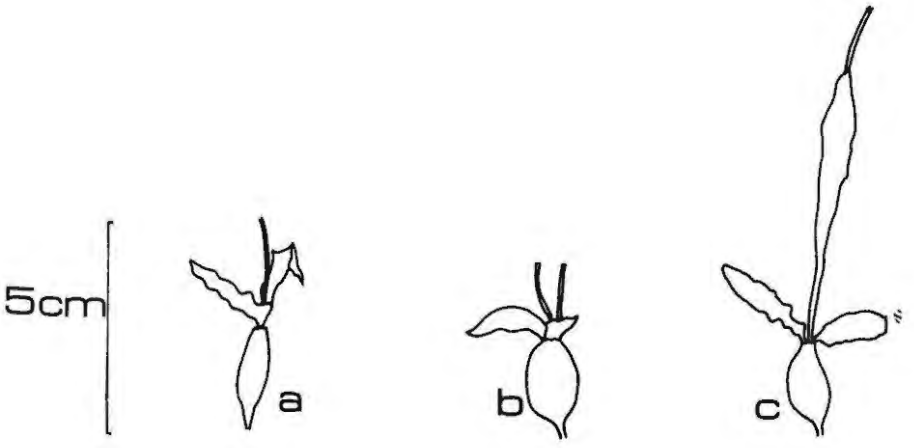


FIG. 221
Plants of Scilla socialis - (a) Tim s.n.; (b) Bayliss BS/3806; (c) Bayliss BS/3327.

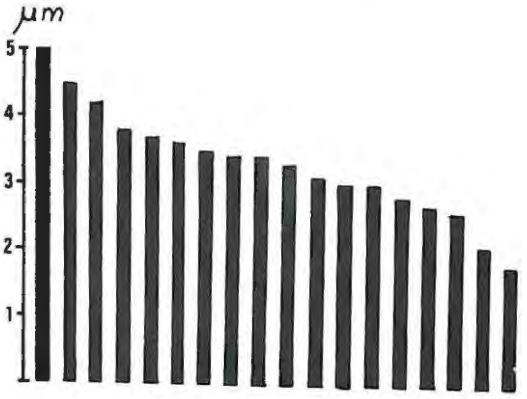


FIG. 222
Idiogram of meiotic chromosomes of Scilla concolor.

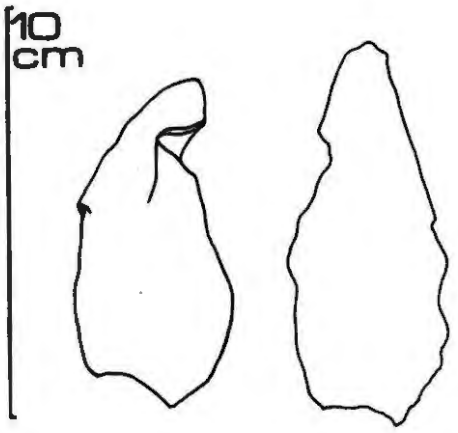


FIG. 223
Leaves of Scilla concolor.

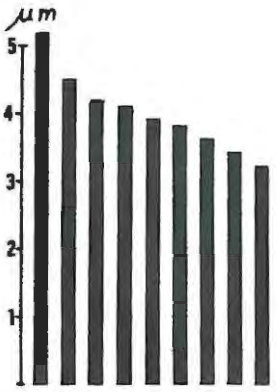


FIG. 224
Idiogram of meiotic chromosomes of Scilla revoluta (Jessop 1064).

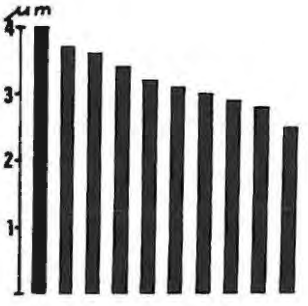


FIG. 225
Idiogram of meiotic chromosomes of Scilla revoluta (Jessop 1064).

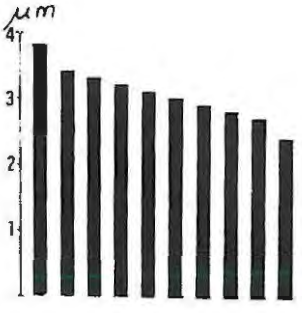


FIG. 226
Idiogram of meiotic chromosomes of Scilla revoluta (Jessop 1064).

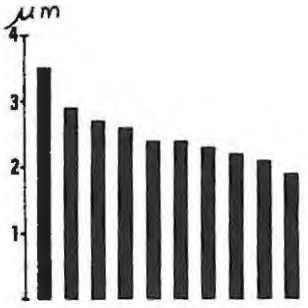


FIG. 227
Idiogram of meiotic chromosomes of Scilla revoluta (Bayliss BS/3296).

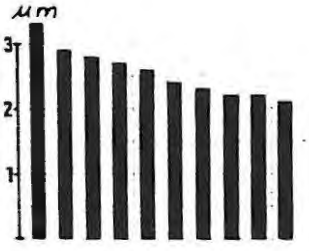


FIG. 228
Idiogram of meiotic chromosomes of Scilla revolta (Strey 9292).

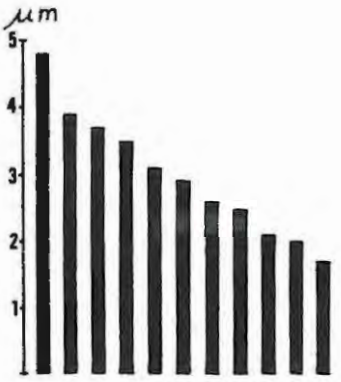


FIG. 229
Idiogram of meiotic chromosomes of Scilla revoluta (Jessop 1065).

FIG. 230
Idiogram of meiotic chromosomes of Scilla revoluta (Jessop 1065).

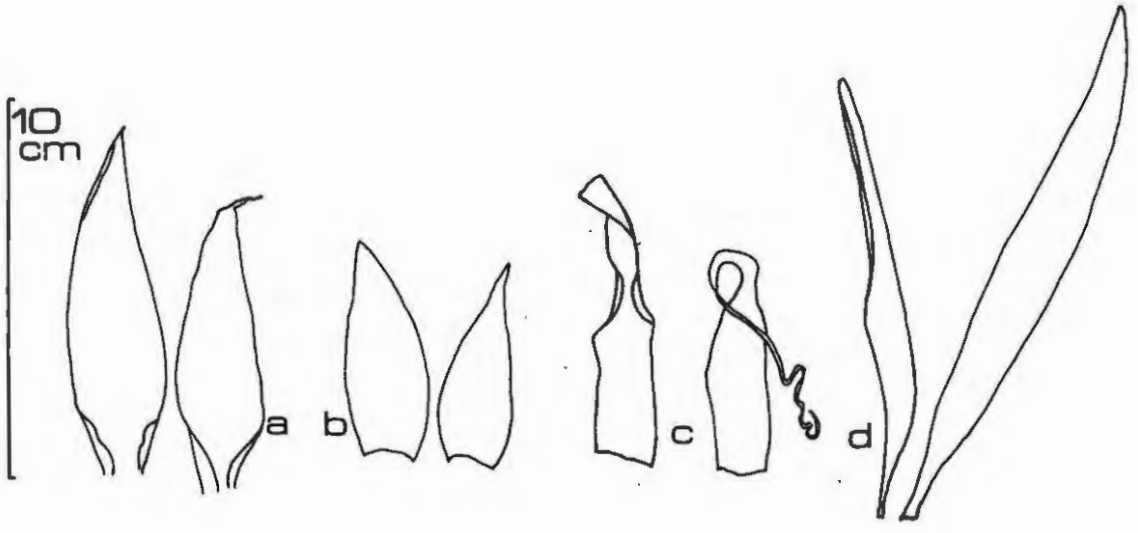


FIG. 231
Leaves of Scilla revoluta - (a) Jessop 1064; (b) Bayliss BS/3296; (c) Strey 9292; (d) Jessop 1065).

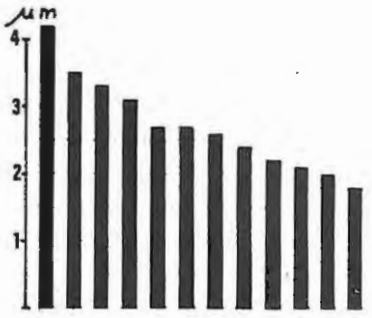


FIG. 232
Idiogram of meiotic chromosomes of Scilla revoluta (Jessop 1066).

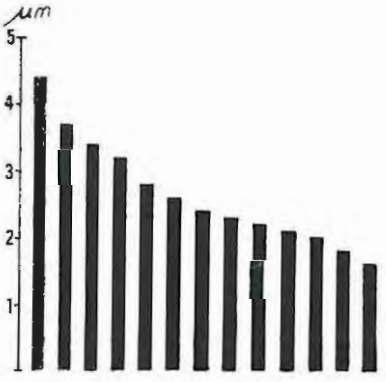


FIG. 233
Idiogram of meiotic chromosomes of Scilla revoluta (Jacot Guillarmod s.n.).

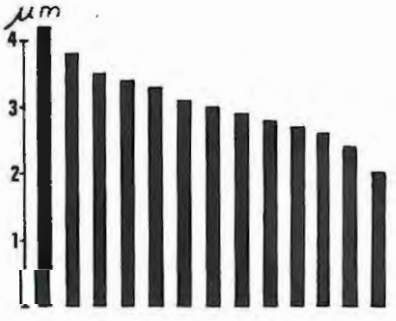


FIG. 234
Idiogram of meiotic chromosomes of Scilla revoluta (Jessop 1067).

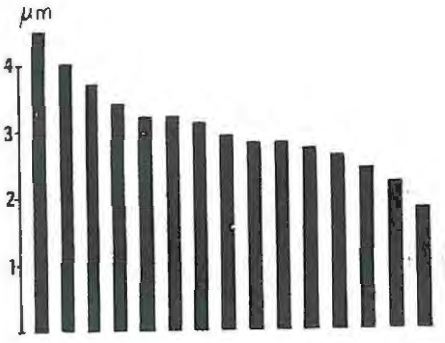


FIG. 235
Idiogram of meiotic chromosomes of Scilla revoluta (Easton s.n.).

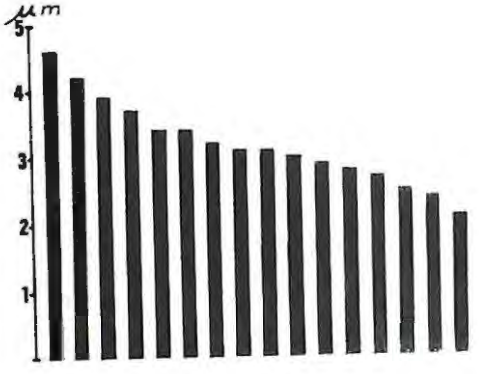


FIG. 236
Idiogram of meiotic chromosomes of Scilla revoluta (Bayliss BS/3887).

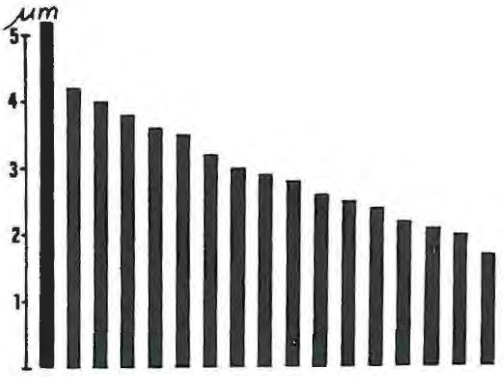


FIG. 237
Idiogram of meiotic chromosomes of Scilla revoluta (Bayliss BS/3744).

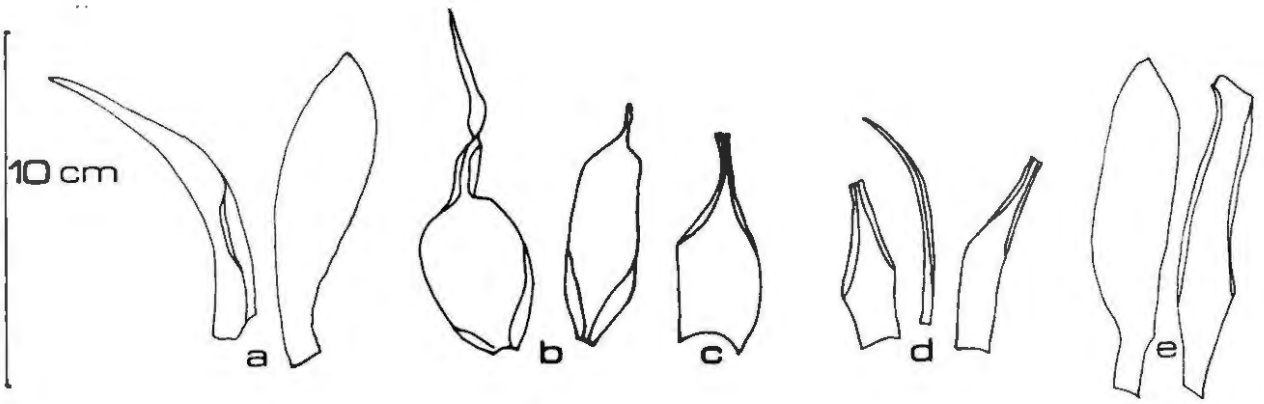


FIG. 238
Leaves of Scilla revoluta: (a) Jacot Guillarmod s.n.; (b) Jessop 1067; (c) Easton s.n.; (d) Bayliss BS/3887; (e) Bayliss BS/3744.

