

INDEX

VOLUME 19 :: January—October, 1957

ILLUSTRATIONS SHOWN IN BRACKETS

NEW DESCRIPTIONS IN HEAVY TYPE

	Page		Page
<i>Acrodon bellidiformis</i>	28	<i>Aloe rhodacantha</i>	7, 57
<i>Acrodon subulatus</i>	7, 57	<i>Aloe rigida</i>	8, 57
<i>Adromischus hemisphaericus</i>	31, 57	<i>Aloe rubescens</i>	6, 57
<i>Aeonium</i>	43	<i>Aloe saponaria</i>	31, 57
<i>Aeonium arboreum</i>	32, 57	<i>Aloe serra</i>	30, 57
<i>Aeonium canariense</i>	54, 57	<i>Aloe soccotrina</i>	30, 57
<i>Aeonium lindleyi</i>	55, 57	<i>Aloe spiralis</i>	8, 57
<i>Agave</i>	20, 87	<i>Aloe succotrina</i>	30, 57
<i>Agave americana</i>	87	<i>Aloe umbellata</i>	31, 57
<i>Agave brachystachys</i>	(13), 92	<i>Aloe variegata</i>	7, 57
<i>Agave cernua</i>	(86)	<i>Aloe vera officinalis</i>	6, 57
<i>Agave ferox</i>	(86)	<i>Aloe viscosa</i>	6, 57
<i>Agave foetida</i>	32, 57	<i>Aloe vulgaris</i>	7, 57
<i>Agave spicata</i>	92	<i>Anacampseros</i>	9
<i>Agave victoriae reginae</i>	(86)	<i>Anacampseros alstonii</i>	9
<i>Agave vivipara</i>	56, 57	<i>Anacampseros telephiastrum</i>	6, 57
<i>Agave yuccaefolia</i>	92	Annual Accounts	45
<i>Aichryson x domesticum</i>	55, 57	<i>Anthericum alooides</i>	7, 57, 91
<i>Aichryson x domesticum aizoides</i>	6, 57	<i>Anthericum annuum</i>	6, 57, 92
<i>Aizoon</i>	93	<i>Anthericum asphodeloides</i>	55, 57
<i>Aizoon canariense</i>	54, 57	<i>Anthericum frutescens</i>	6, 57, 91
<i>Aizoon hispanicum</i>	7, 57	<i>Anthericum longiscarpum</i>	92
Allen, Mrs. C. M.	29	<i>Apicra</i>	42
<i>Aloe</i>	9, 16, 20, 28, 87	<i>Apicra spiralis</i>	8, 57
<i>Aloe abyssinica</i>	7, 57	<i>Aporocactus flagelliformis</i>	32, 57
<i>Aloe arachnoides</i>	8, 57	<i>Aptenia</i>	28
<i>Aloe arborescens</i>	7, 57	<i>Aptenia cordifolia</i>	31, 57
<i>Aloe atrovirens</i>	8, 57	<i>Archicereideae</i>	65
<i>Aloe brevifolia</i>	30, 57	<i>Argyroderma</i>	29, 39, 53, 93
<i>Aloe brevifolia depressa</i>	30, 57	<i>Argyroderma ovale</i>	39
<i>Aloe carinata</i>	8, 57	<i>Aridaria fastigiata</i>	7, 57
<i>Aloe dichotoma</i>	9	<i>Aridaria geniculiflora</i>	6, 57
<i>Aloe ferox</i>	7, 57	<i>Aridaria nitida</i>	32, 57
<i>Aloe glauca</i>	7, 57	<i>Aridaria noctiflora</i>	6, 57
<i>Aloe humilis</i>	7, 57	<i>Aridaria plenifolia</i>	7, 57
<i>Aloe linguiformis</i>	8, 57	<i>Aridaria reflexa</i>	54, 57
<i>Aloe linguiformis verrucosa</i>	8, 57	<i>Aridaria viridiflora</i>	55, 57
<i>Aloe margaritifera</i>	8, 57	<i>Ariocarpus</i>	18, 26
<i>Aloe marginalis</i>	7, 57	<i>Astroloba spiralis</i>	8, 57
<i>Aloe melanacantha</i>	(85)	<i>Astrophytum</i>	3, 18, 65, 75, 87
<i>Aloe mitraeformis</i>	31	<i>Astrophytum asterias</i>	18
<i>Aloe mitrifomis</i>	31, 57	Ausden, J. S.	16, 17, 80, 81
<i>Aloe obliqua</i>	31, 57	<i>Austrocactus</i>	64
<i>Aloe picta</i>	31, 57	<i>Avonia (Anacampseros)</i>	9
<i>Aloe plicatilis</i>	30, 57	<i>Aylostera</i>	49, 50
<i>Aloe retusa</i>	7, 57		

	Page
Backeberg, C.	66
Bally, P. R. O.	58, 59, 60
Barrett, R.	16
Beeson, W.	12, 14, 37, 84
Bergeranthus	52
Bergeranthus vespertinus	52
Binghamia	65
Boarder, A.	1, 2, 5, 18, 26, 42, 43, 44, 49, 50, 73, 74
<i>Bromeliads</i>	92
Brooks, D. H. M.	81
Brown, Dr. N. E.	15
Buining, A. F. H.	40
<i>Bulbine alooides</i>	7, 57, 91
<i>Bulbine altissima</i>	92
<i>Bulbine annua</i>	6, 57, 92
<i>Bulbine asphodeloides</i>	55, 57
<i>Bulbine caulescens</i>	(12), 57, 91
<i>Bulliarda vaillantii</i>	30, 57
Buxbaum, Dr. F.	64
Byles, R. S.	17, 66
<i>Cacalia articulata</i>	92
<i>Cacalia cylindrica</i>	8, 57
<i>Cacalia ficoides</i>	31, 57
<i>Cacalia kleinia</i>	6, 57
<i>Cacalia laciniata</i>	6, 31, 57
<i>Cacalia repens</i>	7, 57
Cactus Cultural Notes	2, 26, 50, 74
<i>Cactus ambiguus</i>	92
<i>Cactus coccinellifera</i>	54, 57
<i>Cactus flagelliformis</i>	32, 57
<i>Cactus grandiflorus</i>	8, 57
<i>Cactus lanuginosus</i>	55, 57, 67
<i>Cactus mammillaris</i>	31, 57
<i>Cactus melocactus</i>	31, 57
<i>Cactus opuntia inermis</i>	54, 57
<i>Cactus opuntia nana</i>	54, 57
<i>Cactus opuntia polyanthus</i>	54, 57
<i>Cactus opuntia tuna</i>	54, 57
<i>Cactus parasiticus</i>	8, 57
<i>Cactus peruvianus</i>	8, 57
<i>Cactus philanthus</i>	54
<i>Cactus phyllanthus</i>	54, 57
<i>Cactus polygonus</i>	67
<i>Cactus royeri</i>	55, 57, 67
<i>Cactus senilis</i>	66
<i>Cactus speciosus</i>	92
<i>Caralluma</i>	29
<i>Caralluma operta</i>	9
<i>Caralluma umdausensis</i>	9
<i>Carpanthia calendulacea</i>	32, 57
<i>Carpanthia candollei</i>	32, 57
<i>Carruanthus caninus</i>	31, 57

	Page
<i>Carruicola (Conophytum)</i>	10, 79
<i>Cephalocereus</i>	66, 87
<i>Cephalocereus bahamensis</i>	66
<i>Cephalocereus barbadensis</i>	66
<i>Cephalocereus collinsii</i>	66
<i>Cephalocereus columbianus</i>	66
<i>Cephalocereus deeringii</i>	66
<i>Cephalocereus fluminensis</i>	69
<i>Cephalocereus keyensis</i>	67
<i>Cephalocereus maxonii</i>	67
<i>Cephalocereus millspaughii</i>	67
<i>Cephalocereus palmeri</i>	67
<i>Cephalocereus purpusii</i>	67
<i>Cephalocereus sartorianus</i>	69
<i>Cephalocereus tweedyanus</i>	69
<i>Cephalocereus zehntneri</i>	67
<i>Cephalophyllum</i>	9
<i>Cephalophyllum loreum</i>	31, 57
<i>Cephalophyllum spongiosum</i>	9
<i>Cereae</i>	64
<i>Cereeanae</i>	16, 20
<i>Cereoideae</i>	64
<i>Cereus</i>	26, 68, 87
<i>Cereus backebergii</i>	66
<i>Cereus brooksianus</i>	66
<i>Cereus catingicola</i>	66
<i>Cereus chrysostele</i>	66
<i>Cereus claroviridis</i>	66
<i>Cereus cometes</i>	66
<i>Cereus hermentianus</i>	67
<i>Cereus jamacaru</i>	29
<i>Cereus luetzelbergii</i>	67
<i>Cereus minensis</i>	66, 67
<i>Cereus monoclonus</i>	67
<i>Cereus moritzianus</i>	67
<i>Cereus nobilis</i>	67
<i>Cereus oligolepis</i>	67
<i>Cereus pentraedrophorus</i>	67
<i>Cereus per lucens</i>	67
<i>Cereus peruvianus</i>	8, 89
<i>Cereus piauhyensis</i>	67
<i>Cereus pitahaya monstrosus</i>	(83)
<i>Cereus repandus</i>	55, 89
<i>Cereus sublanatus</i>	67
<i>Cereus swartzii</i>	67
<i>Ceropegia</i>	76
<i>Ceropegia radicans</i>	76
<i>Ceropegia rendallii</i>	76
<i>Ceropegia woodii</i>	76
<i>Chamaecereus</i>	43
<i>Chamaecereus silvestrii</i>	43
Cheale, J. H.	16
<i>Cheiridopsis</i>	9, 33, 34, 52
<i>Cheiridopsis candissima</i>	9, (85)
<i>Cheiridopsis crassa</i>	(85)
<i>Cheiridopsis cuprea</i>	9

	Page
<i>Cheiridopsis peculiaris</i>	9
<i>Cheiridopsis purpurea</i>	9
<i>Cheiridopsis speciosa</i>	9
Chemical aids to Classification ...	68
<i>Claytonia grandiflora</i>	32, 89
<i>Claytonia portuicaria</i>	32, 89
<i>Claytonia virginica</i>	32, 89
<i>Cleistocactus</i>	87
<i>Cleistocactus straussii</i>	(12), 87
Collings, P. V.	5, 16, 44, 80, 81, 82, 88
<i>Conicosia fusiformis</i>	30, 89
<i>Conophyllum</i>	34
<i>Conophytum</i>	5, 10, 15, 28, 33, 34, 39, 52, 76, 78, 79, 93
<i>Conophytum cinereum</i>	39
<i>Conophytum cupreiflorum</i>	88
<i>Conophytum densipunctum</i>	33
Conophytum extractum	78, (83)
Conophytum glabrum	(11), 15
<i>Conophytum halenbergense</i>	78
Conophytum impressum	10, (11)
<i>Conophytum minutum</i>	15
<i>Conophytum multipunctatum</i>	79
<i>Conophytum muscosi-papillatum</i>	39
<i>Conophytum noisabisensis</i>	33
<i>Conophytum parile</i>	15
<i>Conophytum parviflorum</i>	10
Conophytum parvipunctum	79, (83)
<i>Conophytum pearsonii</i>	15
<i>Conophytum quarziticum</i>	33
Conophytum rostratum	33, (35)
<i>Conophytum sitzlerianum</i>	39
<i>Conophytum taylorianum</i>	78
<i>Cordiformia</i> (<i>Conophytum</i>)	78
<i>Coryphantha</i>	87
<i>Coryphantha andreae</i>	29
<i>Coryphantha werdermannii</i>	29
<i>Coryphanthae</i>	65
<i>Coryphanthanae</i>	16
<i>Cotyledon</i>	5, 16
<i>Cotyledon crenata</i>	92
<i>Cotyledon decussata</i>	55, 89
<i>Cotyledon grandiflora</i>	30, 89
<i>Cotyledon hemisphaerica</i>	31, 89
<i>Cotyledon hispanica</i>	32, 89
<i>Cotyledon hispida</i>	8, 89
<i>Cotyledon laciniata</i>	89
<i>Cotyledon mucizonia</i>	8, 89
<i>Cotyledon orbiculata</i>	30, 89
<i>Cotyledon paniculata</i>	92
<i>Cotyledon pistarinia</i>	32, 89
<i>Cotyledon spurea</i>	89
<i>Cotyledon tardiflorum</i>	92
<i>Cotyledon tuberculosa</i>	30, 89
<i>Cotyledon unguolata</i>	55, 89

	Page
<i>Crassula</i>	4, 9, 20, 34, 43
<i>Crassula acutifolia</i>	6, 89
<i>Crassula alstonii</i>	9
<i>Crassula arborescens</i>	77
<i>Crassula argentea</i>	30, 52, 77, 89
<i>Crassula arta</i>	9
<i>Crassula ciliata</i>	6, 89
<i>Crassula coccinea</i>	6, 89
<i>Crassula columella</i>	9
<i>Crassula cordata</i>	32, 89
<i>Crassula deceptrix</i>	9
<i>Crassula falcata</i>	31, 89
<i>Crassula glomerata</i>	8, 89
<i>Crassula lactea</i>	4, 7, 89
<i>Crassula monticola</i>	28
<i>Crassula montis draconis</i>	4
<i>Crassula muscosa</i>	30, 89
<i>Crassula nudicaulis</i>	32, 89
<i>Crassula obvallata</i>	8, 89
<i>Crassula orbicularis</i>	7, 89
<i>Crassula perfoliata</i>	6, 89
<i>Crassula perfossa</i>	7, 89
<i>Crassula portulacea</i>	30, 89
<i>Crassula rubens</i>	8, 89
<i>Crassula scabra brevifolia</i>	56, 89
<i>Crassula scabra minor</i>	56, 89
<i>Crassula spathulata</i>	8, 89
<i>Crassula tetragona</i>	6, 89
<i>Crassula vaillantii</i>	30, 89
Crookes, A.	16, 17
<i>Cryophytum crystallinum</i>	32, 89
<i>Cryophytum nodiflorum</i>	31, 89
Cullman, Dr. W.	35, 40
Cultivation of Succulents	4, 28, 52, 76
Culture of Cacti	18
Cutler, Miss D. E.	80
<i>Cylindrophyllum calamiforme</i>	6, 89
Dawson, The Hon. Mrs. I. M.	16
<i>Delosperma</i>	28
<i>Delosperma echinatum</i>	7, 89
<i>Derenbergia</i> (<i>Conophytum</i>)	33, 78
Dewin, C. G.	87
<i>Digitorebutia</i>	40
Digitorebutia A. V. Fric	(35), 40
<i>Digitorebutia haagei</i>	40
<i>Digitorebutia nigricans</i>	40
<i>Digitorebutia oculata</i>	40
<i>Digitorebutia oculata friciana</i>	40
<i>Digitorebutia steinmannii</i>	50
<i>Dinteranthus</i>	4
<i>Disocactus</i>	64
<i>Disphyma australe</i>	55, 89

	Page		Page
<i>Disphyma crassifolia</i>	56, 89	<i>Epiphyllaneae</i>	64
Djerassi, Professor C.	68	<i>Epiphyllaeae</i>	64
<i>Dolichothele aylostera</i>	50	<i>Epiphyllum</i>	18, 49, 75, 87
Donald, J. D.	40	<i>Epiphyllum phyllanthus</i>	54, 89
<i>Drosanthemum erigeriflorum</i>	55, 89	<i>Epiphyllum truncatum</i>	4
<i>Drosanthemum hispidum</i>	8, 89	<i>Epithelantha</i>	3
<i>Drosanthemum hispidifolium</i>	55, 89	<i>Erepsia mutabilis</i>	8, 89
<i>Drosanthemum micans</i>	55, 89	<i>Espostoa</i>	87
<i>Drosanthemum nitidum</i>	32, 89	<i>Espostoa lanata</i>	68
<i>Drosanthemum pallens</i>	32, 89	<i>Euconophytum</i>	15
<i>Duvalia coespitosa</i>	54, 89	<i>Euechinocactinae</i>	65
<i>Duvalia hirtella</i>	54, 89	<i>Euphorbia</i>	5, 16, 29, 43, 49, 53, 76, 77, 93
<i>Duvalia radiata hirtella</i>	54, 89	<i>Euphorbia anacantha</i>	89
 		<i>Euphorbia bergeri</i>	55, 89
<i>Echeveria</i>	16, 20, 28, 43, 76	<i>Euphorbia canariensis</i>	54, 89
<i>Echeveria glauca</i>	76	<i>Euphorbia caput medusae</i>	55, 89
<i>Echeveria secunda</i>	76	<i>Euphorbia caput medusae cristate</i>	52
<i>Echidnopsis</i> and East Africa	58	<i>Euphorbia echinus</i>	76
<i>Echidnopsis</i>	58	<i>Euphorbia infausta</i>	54, 89
<i>Echidnopsis angustiloba</i>	58, (60)	<i>Euphorbia lophogona</i>	32, 89
<i>Echidnopsis archeri</i>	(59), (60), 63	<i>Euphorbia meloformis</i>	54, 89
<i>Echidnopsis cereiformis</i>	58	<i>Euphorbia multiceps</i>	(38)
<i>Echidnopsis ciliata</i>	58, (59)	<i>Euphorbia neriifolia</i>	7, 89
<i>Echidnopsis dammanniana</i>	58	<i>Euphorbia obesa</i>	2, 27, 28, 76
<i>Echidnopsis framesii</i>	9	<i>Euphorbia officinarum</i>	30, 89
<i>Echidnopsis nubica</i>	58	<i>Euphorbia stellata</i>	55, 89,
<i>Echidnopsis planiflorae</i>	58	<i>Euphorbia tridentata</i>	54, 89
<i>Echidnopsis scutella</i>	63	<i>Euphorbia uncinata</i>	55, 89
<i>Echidnopsis serpentina</i>	9	<i>Euphorbia virosa</i>	(38)
<i>Echidnopsis sharpei</i>	63	<i>Eupilocereus</i>	66
<i>Echidnopsis virchowii</i>	58, (60), 63	 	
<i>Echinocactanae</i>	5	<i>Facheiroa blossfeldiorum</i>	53
<i>Echinocactus</i>	5	Farwell, W. R.	16, 81
<i>Echinocactus grusonii</i>	18, 26, 27, 41, 87	<i>Faucaria</i>	16, 28, 43, 76
<i>Echinocactus horizontalonius</i>	29	<i>Faucaria felina</i>	55, 89
<i>Echinocereae</i>	64	Ferguson, Miss	15
<i>Echinocereaeanae</i>	16	<i>Ferocactus</i>	87
<i>Echinocereus</i>	51	<i>Ferocactus wislizenii</i>	(61)
<i>Echinocereus berlandieri</i>	51	<i>Ficoidaceae</i>	78, 79, 93
<i>Echinocereus blanckii</i>	51	Fletcher, J.	80
<i>Echinocereus longispinus</i>	51	Fric, A. V.	40
<i>Echinocereus oklahomensis</i>	2, 51	<i>Frithia</i>	39
<i>Echinocereus perbella</i>	51	<i>Furcraea cubensis inermis</i>	32, 89
<i>Echinocereus salm dyckiana</i>	51	<i>Furcraea gigantea</i>	32, 89, 92
<i>Echinocereus scheerii</i>	51	 	
<i>Echinocereus triglochidiata</i>	51	<i>Gasteria</i>	16, 76, 87
<i>Echinocereus websteriana</i>	51	<i>Gasteria angustifolia</i>	8, 89
<i>Echinopsis</i>	64, 87, 88	<i>Gasteria disticha</i>	8, 89
<i>Echinopsis eyresii</i>	27, (36)	<i>Gasteria pulchra</i>	31, 89
<i>Echinopsis turbinata</i>	88	<i>Gasteria sulcata</i>	8, 89
Edwards, A. J.	16, 25, 42, 44, 49	<i>Gasteria verrucosa</i>	8, 89

	Page
Gates, Howard E.	41
<i>Geranium</i>	87
<i>Geranium ciliatum</i>	92
<i>Geranium tetragonum</i>	31, 89
<i>Gibbaeum</i>	4, 5, 28, 34, 52, 53, 76
<i>Gibbaeum angulipes</i>	34
<i>Gibbaeum dispar</i>	39
<i>Gibbaeum molle</i>	4
<i>Gibbaeum petrense</i>	53
<i>Gibbaeum pilosulum</i>	39
<i>Gibbaeum pubescens</i>	53
<i>Gibbaeum velutinum</i>	53
Gilbert, C. E. L.	42, 44
<i>Glandulicactus</i>	65
Glenister, N. H.	16, 17
<i>Glottiphyllum</i>	28, 34
<i>Glottiphyllum album</i>	39
<i>Glottiphyllum longum</i>	30, 89
<i>Glottiphyllum nelii</i>	39
<i>Glottiphyllum oligocarpum</i>	39
Gorrod, G.	80, 81
<i>Gymnocactus subterraneus</i>	(11)
<i>Gymnocalycium</i>	2, 20, 53, 75
<i>Gymnocalycium anisitsii</i>	29
<i>Gymnocalycium brachyanthum</i>	29
<i>Gymnocalycium netrielianum</i>	(62)
<i>Gymnocalycium oenanthemum</i>	53
<i>Gymnocalycium saglionis</i>	29
<i>Gymnocalycium spegazzinii</i>	29

	Page
<i>Haageocereus</i>	65
Hall, Hy	9, 38, 85
Halford, Miss M.	80, 81
Hancock, Miss M.	80
<i>Harrisia gracilis</i>	55, 89
<i>Harrisia martini</i>	2
<i>Haworthia</i>	16, 17, 18, 19, 20, 34, 39, 42, 43, 76
<i>Haworthia arachnoides</i>	8, 89
<i>Haworthia batesiana</i>	42
<i>Haworthia bolusii</i>	42
<i>Haworthia glabrata</i>	42
<i>Haworthia herbacea</i>	8, 89
<i>Haworthia margaritifera</i>	8, 89
<i>Haworthia margaritifera polyphylla</i>	8, 89
<i>Haworthia maughanii</i>	42
<i>Haworthia planifolia</i>	42
<i>Haworthia reinwardtii</i>	42
<i>Haworthia retusa</i>	7, 42, 89
<i>Haworthia rigida</i>	8, 89
<i>Haworthia truncata</i>	42
<i>Haworthia viscosa</i>	6, 89

	Page
Heathcote, A. W.	5, 42, 43, 44, 49
Hedges, G. R.	1, 16, 17, 44, 80
Hedges' Cup	29
Heerde, Mr. van	9
Herre, H.	10, 78, 88
Higgins, Mrs. V.	17
<i>Hoodia</i>	29
<i>Huernia</i>	29
<i>Huernia namaquensis</i>	9
<i>Huernia reticulata</i>	55, 89
<i>Hylocereae</i>	64
<i>Hylocereoideae</i>	65
Ibbotson, G. R.	16, 81
<i>Kalanchoe aegyptica</i>	8, 89
<i>Kalanchoe crenata</i>	8, 56, 89, 92
<i>Kalanchoe granata</i>	4, 77
<i>Kalanchoe laciniata</i>	8, 31, 89
<i>Kalanchoe spathulata</i>	8, 89
<i>Kleinia</i>	20
<i>Kleinia articulata</i>	6, 89
<i>Kleinia ficoides</i>	31, 89
<i>Kleinia neriifolia</i>	6, 89
<i>Kleinia repens</i>	7, 89