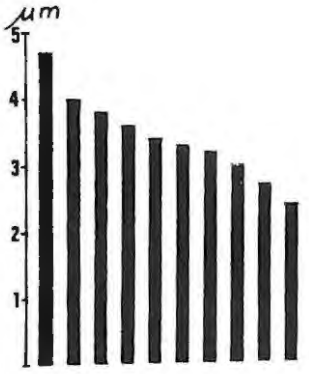


FIG. 239
Idiogram of meiotic chromosomes of Scilla undulata (Bayliss BS/3224).

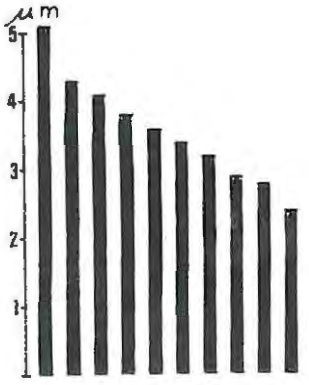
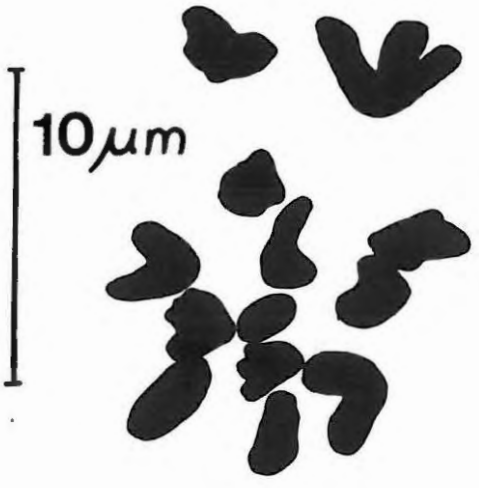


FIG. 240
Idiogram of meiotic chromosomes of Scilla undulata (Bayliss BS/3558).



FIGS 241 (above) & 242
Meiotic chromosomes of Scilla undulata (Jessop 1068).

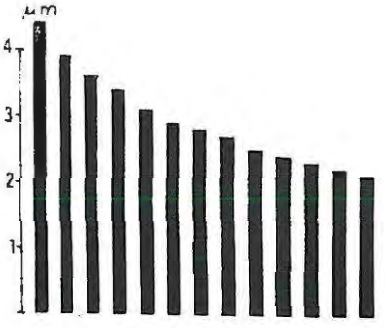
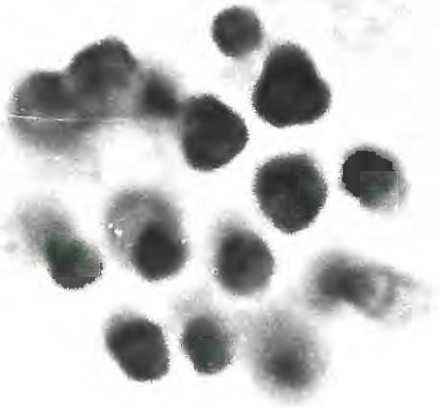
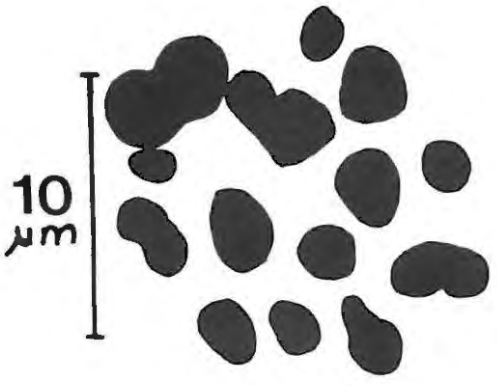
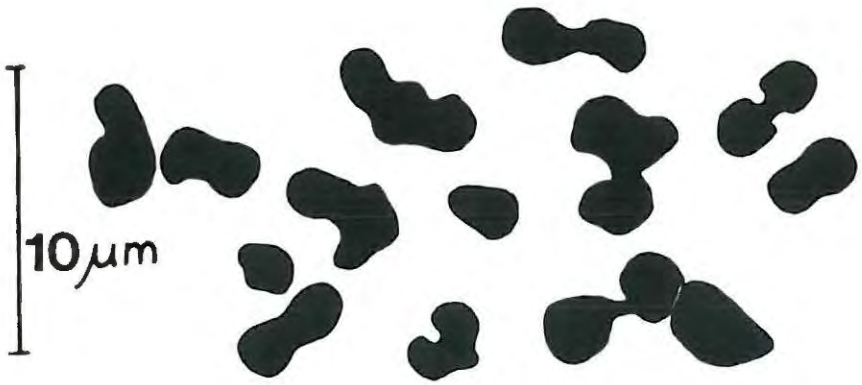


FIG. 243
Idiogram of meiotic chromosomes of Scilla undulata (Jessop 1068).





FIGS 244 (above) & 245
Meiotic chromosomes of Scilla undulata (Bayliss s.n.).



FIGS 246 (above) & 247
Meiotic chromosomes of Scilla undulata (Bayliss s.n.).

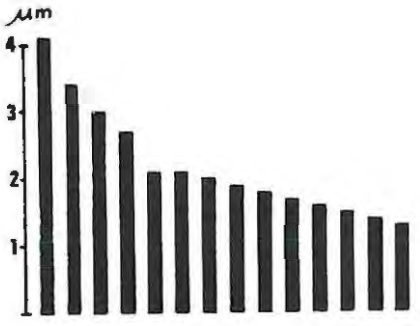
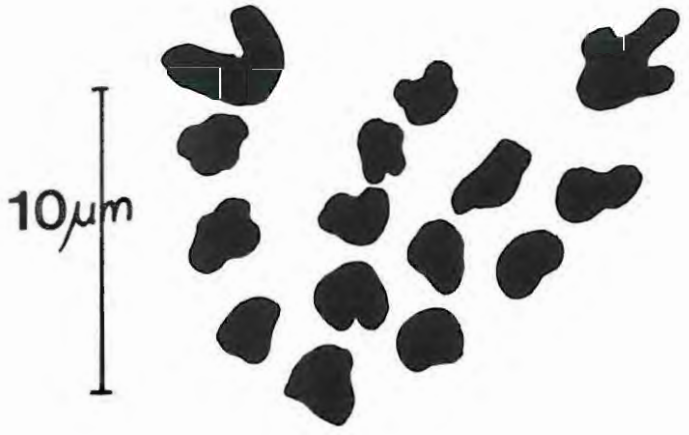


FIG. 248
Idiogram of meiotic chromosomas of Scilla undulata (Bayliss s.n.).



FIGS 249 (above) & 250
Meiotic chromosomes of Scilla undulata (Jessop 1053).

FIG. 251
Idiogram of meiotic chromosomes of Scilla undulata (Jessop 1053).

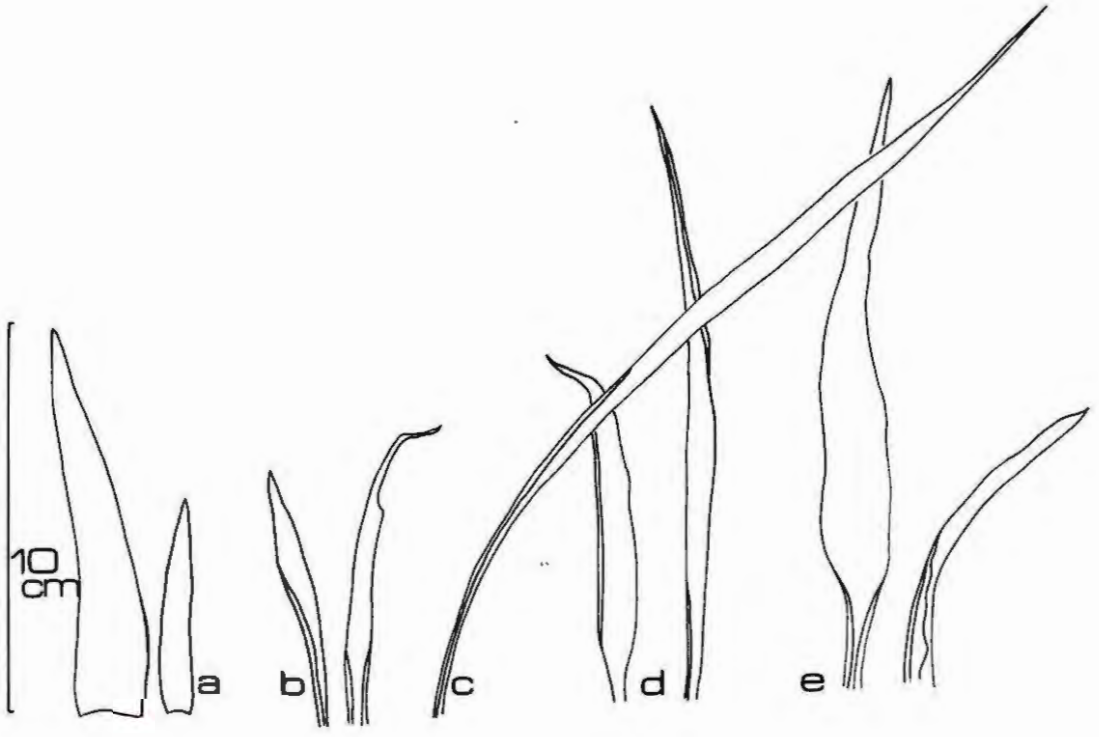
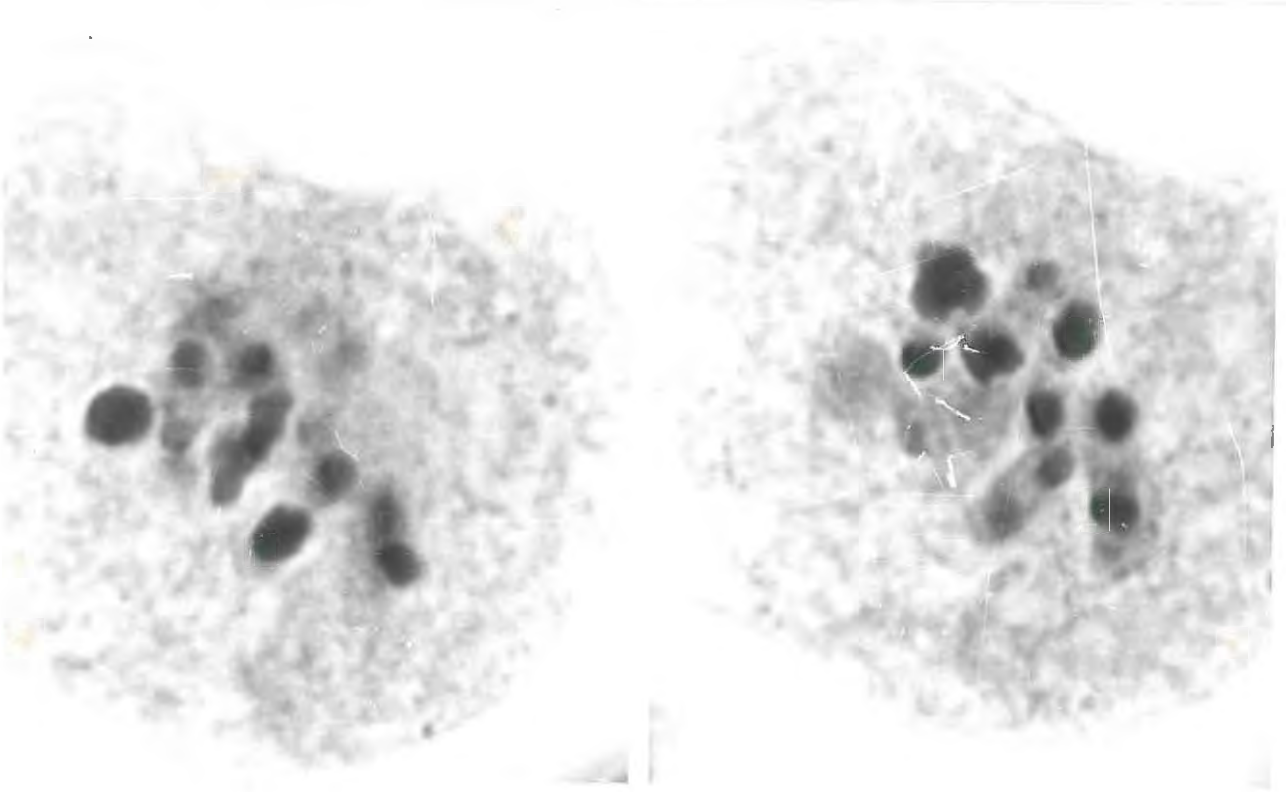


FIG. 252
Leaves of Scilla undulata - (a) Bayliss BS/3224; (b) Bayliss BS/3558; (c) Jessop 1068; (d) Bayliss s.n.; (e) Jessop 1053.