<i>Lampranthus</i>	28
<i>Lampranthus aureus</i>	6, 89
<i>Lampranthus coccineus</i>	30, 89
<i>Lampranthus glaucus</i>	54, 89
<i>Lampranthus scaber</i>	55, 89
<i>Lampranthus spectabilis</i>	89
<i>Lampranthus tenuifolius</i>	30, 89
<i>Lampranthus violaceus</i>	30, 89
Lawrence, Miss M.	16
<i>Lemaireocereus</i>	68
<i>Lemaireocereus arizonii</i>	68
<i>Lemaireocereus dumortieri</i>	68
<i>Lemaireocereus hystrix</i>	68
<i>Lemaireocereus laetus</i>	68
<i>Lemaireocereus longispinus</i>	68
<i>Lemaireocereus pruinosus</i>	68
<i>Lemaireocereus stellatus</i>	68
<i>Lemaireocereus thurberi</i>	68
<i>Lemaireocereus weberi</i>	68
<i>Lithops</i>	4, 5, 20, 28, 29, 39, 43, 53, 76, 77
<i>Lithops bromfeldii</i>	(37)

	Page		Page
<i>Lithops eberlanzii</i>	(37)	<i>Mammillaria pacifica</i>	2
<i>Lithops helmutii</i>	(37)	<i>Mammillaria parkinsonii</i>	2, 19
<i>Lithops kuibisensis</i>	39	<i>Mammillaria pennispinosa</i>	29
<i>Lithops lineata</i>	39	<i>Mammillaria perbella lanata</i>	2
<i>Lithops ruschiorum</i>	39	<i>Mammillaria petterssonii longispina</i>	50
<i>Lithops triebnerii</i>	(37)	<i>Mammillaria plumosa</i>	3, 27, 50
<i>Lithops volkei</i>	39	<i>Mammillaria potosina</i>	50
<i>Lobivia</i>	20, 49, 64	<i>Mammillaria prolifera</i>	27, 75
<i>Lobivia aurea</i>	(62)	<i>Mammillaria prolifera multiceps</i>	(61)
<i>Lobivia famatimensis albiflora</i>	(84)	<i>Mammillaria rhodantha</i>	2, (13), 27 75
<i>Lobivia neohaageana</i>	(84)	<i>Mammillaria roseoalba</i>	53
Loder, R. R.	16	<i>Mammillaria saetigera</i>	2
<i>Lomatophyllum purpureum</i>	7, 90	<i>Mammillaria saffordii</i>	50
Lucas, T. R. A.	16	<i>Mammillaria schelhasei</i>	50, 75
		<i>Mammillaria schiedeana</i>	2, 75
		<i>Mammillaria sheldonii</i>	19
Macdonald, E. W.	5	<i>Mammillaria simplex</i>	31, 65, 90
<i>Machaerocereus</i>	68	<i>Mammillaria stellaris</i>	75
<i>Machaerocereus eruca</i>	68	<i>Mammillaria surculosa</i>	50
<i>Machairophyllum albidum</i>	55, 90	<i>Mammillaria tolimensis</i>	53
<i>Macrocaulon candollei</i>	32, 90	<i>Mammillaria trichacantha</i>	50
Maddams, W. F.	68	<i>Mammillaria vaupelii</i>	50
<i>Malacocarpus</i>	75	<i>Mammillaria viereckii</i>	50
<i>Mamillopsis</i>	53	<i>Mammillaria wildii</i>	18, 19, 50, 53, 75
<i>Mamillopsis senilis</i>	29, 50	<i>Mammillaria woodsii</i>	3
<i>Mammillaria</i>	2, 5, 16, 17, 18, 19, 20, 27, 49, 50, 65, 75, 93	<i>Mammillaria yaquensis</i>	53
<i>Mammillaria baumii</i>	50	<i>Mammillaria zeilmanniana</i>	19
<i>Mammillaria bocasana</i>	27, 75	Marsden, C.	20, 39
<i>Mammillaria bocasana splendens</i>	50	Marshall, B. C.	13, 16, 36, 61, 81, 83
<i>Mammillaria castaneoides</i>	75	Martin, Miss M. J.	35
<i>Mammillaria compressa</i>	(83)	Mealy bug, New Treatment	20
<i>Mammillaria ebenacantha</i>	2	Measures, J.	11, 80, 81
<i>Mammillaria egregia</i>	3	<i>Mediopilocereus</i>	66
<i>Mammillaria erythrosperma</i>	(61)	<i>Melocactus</i>	27
<i>Mammillaria falcata</i>	2	<i>Melocactus communis</i>	31, 90
<i>Mammillaria fraileana</i>	2	<i>Melocactus maxonii</i>	29
<i>Mammillaria hahniana</i>	3	Melville, R. H.	81
<i>Mammillaria hamilton hoytea</i>	29	<i>Mesembryanthemaceae</i>	10, 15
<i>Mammillaria herrerae</i>	3	<i>Mesembryanthemum</i>	5, 9, 10, 16, 20, 33, 43, 50, 76
<i>Mammillaria hidalgensis</i>	53	<i>Mesembryanthemum acinaciforme</i>	31, 90
<i>Mammillaria hirsuta</i>	75	<i>Mesembryanthemum albidum</i>	55, 90
<i>Mammillaria iwiersensiana</i>	2	<i>Mesembryanthemum apetalum</i>	56, 90
<i>Mammillaria kewensis</i>	(13)	<i>Mesembryanthemum aureum</i>	6, 90
<i>Mammillaria klissingiana</i>	3	<i>Mesembryanthemum barbatum</i>	7, 90
<i>Mammillaria kunzeana</i>	(61), 75	<i>Mesembryanthemum bellidiflorum</i>	7, 90
<i>Mammillaria longicoma</i>	75	<i>Mesembryanthemum brachiatum</i>	32, 90
<i>Mammillaria longiflora</i>	18, 27, 75	<i>Mesembryanthemum calamiforme</i>	6, 90
<i>Mammillaria magallani</i>	3	<i>Mesembryanthemum candollei</i>	32, 90
<i>Mammillaria marksiana</i>	29	<i>Mesembryanthemum caninum</i>	31, 90
<i>Mammillaria melanocentra</i>	53	<i>Mesembryanthemum carinatum</i>	92
<i>Mammillaria morganiana</i>	2	<i>Mesembryanthemum coccineum</i>	30, 90
<i>Mammillaria multiceps</i>	75	<i>Mesembryanthemum cordifolium</i>	31, 90
<i>Mammillaria neopotosina</i>	2		
<i>Mammillaria neoschwarziana</i>	2		

	Page
<i>Mesembryanthemum corniculatum</i> ...	31, 90
<i>Mesembryanthemum crassifolium</i> ...	56, 90
<i>Mesembryanthemum croceum</i> ...	30, 90
<i>Mesembryanthemum crystallinum</i> ...	32, 90
<i>Mesembryanthemum cuneifolium</i> ...	32, 90
<i>Mesembryanthemum deltoides</i> ...	8, 90
<i>Mesembryanthemum dimidiatum</i> ...	31
<i>Mesembryanthemum dolabriforme</i> ...	6, 90
<i>Mesembryanthemum echinatum</i> ...	7, 90
<i>Mesembryanthemum echinatum luteum</i> ...	7, 90
<i>Mesembryanthemum expansum</i> ...	8, 31, 90
<i>Mesembryanthemum felinum</i> ...	55, 90
<i>Mesembryanthemum filamentosum</i> ...	8, 90
<i>Mesembryanthemum geniculiflorum</i> ...	6, 90
<i>Mesembryanthemum gladiatum</i> ...	56, 90
<i>Mesembryanthemum glaucum</i> ...	54, 90
<i>Mesembryanthemum helianthoides</i> ...	32, 90
<i>Mesembryanthemum hirsutum</i> ...	7
<i>Mesembryanthemum hispidum</i> ...	8, 90
<i>Mesembryanthemum hispifolium</i> ...	55, 90
<i>Mesembryanthemum lacerum</i> ...	56, 90
<i>Mesembryanthemum laterifolium</i> ...	55, 90
<i>Mesembryanthemum linguiforme</i> ...	30, 90
<i>Mesembryanthemum longistylum</i> ...	54, 90
<i>Mesembryanthemum micans</i> ...	55, 90
<i>Mesembryanthemum milleri</i> ...	56, 90
<i>Mesembryanthemum mutabile</i> ...	8
<i>Mesembryanthemum noctiflorum</i> ...	6, 90
<i>Mesembryanthemum nodiflorum</i> ...	31, 56, 90
<i>Mesembryanthemum pinnatifidum</i> ...	54, 90
<i>Mesembryanthemum pugioniforme</i> ...	30, 90
<i>Mesembryanthemum radicans</i> ...	55, 90
<i>Mesembryanthemum scabrum</i> ...	55, 90
<i>Mesembryanthemum spectabile</i> ...	55, 90
<i>Mesembryanthemum splendens</i> ...	7, 90
<i>Mesembryanthemum stellatum</i> ...	7, 90
<i>Mesembryanthemum striatum</i> ...	32, 90
<i>Mesembryanthemum striatum x hispifolium</i> ...	55
<i>Mesembryanthemum striatum x pallidum</i> ...	32
<i>Mesembryanthemum tenuifolium</i> ...	30, 90
<i>Mesembryanthemum tortuosum</i> ...	31, 90
<i>Mesembryanthemum tuberculatum</i> ...	55, 90
<i>Mesembryanthemum tuberosum</i> ...	30, 90
<i>Mesembryanthemum uncinatum</i> ...	8, 90
<i>Mesembryanthemum verruculatum</i> ...	7, 90
<i>Mesembryanthemum violaceum</i> ...	30, 90
<i>Mestoklema tuberosum</i> ...	30, 90
<i>Micropterum cuneifolium</i> ...	32, 90
<i>Micropterum pinnatifolium</i> ...	54, 90
Mimicry plants ...	34
<i>Mitrocereus</i> ...	69
<i>Mitrophyllum</i> ...	34
<i>Monanthes polyphylla</i> ...	49, 55, 90
<i>Monilaria</i> ...	34
<i>Monvillea</i> ...	69
<i>Mucizonia hispida</i> ...	8, 90

	Page
<i>Myrtillocactus</i> ...	68
<i>Myrtillocactus cochal</i> ...	68
<i>Nananthus</i> ...	34
<i>Nananthus malherbei</i> ...	39
<i>Neobesseyia</i> ...	65
<i>Neobuxbaumia</i> ...	53
<i>Neohenricia</i> ...	39
<i>Neolloydia grandiflora</i> ...	29
<i>Neomammillaria mammillaris</i> ...	31
<i>Neoraimondia macrostibas</i> ...	68
Neville, R. H. ...	16
<i>Nopalxochia phyllanthoides</i> ...	(36), 92
Norco Cactus Farm Plants ...	41
<i>Notocactus</i> ...	26, 27, 75
<i>Notocactus apricus</i> ...	27
<i>Notocactus concinnus</i> ...	27
<i>Notocactus graessnerii</i> ...	27
<i>Notocactus haselbergii</i> ...	27
<i>Notocactus leninghausii</i> ...	27, (62)
<i>Notocactus mammulosus</i> ...	27
<i>Notocactus ottonis</i> ...	27
<i>Notocactus rutilans</i> ...	29
<i>Notocactus tabularis</i> ...	27
Nyctocereae ...	64, 65
<i>Nyctocereus hirschtianus</i> ...	2
<i>Nyctocereus serpentinus</i> ...	(36), 92
Ollason, L. ...	29
<i>Ophthalmophyllum</i> ...	34, 39, 53, 77
<i>Ophthalmophyllum lydiae</i> ...	53
<i>Ophthalmophyllum pillansii</i> ...	77
<i>Opuntia</i> ...	51, 87, 93
<i>Opuntia humifusa</i> ...	54, 90
<i>Opuntia opuntia</i> ...	54, 90
<i>Opuntia stricta</i> ...	54, 90
<i>Opuntia tomentosa</i> ...	54, 90
<i>Opuntia tuna</i> ...	54, 90
<i>Opuntia vulgaris</i> ...	29, 54, 90
<i>Oscularia majus</i> ...	8, 90
<i>Othonna cylindrica</i> ...	8, 90
<i>Pachypodium</i> ...	9
<i>Pachypodium namaquanum</i> ...	9
<i>Parodia</i> ...	75
<i>Parodia aureispina</i> ...	(84)
<i>Pectinaria articulata</i> ...	9
<i>Pedilanthus macrocarpus</i> ...	77
<i>Pelargonium radicans</i> ...	92
<i>Pelargonium tetragonum</i> ...	31, 90

	Page		Page
<i>Pelecyphora</i>	3, 26	<i>Pilosocereus claroviridis</i>	66
<i>Pelecyphora aselliformis</i>	(84)	<i>Pilosocereus collinsii</i>	66
Penfold, R.	81	<i>Pilosocereus columbianus</i>	66
Pests	82	<i>Pilosocereus cometes</i>	66
<i>Pfeiffera</i>	64	<i>Pilosocereus cuyabensis</i>	66
Phylogenetic System of Cactaceae	64	<i>Pilosocereus deeringii</i>	66
<i>Piaranthus</i>	9	<i>Pilosocereus floccosus</i>	67
<i>Piaranthus cornutus</i>	9	<i>Pilosocereus gironensis</i>	67
<i>Piaranthus decorus</i>	56, 90	<i>Pilosocereus glaucescens</i>	67
<i>Piaranthus framesii</i>	9	<i>Pilosocereus glaucochrous</i>	67
<i>Piaranthus punctatus</i>	9	<i>Pilosocereus gonnellei</i>	67
Pilcher, Miss A. M.	16, 80	<i>Pilosocereus gonnellei zehntneri</i>	67
<i>Pilocereus</i>	18, 27, 66	<i>Pilosocereus guerreronis</i>	67
<i>Pilocereus alensis</i>	66	<i>Pilosocereus hapalacantha</i>	67
<i>Pilocereus arenicola</i>	66	<i>Pilosocereus hermentianus</i>	67
<i>Pilocereus arrabidae</i>	66	<i>Pilosocereus keyensis</i>	67
<i>Pilocereus aurisetus</i>	66	<i>Pilosocereus lanuginosus</i>	67
<i>Pilocereus bradei</i>	66	<i>Pilosocereus leucocephalus</i>	66, 67
<i>Pilocereus campinensis</i>	69	<i>Pilosocereus luetzelburgii</i>	67
<i>Pilocereus catalani</i>	66	<i>Pilosocereus macrocephalus</i>	67
<i>Pilocereus chrysacanthus</i>	66	<i>Pilosocereus maxonii</i>	67
<i>Pilocereus cuyabensis</i>	66	<i>Pilosocereus millspaughii</i>	67
<i>Pilocereus floccosus</i>	67	<i>Pilosocereus minensis</i>	67
<i>Pilocereus glaucescens</i>	67	<i>Pilosocereus monoclonos</i>	67
<i>Pilocereus glaucochrous</i>	67	<i>Pilosocereus moritzianus</i>	67
<i>Pilocereus gonnellei</i>	67	<i>Pilosocereus nobilis</i>	67
<i>Pilocereus gonnellei zehntneri</i>	67	<i>Pilosocereus oligolepsis</i>	67
<i>Pilocereus guerreronis</i>	67	<i>Pilosocereus palmeri</i>	67
<i>Pilocereus hapalacantha</i>	67	<i>Pilosocereus pentaedrophorus</i>	67
<i>Pilocereus leucocephalus</i>	66, 67	<i>Pilosocereus perlucens</i>	67
<i>Pilocereus macrocephalus</i>	69	<i>Pilosocereus piauhensis</i>	67
<i>Pilocereus robinii</i>	67	<i>Pilosocereus polygonus</i>	67
<i>Pilocereus rupicola</i>	67	<i>Pilosocereus purpusii</i>	67
<i>Pilocereus salvadorensis</i>	67	<i>Pilosocereus robinii</i>	67
<i>Pilocereus sergipensis</i>	69	<i>Pilosocereus royenii</i>	67
<i>Pilocereus tehuacanus</i>	69	<i>Pilosocereus rupicola</i>	67
<i>Pilocereus tuberculatus</i>	69	<i>Pilosocereus salvadorensis</i>	67
<i>Pilocereus ulei</i>	69	<i>Pilosocereus sartorianus</i>	67
<i>Pilocereus urbanianus</i>	69	<i>Pilosocereus sergipensis</i>	67
<i>Pilocereus vollii</i>	69	<i>Pilosocereus sublanata</i>	67
<i>Pilosocereus</i>	66	<i>Pilosocereus swartzii</i>	67
<i>Pilosocereus alensis</i>	66	<i>Pilosocereus tehuacanus</i>	67
<i>Pilosocereus arenicola</i>	66	<i>Pilosocereus tuberculosus</i>	67
<i>Pilosocereus arrabidae</i>	66	<i>Pilosocereus tweedyanus</i>	67
<i>Pilosocereus arrabidae</i> x <i>Cephalocereus</i>		<i>Pilosocereus ulei</i>	67
<i>fluminensis</i>	67	<i>Pilosocereus urbanianus</i>	67
<i>Pilosocereus aurisetus</i>	66	<i>Pistorinia hispanica</i>	32, 90
<i>Pilosocereus backebergii</i>	66	<i>Pleiospilos</i>	5, 28, 34, 39, 52, 53, 76
<i>Pilosocereus bahamensis</i>	66	<i>Pleiospilos bolusii</i>	39
<i>Pilosocereus barbadensis</i>	66	<i>Pleiospilos hilmarii</i>	39
<i>Pilosocereus bradei</i>	66	<i>Pleiospilos nelii</i>	34
<i>Pilosocereus brooksianus</i>	66	<i>Pleiospilos prismaticus</i>	39
<i>Pilosocereus catalani</i>	66	<i>Pleiospilos simulans</i>	39
<i>Pilosocereus catingicola</i>	66	Pohlmann, R. H.	16, 17, 80
<i>Pilosocereus chrysacanthus</i>	66	Pooley, Mrs. F. E.	16, 80
<i>Pilosocereus chrysostele</i>	66		

	Page		Page
<i>Portulaca anacampseros</i>	6, 90	<i>Sedum aizoides</i>	6, 90
<i>Portulaca oleracea</i>	32, 90	<i>Sedum aizoon</i>	31, 90
<i>Portulaca paniculata</i>	56, 90	<i>Sedum album</i>	7, 90
<i>Portulaca patens</i>	56, 90	<i>Sedum altissimus</i>	7, 90
<i>Portulacaria afra</i>	32, 90	<i>Sedum anacampseros</i>	7, 90
<i>Prenia pallens</i>	8, 90	<i>Sedum annuum</i>	32, 90
President, From the	1, 25, 49, 73	<i>Sedum atratum</i>	32, 90
<i>Pseudomammillaria</i>	53	<i>Sedum dasyphyllum</i>	31, 90
<i>Pseudotrilocereideae</i>	65	<i>Sedum guatamalense</i>	77
<i>Pseudotruncatella (Lithops)</i>	39	<i>Sedum nudum</i>	55, 90
		<i>Sedum nussbaumii</i>	77
		<i>Sedum populifolium</i>	31, 90
<i>Rabiea difformis</i>	39	<i>Sedum reflexum</i>	32, 90
Rauh, Professor Dr. W.	11, 35, 83	<i>Sedum rhodiola</i>	54, 90
<i>Reaumuria vermiculata</i>	56, 90	<i>Sedum rosea</i>	54, 90
<i>Rebutia</i>	20, 27, 40, 49, 50, 64, 75	<i>Sedum rubens</i>	8, 90
<i>Rebutia chrysacantha</i>	50	<i>Sedum rupestre</i>	32, 90
<i>Rebutia fricii</i>	40	<i>Sedum saxatile</i>	32, 90
<i>Rebutia grandiflora</i>	(36)	<i>Sedum sediforme</i>	7, 90
<i>Rebutia marsonieri</i>	50	<i>Sedum sexangulare</i>	32, 91
<i>Rebutia miniscula</i>	50	<i>Sedum sieboldii</i>	77
<i>Rebutia speggazziniana</i>	27	<i>Sedum telephium</i>	31, 91
<i>Rebutia violaciflora</i>	50	<i>Sedum telephium purpureum</i>	31
<i>Rebutinae</i>	40	<i>Sedum treleasei</i>	77
Reed, M. G. R.	80	<i>Sedum villosum</i>	8, 91
Reeds, S....	16, 17, 80, 81	<i>Selenicereus grandiflorus</i>	8, 91
Reed, Mrs. W. A.	81	<i>Semnanthe lacera</i>	31, 56, 91, 92
Redoute, P. J.	6, 30, 54	<i>Sempervivum</i>	43
<i>Reicheocactus</i>	65	<i>Sempervivum arachnoideum</i>	31, 91
Report of the Council	44	<i>Sempervivum arboreum</i>	32, 91
Reports of meetings	18, 42, 82	<i>Sempervivum canariense</i>	54, 91
Reynolds, L.	16	<i>Sempervivum hirtum</i>	31, 91
<i>Rhipsalideae</i>	64	<i>Sempervivum monanthos</i>	55, 91
<i>Rhipsalis</i>	64	<i>Sempervivum montanum</i>	31, 91
<i>Rhipsalis fasciculatus</i>	8, 90	<i>Sempervivum sediforme</i>	7, 91
<i>Rhodiola rosea</i>	54	<i>Sempervivum tectorum</i>	31, 91
<i>Rhombophyllum dolabriforme</i>	6	<i>Sempervivum tortuosum</i>	55, 91
<i>Rochea coccinea</i>	6, 90	<i>Senecio articulata</i>	6, 91, 92
<i>Rochea falcata</i>	31, 90	<i>Senecio ficoides</i>	31, 91
Rowley, G. D.	5, 6, 12, 13, 30, 54, 66, 73	<i>Senecio kleinia</i>	6, 91
<i>Rulingia patens</i>	56, 90	<i>Senecio serpens</i>	7, 91
<i>Ruschia uncinatus</i>	8, 90	<i>Sesuvium portulacastrum</i>	6, 56, 91
<i>Ruschia verruculata</i>	7, 90	<i>Sesuvium portulacastrum sessile</i>	6, 91
		<i>Sesuvium revolutum</i>	56, 91
<i>Sansevieria</i>	92	Shepherd, R. H.	80
<i>Saxetana (Conophytum)</i>	33	Show Results	16, 80, 81
<i>Sceletium anatomicum</i>	52	Shurly, Mrs. D. F.	16, 17, 44
<i>Sceletium expansum</i>	31, 90	Shurly, E.	19, 44, 82, 88
Schutzbach, W.	34	<i>Solisia</i>	3, 26
Schwantes, Professor Dr. G.	39	Spence, Mrs. N. V.	16
<i>Sedum acre</i>	32, 90	<i>Sphalmanthus viridiflorus</i>	55, 91
		<i>Stapelia</i>	9, 28
		<i>Stapelia asterias</i>	55, 91
		<i>Stapelia cespitosa</i>	54, 91
		<i>Stapelia grandiflora</i>	29, 56, 91
		<i>Stapelia hanburyana</i>	(35)

	Page
<i>Stapelia herrei</i>	9
<i>Stapelia hirsuta</i>	(35), 55, 91
<i>Stapelia longipes namaquensis</i>	9
<i>Stapelia pedunculata</i>	9
<i>Stapelia punctata</i>	56, 91
<i>Stapelia reticulata</i>	55, 91
<i>Stapelia rubiginosa</i>	9
<i>Stapelia variegata</i>	29, 55, 91
<i>Stapeliads</i>	16, 29, 52, 76
Statham, J. G.	27
<i>Stenocactus</i>	2, 75
<i>Stenocereus</i>	27
Stillwell, Mrs. M.	4, 16, 17, 28, 52, 73, 76, 80, 81
<i>Stomatium</i>	16
<i>Strombocactus</i>	18, 26
<i>Strombocactus disciformis</i>	88
Succulents on Italian Riviera	87

<i>Talinum anacampseros</i>	6, 91
<i>Talinum paniculata</i>	56, 91
<i>Talinum patens</i>	56, 91
<i>Tavaresia</i>	29
<i>Tavaresia grandiflora</i>	(62)
<i>Tephrocactus rauhii</i>	(11)
<i>Tetragonia</i>	93
<i>Tetragonia crystallina</i>	7, 91
<i>Tetragonia decumbens</i>	7, 91
<i>Tetragonia decumbens ovalifolia</i>	7, 91
<i>Tetragonia echinata</i>	31, 91
<i>Tetragonia expansa</i>	32
<i>Tetragonia herbacea</i>	31, 91
<i>Tetragonia tetragonoides</i>	32, 91
<i>Thelocactus</i>	18, 27
<i>Thelocactus schwarzii</i>	53
<i>Tillaea aquatica</i>	30, 91
<i>Tillaea muscosa</i>	30, 91
<i>Tillaea vaillantii</i>	30, 91
Tischer, Dr. A.	10, 15, 39, 78, 79, 80

	Page
<i>Titanopsis</i>	34, 39, 52
<i>Titanopsis calcarea</i>	34
<i>Titanopsis hugo-schlechteri</i>	34
<i>Titanopsis schwantesii</i>	34
<i>Titanopsis setifera</i>	34
Towler, W. T. N.	80
Town to Country	43
<i>Trianthema</i>	93
<i>Trianthema monogyna</i>	31, 91
<i>Trianthema portulacastrum</i>	31, 91
<i>Trichocaulon</i>	58
<i>Trichocereus</i>	18, 68
<i>Trichocereus peruvianus</i>	68
<i>Trichodiadema barbatum</i>	7, 91
<i>Trichodiadema hirsutum</i>	7, 91
<i>Truncatella (Conophytum)</i>	79
<i>Tuberculata (Conophytum)</i>	10

<i>Umbilicus pendulinus</i>	55, 91
<i>Umbilicus rupestris</i>	55, 91

Walden, K. H.	42, 49, 73, 80, 81
Watson, H.	16
Watt, Mrs. G.	80
West, R. H.	16, 17, 44, 80, 81
<i>Wettsteinia</i>	15
Winter, H.	33
Wittia	64

Young, E. W.	43, 73
<i>Yucca alvifolia</i>	7, 91, 92
<i>Zygocactus</i>	64
<i>Zygophyllum album</i>	55, 91

THE
CACTUS
AND SUCCULENT
JOURNAL
OF GREAT BRITAIN

Established 1931

Vol. 19

JANUARY, 1957

No. 1

Contents

PAGE

From the President	1
Cactus Cultural Notes	2
Cultivation of Succulents	4
Pierre-Joseph Redouté	6
Little Namaqualand	9
Conophytum impressum	10
Conophytum glabrum	15
Show Results	16
Reports of Meetings	18
A New Treatment for Root Mealy Bug	20

*Published Quarterly by the Cactus and Succulent Society of Great
Britain at 7 Deacons Hill Road, Elstree, Herts.*

Price 2/6 Post Free 2/9



President : E. W. Shurly, F.L.S., F.C.S.S.