FIGS 253 (above left), 254 (above right) & 255
Meiotic chromosomes of Scilla marginata
(Bayliss BS/3931).

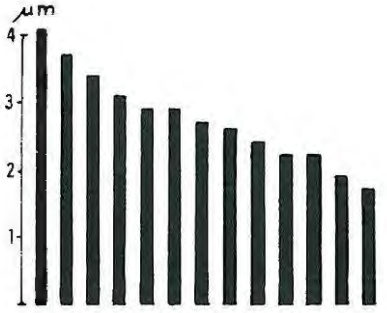


FIG. 256
Idiogram of meiotic chromosomes of Scilla marginata (Bayliss BS/3931).

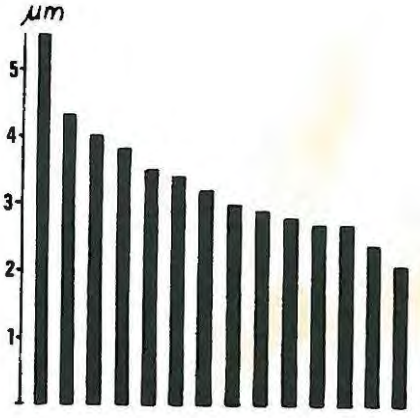


FIG. 257
Idiogram of meiotic chromosomes of Scilla marginata (Jessop s.n.).

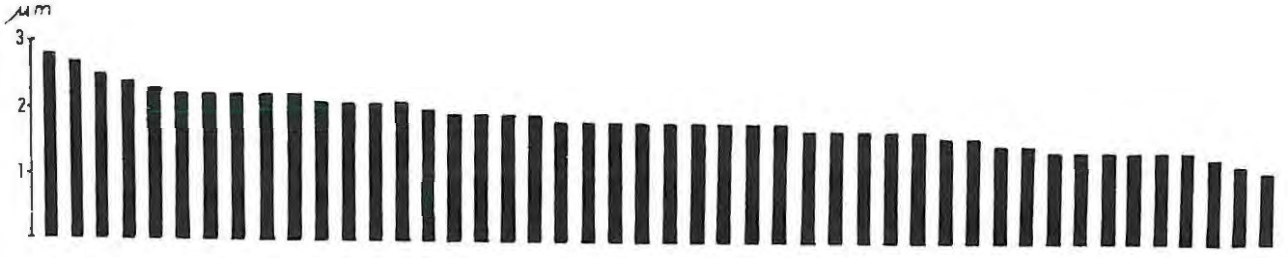
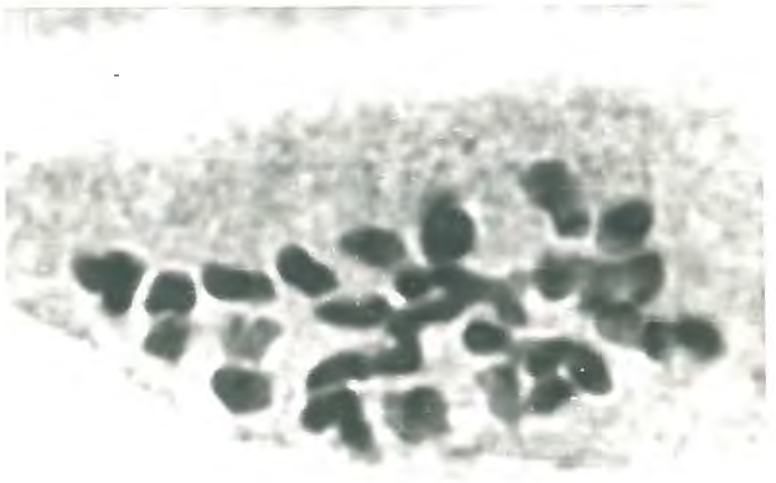


FIG. 258
Idiogram of meiotic chromosomes of Scilla sp. nov. (Jessop 1057).



FIGS 259 (above) & 260
Meiotic chromosomes of Scilla ovatifolia.

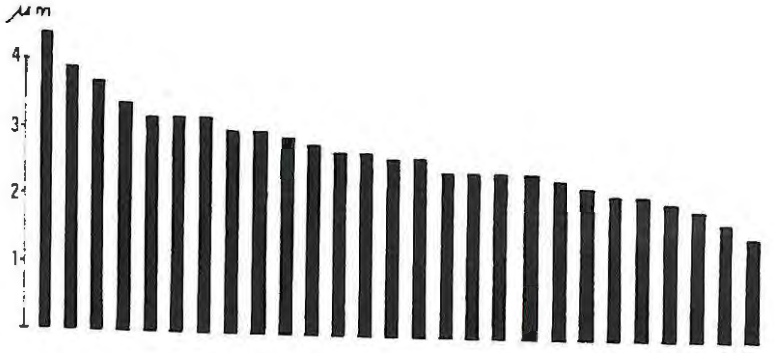


FIG. 261
Idiogram of meiotic chromosomes of Scilla ovatifolia.

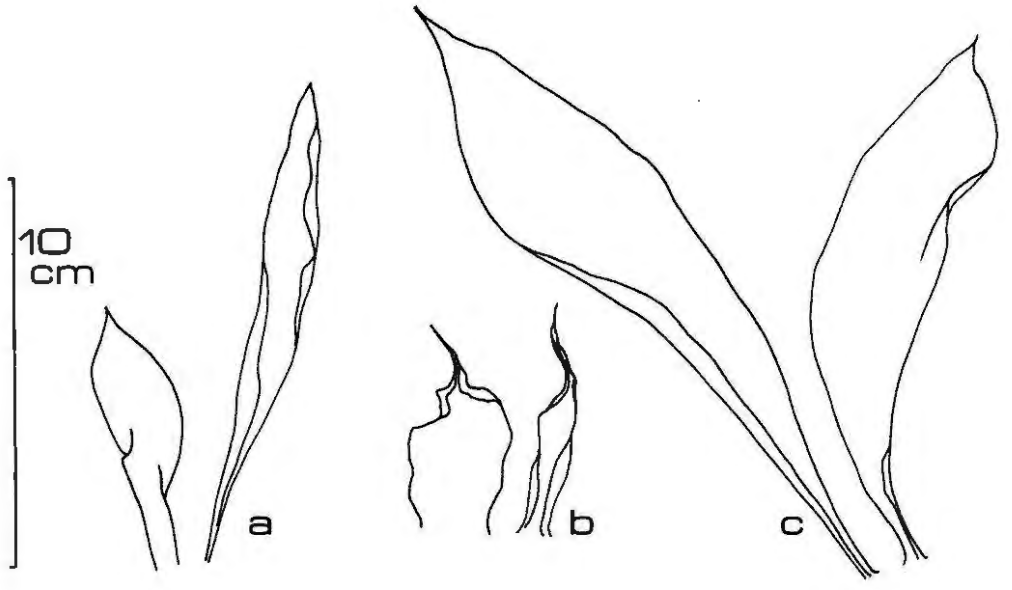


FIG. 262
Leaves of: (a) Scilla marginata (Bayliss BS/3931);
(b) Scilla sp. nov.(Ledebouria luteola);
(c) Scilla ovatifolia.

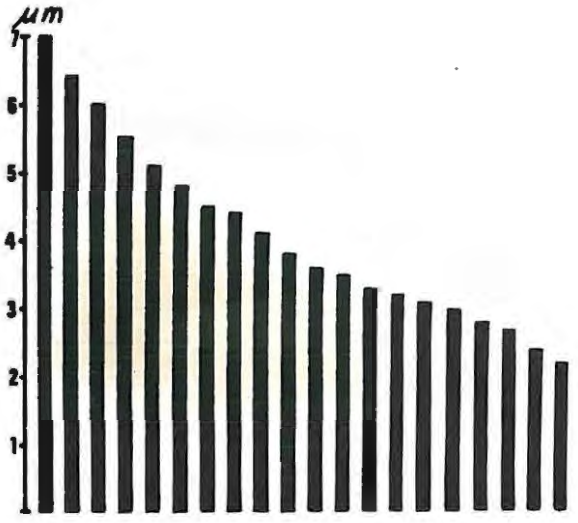
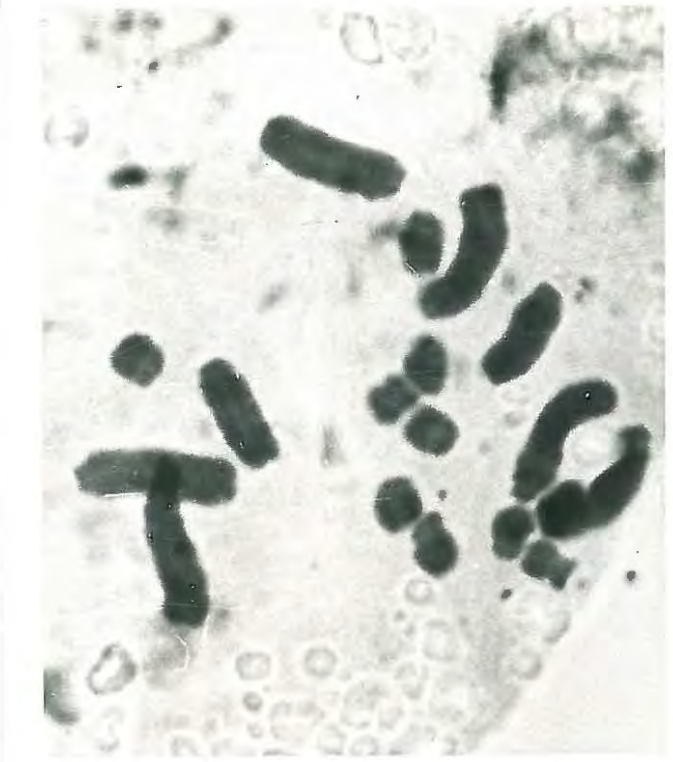
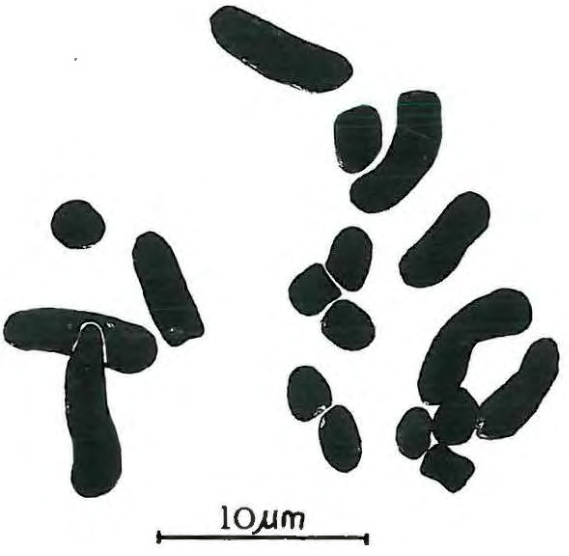


FIG. 263
Idiogram of mitotic chromosomes of Scilla sp. nov. (Ledebouria scabrida; Tölken s.n.).





FIGS 264 (above) & 265
Mitotic chromosomes of Scilla firmifolia.