Vice-President : A. Boarder

COUNCIL :

A. J. EDWARDS, A.M.Tech.I.(Gt. Bt.)	G. L. HEDGES	
H. J. AYLOTT	Chairman.	S. J. PULLEN
P. V. COLLINGS	Mrs. M. STILLWELL	
A. W. HEATHCOTE A.C.I.S.	R. H. WEST	

Secretary : K. H. Walden, 152 Ardgowan Road, Catford, London, S.E.6.

Treasurer : E. W. Young, 35 Castle Drive, Ilford, Essex.

Editor : E. Shurly, 7 Deacons Hill Road, Elstree, Herts.

Librarian : P. V. Collings, St. John, Northumberland Road, New Barnet, Herts.

Exchanges : A. Boarder, Marsworth, Meadway, Ruislip, Middlesex.

Liaison Officer : A. W. Heathcote, Southwold, Station Road, Bishopston, Seaford, Sussex.

Meeting Place : New Hall, Royal Horticultural Society, Vincent Square, London, S.W.1. 6 p.m. for 6.30 p.m.

Annual Subscription—21/-

SOCIETY NEWS

1957

January	No Meeting.
February 19th	Annual General Meeting. 7 p.m. Restaurant, Old Hall.
March 5th	Seed raising and culture : A. Boarder. Table Show : Any genera.
April 2nd	Plant Exchanges.
	All the above meetings, except A.G.M. in the Lecture Room.

Branches

Berks & Bucks : Secretary : Mrs. M. Stillwell, 18 St. Andrews Crescent, Windsor.

West Kent : Secretary : Mrs. J. M. Hoather, 6 Cromwell Close, Bromley, Kent.

North Kent : Secretary : T. Holt, Orchard End, Downs Road, Northfleet, Kent.

Essex : Secretary : D. Stringer, 131a Fulwell Avenue, Barkingside, Essex.

North London : Secretary : Mrs. C. M. Allen, Shirley, Beech Hill Avenue, Hadley Wood, Herts.

Back Numbers of the Journal.

The following are still available :—

Volume 3	Part 3.	Volumes 10 and 12	Parts 2, 3 and 4 of each.
Volume 4	Complete.	Volume 13	Complete.
Volume 5	Parts 1, 2 and 3.	Volume 14	Parts 2, 3 and 4.
Volume 6	Part 1.	Volume 15	Complete.
Volume 7	Part 4.	Volume 16	Parts 2, 3 and 4.
Volume 8	Parts 3 and 4.	Volumes 17 and 18	Complete.
Volumes 9 and 11	Complete.		

Prices : Volumes 10/9 each, post free. Single parts, 2/9 each, post free.

Reprint : *Plantae succulentae in Horto Alenconio*, by H. A. Duval, 1809, with introduction by W. T. Stearn. 1/2 each, post free.

From the Editor, 7 Deacons Hill Road, Elstree, Herts.

THE
C A C T U S
AND SUCCULENT
JOURNAL
OF GREAT BRITAIN

ESTABLISHED 1931

Vol. 19

JANUARY, 1957

No. 1

FROM THE PRESIDENT

I am sorry to have to commence 1957 with the report that can only sadden all of us.

I quote an extract from a letter I have received from Mr. Arthur Boarder :—" I find that I shall have to give up the seed distribution job. I am sorry about this as I used to enjoy doing it. However, some of the selfish members have laid on the last straw. I have spent hours and even full days at sending off and packeting seeds. Most members help by complying with the directions, but there are many others who persist in asking for full directions as to how to grow them and also sending long lists of plants they have and they say ' do not send any seeds of the kinds I have.' Others ask for all kinds of rare seeds which have never even been put out on one of our lists. I have seen the deterioration of my collection of plants over the past two years or so and have put up with that, but when it comes to my health failing, I feel I must call a halt. Besides this fact, I have had to pay someone to re-pot and prick out and this because I have had to spend so much time with the seed distribution."

It is common to officials of the society to have to neglect their plants and, like Mr. Boarder, they put up with that because they enjoy serving the members. I can only hope that the minority of members who have made Mr. Boarder's task so much of a burden that he has to resign realise what they have done. Mr. Boarder has been one of the most unselfish of all of us. He has taken a leading part in the affairs of the Society since its founding, he has judged at almost every one of our Shows, he has freely given of his advice and experience and literally thousands of members have benefited by his generous nature. All this he has done free of charge, willingly and generously, although he lectures and judges professionally. He has had the good of the Society and its members at heart all these years and we can only regret that some members have been so inconsiderate as to cause this decision to be made.

Mr. G. R. Hedges, 16 Buck Lane, Kingsbury, London, N.W. 9, has agreed to undertake the work and we must insist upon ALL members conforming with the directions appertaining to the seed distribution otherwise I am afraid Mr. Hedges will also find the position impossible. In that case, the Council will have to seriously consider whether the seed distribution should not be reviewed. The seed distribution is of the utmost value to all members, and it is entirely free, and it would be a serious loss if it was held impossible to continue it.

E. SHURLY.

Table Shows are held at meetings and every member is invited to bring one plant for competition. Points are awarded and, at the close of the year, prizes are awarded.

CACTUS CULTURAL NOTES

By A. BOARDER

The year 1956 was not a good one for cactus growers as there was little sunshine at a time when it was most needed. It is rather a wonder that there were as many flowers considering the weather for most of the year. There seemed to be a fair amount of bloom in my greenhouse and I have been very surprised at the number of fruits which have formed on the *Mammillarias*. I am writing on December 3rd, 1956, and have already collected 176 kinds of *Mammillaria* seed from my plants. I hardly thought I had had so much bloom. The fruits have made a gay show all through the autumn into the winter, many are still forming and some are quite large and colourful. *M. gilensis* has very large red seed pods and seen on quite a small seedling they look very attractive besides being unusual. *M. neoschwarziana* has large club-shaped fruits and a *M. perbella lanata* is very handsome with a double ring of pinkish-red pods. *M. fraileana* has two large terra-cotta coloured seed pods which keep their colour for weeks. *M. falcata* has over 40 fine red fruits and these remain colourful for some time. The pods on *M. rhodantha* although quite showy do not keep red for long and soon lose the colour when they ripen.

M. schiedeana appears awkward this last two seasons, it has had many flowers and develops nice red seed pods. However, on examination I have found that the pods are empty of seeds. I think that it is very rare for me to find pods on *Mams.*, which do not contain at least a few seeds. My plant of *Euphorbia obesa* usually produces two complete crops of seeds, this year the first crop was gathered safely, but the second has not yet ripened although a couple of dozen pods are well formed and appear to contain seeds. The weather has not been kind enough to my *Harrisia martini* as a flower bud has formed, but will not open now this year. The plant is usually a late flowering one, but this year mine is not going to oblige. I had two buds form on a last year's seedling of *M. pacifica*, and although they just showed the colour they never fully developed and now appear to have shrunk back into the body of the plant.

I had a new species (unnamed), of *Gymnocalycium* flower for me this year and as the plant was only a 1955 seedling I was very interested, I have not previously flowered a *Gymnocalycium* the year following the sowing of the seed. It is also more strange as I had parted with a number of the largest plants late in 1955 and early in 1956, and I shall be pleased to hear from any member who has had seedlings from me whether they have also flowered any unusual kinds in 1956. This will indicate to me whether it is just the early good start I give my seedlings or whether there is something also in the subsequent treatment of the seedlings.

I have had a two year old seedling of *Echinocereus oklahamensis* which flowered normally and then produced a flower right in the centre of the growing point. It will be interesting to see how the plant continues to make fresh growth next time. An interesting plant I have flowered well this year is *Nyctocereus hirschtianus*, as it is quite a small plant about as big as my forefinger and it has quite large white tubular flowers which open only for one night. I had five or six flowers form at different times and each one has produced a seed pod filled with apparently good seeds. I have no other plant of this species in the greenhouse and no other night-flowering plant was in bloom at the same time.

What handsome plants the genus *Stenocactus* make, I have several I raised from seed about six or seven years ago, and not only have they made fine specimens and flowered well, but the spines are as long and stout as one would expect to find on imported plants. They are interesting to grow from seed and the seedling of the first year looks very unlike a *Stenocactus*. Most species of these seedlings have a bunch of long curling spines growing up above the growing centre. These disappear when the plant ages a bit to be replaced by stout spines which do not usually grow over the top of the plant. It is apparently nature's way of protecting the tender growing centre of the young seedling.

A feature of some of the *Mammillarias* is their tendency to make two or more heads. The species :— *M. parkinsonii*, *M. saetigera*, *M. morganiana* and *M. iwensensiana*, almost always divide up into two to four heads after they reach a fair size, but some other kinds have such a tendency. *M. ebenacantha* goes double headed and I have found several other species showing the beginnings of a double head. I find these on those *Mams.* which do not normally make any off-sets. *M. rhodantha* will do this when fairly large and I have a *M. neopotosina* doing the same thing. I think it spoils the look of the plant a little, but there is absolutely nothing one can do about it. The development of the two heads usually gives two heads of similar size and it would be impossible to remove one without leaving a horrible scar.

At a meeting of the Society in July a member suggested the use of surgical spirit for killing mealy bug. I

made some experiments as soon as I could and found that indeed it does the trick as claimed. It is strange that I had not found this before as it is mostly composed of alcohol the same as methylated spirit. I tested meth. again and although it darkens a mealy bug and appears to stupify it for a time, after a few minutes the bug can recover, get back its white covering and walk off. However, one touch with surgical spirit darkens the bug for ever and it is killed almost instantly. I am very glad to have found this as it means that no more need one use that very dangerous narcotic toxin, nicotine. I have used some of this mixed with meth. for many years and have disliked it intensely. Now I find that the surgical spirit is quite easily obtained at any chemists without any enquiries and signing of poison books, it is quite colourless and so cannot stain any white hairs or spines as was possible with nicotine. I find the best way to deal with the occasional bug is to touch it with a pointed stick which has been dipped into the spirit. It can be sprayed on to a badly affected plant and the new type of plastic bottle sprayers are ideal for this, but a plant well sprayed should be again sprayed with clear slightly warmed water soon after being treated. There does appear to be a slight greasy deposit left on a glass surface once the spirit evaporates and this could cause a blocking of the pores of a plant.

The photograph of my greenhouse and frame depicted in the last Journal may need some explanation to new members. The house is 20 feet by 9 feet and has a centre path of concrete. A wall surrounds the path except at the door and in between this and the outer wall is packed with earth with shingle on top. The surface is covered with sand on which the plants stand. Cable heaters are embedded in the sand so that no pot is more than a few inches from a cable. The frame is 20 feet by 6 feet 9 inches, and as there is no path it holds about the same amount as the greenhouse. All the frame-work is made of reinforced concrete, the long pieces half jointed to fit to the next section and all is secured by aluminium pins. There are 75 separate pieces of concrete in the frame-work, and the necessary pieces to take the glass have been made with a rebate. Six wooden lights fit each side and all are removable. They can be raised for air as shown in the picture. The base is raised and floated over with concrete and my seedling boxes stand on inch tile-batten. Under the boxes run two 80 foot soil warming cables and another is linked around the inside of the frame. A thermostat regulates the temperature which is about 43 degrees F. All the seed boxes in which the seedlings are pricked out are of concrete with no drainage holes whatever, which disposes of the oft repeated warning, cacti cannot be grown without having a well drained pot or pan. The watering must of course be done with care at all times.

Today I watered everything in the greenhouse. The temperature was 58 with the four top windows opened very slightly. The frame, unopened was at 63 degrees F., at 3.0 p.m. It may not be necessary to water again for a month, it all depends on the weather.

Before our next journal will be published many members will be starting to sow cactus seed. I get so many enquiries as to how to grow seedlings that I feel I must give a little information on the subject. Many of our older members would perhaps be surprised to know that at least three quarters of our members are either beginners or have no greenhouse. I can tell by my correspondence that hundreds of our members are still at a loss as to how best to grow their seedlings. Seed can be sown in pans in John Innes seed compost. The seed should be sprinkled on the surface and only the larger seeds should be just pressed into the soil. The pan can be watered in the first instance by immersion in fairly hot water until all is well soaked. The pans can be placed in damp peat in a propagating frame with a temperature of from 70 to 75 degrees. Higher temperatures can give weak seedlings. The pans should have a cover of glass and be shaded from the light until some seedlings appear. They must then have air and be watered as often as they need it. Do not keep them soaking wet at all times. The early part of the year is the best for seed sowing so that the seedlings get plenty of time to grow on well before the winter. They can be a bit of a nuisance to keep healthy in the winter as although warmth can be given, it is not everyone who can give artificial lighting which they should have to replace the lack of sun in the short days if they are kept at a growing temperature.

The general watering of the cacti need not be hurried. If in a greenhouse most plants will not require watering regularly until March, but it all depends on the kind of plant. As soon as fresh growth is seen at the growing centre of a plant some water can be given. Refrain from watering any plant which shows no sign of new growth. Start re-potting as soon as the plants commence to grow. Remove all old soil and use clean pots. When dealing with very white spined plants it is a good plan to incorporate some limestone chippings in the potting mixture as the plants can benefit from this.

The plants which like the limestone particularly are :—*Epithelanthas*, *Pelecyporas*, *Solisias*, *Astrophytums*, and such *Mammillarias* as :—*plumosa*, *herrerae*, *egregia*, *magallini*, *hahniana*, *woodsii*, *klissingiana* and those others with close white spines. Plenty of air is essential in the greenhouse on all suitable occasions.

JANUARY NOTES ON CULTIVATION OF SUCCULENTS

By Mrs. M. STILLWELL

With twenty-five wonderful years to look back on, the Society now goes from strength to strength and as we enter into another year, full of new hopes and resolutions for the future, may we extend a helping hand to all those new members who are seeking assistance with the growing of their plants. Anyone with a problem, however great or small, will always be sure of some helpful advice from officials of the Society if they care to write enclosing a stamped addressed envelope. For those members who live too far away to attend meetings, I will always undertake to help them name their succulents if they care to send me any small plants or cuttings. These should all be numbered and will be returned to the owner with the appropriate name against each number, as far as I am able. The member would, of course, be expected to pay the return postage, if a number of plants were sent. Very young seedlings are almost impossible to identify until they have formed their true bodies, particularly in the *Mesembryanthemum* family.

Just before Christmas, I had one or two casualties among the *Lithops* and *Dinteranthus*. I found that two pots of *Lithops*, while appearing healthy on the surface, had turned black at the base and in a short time had collapsed. They had not been watered and there were no drips and the house was quite frostproof. The only solution I could find was that the base of the plants had been severely bruised by matching stones placed around them for the purpose of showing. During the journey up to London, no doubt these plants had a considerable jolting and I feel sure this was the ultimate result as plants that did not go to the shows were intact. It would be advisable to take all such top dressings to shows separately if it is desirable to use them.

The watering of succulents during the winter is always a little tricky. As long as a plant stays healthy and plump I do not water it as it is so easy to produce an over damp atmosphere in the greenhouse which soon leads to an attack of mildew, particularly if the house has not got a concrete floor. Plants in the living room will generally be subjected to much higher temperatures and, therefore, will need more water, but only when they show signs of requiring it. *Crassulas*, for instance, are mostly winter growers and should be watered sparingly about once a week. My large pot of *Crassula lactea* was a mass of bloom and all ready to bring indoors for Christmas as it has been for many past years, also its companion the pink flowered *Crassula montis draconis*. I always bring indoors *Kalanchoe granata* at this time of the year as by December, being kept on the dry side, it has taken on a really flaming red shade, and is ideal as a Christmas decoration. These three plants can stay indoors for weeks and suffer no ill effects.

Many of the *Gibbaeums* should now be in bud, in fact, I had *Gibbaeum molle* out in November. These plants want careful watering during the winter when their buds are developing, but never water directly on to the plant, but carefully round the edge of the pot so that just sufficient moisture trickles down to the roots.

I had an enquiry the other day concerning *Epiphyllum truncatum*. Although this is really a cactus, many people still look upon it as a succulent owing to its leafy appearance. The lady in question had a beautiful plant in her sitting room covered with buds. She wished to know if it would be advisable to take it into her warm kitchen every night and place it back in the sitting room during the day time. My advice to anyone dealing with this rather temperamental plant is to leave it in the one position where the buds were first formed. It is obvious that these conditions suit it and any sudden changes of temperature would almost certainly cause dropping of buds. Providing the room is frost proof there is nothing to worry about.

This is the time of the year when most people enjoy a good book and, by careful study, one can learn from books the exact conditions and localities in which our plants grow. From this we get to know their requirements, whether they require sunny or shady conditions, what period of the year constitutes their growing and their resting times and, perhaps the most important, the type of soil in their native habitat. Whether it is calcareous, chalky, or sandy, by giving our plants individual treatment we can obtain far better results than if we plant everything in the same old soil mixture year after year. As this is the time of the year when we are beginning to think about getting some fresh material together to start repotting, why not buy, also, small quantities of these little extras that some of the plants will need, such as a really good sharp sand, hoof and horn, bone meal, fine limestone, grit, peat, and a little leafmould. Have all these ingredients in boxes on top, or under the potting bench, so that when mixing the soil every plant can have a little of what it fancies and I'm sure it will do it good, as the song says. All plants benefit from being repotted at least once a year and having decayed and dead roots removed. It also ensures a thorough examination of the plants and so helps to combat the spread of pests, such as mealy bug. I

find that plants react better if repotted just at the commencement of their growing period, particularly the stemless *Mesembryanthemums*. This is not always possible where one has a large collection to attend to, but it is a practice I endeavour to keep if I can.

Euphorbias should not be watered until all danger of frost is passed and it would not be advisable to take any cuttings from these until May or June. All cut surfaces should be quickly covered with flowers of sulphur, which is another necessity for the potting bench, together with a bottle of nicotine and methylated spirit, 40 parts meth. to one of nicotine for treating the pests.

Many people will soon be thinking of sowing seed. Personally I think that March is quite early enough as they will invariably catch up with those sown in January. Those people without a propagator should wait until the end of April or the beginning of May to ensure safe germination of the seed.

While I am sure that electricity is the ideal method of heating a greenhouse, it is also one of the most expensive and so, this season, I have endeavoured to cut the cost a little by introducing small blue flame oil heaters during the really cold spells. This has kept up the temperatures very well and the electric heaters have only had to do about half the work, as they cut out much sooner. I believe now there are some very good convector types of greenhouse heaters on the market which keep the air circulating and should be the ideal thing for those people contemplating a new heating system.

Conophytums can be given one good watering in March on a nice bright day and then allowed to rest until about July. Water and repot *Lithops* in May and leave *Pleiospilos* dry until the end of July. *Gibbaeums* like a rest in the summer, also some of the winter growing *Cotyledons*.

Last year's seedlings can soon be pricked out into pans and placed on a shelf near the glass as soon as all danger of frost is past, this will get them nicely hardened off.

ALKALOIDS FROM CACTI

The discovery of an alkaloid, anhalonine, from "mescal buttons" by Lewin in 1888 aroused much interest in the chemical composition of the *Cactaceae* family, and, a few years later, Heyl isolated an amorphous alkaloid, pilocereine, from *Lophocereus schottii*. This alkaloid has recently been obtained in a crystalline form and was found to have the empirical formula $C_{30}H_{42}N_2O_4$. The hydrochloride of the alkaloid, isolated from *L. schottii* and *P. marginatus*, has now been studied pharmacologically by C. E. Powell and K. K. Chen (*F. Amer. Pharm. Ass.*, 1956, 45, 559). Its action intravenously was determined on the blood pressure, respiration, and small intestine of anaesthetised dogs and cats. Its effect on the blood pressure was also studied in anaesthetised roosters and rats. Pilocereine was found to lower the blood pressure of dogs and roosters, whereas the cat's blood pressure was elevated. In anaesthetised cats, small doses first lowered and then raised blood pressure. Larger doses only lowered blood pressure. The alkaloid relieved methacholine-and-histamine-induced spasm of the isolated small intestine of rabbits and guinea-pigs. One interesting feature was the anti-malarial action of pilocereine in canaries infected with *P. relictum*, in which it was almost as effective as quinine.

(By permission of the proprietors of The Pharmaceutical Journal, October 20th, 1956).