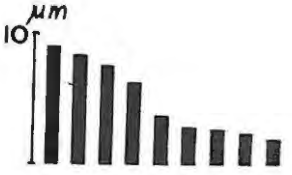
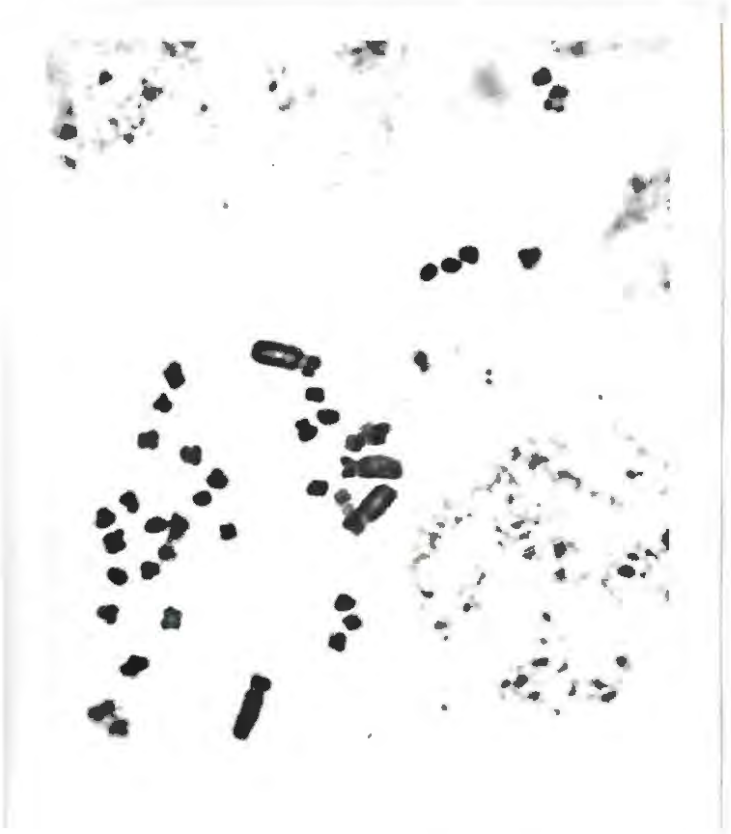
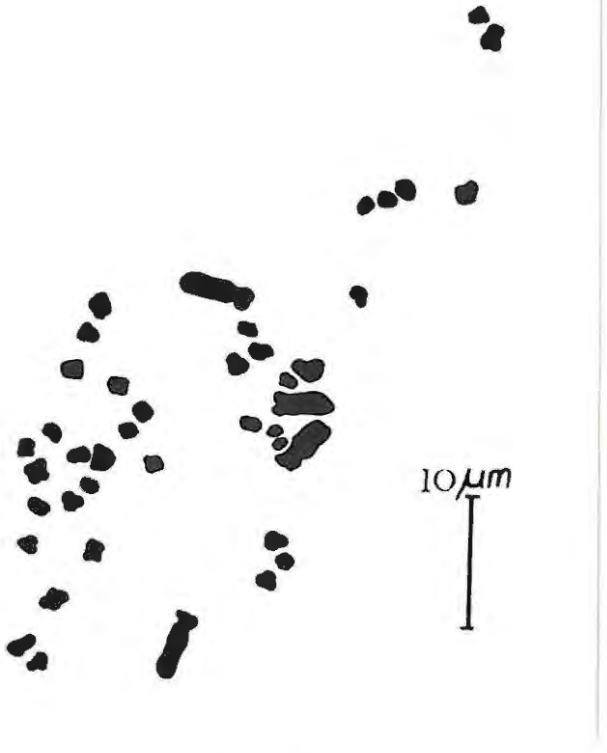


FIG. 266
Idiogram of mitotic chromosomes of Scilla firmifolia.





FIGS 267 (above) & 268
Mitotic chromosomes of Scilla nervosa.

FIG. 269
Idiogram of mitotic chromosomes of Scilla nervosa.

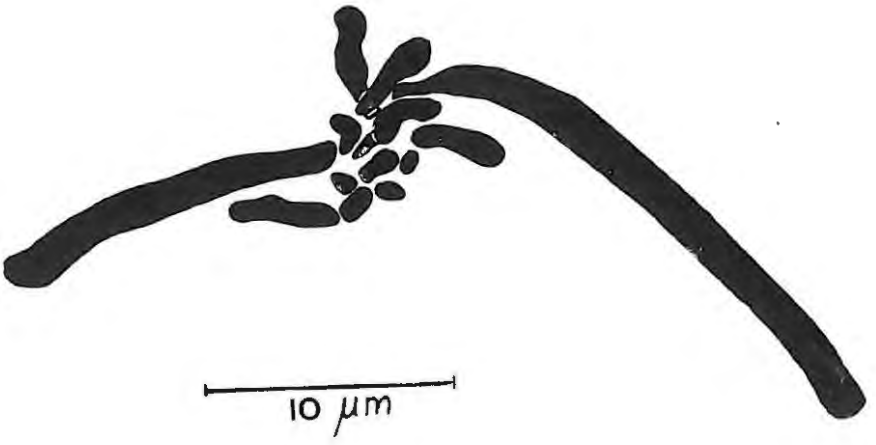


FIG. 270
Mitotic chromosomes of Scilla plumbea.

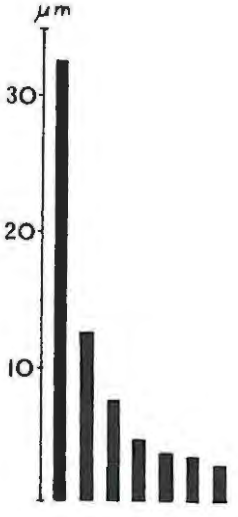
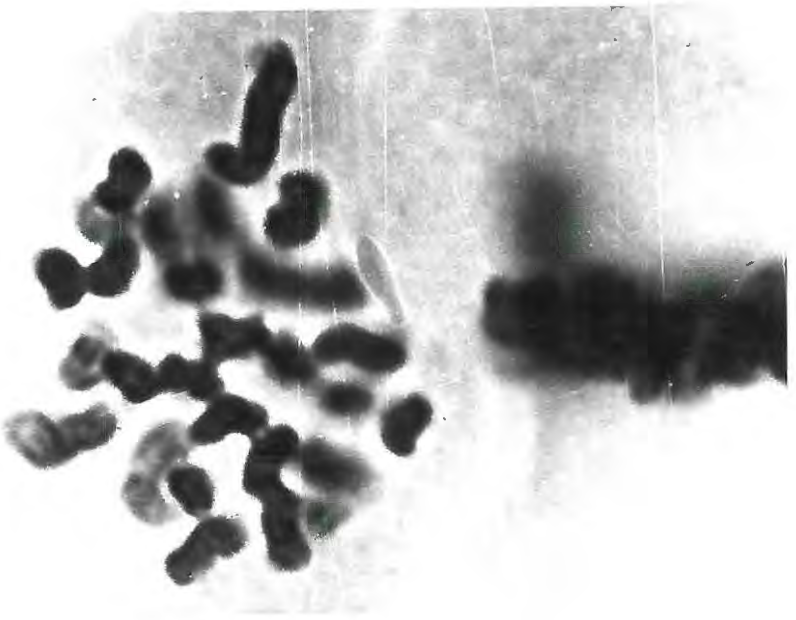
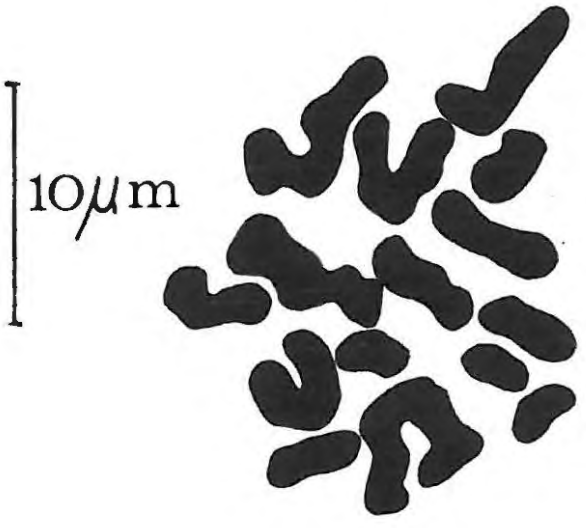
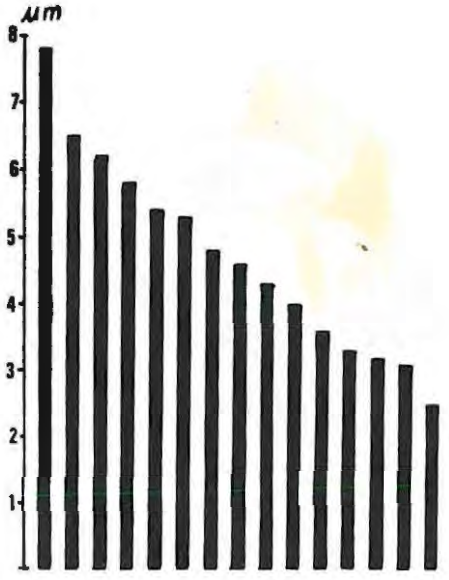


FIG. 271
Idiogram of mitotic chromosomes of Scilla plumbea.





FIGS 272 (above) & 273
Meiotic chromosomes of Drimiopsis maculata (Strey 9031).



74

m of meiotic chromosomes of Drimiopsis maculata
9031).

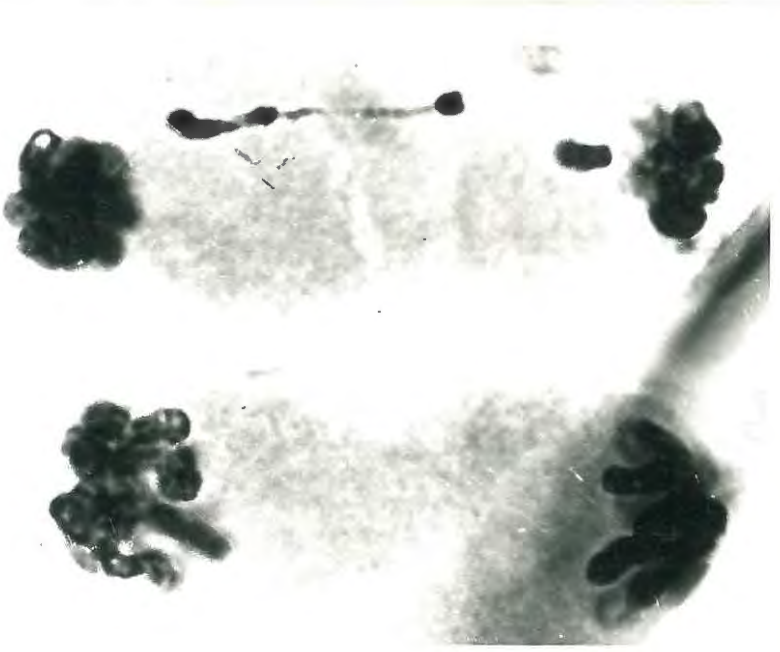


FIG. 275
Meiotic chromosomes of Drimiopsis maculata, showing laggards (Jacot Guillarmod s.n.).

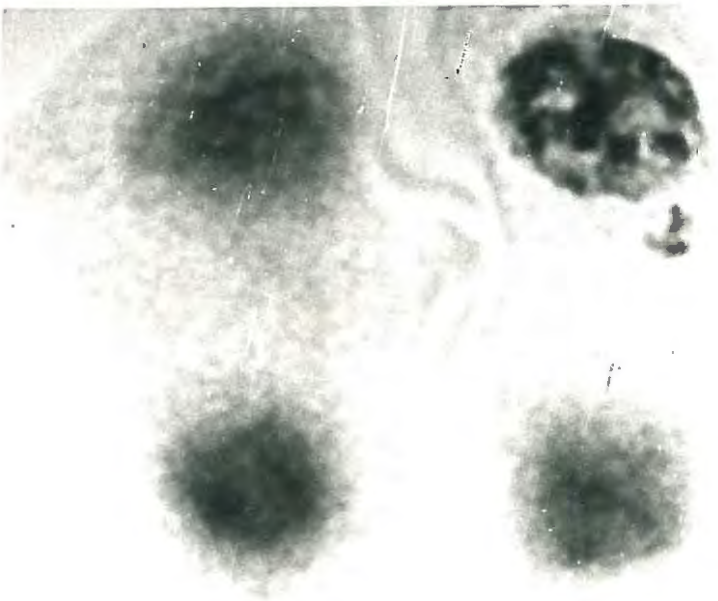


FIG. 276
Meiotic chromosomes of Drimiopsis maculata, showing a micronucleus (Jacot Guillarmod s.n.).

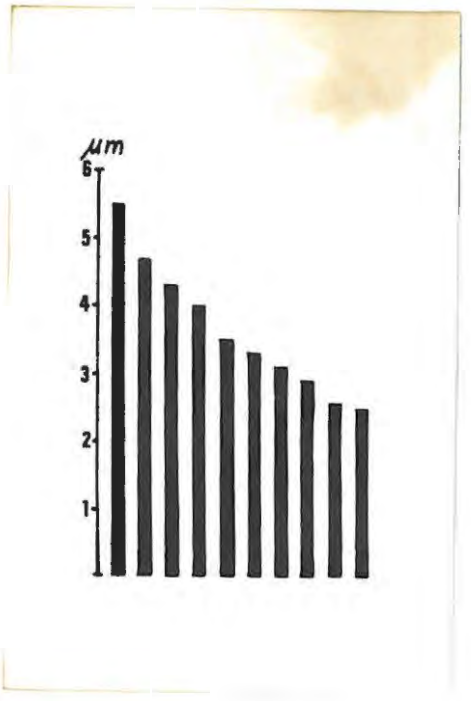


FIG. 277
Idiogram of meiotic chromosomes of Drimiopsis burkei.

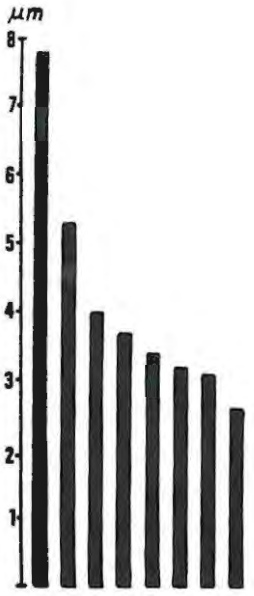


FIG. 278
Idiogram of meiotic chromosomes of Drimia anomala (Kaffir Drift).

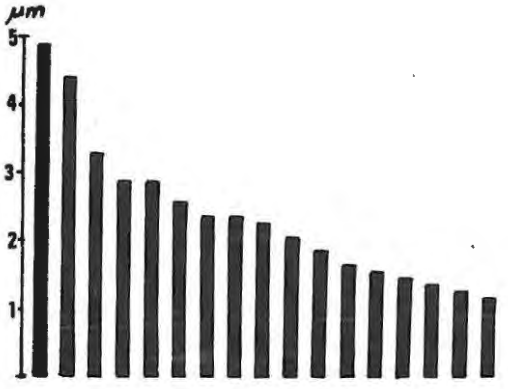


FIG. 279
Idiogram of meiotic chromosomes of Drimia anomala (Fort Brown).

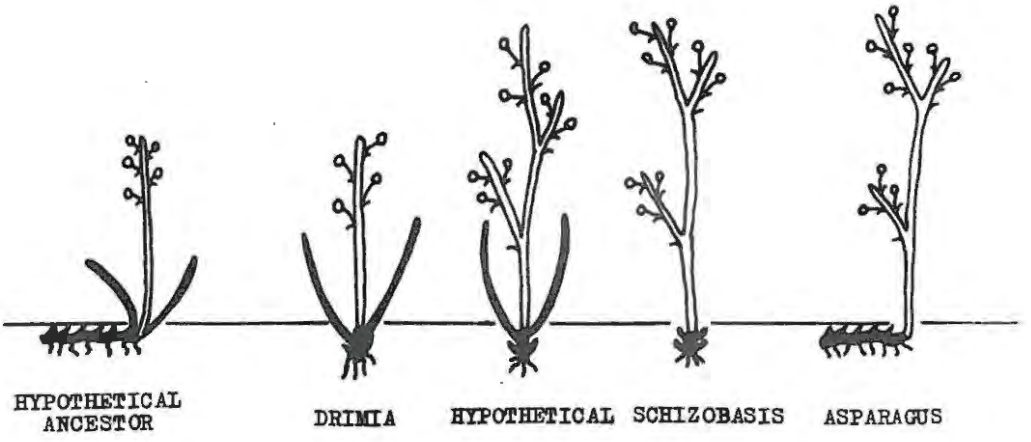


FIG. 280

Diagram indicating evolutionary sequence (from left to right), leading from a hypothetical ancestor through plants morphologically similar to Drimia and Schizobasis to Asparagus.

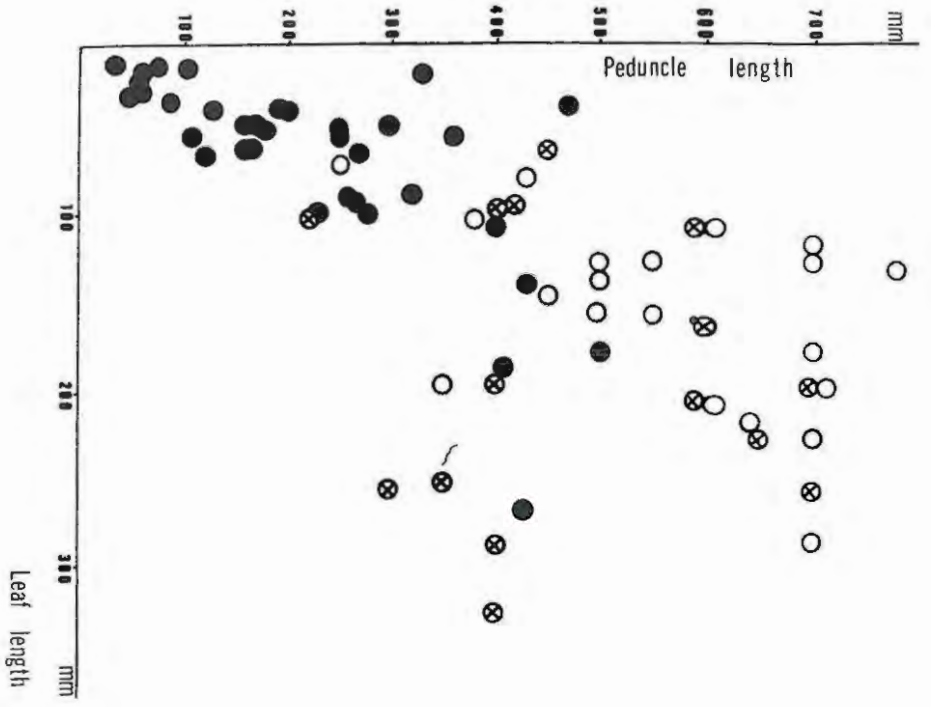


FIG. 281

Diagram to illustrate variation in peduncle and leaf length and leaf hairiness in Scilla natalensis.

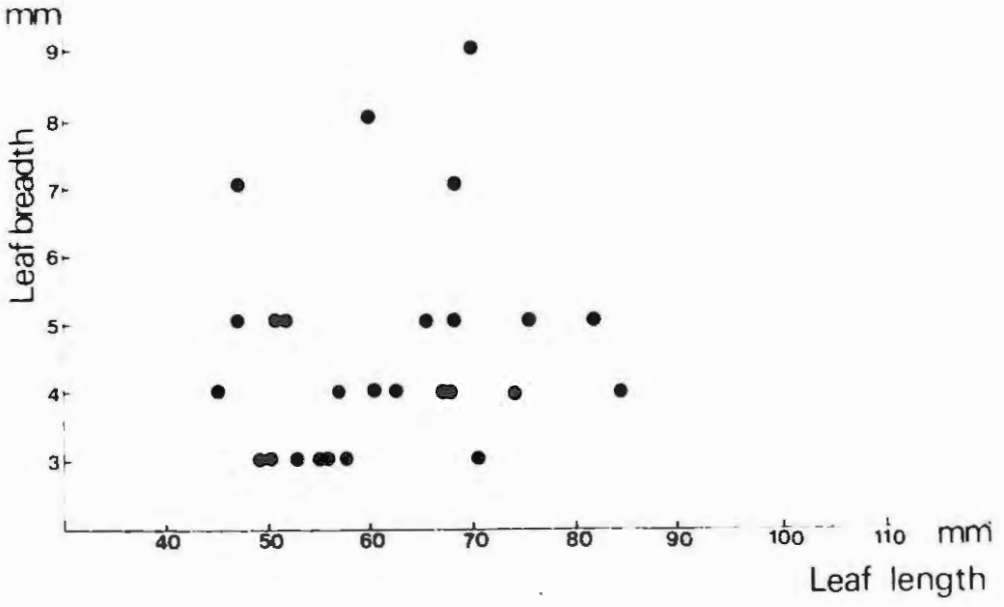


FIG. 282

Diagram to illustrate variation in a small population of Scilla nervosa. Population area: 15 miles S.E. of Kamsberg on road to Nottingham Road (2929; Underberg, Natal); 80 m^2.

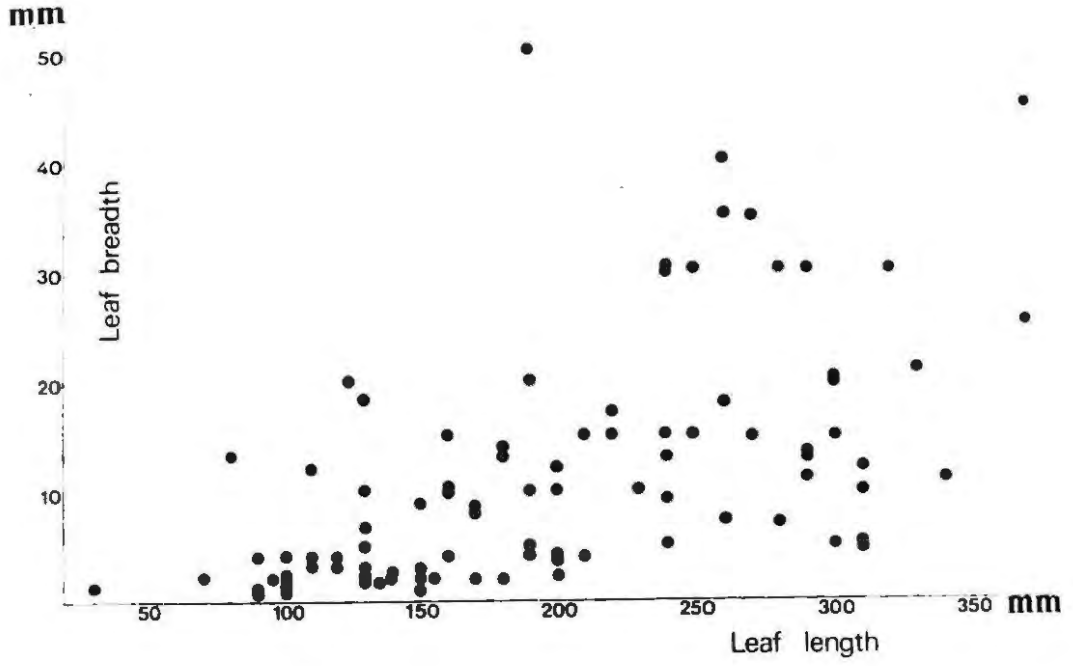


FIG. 283
Diagram to illustrate variation in leaf size in Scilla nervosa; based on herbarium specimens.