The programme for 1957 is as follows :—February 19th, Annual General Meeting, 7 p.m. ; March 5th, Seed raising and culture, Mr. A. Boarder, Table Show—Any genera ; April 2nd, Plant Exchanges ; May 21st, Show Preparations, Mr. A. W. Heathcote, Table Show—*Mammillarias* ; June 4th, Interesting plants at the Show held 4th and 5th June, by a Panel, Table Show—plants in flower ; July 16th, Pests, Mr. P. V. Collings, Table Show—*Echinocacti* ; August 27th and 28th, SHOW ; August 27th, Any Questions, by a Panel, Table Show—*Euphorbias* ; September 10th, Plant Exchanges ; October 22nd, Succulent Collection at Kew, Mr. E. W. Macdonald, Table Show—*Lithops* ; November 19th, A visit to Monaco, 1953, Mr. G. D. Rowley ; December 3rd, Members' photographic slides. All meetings held at the R.H.S. Halls, Greycoat Street or Vincent Square at 6 p.m. for 6.30 p.m., except the A.G.M. at 7 p.m. in the Restaurant, Old Hall. The August, November and December meetings will be held in the Floral A Room, New Hall. The rest in the Lecture Room, New Hall. Sherman Hoyt Competition (R.H.S. Show) 18th and 19th June, 1957.

PIERRE-JOSEPH REDOUTÉ—
 “RAPHAEL OF THE SUCCULENTS”—*cont.*

With bibliographical and botanical details of over two hundred published plates.

By GORDON D. ROWLEY

A. P. DE CANDOLLE & P. -J. REDOUTÉ

Plantarum Succulentarum Historia

ou

Histoire Naturelle des Plantes Grasses

Collation of Plates

L=Large and S=Small paper editions

Fascicle and presumed date	Page	De Candolle's name	Modern name	Authority	
1 Dec. 1798 or Jan. 1799	1	<i>Crassula coccinea</i>	<i>Rochea coccinea</i> (L.) D.C.	Harv. in Fl. Cap. II	
	2	<i>Crassula acutifolia</i>	<i>Crassula acutifolia</i> Lam.	Schonl.	
	3	<i>Talinum anacampseros</i> (<i>Portulaca anacampseros</i>)	<i>Anacampseros telephiastrum</i> D.C.	Berg.	
	4	<i>Sedum aizoides</i>	<i>Aichryson x domesticum</i> Praeg. <i>aizoides</i> (Lam.) Praeg.	Praeg.	
2 1799	5	<i>Mesembryanthemum calamiforme</i>	<i>Cylindrophyllum calamiforme</i> (L.) Schwant.	Berg. (as <i>Mesem. calamiforme</i> L.)	
	6	<i>Mesembryanthemum dolabriforme</i>	<i>Rhombophyllum dolabriforme</i> (L.) Schwant.	Berg. (as <i>Mesem. dolabriforme</i> L.)	
	7	<i>Crassula ciliata</i>	<i>Crassula ciliata</i> L.	Schonl.	
	8	<i>Anthericum annuum</i>	<i>Bulbine annua</i> (L.) Willd.	Bak. in Fl. Cap. VI	
	9	<i>Sesuvium portulacastrum</i>	<i>Sesuvium portulacastrum</i> L. <i>sessile</i> G. Don	Don III	
	10	<i>Mesembryanthemum noctiflorum</i>	<i>Aridaria noctiflora</i> (L.) N. E. Br.	N. E. Br. in J. Bot. 1928	
	11	<i>Mesembryanthemum aureum</i> (<i>Mesembryanthemum</i> in S)	<i>Lampranthus aureus</i> (L.) N. E. Br.	Berg. as <i>Mesem. aureum</i> L.	
	12	<i>Cacalia kleinia</i>	<i>Senecio kleinia</i> (L.) Less.	Berg. as <i>Kleinia neriifolia</i> Haw.	
	3 1799	13	<i>Crassula perfoliata</i>	<i>Crassula perfoliata</i> L.	Schonl.
		14	<i>Anthericum frutescens</i> (<i>Bulbine caulescens</i>) Fig. 5	<i>Bulbine caulescens</i> L.	Bak. in Fl. Cap. VI
	4	15	<i>Aloe rubescens</i>	<i>Aloe vera</i> L. <i>officinalis</i> (Forsk.) Bak.	Berg.
16		<i>Aloe viscosa</i>	<i>Haworthia viscosa</i> (L.) Haw.	Berg.	
17		<i>Mesembryanthemum geniculiflorum</i>	<i>Aridaria geniculiflora</i> (L.) N. E. Br.	N. E. Br. in J. Bot. 1928	
18		<i>Cacalia laciniata</i>	<i>Senecio articulatus</i> (L.f.) Sch. Bip.	Berg. as <i>Kleinia articulata</i> (L.f.) Haw.	
19		<i>Crassula tetragona</i>	<i>Crassula tetragona</i> L.	Schonl.	

Fascicle and presumed date	Page	De Candolle's name	Modern name	Authority
1799	20	<i>Yucca aloifolia</i>	<i>Yucca aloifolia</i> L.	Trelease in 13th Ann. Rep. Miss. Bot. Gdn. 1902, 88.
	21	<i>Aloe variegata</i>	<i>Aloe variegata</i> L.	Reyn.
	22	<i>Sedum album</i>	<i>Sedum album</i> L.	Praeg.
	23	<i>Tetragonia decumbens</i>	<i>Tetragonia decumbens</i> Mill. ovalifolia Sond.	Sond. in Fl. Cap. II
	24	<i>Mesembryanthemum echinatum</i> (M. ech. luteum on S plate)	<i>Delosperma echinatum</i> (Ait.) Schwant.	Berg. as Mesem. echinatum Ait.
5 1800	25	<i>Crassula perfossa</i>	<i>Crassula perfossa</i> Lam.	Higgins in Nat. Cact. & Succ. J. X, 1955, 29.
	26	<i>Anthericum alooides</i>	<i>Bulbine alooides</i> (L.) Willd.	
	27	<i>Aloe vulgaris</i>	<i>Aloe abyssinica</i> Lam.	Berg.
	27*			
	27**			
	28	<i>Mesembryanthemum barbatum</i>	<i>Trichodiadema barbatum</i> (L.) Schwant.	Berg. as Mesem. barbatum L.
	29	<i>Mesembryanthemum stellatum</i>	<i>Trichodiadema hirsutum</i> (Haw.) Stearn	Stearn; N. E. Br. MSS as <i>M. hirsutum</i> Haw.
	30	<i>Aizoon hispanicum</i> (Airoon h. on plate)	<i>Aizoon hispanicum</i> L.	Don III
6 1800	31	<i>Aloe marginalis</i>	<i>Lomatophyllum purpureum</i> (Lam.) Dur.	Berg.
	32	<i>Aloe ferox</i>	<i>Aloe ferox</i> Mill.	Reyn.
	33	<i>Sedum anacampseros</i>	<i>Sedum anacampseros</i> L.	Praeg.
	34	<i>Tetragonia crystallina</i>	<i>Tetragonia crystallina</i> L'Her.	Don III
	35	<i>Mesembryanthemum splendens</i>	<i>Aridaria plenifolia</i> (N. E. Br.) Stearn	N. E. Br. in J. Bot. 1928 as <i>A. fastigiata</i> (Haw.) N. E. Br.
	36	<i>Mesembryanthemum verruculatum</i>	<i>Ruschia verruculata</i> (L.) Rowl.	See†
7 1800	37	<i>Crassula lactea</i>	<i>Crassula lactea</i> Ait.	Schonl.
	38	<i>Aloe arborescens</i>	<i>Aloe arborescens</i> Mill.	Reyn.
	39	<i>Aloe humilis</i>	<i>Aloe humilis</i> (L.) Mill.	Reyn.
	40	<i>Sedum altissimum</i> (<i>Sempervivum sediforme</i>)	<i>Sedum sediforme</i> (Jacq.) Pau	Praeg. (as <i>Sedum altissimum</i> Poir.)
	41	<i>Mesembryanthemum bellidiflorum</i>	<i>Acrodon subulatus</i> (Mill.) N. E. Br.	N. E. Br. in J. Bot. 1928
	42	<i>Cacalia repens</i>	<i>Senecio serpens</i> Rowl.	Berg. as <i>Kleinia repens</i> (L.) Haw.
8 1800	43	<i>Crassula orbicularis</i>	<i>Crassula orbicularis</i> L.	Schonl.
	44	<i>Aloe rhodacantha</i>	<i>Aloe glauca</i> Mill.	Reyn.
	45	<i>Aloe retusa</i>	<i>Haworthia retusa</i> (L.) Haw.	Berg.
	46	<i>Euphorbia nerifolia</i>	<i>Euphorbia nerifolia</i> L.	Berg.

†*Ruschia verruculata* (L.) Rowl. n. comb.= *Mesembryanthemum verruculatum* L. in Sp. Plant. Edn. I, 1753, 486; Haw. in Misc. Nat. 1803, 81; Syn. Plant. Succ. 1812, 238-8; Revis. Plant. Succ. 1821, 155 (incl. *α dillenii* and *β candollii*); Sond. in Fl. Cap. II, 1862, 428; Berg. in Mesem. & Port. 1908, 126-7; L. Bolus in Notes on Mesem. I, 1928, 57.

Fascicle and presumed date	Page	De Candolle's name	Modern name	Authority
	47	Mesembryanthemum expansum	Prenia pallens (Ait.) N. E. Br.	N. E. Br. in G.C. 1928; see also Bothalia I, 1922, 157.
	48	Cacalia cylindrica	Othonna cylindrica (Lam.) D.C.	Berg.
9	49	Crassula spathulata	Crassula spatulata Thunb.	Schonl.
1800	50	Aloe arachnoides	Haworthia arachnoides (Ait.) Haw.	Berg.
	51	Aloe atrovirens	Haworthia herbacea (Mill.) Stearn	Stearn
	52	Cactus grandiflorus	Selenicereus grandiflorus (L.) Br. & R.	Br. & R.
	53	Mesembryanthemum deltoides	Oscularia majus (West.) Schwant.	N. E. Br. in J.L.S. 1920, 118 as Mesem. del- toides L. majus Weston
	54	Mesembryanthemum uncinatum	Ruschia uncinata (Mill.) Schwant.	Sond. in Fl. Cap. II as Mesem. uncinatum Mill.
10	55	Crassula rubens	Sedum rubens L.	Praeg.
Dec. 1800	56	Aloe spiralis	Astroloba spiralis (L.) Uitew.	Berg. as Apicra spiralis (L.) Bak.
or				
Jan. 1801	57	Aloe margaritifera	Haworthia margaritifera (L.) Haw. minima (Ait.) Uitew. polyphylla (Haw.) Uitew.	Berg. as Haworthia margaritifera (L.) Haw.
	58	Cactus peruvianus	Cereus peruvianus (L.) Mill.	Salm-Dyck in Cact. in Hort. Dyck. 1849, 46 as Cereus peru- vianus Tabern.
	59	Cactus parasiticus	Rhipsalis fasciculata (Willd.) Haw.	Br. & R.
	60	Mesembryanthemum filamentosum	Erepisia mutabilis (Haw.) Schwant.	Berg. & N. E. Br. MSS. as Mesem. mutabile Haw.
11	61	Crassula obvallata	Crassula obvallata L.	Schonl.
1801	62	Aloe rigida	Haworthia rigida (D.C.) Haw.	Berg.
	63	Aloe carinata	Gasteria verrucosa (Mill.) Haw.	Berg.
	64	Kalanchoe aegyptiaca	Kalanchoe aegyptiaca † D.C.	Berg.
	65	Kalanchoe spathulata	Kalanchoe spathulata † D.C.	Berg.
	66	Mesembryanthemum hispidum	Drosanthemum hispidum (L.) Schwant.	Berg. as Mesem. hispidum L.
12	67	Crassula glomerata	Crassula glomerata L.	Schonl. (as "t.57")
1801	68	Aloe linguiformis	Gasteria sulcata (S.D.) Haw.†† ?	
	[68*]	Aloe linguiformis verrucosa	Gasteria angustifolia (Ait.) Haw.	N. E. Br. MSS.
	69	Cotyledon hispida (C. mucizonia)	Mucizonia hispida (Lam.) Berg.	
	70	Sedum villosum	Sedum villosum L.	Praeg.

† Referred to synonymy under *K. laciniata* (L.) D.C. by R. Hamet; to *K. crenata* Haw. by Britten in Fl. Trop. Afr. II, 395.

†† Baker refers this plate to *G. disticha* Haw. in Fl. Cap. VI; Berger doubtfully assigns it to *G. angustifolia* (Ait.) Haw.

LITTLE NAMAQUALAND—cont.

By H. HALL

S. herrei is one of the loveliest and one of the difficult ones. *S. pedunculata* is another gem, invariably under the shrublets like most *Stapelias*. When not in flower it is indistinguishable from *Caralluma aperta* or for that matter, *C. umdausensis*, both of which have large attractive flowers. Another rarity is *S. rubiginosa* from the Richtersveld which is one of the small flowered species. On one memorable occasion, quite near this, I came across *Stapelia longipes* var. *namaquensis*, the first and only occasion I ever saw a specimen. It bore large flowers flat on the ground at the end of six inch stems. I gathered the flowers and portions of the stems for herbarium purposes and left the bulk of the plant alone, for it was more than a foot across. Though I have searched that same spot three times since, far into the Richtersveld, I have never come across it again. The rocky slope is large and such plants are never conspicuous. The pretty flowered *Huernia namaquensis* is fairly common along the west coast in the northern area.

Several species of *Piaranthus* occur in Namaqualand, such as *P. framesii*, *P. punctatus* and *P. cornutus*. Years ago I once came across a carpet of *P. cornutus* growing around the foot of an old and massive *Aloe dichotoma*. This carpet was about six feet wide, thinly covered with the hard, undecaying, discarded leaves of the *Aloe* which supplied some shade from the sun. I have seen this same plant on a number of occasions since and it still remains, to me, a very outstanding specimen and many times larger than any other specimen or species of *Piaranthus*.

Near Springbok I have collected *Pectinaria articulata* and the only specimen I have ever seen. On the Knersvlakte one occasionally sees the curious *Echidnopsis framesii*, always under shrublets. Further to the west, somewhat beyond the scope of this article I have seen masses of the same thing and from many specimens examined and noting the variation in stems and flowers I feel that the second species viz. *E. serpentina* is but one and the same thing.

There are many species of *Anacampteros*, widely scattered, difficult to identify. The snowy white, papery stemmed species occur everywhere there are quartz outcrops, almost invisible in the strong sunlight. Showiest of all, I think, is *A. alstonii*, its large, turnip-shaped rootstock buried to its rim, surmounted with myriads of silvery white stems, flush with the ground. The flowers are delicately shaded with pale pink and the largest of the *Avonia* section. This is common to the east of Namaqualand, but I have seen it near Steinkopf on one occasion.

It is impossible to mention all the succulent gems here, but I must include *Crassula deceptrix* and *C. alstonii*, two of the finest of all the fat dwarfs. *Crassula arta* and *C. columella* would feel offended if I left them out though they are somewhat difficult in cultivation. *Crassula* is an enormous genus and of great interest. Namaqualand rightly claiming many of the finest species.

The genus *Cheiridopsis* is well represented in this area and, since it can claim to have some of the finest flowers amongst *Mesembryanthemum*, generally cannot be left out. Unfortunately, they rarely retain their true characteristics in cultivation under glass nor can they claim to ever show their flowers to perfection under artificial conditions. Widespread over vast areas of Namaqualand is *Ch. candidissima*, forming compact clumps more than a foot across. Its large flowers are white, palest pink or creamy yellow and very showy indeed. Most species have yellow flowers, but those of *Ch. speciosa* are red, those of *Ch. purpurea* are magenta, salmon-pink with *Ch. cuprea*. Near Steinkopf occurs the curious shaped *Ch. peculiaris*, violet-grey in colour like the shales in which it grows.

Related to *Cheiridopsis* is the genus *Cephalophyllum* which shares the honour for show flowers. Many are trailing species, revelling in the loose sandy wastes which allow of readily rooting as they spread. The largest flowered of all is *C. spongiosum*, another trailer which climbs amongst and over the shrubs along the coastal region south of Alexander Bay. The flowers are reddish and nearly six inches across.

Perhaps the most famous plant of all, from a botanical point of view, is *Pachypodium namaquanum*. It has been mentioned several times in previous issues of the Journal so I will merely add that it is more or less confined to the regions near the Orange River. Last year I saw great numbers in South West Africa, but also quite near the Orange River too. My recent visit to their home by no means lessened their fascination for me. My friend and guide on many occasions, Mr. van Heerde, of Springbok, is never unwilling to tramp amongst the lonely hills where these strange looking plants grow. We photographed one giant which measured at least ten feet in height. It was so old that the lower three foot of stem was smooth and shiny where the thorns had fallen away. At this, the winter stage, the tips of the stems are clothed in leaves, the flower buds barely visible in the leafy crowns. All the ends of the stems lean over to the north, a well-known feature. Where they grow is a very silent, lonely world and these strange plants are very impressive and mysterious. A year ago, when in South West Africa, my companions and I camped beneath a slope studied with *Pachypodiums*. I shall always remember the strange sight they formed, silhouetted against the paling sky as night descended.

CONOPHYTUM IMPRESSUM Tisch. spec. nov.

By Dr. A. TISCHER

(*Mesembryanthemaceae* Lowe ; Gen. ; *Conophytum* N. E. Br. ; Subgen. *Conophytum* Schwant. Ser. : *Carruicola* Schwant., Subser. : *Tuberculata* Schwant.).

Planta humilia caespitosa ramulis abbreviatis ; corpuscula obconica ad 13 mm. longa ad 12 mm. diam., circuitu circulata vel irregulariter 4-6-angulata, supra \pm incavata, ore —3,5 mm. longo ; levia glabra, supra punctis non prominentibus brunneo-viridibus notata ; ore ciliate zona saturate cinereo vel olivaceo viride cincta ; flores nocturni ; ovarium inclusum ; calycis tubus 2,5-3,5 mm. longus ad 3 mm. diam., compressus non ampliatus albus, segmentis 5, ad 1 mm. longis, leviter carnosus rubro-brunneis ; corollae tubus 4-5 mm. longus compressus non ampliatus albo-viridis, segmentis 26-28, 1-2 seriatis lineatis 6-7 mm. longis ad $\frac{1}{2}$ mm. latis acutis albis ; stamina pauca filamentis albis ; stigmata 4-5 ad 1,5 mm. longis albo-viridia stylo 1 mm. longo ; ovarium 2,2 mm. diam. supra plana ; discus crenulatus ad 1 mm. altus leviter ampliatus saturate viridis.

Habit. inter Calvinia et Clanwilliam, S.A.

Coll. H. Herre 1949. S.U.G. No. 12251.

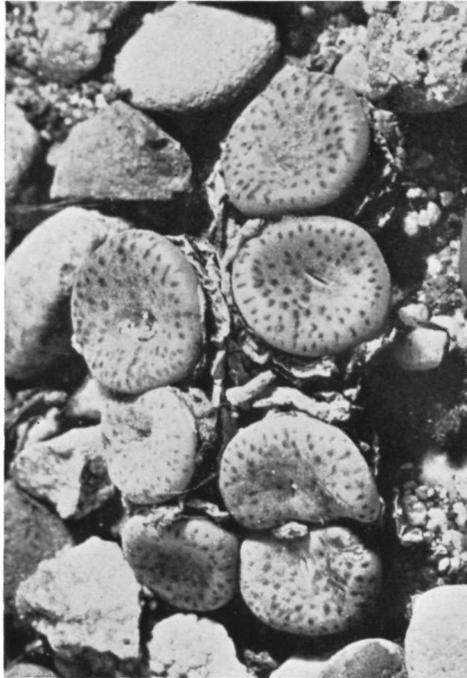
Type in Botan. State Collection, Munich. Mes. No. 205.

Plant forming comparatively low cushions by proliferation : internodes very short ($-\frac{1}{2}$ mm.) ; bodies obconical, —13 mm. long, at the top up to 12 mm. in diameter, contour of upper side circular or irregularly obtuse 4-6 angled, upper side deepened somewhat crater-like (hence the name *impressum* : impressed !) ; fissure —3-5 mm. long, somewhat impressed, not gaping much (type 19 of type scheme by Tischer) ; upper surface smooth and bare ; body-colour muddy grey-green to olive-green, sides becoming purple-reddish under influence of sun ; on the upper side a number of fairly closely-packed, not very large, dark brownish-green dots, which towards the edge become smaller and, there only, singly merge into very short, thin lines ; flowers nocturnal, scented ; ovary enclosed ; calyce tube 2.5-3.5 mm. long, —3 mm. in diameter, compressed, not amplified, skin-like white, slightly brown-tinted, with 4-5 points, 1 mm. long, hardly succulent, reddish-brown ; corolla tube 4-5 mm. long, compressed, not amplified, greenish-white, with 26-28 corolla segments in 1-2 rows, linear, 6-7 mm. long, — $\frac{1}{2}$ mm. wide, pointed, white, occasionally tinted greenish, inner ones partly shorter ; stamens few, anthers placed at the termination of the tube, filaments united with the tube from the base of the tube, white ; 4-5 stigmas, —1.5 mm. long, greenish-white, on style 1 mm. long ; ovary 2.2 mm. in diameter, flat above ; disk fairly erect, —1 mm. high, somewhat amplified, crenulate above, dark green.

I received several plants of this beautifully-marked *Conophytum* species from Herr Herre, Stellenbosch, who discovered it on a collecting trip during 1949. According to its habit and its marking it must be classed in the series *Tuberculata* Schwant. The new species distinguishes itself from other species of this group particularly by the crater-like deepened upper side and the usually somewhat irregularly 4-6 angled contour, also by the not raised, comparatively small punctuation, which otherwise, within the series *Tuberculata*, is known only from *C. parviflorum* N. E. Br. The upper side of the latter is, however, usually circular to elliptical and, towards the centre, impressed somewhat superficially fluted. Moreover, the flower of the *C. impressum*, due to its longer corolla segments, is more attractive than that of *C. parviflorum*. By its colour and marking *C. impressum* is a particularly beautiful species. Favoured by its grey-green ground colouring, it should be fairly difficult to find it in nature even during the growing period. By branching it forms, although more slowly than other species, very low cushions and is, planted between stones, an embellishment in collections of very succulent *Mesems*. Our illustration conveys a very good image of a typical plant. The impression on the upper side, its somewhat irregular contour and the characteristic marking are clearly shown on it.

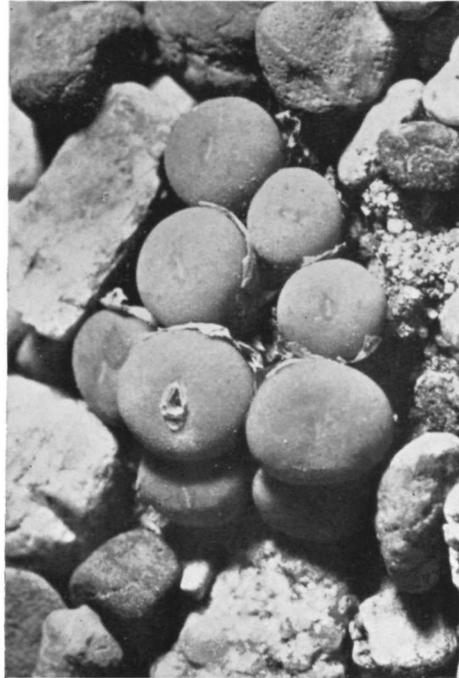
Members attending meetings are invited to put questions to the speaker. A notice could be given to the Chairman or Secretary before the meeting commences of any general difficulties you may have.

The first issue of H. Krainz' *DIE KAKTEEN* has now been received. It is a comprehensive loose leaf work and the present number contains descriptions and details of nine different species, description of one genus and pages on morphology and systematics. The details contain the literature appertaining to the species, the descriptions in the original language, the home of the plant and cultivation. It is certainly the best that has yet appeared. It is printed in German. Copies can be obtained from Wheldon & Wesley Ltd. and Mr. H. Cork.