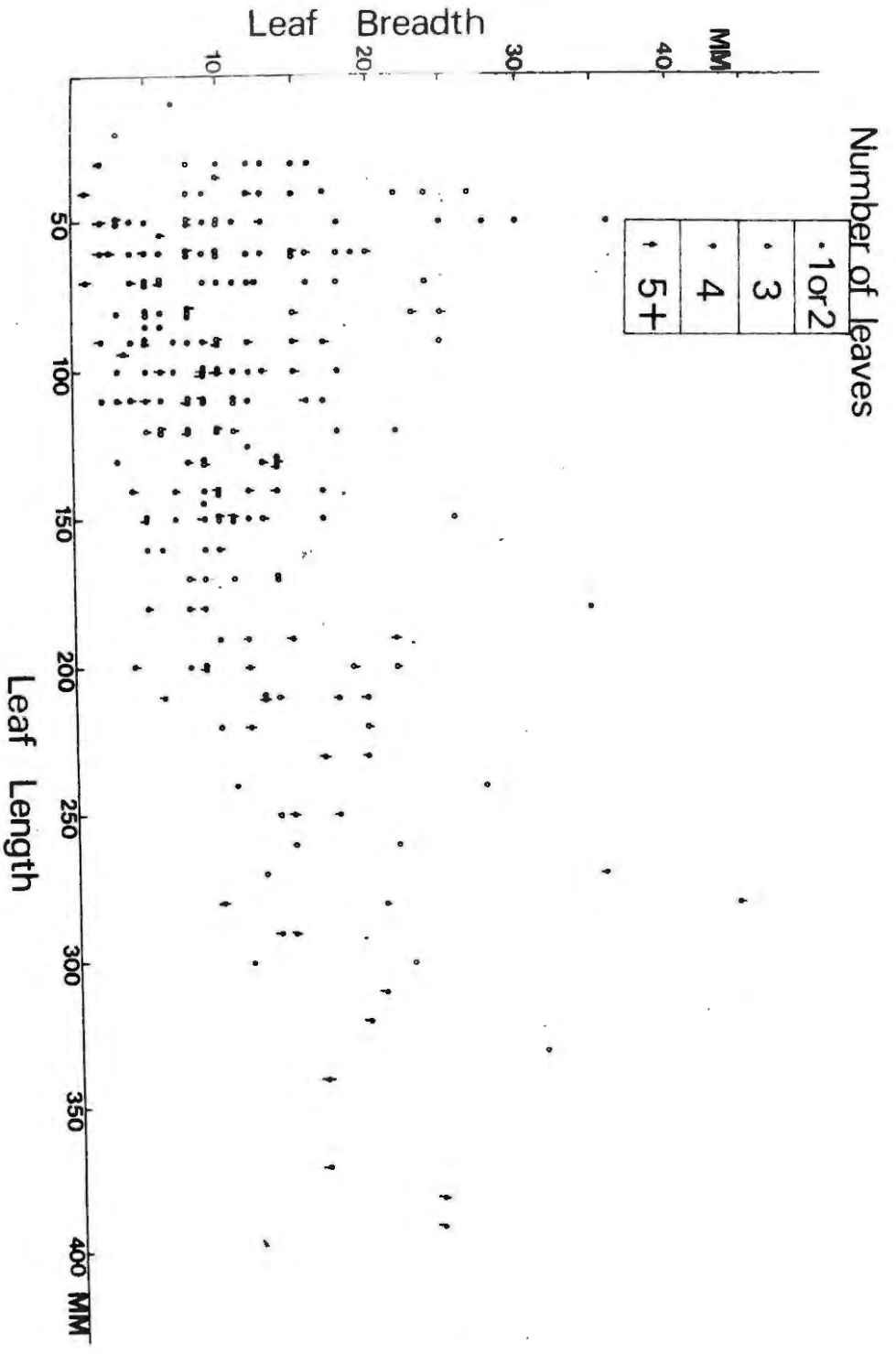


FIG. 284

Diagram to illustrate variation in leaf size and number in the Ledebouria cooperi complex; based on herbarium specimens.

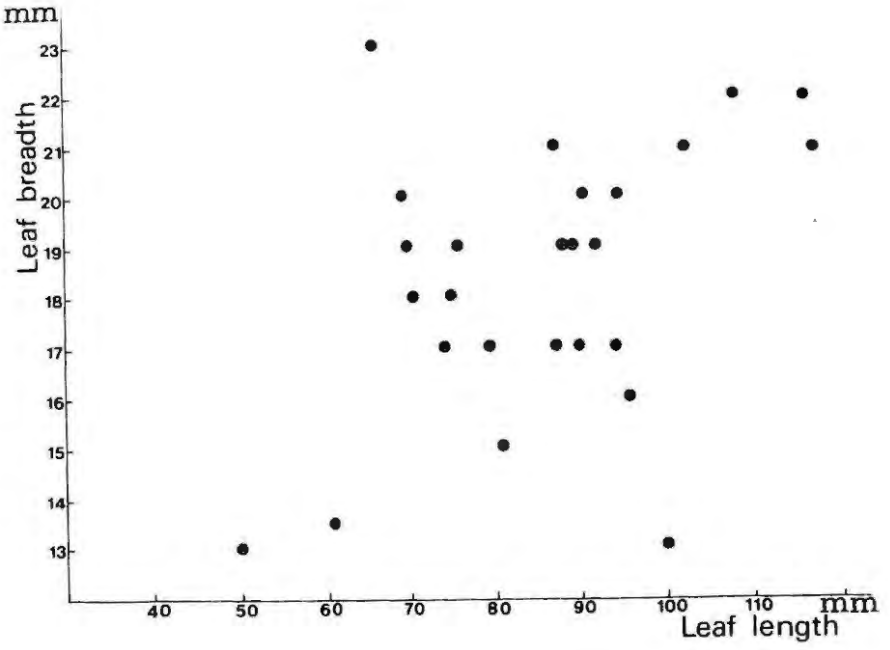


FIG. 285

Diagram to illustrate variation in a small population of Ledebouria marginata. Population area: 12 miles north of Cathcart (3227; Stutterheim, Cape); 2000m^2.

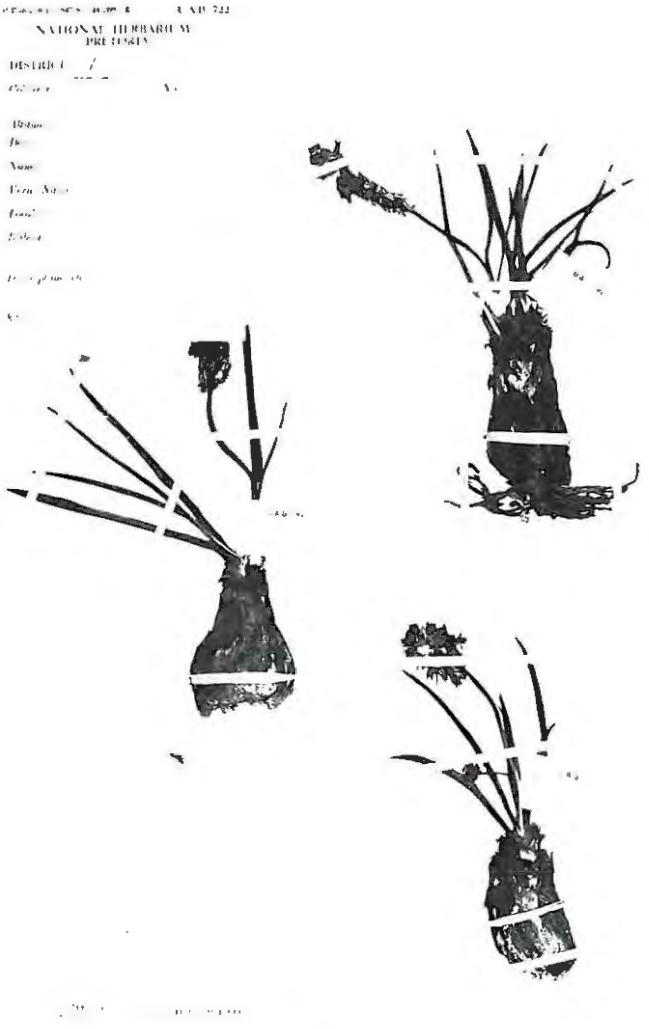


FIG. 286
Holotype of Ledebouria luteola, sp. nov. (Codd 5625; PRE). x 1/4.

FIG. 287
Holotype of Ledebouria viscosa, sp. nov. (Meeuse 10493; PRE). x 1/4.

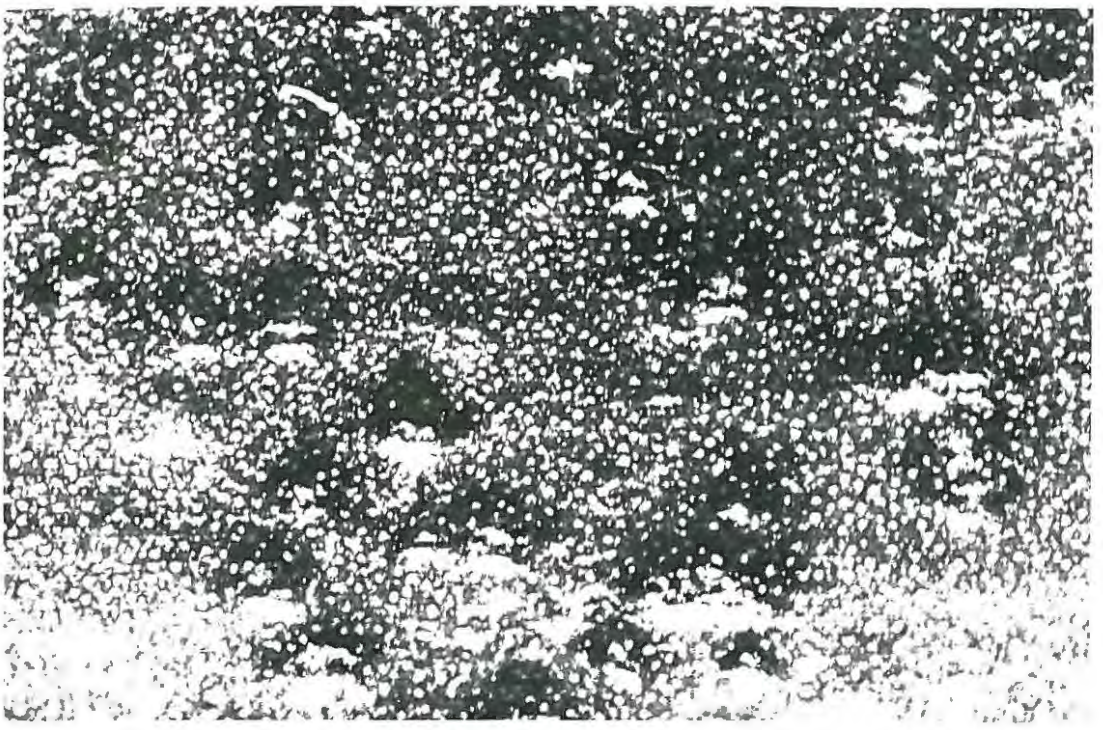


FIG. 288
Dorsal surface of leaf of Ledebouria scabrida.
x 10.

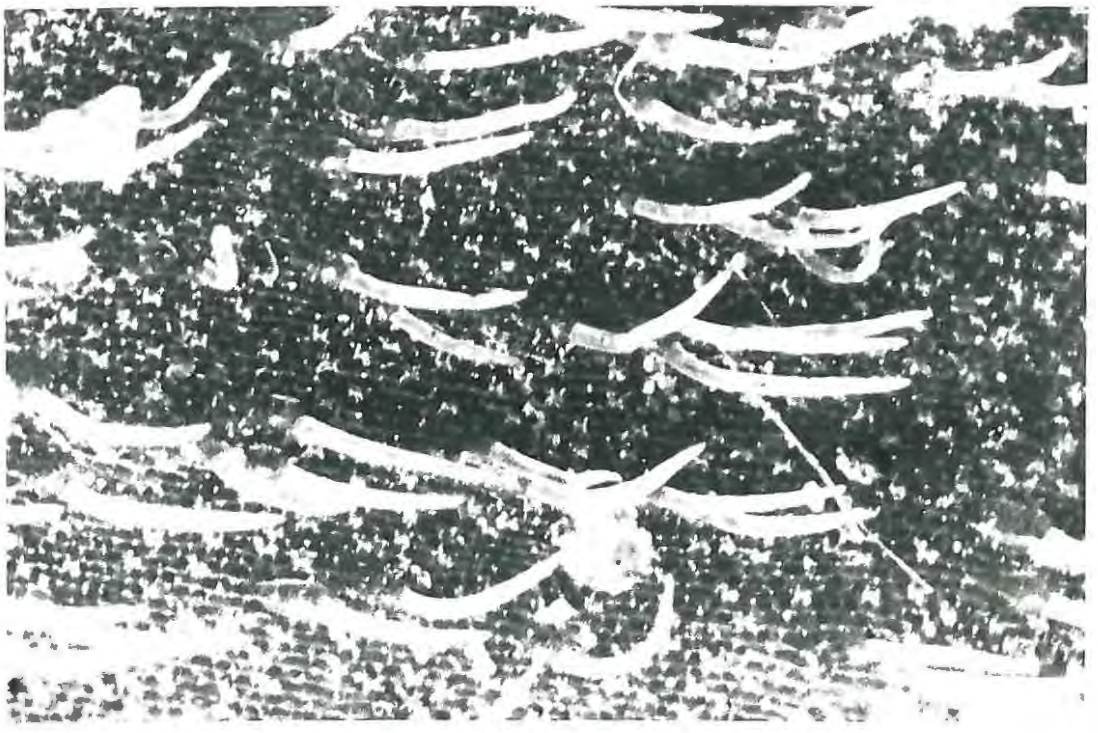


FIG. 289
Dorsal surface of leaf of Ledebouria hypoxidioides.
x 10.