Conophytum impressum

Prof. Dr. W. Rauh



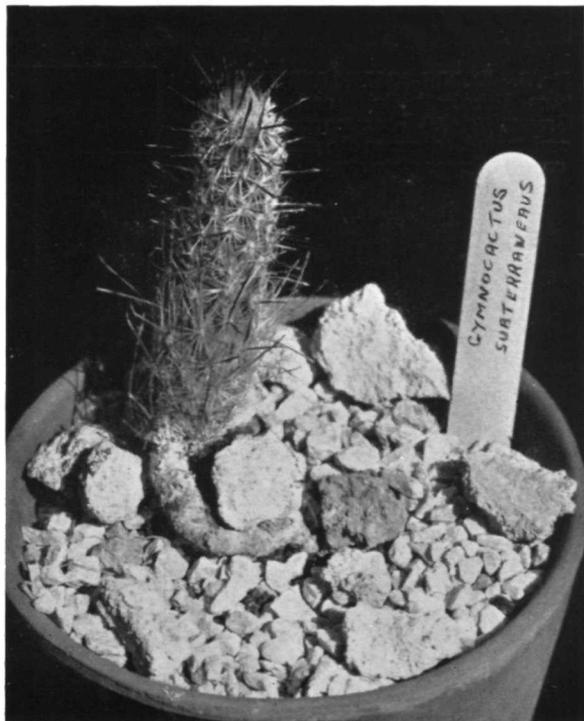
Conophytum glabrum

Prof. Dr. W. Rauh



Tephrocactus rauhii

Prof. Dr. W. Rauh



Gymnocactus subterraneus

J. Measures

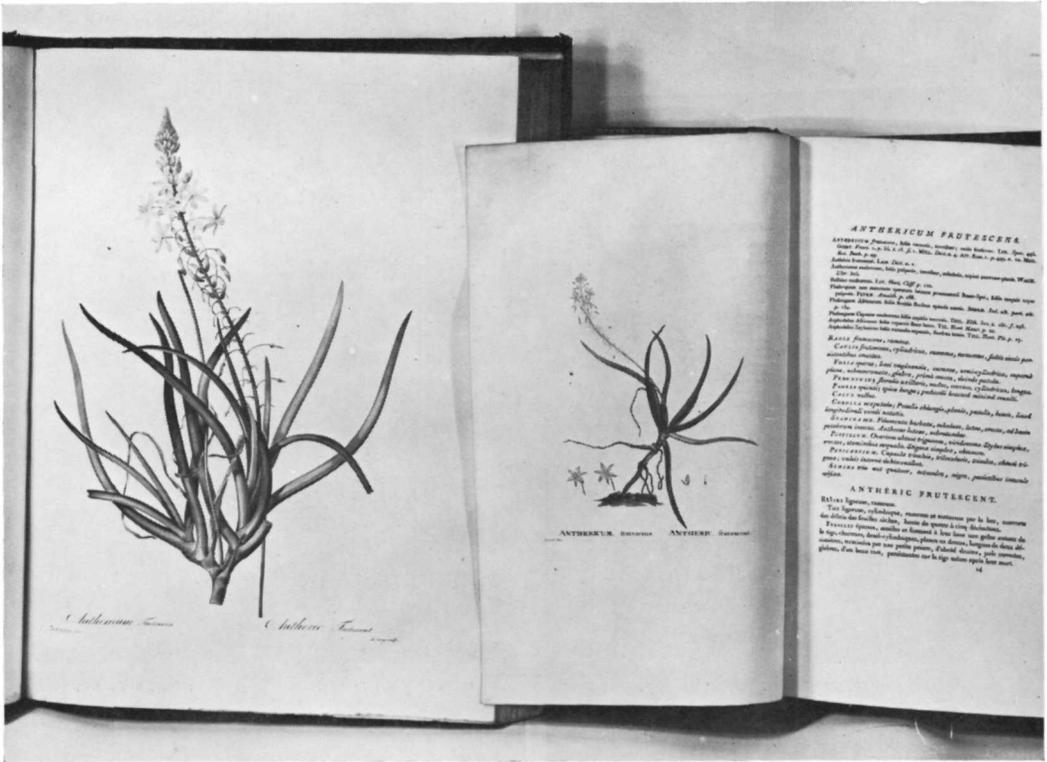
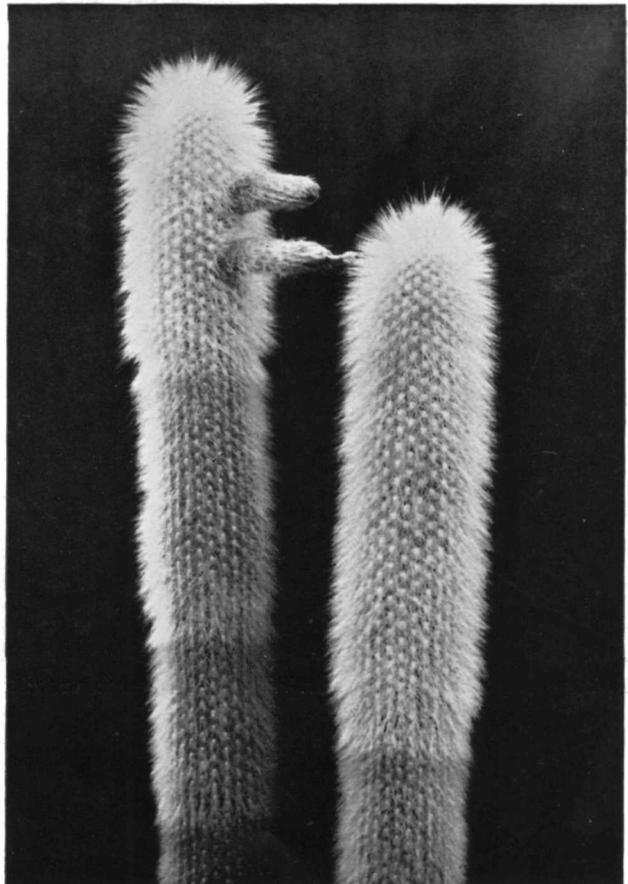


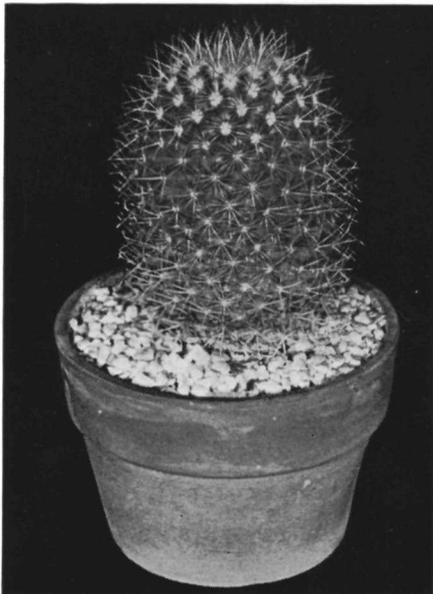
Fig. 5. PIERRE-JOSEPH REDOUTÉ —
 "Les Liliacées" (left) and "Plantes
 Grasses" (right). The same plant, *Bulbine
 caulescens* L., showing the gain in effect
 from the larger plate size.



Cleistocactus straussii W. Beeson

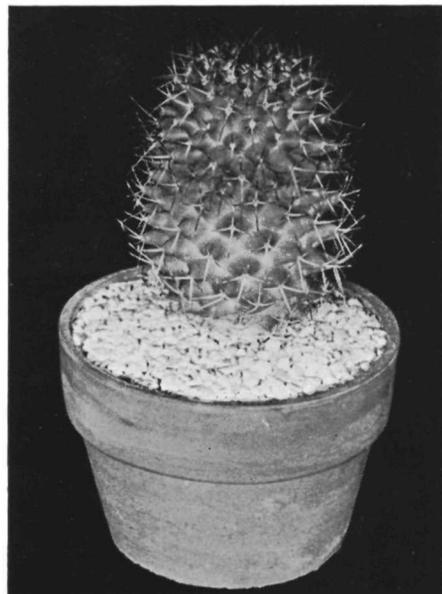


Fig. 6. PIERRE-JOSEPH REDOUTÉ — "Les Liliacées" *Agave brachystachys* Cav.



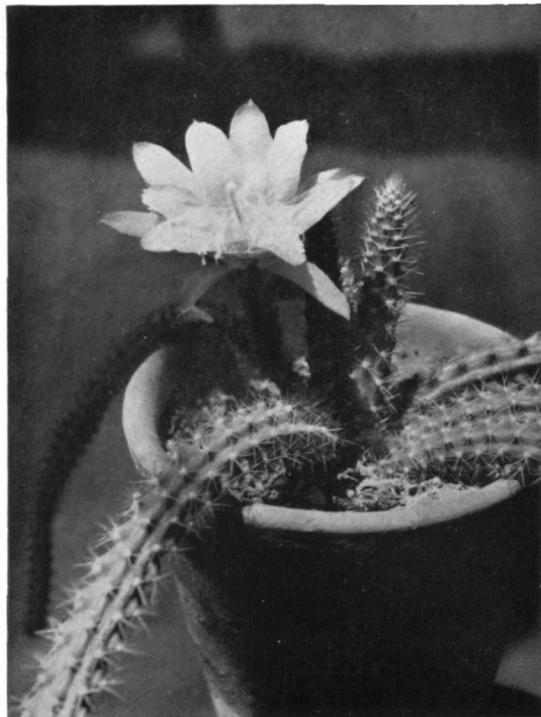
Mammillaria rhodantha

B. C. Marshall

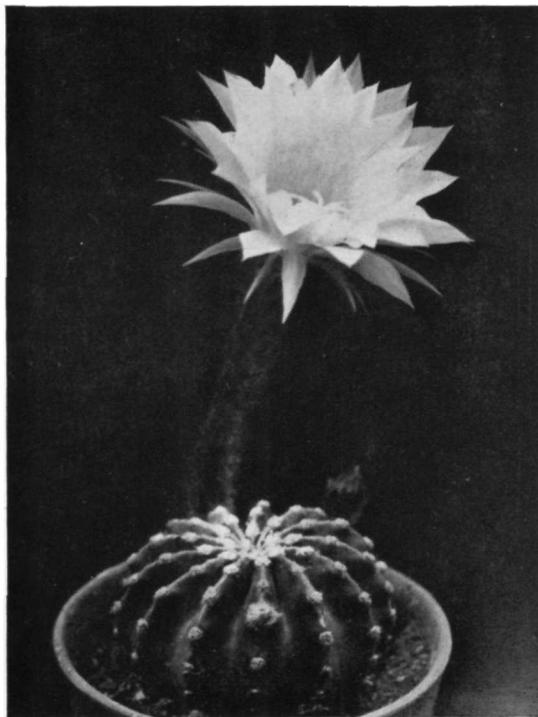


Mammillaria kewensis

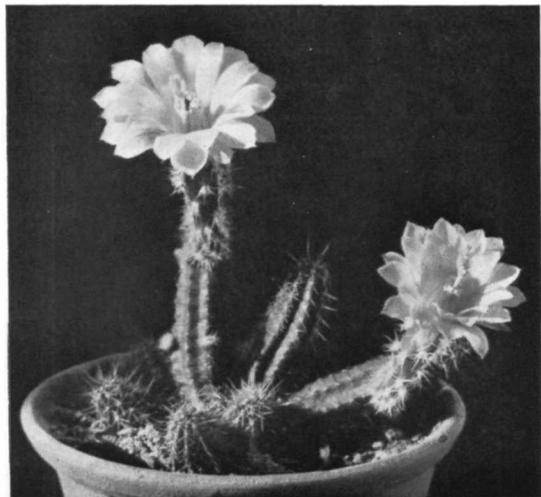
B. C. Marshall

*Selenicereus mallisonii*

W. Beeson

*Echinopsis eyriesii grandiflora*

W. Beeson

*Echinocereus scheerii*

W. Beeson

*Lobivia famatimensis rosiflora*

W. Beeson

CONOPHYTUM GLABRUM Tisch. spec. nov.

By Dr. A. TISCHER

(*Mesembryanthemaceae* Lowe; *Conophytum* N. E. Br.; *Euconophytum* Schwant. Ser.; *Wettsteinia* Schwant.).

Planta caespitosa ramulis abbreviatis; corpuscula turbinata ad 12 mm. alta, ad 9 mm. diam., supra visa circulata, apice subplana vel leviter convexa, fissura non depressa ad 1.5 mm. longa; glabra leviter cinereo-viridia, supra paucis punctis minutis inconspicue notata; fissura pilosa, linea saturate viride cincta; flores diurni; ovarium inclusum; calysis tubus ad 3.5 mm. longus membranaceus ad 1.5 mm. diam., segmentis 4 membranaceis ad 1 mm. longis; corollae tubus ad 9 mm. longus, leviter ampliatus interne aureus ad 1.5 mm. diam., segmentis 18-20, 1-2 seriatis spatulatis ad 8 mm. longis, ad 2.5 mm. latis, emarginatis vel retusis purpureis; staminodiis acutis aureis 15-16; stamina pauca in medio tubi adnata; stigmata $\frac{1}{2}$ mm. longa stylo 1 mm. aureo; ovarium 1.5 mm. diam., discus saturate viridis inconspicuus.

Hab; Van Rhynsdorp Div.

Type in Munich Botanical Collection, Mes. Nr. 202.

Plant forming more or less loose clumps by branching; internodes very short; bodies obconical, —12 mm. high, 6-9 mm. in diameter, circular in contour when seen from above, after division usually somewhat elliptical, upper side almost flat or only very slightly convex, fissure not flattened, —1.5 mm. long; body surface smooth, bare, basic colour green to bluish green, on the upper side scattered small dark green, hardly noticeable dots, fissure closed, with whitish hairs, surrounded with narrow dark green line. Flower; ovary enclosed; calyx tube up to 3.5 mm. long, up to 1.5 mm. in diameter, skin like white, not expanded towards above; corolla tube up to 9 mm. long, little expanded towards above, yellowish translucent, inside golden yellow, with 18-20 corolla segments, in 1-2 rows, broad spatulate, —8 mm. long, up to 2.5 mm. wide, notched above or more or less retuse, inner ones singly shorter and narrower, of splendid carmine colour, at the exit of the corolla tube about 15 acute, golden yellow staminodes; stamens few, anthers golden yellow, standing from the base of the tube up to about the middle; stigma 1, about $\frac{1}{2}$ mm. long, golden yellow, on style 1 mm. long; ovary 1.5 mm. in diameter, disc inconspicuous, dark green. Flower diurnal.

Habitat: presumably Van Rhynsdorp Division, about 25 miles north of Van Rhynsdorp. Collector unknown.

I have cultivated two plants of *C. glabrum* which were sent to me years ago from England and South Africa. One of these plants originates from the collection of the late English botanist N. E. Brown. The other I received from South Africa before the second world war, with the information that it had been found by Miss Ferguson about 25 miles north of Van Rhynsdorp. Unfortunately, I lost further notes during the war. The plant originating from Brown's collection is said to have stood there under the name *C. parile*. I suspected at first that it was the question of sparsely dotted plants of *C. minutum* (Haw.) N. E. Br., to which the bodies have some resemblance in size and colour. Prolonged observation has shown, however, that my two plants can be well distinguished, in regard to habit as well as flower, from the forms of *C. minutum* known hitherto and that reasons can be offered for their separation as independent species. As a rule the bodies are shorter, broader and not depressed at the fissure. The dotting can hardly be distinguished on the upper side, so that the bodies appear very smooth and unmarked, hence the designation *glabrum*. The fissure is whitish hairy and has a dark surround. The flower corresponds, in its basic scheme, to the flower construction within the series *Wettsteinia* with very short stigmas, very short style and with staminodes at the exit of the corolla tube, to which belong *C. minutum* (Haw.) N. E. Br., *C. pearsonii* N. E. Br., and *C. tubatum* Tisch. It differs, however, from the flower of these species in the smaller number of corolla segments, which are of a beautiful purple carmine colour and much broader (—2.5 mm.). The corolla segments of the *minutum* forms are altogether narrower and of lighter rose colour. The plants of *C. glabrum* sent to me at the time have been collected in the wild state.

In cultivation *C. glabrum* is not delicate. In course of time it forms beautiful, large, flat clumps. As only very few plants are in cultivation, it will be possible to distribute it only gradually by propagation, unless new plants can be collected in the natural habitat. In cultivation it flowers quite freely. By reason of its form and colouring, but particularly by reason of its wonderful magenta coloured flower, *C. glabrum* belongs to the most beautiful species of the genus.

I have referred to Neale's collection of Photographic Plates in previous issues of the Journal. They are a very fine aid to identification of plants with short cultivation notes. It is a good buy for all who are interested in our plants.

SHOW RESULTS

5th and 6th JUNE, 1956

- Class 1. Three *Echinocactanae*. Ist, S. Reeds ; 2nd, R. H. West ; 3rd, P. V. Collings ; V.H.C., L. Reynolds.
- Class 2. Three *Coryphanthanae* (including *Mammillaria*). Ist, R. H. West ; 2nd, S. Reeds ; 3rd, P. V. Collings ; V.H.C., Mrs. D. F. Shurly ; H.C., H. Watson.
- Class 3. Three *Coryphanthanae* (members not having won a first in any class). Ist, T. R. A. Lucas ; 2nd, B. C. Marshall ; 3rd, Hon. Mrs. I. M. Lawson.
- Class 4. Three *Cereeanae*. Ist, R. H. West ; 2nd, Mrs. D. F. Shurly ; 3rd, S. Reeds ; H.C., P. V. Collings.
- Class 5. Three *Echinocereeanae*. Ist, R. H. West ; 2nd, Mrs. D. F. Shurly ; 3rd, S. Reeds.
- Class 6. Three cacti (any genera). Ist, S. Reeds ; 2nd, Mrs. D. F. Shurly ; 3rd, A. J. Edwards ; H.C., R. H. West.
- Class 7. Three cacti (members not having won a first in any class). Ist, N. H. Glenister ; 2nd, Hon. Mrs. I. M. Dawson ; 3rd, G. L. R. Hedges ; H.C., J. H. C. Cheale.
- Class 8. One specimen cactus. Ist, S. Reeds ; 2nd, R. H. West ; 3rd, P. V. Collings ; H.C., H. Watson.
- Class 9. Cacti raised from seed on or after 1st January, 1954. Ist, R. P. Pohlmann ; 2nd, R. H. West.
- Class 10. Miniature Garden (cacti). Ist, G. L. R. Hedges ; 2nd, B. C. Marshall.
- Class 11. Three stemless *Mesembryanthemums*. Ist, Mrs. M. Stillwell ; 2nd, Mrs. D. F. Shurly ; 3rd, P. V. Collings.
- Class 12. Three *Haworthias*, *Gasterias* and/or *Aloes*. Ist, Mrs. M. Stillwell ; 2nd, R. Barrett ; 3rd, Mrs. D. F. Shurly.
- Class 13. Three *Euphorbias*. Ist, Mrs. D. F. Shurly ; 2nd, Mrs. M. Stillwell ; 3rd, S. Reeds.
- Class 14. Three succulents other than cacti. Ist, Mrs. D. F. Shurly ; 2nd, Mrs. M. Stillwell ; 3rd, R. H. West ; H.C., S. Reeds.
- Class 15. Three succulents other than cacti (members not having won a first in any class). Ist, T. R. A. Lucas ; 2nd, N. H. Glenister ; 3rd, Mrs. F. E. Pooley.
- Class 16. Six South African succulents. Ist, Mrs. M. Stillwell ; 2nd, R. H. West ; 3rd, Mrs. D. F. Shurly.
- Class 17. Group of cacti and/or succulents. Ist, Mrs. M. Stillwell ; 2nd, G. L. R. Hedges ; 3rd, W. R. Farwell.
- Class 18. Three cacti (any genera). Ist, N. G. Glenister ; 2nd, R. H. Neville ; 3rd, R. R. Loder.

28th and 29th August, 1956

- Class 1. Three *Echinocactanae*. Ist, P. V. Collings ; 2nd, R. H. West ; 3rd, S. Reeds.
- Class 2. Three *Coryphanthanae*. Ist, Mrs. D. F. Shurly ; 2nd, R. H. West ; 3rd, G. R. Ibbotson ; V.H.C., P. V. Collings.
- Class 3. Three *Cereeanae*. Ist, R. H. West ; 2nd, S. Reeds ; 3rd, P. V. Collings.
- Class 4. Three *Echinocereeanae*. Ist, R. H. West ; 2nd, S. Reeds.
- Class 5. Three cacti (any genera). Ist, S. Reeds ; 2nd, R. H. West ; 3rd, A. J. Edwards ; V.H.C., Mrs. D. F. Shurly ; H.C., P. V. Collings ; C., N. H. Glenister.
- Class 6. One specimen succulent excluding cacti. Ist, A. Crookes ; 2nd, Mrs. M. Stillwell ; 3rd, Miss A. M. Pilcher ; V.H.C., Mrs. D. F. Shurly.
- Class 7. Three *Faucarias* and/or *Stomatiums*. Ist, Mrs. D. F. Shurly ; 2nd, Mrs. M. Stillwell ; 3rd, Mrs. N. V. Spence.
- Class 8. Three *Euphorbias*. Ist, Mrs. D. F. Shurly ; 2nd, Mrs. M. Stillwell ; 3rd, S. Reeds ; V.H.C., P. V. Collings.
- Class 9. Three *Haworthias*, *Gasterias* and/or *Aloes*. Ist, A. Crookes ; 2nd, Mrs. D. F. Shurly ; 3rd, Mrs. M. Stillwell ; V.H.C., R. Barrett.
- Class 10. Three *Echeverias* and/or *Cotyledons*. Ist, Mrs. D. F. Shurly ; 2nd, Mrs. M. Stillwell ; 3rd, P. V. Collings.
- Class 11. Three stemless *Mesembryanthemums*. Ist, Mrs. M. Stillwell ; 2nd, Mrs. D. F. Shurly ; 3rd, R. H. West ; H.C., P. V. Collings.
- Class 12. Three stemless *Mesembryanthemums* (members not having won a first in any class). No entries.
- Class 13. Three succulents other than cacti (members not having won a first in any class). Ist, Mrs. F. E. Pooley ; 2nd, J. S. Ausden ; 3rd, Mrs. N. V. Spence.
- Class 14. Three *Stapeliads*. Ist, P. V. Collings ; 2nd, Mrs. M. Stillwell ; 3rd, N. H. Glenister ; V.H.C., Miss M. Lawrence ; H.C., G. L. R. Hedges.
- Class 15. Succulents other than cacti raised from seed sown on or after 1st January, 1954. Ist, G. L. R. Hedges ; 2nd, Mrs. M. Stillwell ; 3rd, Miss A. M. Pilcher.
- Class 16. Six South African succulents in pots not larger than 3½ in. Ist, Mrs. M. Stillwell ; 2nd, S. Reeds ; 3rd, Mrs. D. F. Shurly ; H.C., R. H. West.

Class 17. Group of cacti and/or succulents, space 3 ft. square. 1st, Mrs. M. Stillwell ; 2nd, J. S. Ausden ; 3rd, S. Reeds.

Class 18. Three succulents other than cacti (Juniors). 1st, N. H. Glenister.

Denton Memorial Medal : Mrs. M. Stillwell (twice).

Amateur Gardening Bronze Medal : Mrs. D. Shurly.

Amateur Gardening Silver Medal : Mrs. M. Stillwell.

Amateur Gardening Diploma : A. Crookes.

Amateur Gardening Award of Merit : R. P. Pohlmann.

Sir William Lawrence Cup : R. H. West.

Evelyn Theobald Cup : Mrs. M. Stillwell.

P. V. Collings Cup : Mrs. D. F. Shurly.

R. S. Farden Cup : Mrs. M. Stillwell.

Mrs. E. B. Pryke Howard Cup : Mrs. M. Stillwell.

Mrs. J. A. Luty Wells Cup : S. Reeds.

S. J. Pullen Cup : G. L. R. Hedges.

Juniors Challenge Shield : N. H. Glenister.

REPORTS OF MEETINGS—continued from page 19

Give your *Mammillarias* all the sun you can. It is impossible to give them, in this country, as much as they get in their native habitat. Ordinary greenhouse glass does retard sunshine from reaching the plants in its purest form. Scorch practically always is caused by flaws in the glass acting as lenses.

Plenty of fresh air is always essential. Greenhouses are not constructed to give plants the maximum of air, so every opportunity should be taken so that as much air as possible can be given to the plants. Even with open ventilators it is easily possible to have stagnant air in a greenhouse or frame, it is essential there should be a current of air, not draughts. Stagnant air means that the plant cannot breathe and so becomes stifled and choked, becomes ill and can even die. In the last few years more attention has been given to growing our plants out of doors during the growing season, the summer, and it has been found that the plants improve in looks, growth and flowering. One naturally does not wish to endanger one's choicest specimens, but it can be recommended that, when you have more than one of a species, to test this out of doors cultivation. Of course, the plants will have to be brought into the greenhouse when the inclement weather starts in the autumn and should not be put outside till the weather is settled in the spring. The easiest method is plunging pots into a rockery, but best results are obtained from actual planting in the soil outside, but the soil must be very porous indeed and it is recommended surrounding the plants with rough, sharp material to avoid the onslaught of slugs, etc.

Mr. R. S. Byles, Kinloch, Craigweil Avenue, Radlett, Herts., has compiled a complete list of all published genera, sub genera, etc., valid and invalid. It is invaluable for any one who needs reference to such information and it can be thoroughly recommended. Foreword by Mrs. Vera Higgins. Apply for 36 paged copy, price 6/- to Mr. Byles, as above.

LISTS RECEIVED

Wheldon & Wesley Ltd., 83/84 Berwick Street, London, W.1 : 108 paged printed list of books on Natural History, including ten pages on cacti and succulents.

A. S. Jones, Westgarth, Bailes Lane, Normandy, nr. Guildford : three paged type-printed list of cacti and succulents.

Butcher's, Shirley, Croydon, Surrey : 112 paged printed list of seeds, including one of cacti and succulent seeds.

H. Cork, 73 Queenswood Road, Forest Hill, London, S.E.23 : 96 paged printed list of Natural History books, including just over six pages on cacti and succulents.

REPORTS OF MEETINGS

17th April, 1956. The Culture of Cacti : A. BOARDER

The great majority of cacti come from Mexico and the surrounding areas, i.e., part of the southern half of North America into South America ; Peru, Bolivia, Paraguay and Uruguay, especially to the west. In all those areas there is plenty of sunshine. Some cacti even flourish under conditions of extreme altitude, i.e., 15,000 feet up in the Andes. To reproduce all these varying conditions here is an impossibility. The cold damp winters and the scarcity of light in this country are severe handicaps. Then we try to reproduce the varied soil conditions with one compost for all plants. Some plants are, of course, difficult. Some imported subjects particularly difficult for newcomers were *Astrophytum asterias*, some species of *Thelocactus*, *Strombocactus* and *Ariocarpus*. Success may be achieved by striking them in a special trough or box. Any rough box will do, with a layer of damp peat in the bottom with one inch of sharp sand on top. The damp peat encourages the plants to send down new roots towards the moisture. Do not pot until they have made new roots even though some flower during the process. Peat should be soaked in boiling water after rubbing through a quarter inch sieve.

New members should get more general experience before attempting to grow the rarer plants. There are hundreds of plants that would flower for them with much less effort. Exceptions to note, however, include *Echinocactus grusonii*, *Pilocerei* and *Trichocerei*. On the other hand, *Mammillaria wildii*, planted in February 1955, now has two buds on it. Give plants adequate room. Over twenty four different species flowered a year after sowing, especially *M. longiflora* with its tubular flowers fourteen months after sowing.

There is no secret in successful seed raising, but it is important to adhere strictly to the instructions. Use John Innes Seed Compost as being consistent in its composition and easy to obtain. Be careful, however, not to purchase Potting Compost. Pans and containers should be sterilised to avoid blackleg or damping off, there is no remedy once an attack has set in. Do not give the seeds too much room. a four-inch pot divided by celluloid labels into ten or twelve compartments is quite practicable, about twelve seeds to the square inch. Use pieces of crock large enough to cover the whole of the bottom of the pots. They can be trimmed to shape with pincers or pliers. Pass the compost through a perforated zinc sieve ; put the roughest at the bottom, build up with unsieved compost and add the finings at the top. Press down and sprinkle the seeds on top. Only the largest should be pressed into the soil. Pass some sharp sand through the perforated zinc sieve and cover the seed with a layer of the remaining sand to a depth of one granule.

Warmth, moisture and air are the essential elements for successful growth. Immerse the container in water warm enough to be comfortable to the hand, this soaks in quicker than cold water, allow to stand for an hour and then put the container into the propagating frame. If you have no frame, delay your seed raising until April or May. The containers stand on the sand. Peat, which is kept moist, is kept between the containers. Each container is covered with a piece of shaded glass until germination starts. The ideal temperature is seventy degrees F. The seedlings, as they develop, must be protected from strong sunlight which turns them red and administers a severe check. Cacti seeds germinate fairly quickly on the whole. *Astrophytums* germinate in about two days and the majority of *Mammillarias* in from eight to fourteen days. Remove the glass covers immediately germination begins otherwise damping off may result. Never allow the soil to dry out, but never leave the soil sopping wet. If white mould forms on the surface it is probably due to some seed casing left with the seeds. Spray with a solution of permanganate of potash (beetroot colour). If the plants appear to push each other up from the soil, particularly if the cotyledon leaves have been absorbed, they should be pricked out. The greatest care should be taken not to damage the tiny roots which are very thin at the point where they join the body of the plant.

John Innes Seed Compost should be used, plus three quarters of an ounce of sulphate of potash and one and a half ounce hoof and horn grist, to the bushel. If plants are not pricked out growth will be retarded due to the failure of nourishment. Prick out about one inch apart in all directions. By September or October they should be nearly touching again. Once the spines have developed and the cotyledons have been completely absorbed a little sun, not too much, can be allowed. Thermostats should be kept at forty-eight degrees F., after pricking out, just in case frosts occur. During winter months the thermostats should be set at forty to forty-three degrees F. and maximum light should be given. Water as fast as the soil dries out, even daily in growing weather.

Mature plants should be repotted each year. Repotting should be done early in the year, up to April or May, even if the plants are in bud. Good drainage is essential, but do not fill third full of crocks. The drainage elements are in the compost. Beginners should buy cactus compost ready for use, but John Innes Potting Soil No. 1 is a good base. Used, as supplied, is admirable for *Epiphyllums*. For globular and other types add one sixth

by bulk of sharp sand. If one pot remains wet after the others have dried out, repot. Be wary of giving additional fertilisers as too much will weaken the plants by causing them to make too lush growth. When repotting take the opportunity of examining the roots thoroughly. If there are no roots, do not repot, but set the plant aside for rerooting in a nursery bed or pan. All dead roots should be cut off with a sharp knife, especially those round the edge of the pot—these are the tiny fibrous roots which absorb the solubles in the soil—the plants will speedily make new ones. The roots should be thoroughly washed if there is the slightest trace of root bug. Dry thoroughly before repotting. When selecting the size of the pot, allow half inch clear round small plants and one inch round larger ones, according to bulk and height. When the plants are repotted, the compost should be crumbly moist to the touch. A few grains of paradichlorobenzene above the crock or rubbed round the inside of the pot strongly deters root bug. As the soil is added, firm down and build up to within half an inch of the top, to allow for adequate watering which commences about a week after repotting.

8th June, 1956. *Mammillarias*. E. SHURLY

It is a huge genus of some 350 species with a great diversity of types and colouring. Compared with some genera, they were small, but richly rewarding with flowers. With certain reservations they were not difficult to grow.

Haworth named the genus in 1812 from "mammilla," a nipple or tubercle. A better name, however, would be one that described a plant flowering in the axils, but as the genus has been named in accordance with the rules, the name must be adhered to.

A first division of the genus would be plants with milky sap and with watery sap; a second division according to outward appearance, i.e., with open formation and with tubercles apart and plants more or less covered with hair or spines and with tubercles less close together. Another division, according to spines, would be with central spines and without. Another division could be based on black or brown seed colouring.

Nature does not work to a standard specification, colour of flowers are fugitive and cannot be depended upon for identification. Some species flower profusely, often all over the plant, others less profusely generally at the top and often with larger flowers. Generally speaking, those with open formation and milky sap are easy to bloom, but hair or spine covered plants, such as *M. parkinsonii*, were not so easy. It would be found that plants with hooked spines and soft texture flowered profusely, mostly in the spring.

There were two sections to hooked spined *Mammillarias*; those with a soft texture, such as *M. wildii* which flowers profusely, and those with a firm texture, such as *M. sheldonii*, which are difficult to establish and to flower. *M. zeilmanniana* has, this year, borne a profusion of magnificent flowers of a cerise to purple colouring and also offsetted freely.

Mammillarias have two types of roots, fibrous or tap rooted. The function of fibrous roots is to extract nutriment from the soil and transport it to the stems and cells. Tap roots, on the other hand, act as storehouses as well as transporters and are typical of a dry habitat. They are really underground stems.

Pot culture increases the difficulty of cultivation, if it is possible to grow in the open soil there is much more room for the roots to obtain nutriment.

It is not possible to lay down hard and fast rules for watering as this must depend on your conditions, but the soil should be open and well drained and the siting of the pots should allow the maximum light. A plant has to draw its nourishment from the soil, therefore, the hair roots must be healthy and the nutriment must be in the soil. During the growing season the plant will take a lot of water.

The principal pest was the mealy bug. The 1:40 nicotine/methylated spirit solution was favoured although there are many remedies. No solution, however, kills the eggs while killing adults, so the solution must be applied at about fortnightly intervals until the plant is completely clear. Wash off this mixture an hour or two after application otherwise it may collect and damage growing points when they are depressed. Root bug is difficult to detect and the first sign is usually a sickly plant which is not growing. Depot the plant, clean off all the soil from the roots and inspect. If root bug is seen or suspected, wash in the solution, washing afterwards with clean water.

It is best to repot your plants each year, but if this is not possible, renew the top soil for about an inch in depth, adding a little fertiliser, such as Buxbaum's, hoed in. Do not overdo this or any other fertiliser as too much is harmful. Clay's or hoof and horn can be usefully added when repotting as they are more permanent, but not too much. When preparing to repot, if you find the fine roots growing right against the inside of the pot it is a sign of the lack of air and, possibly, the exhaustion of food in the soil.

Continued on page 17

A NEW TREATMENT FOR ROOT MEALY BUG

By C. MARSDEN, B.Sc., A.R.I.C., F.R.H.S.

The author keeps a small collection of plants for study, mainly cacti with a few succulents amongst them, in his London flat. During the summer months they stand out of doors on the roof; in winter they are kept in what is, in effect, a miniature greenhouse contrived from a large inverted skylight protruding through the roof.

For several years it proved absolutely impossible to keep this small collection free from root mealy even for a short period and it was necessary to unpot, clean up and repot the plants far more often than was desirable. Not only was growth slowed up by setting back but considerable labour was entailed. Finally, loss of growth and flowers, not to mention interference with the purpose for which the collection was kept became so exasperating that a number of colonies of both ordinary and root mealy bug were grown deliberately on some old plants as a basis for investigation of some of the newer insecticidal techniques.

Two difficulties at once became apparent. First, it proved impossible to reach the root bugs under the soil with liquid insecticides; they hide in crannies where air-bubbles protect them even when pots are totally immersed in liquid for long periods. Second, their waxy integument is not easily wetted unless the most active of modern surface-active agents are used, and these agents are apt to upset physical conditions in the compost with serious and often fatal results to the plant. The obvious line of attack therefore seemed to be with toxic vapour and eventually a combination of volatile insecticides was found which when introduced into the soil vaporised slowly; the vapour, penetrating to every interstice under the plant roots and into every pore of the compost gave one hundred per cent kill, and if the plant were covered with a plastic bag, every bug on top could be killed on even the most tightly clustered plant. On the basis of these experiments, a new insecticidal formulation was developed which after three years of testing has proved so successful that not a single mealy bug or root mealy has been found in this particular collection for two full seasons. The formulation includes certain other substances designed to promote rapid root growth on plants which have been badly chewed up and a non-volatile chemical aimed at extending the period of protection afforded.

Tests extending over three years have been made on a wide variety of cacti including *Opuntia*, *Echinopsis*, many *Mammillaria*, *Lobivia*, *Rebutia*, *Gymnocalycium*, and a variety of *Cereanae*. Succulents included *Lithops* and other stemless mesembs., *Haworthia*, *Kleinia*, *Crassula*, *Echeveria*, *Aloe* and *Agave* species. In no instance has any trace of damage or injury to plants been detected; in fact rates of growth have been unprecedented and most gratifying, considering the far from ideal nature of the environment and atmosphere.

The action of 'Fluid SF' as it was labelled for reference, is three-fold.

Primarily, it provides completely effective control of all soil pests and top pests which normally attack cacti, with the possible exception of root eel-worm, on which tests have not yet been made, and this without the need for removing the plant from its pot or soil. Secondly, it stimulates new root growth and consequently top growth for a short period after application.

A third effect not so readily apparent takes place gradually over a period of several weeks after application of Fluid SF, as a result of which the physical condition of the soil is somewhat improved.

Up to the present Fluid SF has proved totally effective in controlling pests in the following categories:—

Coccidae—Mealy bugs, especially root mealy, scale.

Aphidae—Greenfly and blackfly.

Thripidae—Thrips, flea beetle (especially in young seedlings).

Arachnidae—Red spider mite.

The fluid is simply applied. It dissolves in water to the extent of approximately one part in a thousand. One small teaspoonful is stirred into a gallon of water until no oily droplets can be seen on the surface; if any remain, a little more water can be added. Plants may be watered by can, or soaked by immersion and are then not watered again until the soil has completely dried out. Long before then all pests will be dead if they were under the soil. If a polythene bag is put over the plant for forty-eight hours after treatment with the fluid any top pests will also be killed. Eggs are also rendered sterile, eliminating them as possible sources of reinfestation.

It has been found that, even where root infestation is not obvious, application of Fluid SF every six or eight weeks, especially during late autumn and early spring, has a beneficial effect on cacti, improving plant condition and flowering. This is probably due to removal of undetected minor infestations in part, and in part to root stimulation and soil conditioning. Such regular treatment is now routine for all the author's plants.

Those interested in plants other than cacti or succulents may like to know that recent tests on tomato plants, roses and pelargoniums have proved satisfactory, the plants being bagged to retain the vapour. Complete control of pests was obtained without damage to even the sensitive foliage of tomato plants.

WORFIELD GARDENS

BRIDGNORTH

Telephone : Worfield 259

SHROPSHIRE

CACTI AND SUCCULENT SPECIALISTS

GOLD MEDALS—

R.H.S. Chelsea
R.H.S. Great Autumn Show

LARGE GOLD MEDALS—

Shrewsbury
Southport

Mullard Perpetual Silver Trophy for an outstanding non-competitive exhibit—Southport, 1955
Latest lists of attractive and rare plants sent on application, price 4d. We are especially interested in helping Collectors and in giving advice to Beginners.

1957—Come to our **FOURTH OPEN DAY.** You will meet many of the leading Cactus and Succulent personalities in Britain.

Saturday, June 29th Admission 1/-

Sunday, June 30th Admission 1/-. Numbers will be limited on Sunday to avoid overcrowding. A Panel of well-known Horticultural and Cactus experts, including Mr. and Mrs. Higgins, Mr. E. W. Macdonald, Mr. G. D. Rowley, Mr. F. R. McQuown, Mr. P. J. Thrower and Mr. C. P. Quarrell will preside at a Brains Trust.

Special terms for parties from Cactus Societies. Branch Secretaries may apply for tickets now

Show Plants, Collection and Growing Houses on view

Plants for sale to suit every interest and every purse

Tudor House and Garden open.

Lady Leese's Dolls House on view

Light Refreshments available

CACTI FOR DECORATION

Vera Higgins

In her latest book, Mrs. Higgins describes all that needs to be known on the use of cacti and succulents for decorative purposes: selection of species, details of soil, water, temperature, light and ventilation. Illustrated with many line drawings, 8 pages of photographs, full colour frontispiece
Cr. 8vo. 80 pp. 6s. (Postage 6d.)

Full list on request

BLANDFORD PRESS

16 West Central Street, London, W.C.1

CACTI AND SUCCULENTS

WRITE NOW
FOR INTERESTING NEW
SEED LIST
AND LIST OF SEEDLING
PLANTS AT REASONABLE
PRICES

STANLEY V. SMITH

WYCK HILL, STOW-ON-THE-WOLD
GLOUCESTERSHIRE

Telephone : Stow-on-the-Wold 216

LOWIS (SEEDS) LIMITED

OUR ILLUSTRATED CATALOGUE CONTAINS DETAILS OF

CACTI AND SUCCULENTS

Included are varieties suitable for beginners, together with a comprehensive list of varieties for the keen collector. All these are imported by us from our Dutch Nurseries.

Free Copies available from February onwards

also we offer

BULBS, Etc. FOR SPRING PLANTING

GLADIOLI, BEGONIAS, LILIES, DAHLIA TUBERS,
CHRYSANTHEMUMS. Catalogue issued February/March

BULBS, Etc. FOR AUTUMN PLANTING

TULIPS, DAFFODILS, HYACINTHS, CROCUS
SPECIAL COLLECTIONS FOR INDOOR GROWING
Catalogue issued, August/September

ROSES, SHRUBS, PLANTS

A WIDE RANGE OF MANY VARIETIES CONTAINED
IN BOTH ISSUES.

For full particulars write to :

LOWIS (SEEDS) LIMITED
22, SPALDING LINCS.

GARDENERS WISE

WILL ALWAYS CHOOSE

JOHN INNES COMPOSTS

Sterilized and fertilized, ready for use. Guaranteed by the country's leading manufacturers

SEED & No. 1 COMPOST—

NOW ONLY 16/6 Cwt. carriage paid home within 100 miles London

ALSO

CACTUS COMPOST

Specially prepared and recommended

Price 20/- cwt, carriage paid home within 100 miles London

Send 2½d. stamp for instructive literature on Composts for all Crops
To

E. J. WOODMAN & SONS (PINNER) LTD.

Established 1891

(Dept. A1) 14/25 HIGH STREET, PINNER, MIDDX.

Phone 802 (7 lines)



Now is the time to apply

PROF. DR. F. BUXBAUM'S

WORLD FAMOUS

CONCENTRATED HEALTH SALTS

FOR CACTUS and ALL SUCCULENT PLANTS

The Only Commercially Available Health Salts

IT CONTAINS ALL THE ESSENTIAL TRACER ELEMENTS. PROMOTES STURDY GROWTH. ENCOURAGES PROLIFIC FLOWERING. A MUST FOR ALL WHO WANT PLANTS OF WHICH TO BE PROUD.

After many years of scientific study these HEALTH SALTS were produced specifically for CACTI and other SUCCULENTS by Prof. Dr. F. BUXBAUM, a leading Continental authority on Cacti and lecturer in botanical subjects at the University of Graz, Austria.

ECONOMICAL IN USE. MINUTE QUANTITIES ARE EFFECTIVE.

OVERDOSING is wasteful, yet entirely **HARMLESS.**

OBTAINABLE FROM:

ATRA LTD.

3 ST. MARY'S MANSIONS

LONDON, W.2

PRICE 3/9 per packet, postage 5d. extra

CASH WITH ORDER

DECORATED CACTUS POTS

Attractively decorated and glazed rims cover only one third of pot surface, giving ample porosity for plant growth. Saucers are completely glazed on inside bottom and rim; they may safely be placed on any surface. Pot sizes from 2 in. up to 5 in. wide (larger sizes to order).



Send for free illustrated leaflet showing full range and prices

HENRY WATSONS POTTERIES LTD. . WATTISFIELD . SUFFOLK

The Best House in the West

FOR

CACTI AND SUCCULENTS

Gold and Silver Medallists

UPLANDS NURSERY

(G. G. FUGE, F.R.H.S.)

BLACK HORSE LANE

DOWNEND - BRISTOL

Tel. 53675

The most exclusive selection of rare Cacti
and Succulents obtainable.

Inspection invited.

Complete Nursery List available on request

SEND STAMP FOR LIST

WHEN IN LONDON VISIT THE "DAINTEE" SUCCULENT NURSERIES

MY SHOW GREENHOUSE IS UNIQUE AND
CLAIMED TO BE THE ONLY ONE OF ITS
KIND IN THE WORLD.

A LARGE RANGE OF CACTI & SUCCULENTS
FOR SALE. ALSO LITHOPS AND OTHER
MIMICRY PLANTS (I AM THE LARGEST
GROWER OF LITHOPS IN THIS COUNTRY).

For Lithops List send stamp.

VISITORS ARE WELCOME, BUT DO LET ME
KNOW THE DAY AND TIME YOU WILL
BE COMING.

ERNEST H. HEPWORTH

F.R.H.S.

'London's Cacti and Succulent Specialist'

"DAINTEE," 142 ELLISON RD.,
STREATHAM . LONDON,
S.W.16 Phone Pollards 4563

F. W. LEALAN & SON

NEW NURSERIES
SHIPLEY, PATTINGHAM
Nr. WOLVERHAMPTON

Phone : Pattingham 209

If you wish to see a good collection of Cacti and Succulents visit our Nurseries, you will not be disappointed.

Large or small parties welcome

CACTI AND SUCCULENT PLANTS

Strong, Healthy Plants at Reasonable Prices

Send Stamp for 1956 List

Nurseries : On the main
Wolverhampton—Bridgnorth Road.

6 miles from Wolverhampton
7 miles from Bridgnorth

A. E. GREEN

Normandale Nurseries
Sheffield, 6

Phone 44703

Gold Medal Cacti and Succulents

Members of the BRITISH SUCCULENT
GROWERS ASSOCIATION

See our
NEW PICTORIAL LISTS
of RARE PLANTS and
SPECIAL SEED OFFERS
6d. Post Free

We invite you to visit our Nurseries

Second Edition of
"CACTI AND SUCCULENTS"
By G. G. GREEN

17 Colour Plates 200 Illustrations
From any booksellers. 36/-

IMPORT

EXPORT

GOLD MEDAL

CACTI & SUCCULENTS

CHOICE SPECIMENS FOR THE COLLECTOR
ALWAYS AVAILABLE

BEAUTIFUL COLLECTIONS FOR THE
BEGINNER AT REASONABLE PRICES

Satisfaction assured at

"BLACKBURNS"

Catalogue—Price 4d.

T. N. BLACKBURN
CACTI SPECIALIST & GROWER
WOODPLUMPTON, nr. Preston
Telephone: Catforth 255

WHOLESALE

RETAIL

With over 20 years 'Specialist experience'
in Cacti and other Succulent Plants:
We can offer you the finest

PLANTS SEEDS and BOOKS

1957 named list will be ready early in
the New Year.