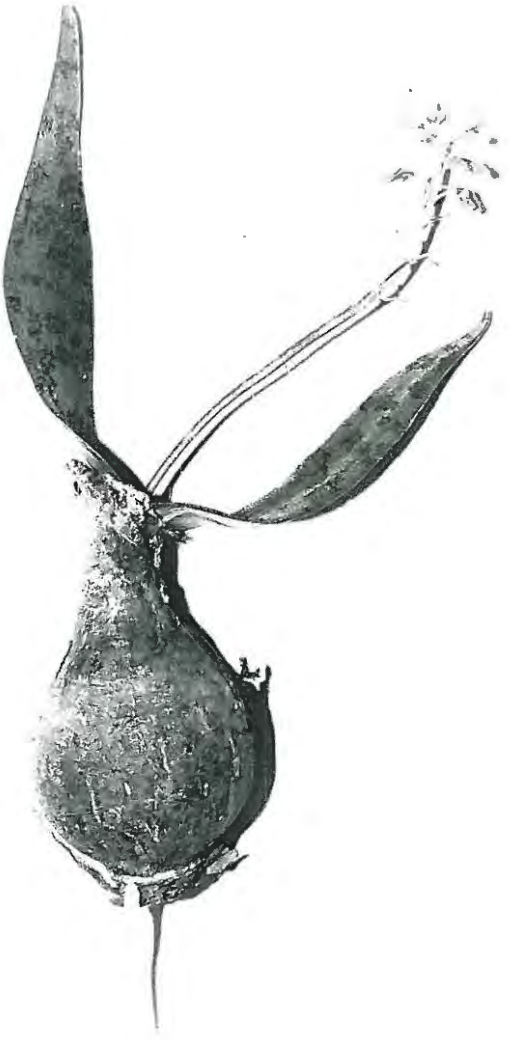


FIG. 290
Holotype of Ledebouria scabrida, sp. nov. (Tölken s.n.; GRA). Scale-10 mm.

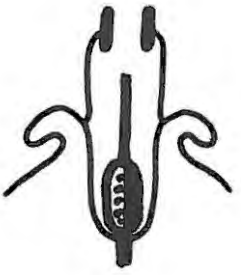


FIG. 291
Half flower of Massonia depressa to show curve in perianth segments.

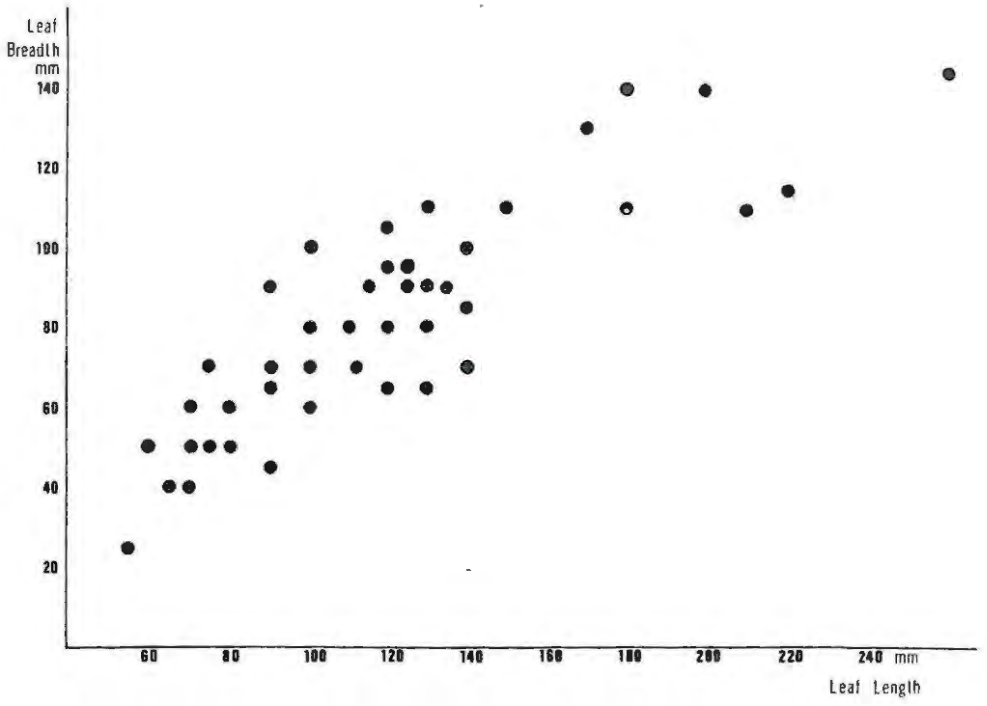


FIG. 292

Diagram to indicate variation in leaf measurements in Massonia depressa. From herbarium material.

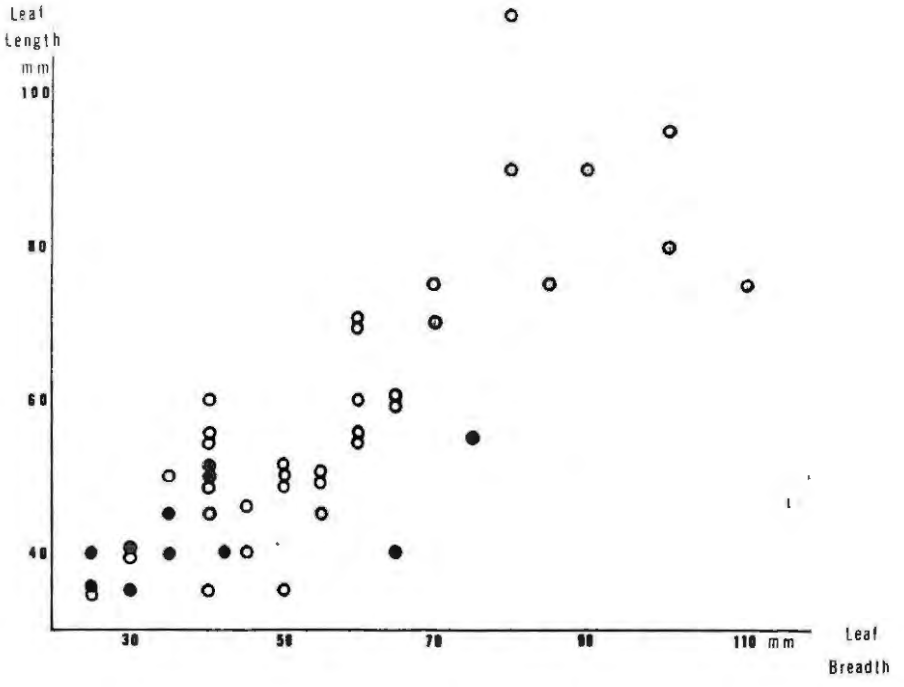


FIG. 293

Diagram to illustrate variation in a population of plants resembling Massonia depressa in having anthers at least 2 mm long. Population area: top of Van Rhyn's Pass (3319; Calvinia, Cape). Solid spots indicate muricate leaves.

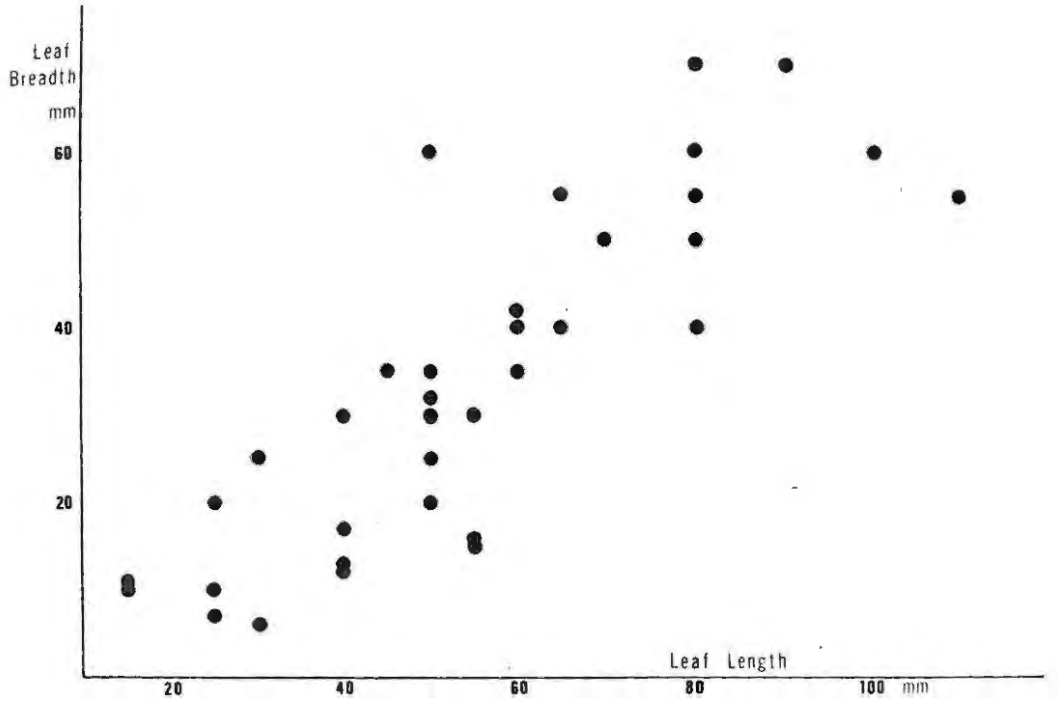


FIG. 294
Diagram to indicate variation in leaf measurements in Massonia echinata. From herbarium material.

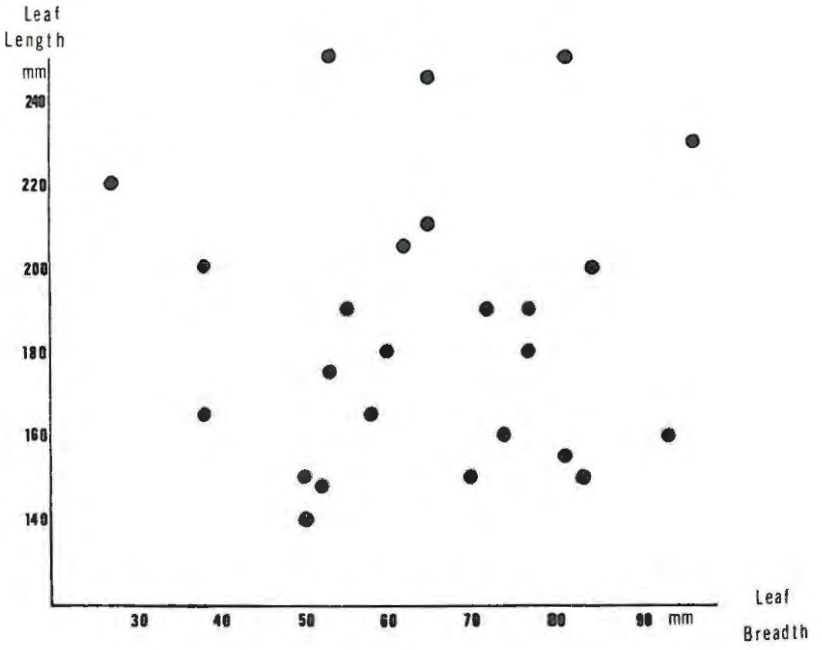


FIG. 295
Diagram to illustrate variation in leaf measurements in Massonia angustifolia in a small population. Population area: Paternoster, behind hotel (3217; Vredenburg, Cape).

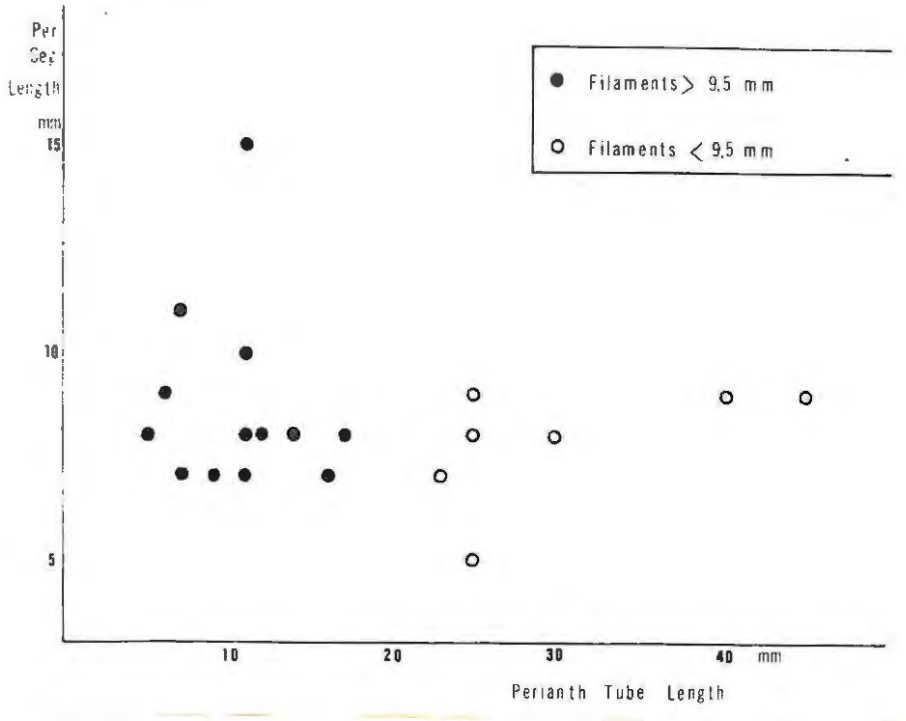


FIG. 296
Diagram to illustrate the separation of Massonia angustifolia from M. comata on filament and perianth tube lengths.