(Stamped self-addressed envelope is appreciated)

1957 Membership to PHOTOGRAPHIC
REFERENCE PLATES with Monthly
Notes (Sent every month) . . £1-5-0

Agents for Membership to Cactus &
Succulent Society of America.

W. T. NEALE & CO. LTD.

16 FRANKLIN ROAD
WORTHING, SUSSEX, ENGLAND

For garden-lovers everywhere

GARDENERS CHRONICLE

AND GARDENING ILLUSTRATED

(Editor: Roy Hay)

Whether you garden on the grandest or most modest scale—you will find the pages of "Gardeners Chronicle & Gardening Illustrated" packed with interest and expert information. Well presented, well printed, well illustrated, this is the finest gardening paper you can buy. Sixpence weekly, published every Friday.

Annual Subscription 34/8; six months 17/4; three months 8/8—or on order from your newsagent.

In case of difficulty write to

THE GARDENERS' CHRONICLE LTD, PRINTING HOUSE SQUARE, LONDON EC4

The Cacticulture Series

By **C. MARSDEN**. B.Sc., A.R.I.C.

Progress Report

BOOK II

is now in the Press

Mammillaria

A quick-reference manual on names, classification, habitat, form, colour, spines, flowers and—most important and detailed—cultivation. With plates.

Probably 25s.

It will appear in late Spring, 1957

★**GROW CACTI**, Book I of the Series is easily the most seriously valuable manual you can recommend to beginners in cultivation.

Illustrated. 12s. 6d. (carriage 9d.)

From your bookseller or the publishers :

Cleaver-Hume Press, 31 Wright's Lane, W.8

WHELDON & WESLEY

LTD.

Buy and Sell

BOOKS

on all branches of

NATURAL HISTORY

especially

Botany & Horticulture

in all languages

83/84 BERWICK STREET

London, W.1

Telephone : GERrard 6459

THE
CACTUS
AND SUCCULENT
JOURNAL
OF GREAT BRITAIN

Established 1931

Vol. 19

APRIL, 1957

No. 2

Contents

	PAGE
From the President	25
Cactus Cultural Notes	26
Cultivation of Succulents	28
Pierre-Joseph Redouté	30
Conophytum rostratum	33
Mimicry Plants	34
Digitorebutia	40
Cactus Farm Plants	41
Reports of Meetings	42
Report of the Council	44
Accounts	45

*Published Quarterly by the Cactus and Succulent Society of Great
Britain at 7 Deacons Hill Road, Elstree, Herts.*

Price 2/6 Post Free 2/9



President : E. W. Shurly, F.L.S., F.C.S.S.

Vice-Presidents : A. Boarder, P. V. Collings

COUNCIL :

A. J. EDWARDS, A.M.Tech.I.(Gt. Bt.)	Mrs. A. HEDGES
H. J. AYLOTT	G. R. IBBOTSON
P. V. COLLINGS	A. S. JONES
A. W. HEATHCOTE, A.C.I.S., Chairman.	Miss A. M. PILCHER
G. L. HEDGES	Mrs. M. STILLWELL

Secretary : K. H. Walden, 152 Ardgowan Road, Catford, London, S.E.6.

Treasurer : E. W. Young, 35 Castle Drive, Ilford, Essex.

Editor : E. Shurly, 7 Deacons Hill Road, Elstree, Herts.

Librarian : P. V. Collings, St. John, Northumberland Road, New Barnet, Herts.

Exchanges : A. Boarder, Marsworth, Meadway, Ruislip, Middlesex.

Liaison Officer : A. W. Heathcote, Southwold, Station Road, Bishopston, Seaford, Sussex.

Meeting Place : New Hall, Royal Horticultural Society, Vincent Square, London, S.W.1. 6 p.m. for 6.30 p.m.

Annual Subscription—21/-

SOCIETY NEWS

1957

May 21st Show Preparations : A. W. Heathcote. Table Show : Mammillarias.
June 4th SHOW.
Interesting Plants at Show. Panel. Table Show : Plants in Flower.
July 16th Pests : P. V. Collings. Table Show : Echinocacti.

Branches

Berks & Bucks : Secretary : Mrs. M. Stillwell, 18 St. Andrews Crescent, Windsor.

West Kent : Secretary : Mrs. J. M. Hoather, 6 Cromwell Close, Bromley, Kent.

North Kent : Secretary : T. Holt, Orchard End, Downs Road, Northfleet, Kent.

Essex : Secretary : D. Stringer, 131a Fulwell Avenue, Barkingside, Essex.

North London : Secretary : Mrs. C. M. Allen, Shirley, Beech Hill Avenue, Hadley Wood, Herts.

Back Numbers of the Journal.

The following are still available :—

Volume 3 Part 3.

Volume 4 Complete.

Volume 5 Parts 1, 2 and 3.

Volume 6 Part 1.

Volume 7 Part 4.

Volume 8 Parts 3 and 4.

Volumes 9, 10, 11 and 12 Complete.

Volume 13 Complete.

Volume 14 Parts 2, 3 and 4.

Volume 15 Complete.

Volume 16 Parts 2, 3 and 4.

Volumes 17 and 18 Complete.

Prices : Volumes 10/9 each, post free.

Single parts, 2/9 each, post free.

Reprint : *Plantae succulentae in Horto Alenconio*, by H. A. Duval, 1809, with introduction by W. T. Stearn.
1/2 each, post free.

From the Editor, 7 Deacons Hill Road, Elstree, Herts.

THE
C A C T U S
AND SUCCULENT
JOURNAL
OF GREAT BRITAIN

ESTABLISHED 1931

Vol. 19

APRIL, 1957

No. 2

FROM THE PRESIDENT

It was a delightful experience for me to find that the members got up and gave their views at the Annual General Meeting. It has been our experience in the past that nobody comments and items get passed without a word being said. This time it was the Journal that was under fire, very few compliments and plenty of criticism, but it was really pleasant to hear what was said. Much of it has been kept in mind and will not be lost, but I do not think anybody will object to the editor commenting on what he considers views that were not founded on fact. However, while he defends some part of what might be called "attack," much of it was suggestions intended to be constructive, let the following be considered information rather than defence.

It was stated that the overwhelming majority of the Society are so much beginners that scientific material was wasted on them and that they wanted to get to know more about plants and their cultivation. I feel that it is not known how many of our members are interested in deeper parts of our subject, not necessarily scientific. It must also be recognised that while our primary object is to help our own members, we have a considerable overseas subscription, mostly societies and individuals who are more interested in "deeper" material.

The editor has been in control of the Journal since the July, 1946 issue. For his own information, and inspired by the comments at the A.G.M., he has run through the pages of our Journal since he has been in control and has assessed the value of the various articles under certain headings. He finds that 203½ pages have been devoted to cultivation pure and simple, 199 pages to matters of general interest and information (it is difficult to separate one from the other), 133 pages to Society matters (these include reports of meetings which are largely devoted to cultivation), 134 pages specifically on certain plants, containing much cultivation material, 27 pages of original descriptions of new plants and, finally, 66½ pages of scientific material. The proportion of the 763 pages (the rest are made up of fill-ups, etc.) devoted to cultivation, plants and general interest which interest the beginner, is so high that I do not feel anybody can complain.

Just before the proofs of this Journal were received, I learned, much to my regret, that Mr. A. J. Edwards felt compelled to resign his position as Chairman. His professional work has so greatly increased that he considered it impossible to continue. I cannot let this pass without expressing our highest appreciation of the valuable and competent services he has rendered to us and to express our hope that he may find it possible, in the near future, to once again resume his activities with us. All who attended our public meetings will wish to pay tribute to his competent and fair method of controlling us. He was one of the most loyal of our officers and always willing to do his bit, whether the greater part of running our Annual Dinner, or superintending and actually working the apparatus at our various meetings.

E. W. SHURLY.

CACTUS CULTURAL NOTES

By A. BOARDER

Now that the growing season is here it will be necessary to re-pot all those plants which are in need of a move. First of all, it may be as well to examine the reasons for re-potting so that the problem is understood to enable the grower to know whether a particular plant needs this treatment or not. One of the main reasons for re-potting is that the plant has extracted all the soluble nourishment from the soil and, if one expects the plant to continue to grow, a change of soil is imperative. Secondly, the plant may have outgrown the pot. When this happens it is almost impossible to see the soil and the necessity for watering is not apparent. The plant may also have grown over the side of the pot, making it almost impossible for it to be watered. Another reason for re-potting is when the soil in the pot remains wet long after the plant has been watered. In such cases the soil will become foul and the roots will die.

A good reason for annual re-pottings is that one is not so likely to be troubled with root-bug, as there is no doubt that root-bug is always encouraged to get a strong hold where the soil in a pot is undisturbed for a year or two. When considering whether to re-pot a plant the question must be considered as to the type and rapidity of growth. Young plants usually grow faster than old plants and some genera are naturally slow growing when a re-pot once in two years may be enough. So much will depend on the plant as, for instance, plants of the genera *Epithelantha*, *Ariocarpus*, *Solisia*, *Pelecyphora* and *Strombocactus* are not as fast growing as many other genera and so need not be re-potted as often. Even these cannot be expected to thrive if they are never re-potted and the condition of the soil should be examined by carefully disturbing the top layer, when its condition can be seen more easily. It may only be necessary to remove the top layer and fill up with fresh. Where year-old seedling plants are concerned it may be necessary to re-pot, or, as it is called, pot-on plants more than once a year. That is if a seedling has been re-potted early in the year it may have grown to such an extent that it has become too big for the pot by the end of July. It should then be potted-on, which means being placed in a slightly larger pot and filling up the spare space with fresh soil.

It should be realised that roots also need a certain amount of air around them. When a plant is re-potted with fresh soil this is fairly well aerated, but after fairly frequent waterings the soil will have become compacted and will not allow any air to get to the roots. This can be noticed when plants are watered. The ones which have been recently dealt with will dry out very quickly, but those which have not been re-potted for a long time will remain damp for a much longer period. I am not going to describe all the directions for re-potting again, I have done so often before, but I would like to mention a few main points to be remembered. First, use clean pots, see that they are large enough. If the plant has grown well it should need a larger pot, usually up to four inches in diameter, one half an inch larger will do, but for a larger pot then the change should be to one an inch wider.

Cut your crock as large as will go into the base of the pot, not a lot of little pieces. By nipping at the edge of a piece of flowerpot the required shape can soon be made with a pair of pincers. A lot of crocks or drainage will be quite unnecessary as if the soil is porous enough it will allow the surplus water to drain away all right. Small plants are easy enough to deal with, but when one has to re-pot a large specimen of say, *Echinocactus grusoni* or large *Cereus*, it is not easy to remove the plant from the pot without causing some damage to spines. I find the best way to deal with a very large plant is to lay some sacking on a bench and then rest the plant on its side carefully on this. Pressure on the base crock with a round stick will then remove the ball of soil from the pot ready for treatment. Always remove every scrap of soil from the roots as this will be quite worn out and useless. Don't worry about breaking a few fibrous roots, they will soon be replaced when the plant finds the fresh soil. With tall plants see that the pot is large enough to form a safe anchorage for it; you do not want plants continually falling over.

As for the potting soil you use, well, I think the best advice I can give is for you to please yourself. No matter what I recommend you will only use it until you see something else in one of the many new books being written on cacti growing. These experts who may have only grown a few plants for a year or two know all the answers, but it does not matter much as cacti are very long suffering and can put up with almost anything. For my part, I still find the John Innes Potting soil with the addition of a sixth part of extra sharp sand to be quite good. A few limestone chippings for the very white spined plants can be added with advantage. Have the soil just crumbly moist when re-potting, it must not be dust dry or yet wet enough to soil the hands.

For ease of growth and free-flowering few genera can beat *Notocactus*. As long as they get fair treatment

and are able to obtain as much sunshine as possible they should never fail to flower every year. I have flowered one or two the year following the sowing of the seed, but normally it will take two years before most plants come into flower. There are, however, two distinct kinds of *Notocactus*. There are the free-flowering types such as *N. ottonis* and varieties; *N. concinus*, *N. tabularis*, *N. aprieus*, *N. mammulosus*, etc., and the finer, closer-spined types such as *N. haselbergii*, *N. grassnerii* and *N. leninghausii*. These latter are not quite as free-flowering and appear to be much slower coming to maturity. In fact, to raise them from seed needs much more skill than does the raising of the first mentioned. However, the species *N. haselbergii* has lovely bright tomato-coloured flowers which have lasted with me for three weeks and very few other cacti can equal this.

Looking round the greenhouse today, 28th February, I find several *Mammillarias* budded, but they have been so for some weeks. It is strange, but every January I see buds on my plants of *M. longiflora* but they usually hang on until early April before they actually open. *M. picta* is usually the first to flower each year. I see that my *Echinopsis eyriesii* which I have had since 1905 is making fresh growth at the top. It is now 15 inches high although only about four inches wide. My *Echinocactus grusoni* is now 10 inches across and a fine specimen. It has grown to this size from walnut size in 1946. My *M. bocasana* is now 9½ inches wide with about 66 heads, but the *M. plumosa* with 90 heads is only 7 inches wide. A *M. rhodantha* I raised from seed in 1946 is now 8 inches high and 5½ inches wide. A *M. prolifera* is 6 inches wide with many heads, each of which carries about 12 seed pods, in all there are at least 200 seed pods on this plant. What it lacks in size of flower it certainly makes up for in colourful seed pods, which last red and plump for a year. The *Rebutias* I raised from seed in 1955 have made some grand plants and I expect a fine show of flowers on them. One of them, *R. spegazziniana* is two inches across.

I have lost my *Euphorbia obesa* female plant. I spoke of it in the last Journal, when I said that I had placed a glass pot over it to encourage the seed pods to ripen. One day I found that all the seed pods on the top of the plant were covered with mildew. I immediately removed the pot and sprayed with permanganate of potash. The trouble was already done, however, as within a few days the top went all soft and rotten and before anything could be done to save it the whole plant had rotted. This is the first time I have tried placing a glass pot over a plant and it will be the last.

I see that some people are recommending the use of plastic bags for raising seeds in. Be very careful if you try this as all succulent seedlings (which, of course, includes all cacti), will damp off or rot at the base as soon as they cannot get enough air or are too wet. I find that once the seedlings appear it is imperative to ensure that plenty of fresh air is always available or they will not exist.

I sowed well over three hundred different species of cactus seeds in January and had 280 kinds up within a month. I was a little earlier with my sowing this year as the season was so bad last year that many seedlings did not get hardly as large as I would have liked them by the autumn. I usually only keep my large seedling frame at a temperature of about 40 degrees, the thermostat is set at 42 degrees, but even this will not suit certain kinds. I find that although practically all the *Mammillaria* seedlings came through without any losses, the *Pilocereus*, *Stenocereus*, *Thelocactus* and *Melocactus* suffered badly. I think one of the main troubles was that many of the boxes were overgrown with moss whilst I was ill last autumn and this held too much dampness round the base of the seedlings. All have had to be removed into fresh clean boxes as it was impossible to get all the moss from around the plants without shifting all of them. It was quite a task as there were at least 50 boxes with up to 120 plants in each. They look better already and no doubt will soon grow on now. I would prefer to keep this seedling frame at a temperature of not less than 50 degrees, but with electric heating in a frame it would be too expensive, although perhaps the saving of some of the plants would have been worth the extra cost. I do usually set the thermostat a little higher once the plants start making active growth, as they must be watered then and so should not be allowed to get too cold at night.

Mr. J. G. Statham quotes a friend's letter :—"No doubt you have heard about all the atomic explosions out here. Well, although they all took place hundreds and hundreds of miles from here, there is little doubt but that they affected the weather. We have never previously had such a wet winter. The central part of Australia is usually called a desert and was always unpassable on account of the conditions. Scientists say that, from fossils found here and other evidence, the central part of Australia was once an inland sea. Well, TODAY thousands of square miles of that former desert is once again an INLAND SEA and the whole country is wonderful to behold and is flourishing with grasses and all sorts of vegetation NEVER BEFORE SEEN. As a matter of fact, water like it has never before been seen by any white man." (How long can seeds lie dormant? Ed.).

CULTIVATION OF SUCCULENTS

By Mrs. M. STILLWELL

I always feel that April is a month of great promise when our plants are making plenty of new growth and, in general, have recovered from their long winter rest. Many of the succulents lose their leaves during the winter, but in many cases this is quite normal, while with others such as *Echeverias*, it is often the result of being kept on the dry side, but this is far the best way to get them safely through the winter. If re-potted in the spring they will soon make plenty of fresh growth and be as good as ever. Having such a damp winter, I found it really necessary to keep everything bone dry for at least two months to avoid attacks of mildew and, even with every precaution taken, I still lost one or two succulents from this cause. The only answer is all the ventilation possible on fine days when conditions permit. Mildew is brought about by a close atmosphere and too much condensation. Too high temperatures should be avoided, 40 to 45 degrees is ample for the winter months. Cacti and succulents always do better in a greenhouse on their own, and not mixed with other leafy plants, which are liable to give off moisture, especially in the winter.

April is the ideal month for sowing seed, either with or without a propagator. Good results can be obtained by sowing the seeds in pans covered with whitewashed glass and placed on a shelf close to the glass. Raise the glass slightly as soon as germination takes place. When the glass is ready to be removed, the pan should be placed in a shady place away from strong light until the plants are several months old, when they may be gradually introduced to the sunlight. I am convinced that, although it may be a slower process than using a propagator, these seedlings do retain their true characteristics throughout the whole of their lives and do not get bloated and green to start with. I have often had seedlings sent to me for identification in this condition, and it is often quite impossible to name them as they are nothing like the true plant should be. If you are using a propagator it should be set at 80 degrees for germination, and then lowered to 70. When the seeds are through it is not really necessary to cover the pans inside the propagator with glass when growing succulent seeds, but the top and sides, if all glass, should be shaded from strong sunlight. Much of the succulent seed is very fine, and should only be sprinkled lightly on top of the soil, and not pressed down or covered. Watering should be from the base and not by overhead spraying, or the fine seed will probably be blown away. Care should be taken not to plant rampant growing succulents with small slow growing ones, such as *Lithops* or *Conophytums* which take a lot longer to reach the pricking out stage. Do not be in too great a hurry to start pricking out, wait until all the seedlings have made their true bodies before disturbing. For those who are growing from seed for the first time, and are probably obtaining seed from the Society, I would suggest that they start off with the easier kinds which will make sizeable plants in one or two years, and leave the more difficult ones such as *Lithops*, *Conophytums* and *Euphorbias* to the more experienced growers. If not, a lot of valuable seed is going to be wasted and they will lose heart over an unsuccessful first attempt.

Here are the names of a few succulents that are fairly easy to grow from seed and should show good germination: *Faucaria*, *Pleiospilos*, *Aptenia*, *Lampranthus*, *Glottiphyllum*, *Delosperma*, *Aloe* and *Stapelia*. Always save all your own seed, even though they may come from quite common plants; they will give you a little more practice in the art of seed raising and many florists are often only too glad to take any surplus plants one has for disposal. It is the commoner kinds that have the best market. Personally, I feel that the end of March or the beginning of April is quite soon enough for seed sowing. By the end of the year they have usually caught up with those sown earlier. I always like to mix a little coarse vermiculite with the sifted top soil on the seed pans, it encourages stronger roots on the young seedlings and so gives them a better start in life. It also helps to hold the moisture longer and prevents the danger of drying out which is so fatal to young seedlings in a propagator.

My *Gibbaeums* have nearly all flowered this spring, but not nearly so profuse as usual. Each plant has only produced one or two flowers, where normally nearly every head flowers. It may be the results of last year's summer and the lack of sunshine. I had a number of flowers on *Acrodon bellidiformis* in February together with *Crassula monticola*, it made a nice splash of pink.

At the early date of writing these notes, I am just preparing for the great re-potting season and, after scrubbing any odd pots in near boiling water that have been left laying about, I am waiting the arrival of a fresh supply of soil, etc. I am also going to try out the new suggestion for our old friend the mealy bug, which is ordinary surgical spirit. It can be sprayed on and left for a short while and then rinsed off with lukewarm water. I am told it really works. I am always very wary of using some of the more dangerous poisons which are now coming on the market,

as I feel sure used by inexperienced people they could prove injurious to health ; one cannot be too careful, whatever the preparation.

May should see the *Lithops* and *Argyrodermas* ready for some water, providing they have lost their old pair of leaves. They can also be re-potted into some coarse open soil with the addition of limestone grit.

All the *Stapeliads* benefit from being re-potted now and some of the old growth can be removed as they only flower on the new. They need a richer soil with the addition of sharp sand and leaf mould and a small amount of crushed bones, or hoof and horn would help to provide a little more stamina in the soil without doing any harm. I have always found the *Stapeliads* very temperamental and difficult to bring safely through the winter: I invariably find I have a number of losses each year. They just rot off at the base. I have heard of really experienced growers who have the same trouble in the winter. They probably need more of a hothouse treatment than we can give them. The hardier ones such as *Stapelia grandiflora* and *S. variegata* do not give much trouble. It is the rare kinds of *Huernias* and *Carallumas* and, of course, for those who have them, the *Tavaresias*, *Hoodias*, etc.

Euphorbias should still be watered with caution this month as we shall still be getting some cold nights. They should be re-potted carefully without too much root disturbance. They must have a very porous soil, with perhaps the addition of extra broken brick, but no lime stone grit. They should be grown as hard as possible and never allowed to get too green by forcing, or they will never be successfully wintered. *Euphorbia* cuttings should never be buried, but allowed to just rest on the soil supported, if necessary, by a stick, or thin cane. The base should be examined periodically in case it has rotted, in which case a fresh cut must be made and sealed with flowers of sulphur and left to thoroughly dry before placing back on the soil.

LISTS RECEIVED

S. V. Smith, Wyck Hill, Stow on the Wold, Glos. : a four paged typed list of cacti and succulent seeds, also a page of sundries.

Succulenta Nurseries, Suvla, Military Road, Hout Bay, Cape, South Africa : a twelve paged printed list of South African succulents and also of cacti and including nearly two pages on the cultivation of succulents.

J. Zehnder, Kaktimex, Postfach Turgi AG, Switzerland : a six paged typed list of seeds of cacti and succulents, also a four paged typed list of cacti and succulent plants.

H. Winter, Frankfurt A.M.-Fechenheim, Germany : a thirty-two paged printed list of cacti and succulent seeds, including a long account of Friedrich Ritter's collections in South America.

Wheldon & Wesley Ltd., 83/84 Berwick Street, London, W.1 : a forty paged list of books on Natural History, including 990 items on botany which includes 34 items on cacti and succulents.

W. H. F. Richards, 103 Wilbury Road, Letchworth, Herts. : six paged mimeographed list of seeds of cacti and succulents.

We have received the second instalment of H. Krainz' "Die Kakteen." Previously we have reviewed the first instalment and the complete descriptions therein mentioned have been continued. The instalment comprises descriptions of sixteen species, two of them, *Mamillopsis senilis* and *Opuntia vulgaris*, in colour, the other fourteen in black and white, *Cereus jamacaru*, *Coryphantha andreae*, *werdermannii*, *Echinocactus horizontalis*, *Gymnocalycium anisitsii*, *brachyanthum*, *saglionis*, *spagazzinii*, *Mammillaria hamilton hoytea*, *marksiana*, *pennispinosa*, *Melocactus maxonii*, *Neolloydia grandiflora* and *Notocactus rutilans*. The quality of this instalment is quite up to the standard of the first instalment and is a welcome addition to the publications on our subject.

It is with regret that we have to record the passing in August, 1956, of L. Ollason, the well known cacti and succulent grower of Australia. He has been so prominent in activities "down under" that his passing will leave quite a vacuum.