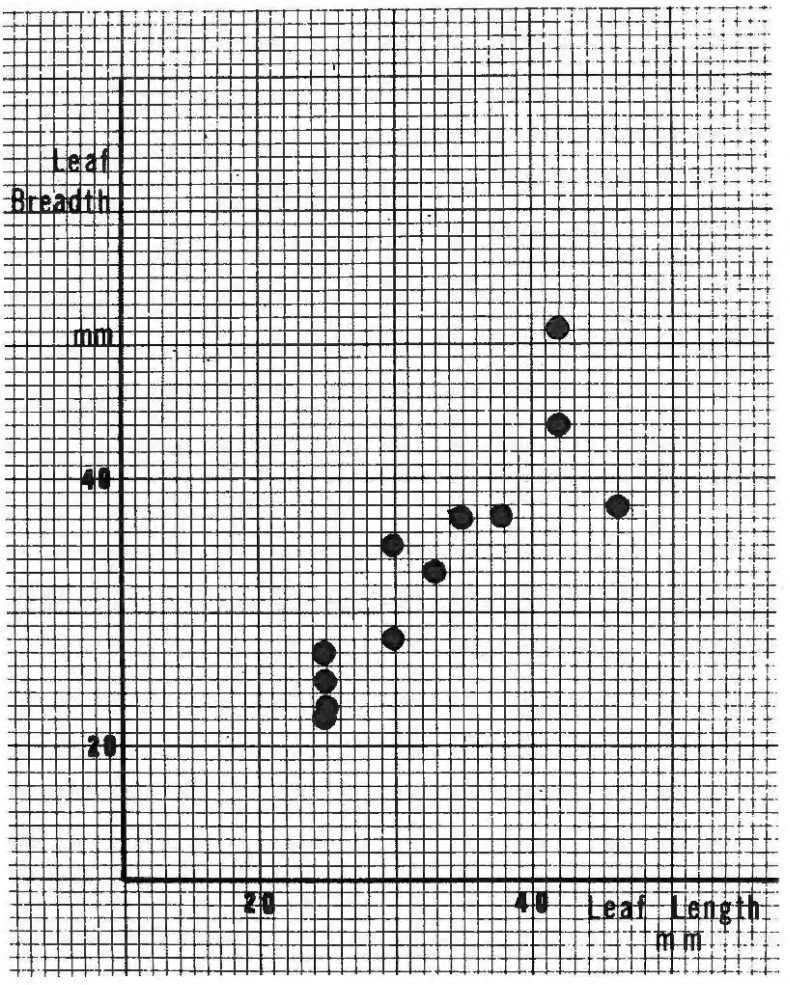


FIG. 297
Diagram to illustrate variation in a small population of Massonia jasminiflora .
Population area: "Vierkant" turning, north of Bloemfontein (30 miles S.W. of Winburg) (2827; Senekal, Orange Free State).

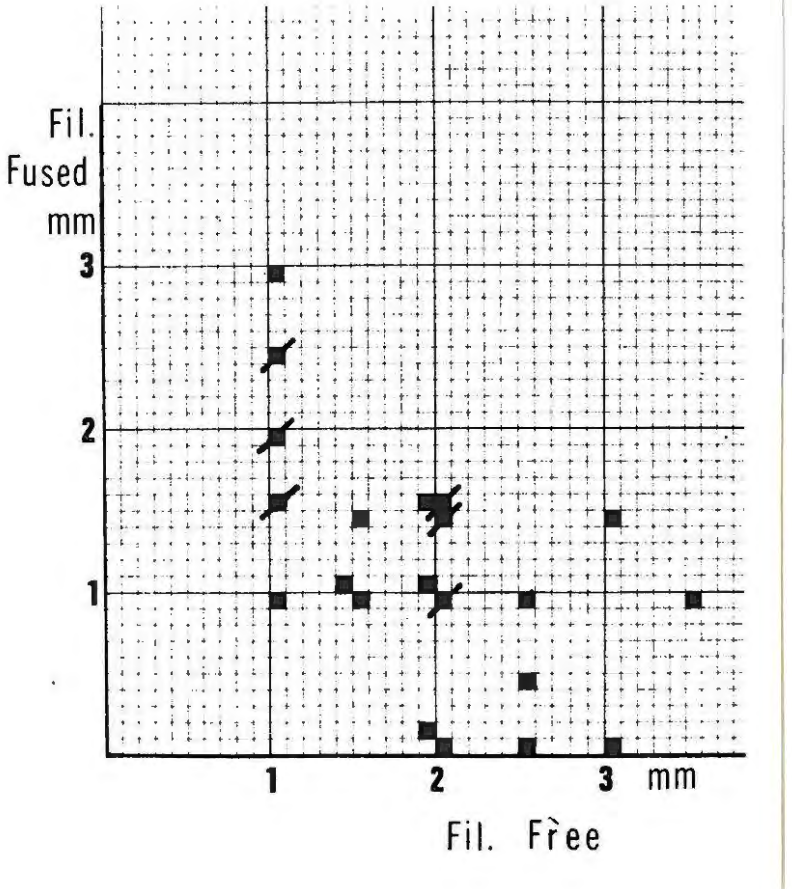


FIG. 298

Diagram to illustrate variation in the lengths of free and fused parts of filaments. Blocks crossed indicate plants with reflexed perianth segments.

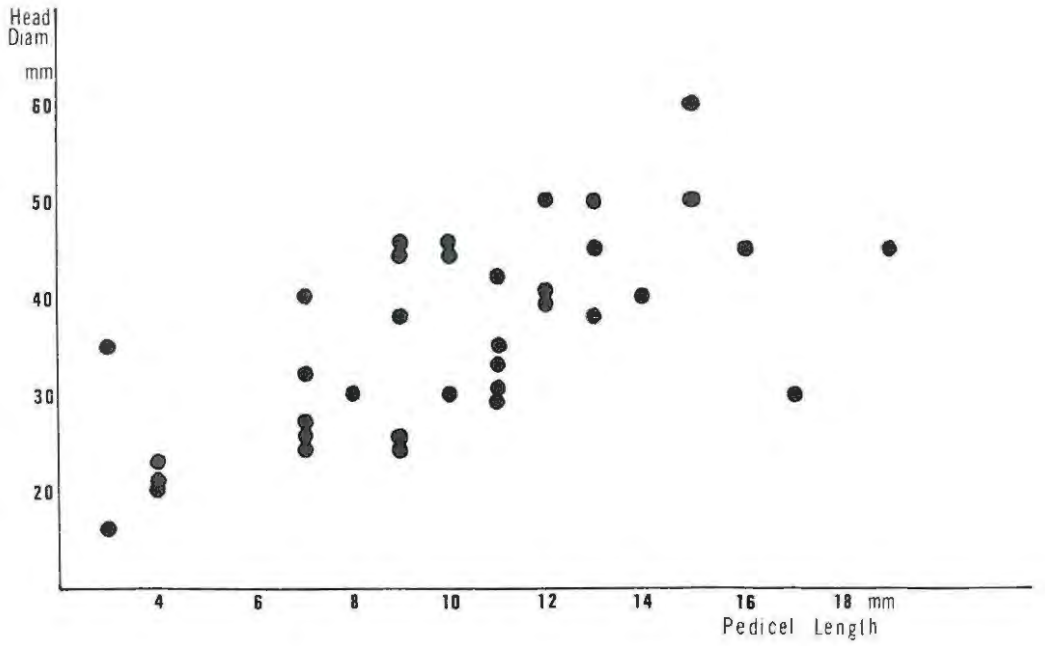


FIG. 299
Diagram to illustrate variation in diameter of flowering head and of pedicel length in Drimia sphaerocephala.

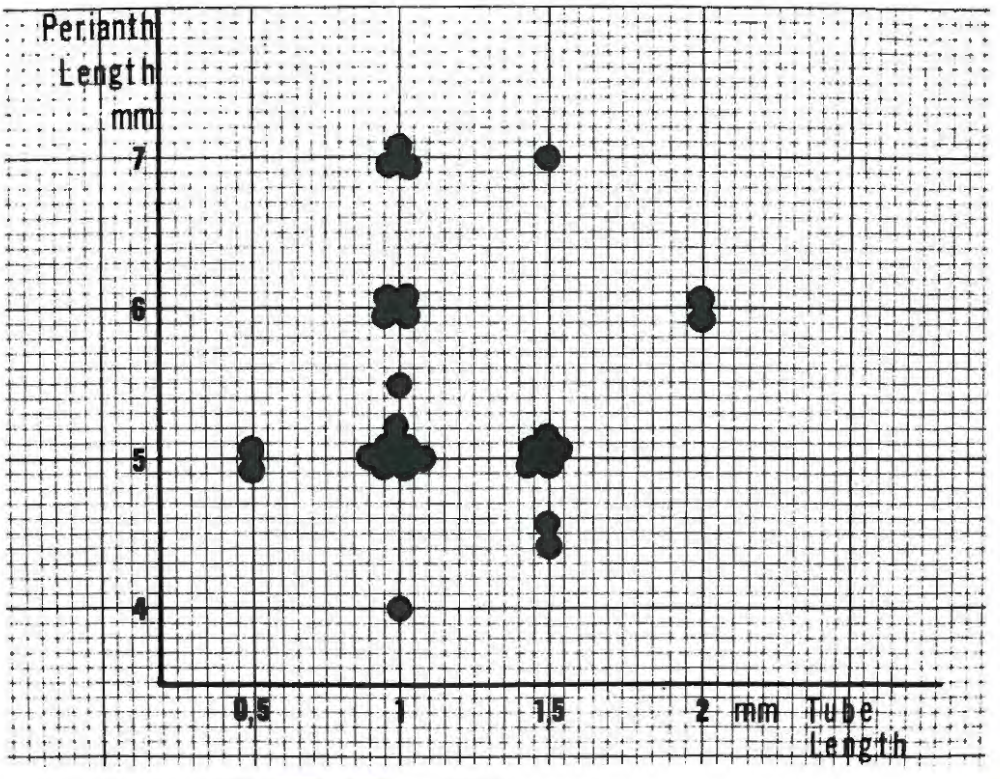


FIG. 300
Diagram to illustrate variation in the lengths of free and fused portions of the perianth of Drimia modesta from the south-western Cape.

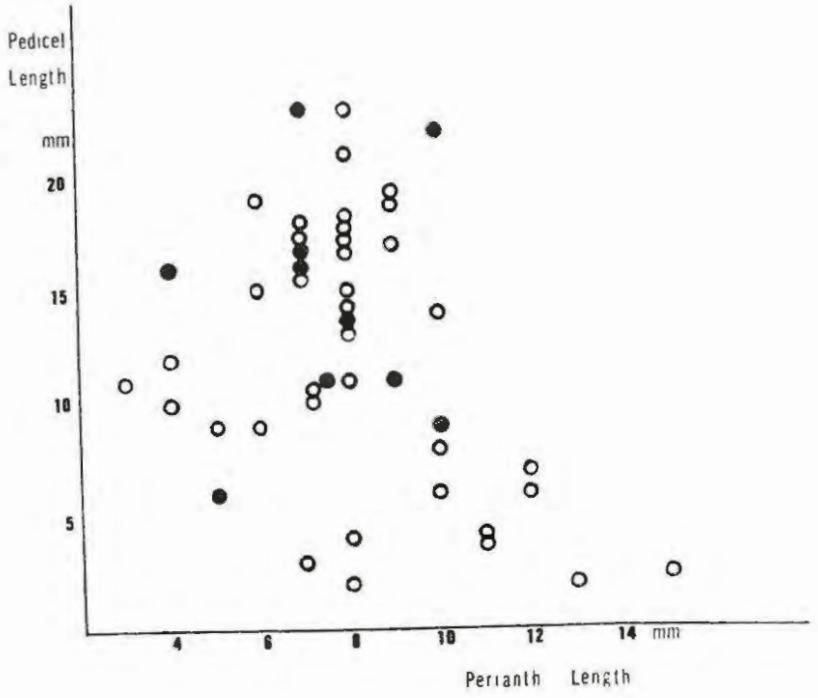


FIG. 301

Diagram to illustrate variation in pedicel and perianth lengths in Drimia altissima. Solid dots indicate plants known to have epigeal bulbs. From herbarium material.