The North London Branch has just issued a very interesting and comprehensive programme for 1957. Members in the area should write for a copy to Mrs. C. M. Allen, Shirley, Beech Hill Avenue, Hadley Wood, Herts.

Mrs. A. Hedges has donated a cup for "Succulents raised from seed," which will be awarded for the highest points gained in this section at the Society's shows during 1957 and subsequent years.

PIERRE-JOSEPH REDOUTÉ—
 “RAPHAEL OF THE SUCCULENTS”—*cont.*

With bibliographical and botanical details of over two hundred published plates.

By GORDON D. ROWLEY

A. P. DE CANDOLLE & P. -J. REDOUTÉ

Plantarum Succulentarum Historia

ou

Histoire Naturelle des Plantes Grasses

Collation of Plates

L=Large and S=Small paper editions

Fascicle and presumed date	Page	De Candolle's name	Modern name	Authority
	71	Mesembryanthemum	Glottiphyllum longum (Haw.)	N. E. Br. in J.L.S. 1920
	71*	linguiforme	N. E. Br.	
	72	Mesembryanthemum pugioniforme	Conicosia sp. aff. fusiformis	N. E. Br. in G.C. 1932
13 1801	73	Tillaea muscosa	Crassula muscosa (L.) Roth.	Don III as Tillaea muscosa L.
	74	Bulliarda vaillantii (Tillaea aquatica Lam non L. ; T. vaillantii Willd.)	Crassula vaillantii (Willd.) Roth	Schonl.
	75	Aloe plicatilis	Aloe plicatilis (L.) Mill.	Reyn.
	76	Cotyledon orbiculata	Cotyledon orbiculata L.	Harv. in Fl. Cap. II
	77	Euphorbia officinarum	Euphorbia officinarum L.‡	Berg.
	77*			
	78	Mesembryanthemum tuberosum	Mestoklema sp. aff. tuberosum (L.) N. E. Br.	N. E. Br. in G.C. 1936
14 1801	79	Crassula portulacea	Crassula argentea Thunb.	Schonl.
	80	Aloe serra	Aloe brevifolia Mill. depressa (Haw.) Bak.	Reyn.
	81	Aloe brevifolia	Aloe brevifolia Mill.	Reyn. non N. E. Br. §
	82	Mesembryanthemum tenuifolium	Lampranthus tenuifolius (L.) Schwant.	Berg. as Mesem. tenuifolium L.
	83	Mesembryanthemum coccineum†	Lampranthus coccineus (Haw.) N. E. Br.	Berg. as Mesem. coccineum Haw.
	84	Mesembryanthemum violaceum	Lampranthus violaceus (D.C.) Schwant.	Sond. in Fl. Cap. II as Mesem. violaceum D.C.
15 1801 or 1802	85	Aloe soccotrina [85*]	Aloe soccotrina Lam.	Reyn.
	86	Cotyledon tuberculosa	Cotyledon grandiflora Burm. f.	N. E. Br. MSS.

‡ See L. Croizat "De Euphorbia Antiquorum" 1934, 95.

§ "Not of Miller, which has the leaves spaced, amplexicaul, and spotted with white and spiny on the upper surface." N. E. Br. MSS.

† Text of some copies of large paper edition only headed "Mesembryanthemum croceum D.C." in error.

Fascicle and
presumed

date	Page	De Candolle's name	Modern name	Authority
	87	<i>Cotyledon hemisphaerica</i>	Adromischus hemisphaericus (L.) Lem.	Berg.
	88	<i>Mesembryanthemum nodiflorum</i>	Mesembryanthemum nodiflorum L.	N. E. Br. in G.C. 1928 as <i>Cryophytum nodiflorum</i> (L.) N. E. Br.
	89	<i>Mesembryanthemum acinaciforme</i>	Semnanthe lacera (Haw.) N. E. Br.	N. E. Br. MSS., syn. <i>Mesem. dimidiatum</i> Haw.
	90	<i>Cacalia ficoides</i>	Senecio ficoides (L.) Sch. Bip.	Berg. as <i>Kleinia ficoides</i> (L.) Haw.
16	91	<i>Aloe obliqua</i>	Gasteria pulchra (Ait.) Haw.	Berg.
1802	92	<i>Sedum telephium</i> [92*]	Sedum telephium L. telephium	Praeg. as <i>S. telephium</i> <i>L. purpureum</i> (Link) Praeg.
	93	<i>Sedum dasyphyllum</i>	Sedum dasyphyllum L.	Don III. Untypical, over-grown plant.
	94	<i>Mesembryanthemum tortuosum</i>	Sceletium expansum (L.) L. Bol.	Berg. and N. E. Br. MSS. as <i>Mesem. expansum</i> L.
	95	<i>Mesembryanthemum caninum</i>	Carruanthus caninus (Haw.) Schwant.	N. E. Br. in J. Bot. 1928
	96	<i>Pelargonium tetragonum</i> (<i>Geranium tetragonum</i>)	Pelargonium tetragonum (L.f.) L'Her.	Harv. in Fl. Cap. I
17	97	<i>Aloe picta</i>	Aloe sp. aff. saponaria (Ait.) Haw.	Reyn. (p. 290)
1802	98	<i>Aloe umbellata</i>	Aloe saponaria (Ait.) Haw.	Reyn.
	99	<i>Aloe mitraeformis</i> (<i>A. mitriformis</i>)	Aloe mitriformis Mill.	Reyn.
	100	<i>Kalanchoe laciniata</i> (<i>Cotyledon laciniata</i>)	Kalanchoe laciniata (L.) D.C.	Berg.
	101	<i>Sedum aizoon</i>	Sedum aizoon L.	Praeg.
	102	<i>Mesembryanthemum cordifolium</i>	Aptenia cordifolia (L.f.) N. E. Br.	N. E. Br. in G.C. 1928
18	103	<i>Rochea falcata</i>	Crassula falcata Wendl.	Schonl.
1802	104	<i>Sempervivum tectorum</i>	Sempervivum tectorum L.	Praeg.
	105	<i>Sempervivum montanum</i>	Sempervivum montanum L.	Praeg.
	106	<i>Sempervivum arachnoideum</i>	Sempervivum arachnoideum L.	Praeg.
	107	<i>Sempervivum hirtum</i>	Sempervivum hirtum L.	Praeg.
	108	<i>Mesembryanthemum corniculatum</i>	Cephalophyllum loreum (L.) Schwant.	Sond. in Fl. Cap. II as <i>Mesem. cornicu-</i> <i>latum</i> L.
19	109	<i>Trianthema monogyna</i> (<i>T. portulacastrum</i>)	Trianthema monogyna L.	Don III
1803	110	<i>Sedum populifolium</i>	Sedum populifolium Pall.	Praeg.
	111	<i>Cactus mammillaris</i> 111*	Mammillaria simplex Haw.	Br. & R. as Neo- mammillaria mam- millaris (L.) Br. & R.
	112	<i>Cactus melocactus</i>	Melocactus communis Lk. & Otto	Br. & R. as <i>Cactus melocactus</i> L.
	113	<i>Tetragonia echinata</i> (<i>T. herbacea</i>)	Tetragonia echinata Ait.	Sond. in Fl. Cap. II

Fascicle and presumed date	Page	De Candolle's name	Modern name	Authority
	114	<i>Tetragonia expansa</i>	<i>Tetragonia tetragonoides</i> (Pallas) Kuntze	Don III as <i>T. expansa</i> Ait.
20	115	<i>Sedum rupestre</i>	<i>Sedum reflexum</i> L.	N. E. Br. MSS.
1803	116	<i>Sedum reflexum</i>	<i>Sedum rupestre</i> L.	N. E. Br. MSS. non Praeg.
	[117]	<i>Sedum acre</i> (as "17" in L.)	<i>Sedum acre</i> L.	Praeg.
	117*			
	118	<i>Sedum sexangulare</i>	<i>Sedum sexangulare</i> L.	Praeg.
	119	<i>Sedum saxatile</i>	<i>Sedum annuum</i> L.	Praeg.
	120	<i>Sedum atratum</i>	<i>Sedum atratum</i> L.	Don III
21	121	<i>Crassula cordata</i>	<i>Crassula cordata</i> Thunb.	Schonl.
1803	122	<i>Cotyledon hispanica</i> (<i>Cotyledon pistorinia</i>)	<i>Pistorinia hispanica</i> (L.) D.C.	Berg.
	123	<i>Portulaca oleracea</i>	<i>Portulaca oleracea</i> L.	Sond in. Fl. Cap. II
	123*			
	124	<i>Euphorbia lophogona</i>	<i>Euphorbia lophogona</i> Lam.	
	125	<i>Sempervivum arboreum</i> Inflorescence	<i>Aeonium arboreum</i> (L.) Webb & Berth.	Praeg.
	125*	Do. Branches		
22	126	<i>Furcroea gigantea</i> (<i>Agave foetida</i>) Flowering plant	<i>Furcroea cubensis</i> Vent. <i>inermis</i> Bak.	J. R. Drummond in 18th Ann. Rep. Miss. Bot. Gdn. 1907, 72
1803	126*	Do. Flower details		
	127	<i>Cactus flagelliformis</i> ("flagilliformis" on plate)	<i>Aporocactus flagelliformis</i> (L.) Lem.	Br. & R.
	128	<i>Mesembryanthemum</i>	<i>Mesembryanthemum</i>	N. E. Br. in G. C. 1928
	128*	<i>crystallinum</i>	<i>crystallinum</i> L.	as <i>Cryophytum</i> <i>crystallinum</i> (L.) N. E. Br.
	129	<i>Mesembryanthemum</i> <i>brachiatum</i>	<i>Drosanthemum nitidum</i> (Haw.) Schwant.	N. E. Br. in J. Bot. 1928 as <i>Aridaria nitida</i> (Haw.) N. E. Br.
	130	<i>Mesembryanthemum</i> <i>striatum</i>	<i>Drosanthemum pallens</i> (Haw.) Schwant.	Berg. as <i>Mesem. striatum</i> α <i>pallidum</i> D.C.
23	131	<i>Claytonia virginica</i>	<i>Claytonia grandiflora</i> Sweet	Don III
1803	132	<i>Portulacaria afra</i> (<i>Claytonia portulacaria</i>)	<i>Portulacaria afra</i> Jacq.	Berg.
	133	<i>Crassula nudicaulis</i>	<i>Crassula nudicaulis</i> L.	Schonl., who says: "Evidently grown in a damp atmos- phere . . ."
	134	<i>Mesembryanthemum</i> <i>cuneifolium</i>	<i>Micropterum cuneifolium</i> (Jacq.) Schwant.	
	135	<i>Mesembryanthemum</i> <i>helianthoides</i>	<i>Carpanthea calendulacea</i> (Haw.) L. Bol.	N. E. Br. MSS.†

† "*Carpanthea candollei* N. E. Br. (*Mesemb. candollei* Haw.)"

"=*Macrocaulon candollei* N. E. Br. This plate was published after 1806." Brown does not, however, indicate what the justification is for this later date.

CONOPHYTUM ROSTRATUM Tisch. spec. nov.

By Dr. A. TISCHER

(Mesembryanthemum Lowe, Gen. *Conophytum* N. E. Br., subgen. *Derenbergia* Schwant., Ser. *Saxetana* Schwant.).

Planta caespitosa ramulis abbreviatis ad 1 mm. longis ; corpuscula ad 25 mm. longa cylindrata superne compressa bilobata, basi loborum ad 14 mm. lata, ad 10 mm. crassa, lobis erectis vel leviter divergentibus ad 12 mm. longis, basi ad 6 mm. diam., dorso obtusis, lateris fissurae applanatis ; supra plus minusve compressa, acuta vel subtruncata retusa ; fissura ad 3 mm. longa papillosa vel velutina parte pellucida inconspicua ; glabra, leviter papillosa, laete viridia vel albescente viridia punctis viridibus inconspicuis, apice carinae non purpureis ; ovarium exsertum ; calycis tubus ad 2 mm. longus non compressus ad 2.8 mm. diam. laete viridis, segmentis 5 carnosus ad 1.5 mm. longis viridibus ; corollae tubus 2.5 mm. longus non compressus albus, segmentis 28-30 linearis 2-3 seriatis, ad 3 mm. longis as 0.7 mm. latis supra acutis albis ; stamina multa exserta filamentis luteis ; stigmata 5 filamentosa ad 2.3 mm. longa laete lutea stylo 0 ; ovarium ad 3 mm. diam. supra conice elevatum ; discus leviter elevatus laete olivaceo—viridis ; flores nocturni.

Hab. : Little Namaqualand, prope Noisabis.

Coll. : H. Herre, 1930.

Type in Munich State Botanical collection, Mes. Nr. 207.

Plant forming comparatively dense cushions by means of offshoots, internodes short, 1 mm., long ; bodies up to 25 mm. long, cylindrical at the bottom, somewhat compressed towards the tip and split into two tips, at the base of the lobes 14 mm. wide, 10 mm. thick, lobes erect, mostly appressed to each other, more rarely spreading outwards, 12 mm. long, at the base 6 mm. in diameter, rounded towards the outside, inside flat, more or less compressed towards the top, partly running to points, on the larger bodies lobes somewhat expanded at the top and drawn upwards chin like towards the outside, in this case slightly scalloped at the top, in the centre and terminating on the inside into a small point at the tip. The bodies often resemble those of *Cheiridopsis* species ; with their appressed lobes they remind one of a bird's beak, hence the name *rostratum*—beak like! Fissure at the base of the lobes 3 mm. long and frequently somewhat thickened, slightly papillose or with short hair ; the body colour is whitish green to light grey green, keel or point of the lobes not tinted red, fissure area dark green, surface of the bodies and lobes appears to be indistinctly stippled in a darker hue ; but when inspected the dots appear clearly as translucent clear spots. Flower : ovary protruding from the fissure ; calyx tube 2 mm. long, not compressed, 2.8 mm. in diameter, light green, with 5 segments, succulent, 1.5 mm. long, blunt above, light green ; corolla tube 2.5 mm. long, not compressed, not expanded, white, with 27-30 segments in 2-3 rows, linear, 3 mm. long, 2-3 mm. wide, pointed above, white, inner ones hardly shorter ; stamens rather numerous, united with the corolla tube from the base, anthers all projecting rather from the tube, filaments whitish yellow ; 5 stigmas, with fine filaments, 2.5 mm. long, light yellow, style 0 ; ovary 3 mm. in diameter, cone-shaped at the top ; discus somewhat elevated, narrow, light green to olive green ; flower opening at night.

I received this interesting new species in 1951 from Mr. H. Herre, Stellenbosch. It was apparently found by him in 1933 in the vicinity of Noisabis in the Richtersveld and is being cultivated at Stellenbosch in the Botanical Gardens of the University under No. 12250. It differs completely from *C. noisabisensis* L. Bol. The latter is a large bodied bilobed species with shorter and wider lobes and velvet-like hairy surface, whereas *C. rostratum* is smaller, possesses comparatively long and narrow lobes and is not hairy. In addition, the two species distinguish themselves completely by their flowers ; *C. noisabisensis* has a large, yellow flower, *C. rostratum* small white. *C. rostratum* is also entirely different from all other species known so far. It appears to have but small inclination to form offshoots and mostly remains compact. After branching it looks very similar to certain species of *Cheiridopsis*. But by its flower it is clearly characterised as a species of *Conophytum*. Its small flower, unfolded by night, refers it to the closer relationship of the larger species of the order *Saxetana* Schwant., as *C. densipunctum* L. Bol. or *C. quartziticum* Tisch. whose habitat *C. rostratum* immediately adjoins to the south. In cultivation the new species causes no special difficulties. Unfortunately, there is only very little plant material in cultivation up to now.

Readers may have learned that the well known cacti and succulent grower, H. Winter, has passed on. Mr. Winter has long been known in the cacti world, and even in this country his loss will be severe. We believe his business will be continued, but his experience and competence must, inevitably, be lacking.

MIMICRY PLANTS THROUGHOUT THE YEAR

By W. SCHUTZBACH, Zurich

From the first sowings in the year 1948 unto this day, my collection has attained a size which it definitely must not exceed. This limitation is due to the space at my disposal during summer and winter. Also, I should not want to add to the time required for the care of it.

My collection is too big to be wintered in living rooms. For many years now a nursery proprietor has made available to me the northern end walls of two old greenhouses. The end of the gangway I have covered with boards, to enable me to place plants on them. With slats and boards I also made up shelves, so that I am in a position to stage the collection at three different levels of height and, in addition, on the ends of the hanging shelves.

In this manner I am relieved of the daily work which would be entailed by heating and, at the onset of severe frosts, covering the plants with straw mats. Every weekend I spend one to two hours with the collection, in order to do the things that are necessary and watering the winter growers.

It is really a very important matter in which way to give the plants the small amount of water which they need. Very little information can be found about it in the literature. I was after a method of working which suited my conditions. This I have found, and employed successfully for many years. In these greenhouses my plants are standing free on the boards or on Eternit-sheeting which I placed on the ground. Atmospheric humidity and warmth varied noticeably, according to the plants grown by the proprietor (Cyclamen, Primulas, Geraniums). Only part of my plants require a little water during the winter half-year.

However, if I pour the small amount of water into the top of the pots, it will be absorbed by the top layer of dry soil and little, or none, will reach the fine rootlets. On the other hand, if I steep the pot, or pan, up to the rim in lukewarm water for one to three seconds (the water having been placed ready in a container), the porous earthenware soaks up the water and some of it enters the pot through the drainage hole. In the drainage and on the inside of the pot walls are the fine rootlets which require the water, and are able to absorb it immediately. The plants, however, remain in dry soil and are not endangered. Pots and pans can thus be watered in correct doses.

This treatment is given to *Conophytum*, *Conophyllum*, *Mitrophyllum*, *Monilaria*, *Gibbaeum*, *Ophthalmophyllum*, *Haworthia*, *Crassula*, *Pleiospilos*, and the pans of seedlings. *Lithops* get a little water only in the case of individual exceptions. *Titanopsis* and *Nananthus* do not get a drop of water from November to May. This absolute winter rest is one of the chief requirements for the cultivation of these genera. My oldest plants of *Titanopsis calcaea* are nine years old, *T. schwantesii*, *hugo-schlechteri* and *setifera* and many *Nananthus* eight years.

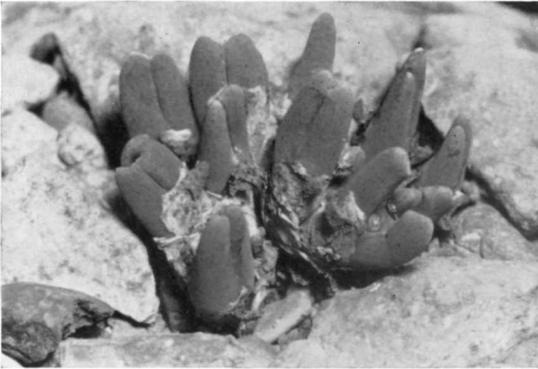
In December last, five *Pleiospilos nelii* formed buds, but only one of them developed sufficiently for the flower to open, this being for one week, in mid-March, 1956.

The Siberian cold which in February and March broke over Europe, caused very little loss in my collection. A few *Haworthias* in moist soil, which had been standing too near the concrete outer wall succumbed to the frost, and a pan-full of *Cheiridopsis* seedlings were killed by the icy-cold air which penetrated through a crack in the glass. During the coldest weeks these greenhouses, in addition to having hotbed lights placed over them, were also covered with straw mats day and night. All plants were standing in darkness for a long time.

At the beginning of May the collection was transferred again to the summer frames. This sounds very simple, but has to be prepared each time a week in advance. I ordered a commercial vehicle for Saturday afternoon. The vehicle owner, together with a man, helped me and my two children to load the pots and pans, previously placed into shallow cases, into the lorry. Three miles away everything has to be carried into the garden. Arranged according to genera, the plants are placed into the bed of gravel, more gravel being filled in between the pots. Finally, the coloured stones are placed in position. Middle of October this work is being carried out in reversed sequence.

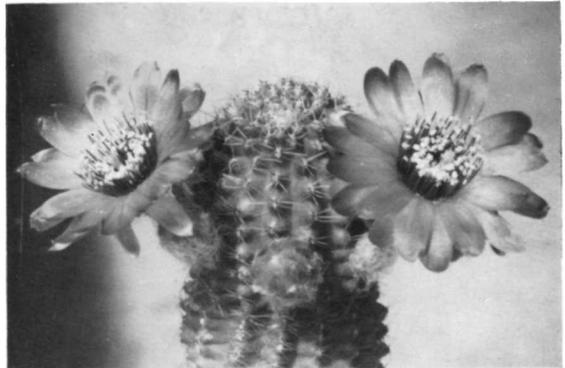
For the first ten days the frame lights have a coating of whitewash, which then is brushed off gradually, until the glass admits the full sunlight. At this time *Gibbaeum angulipes* usually has the flowers already wide open.

In May the weather was still very cool and, therefore, I waited until warm weather allowed a first good watering. Into this water I mix a new insecticide, developed from the Parathion Emulsion, and no longer so dangerous. In this manner I kill all pests on the plants and in the soil, as well as in the gravel bed. Previous tests had shown me that *Glottiphyllum* and *Pleiospilos*, attacked by root mealy bug, when treated in October, had perfectly clean roots in the spring. The test plants did not show the slightest damage. At a subsequent watering I add to the water a mercury preparation, in order to kill all disease germs on the plants and in the soil. It is always preferable to take preventive measures, than to act only when damage has been noticed.



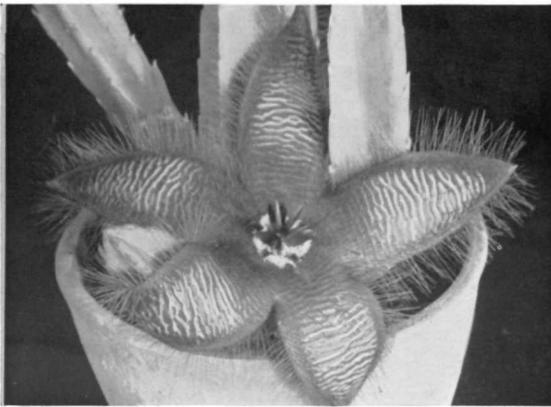
Conophytum rostratum

Prof. Dr. Rauh



Digitorebutia "A. V. Fric"

Dr. W. Cullmann



Stapelia hirsuta (note blue bottle eggs). Miss M. J. Martin



Stapelia hanburyana

Miss M. J. Martin



Fig. 8. *Nyctocereus serpentinus*
(Lag. & Rodr.) Br. & R.

PIERRE-JOSEPH REDOUTÉ—Cacti from Bonpland's
"Description des Plantes Rares . . .".

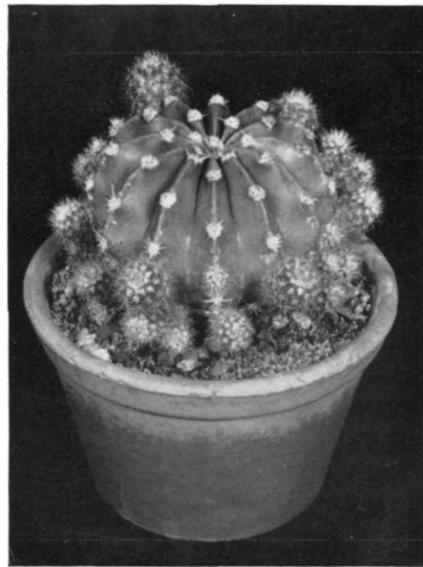


Fig. 7. *Neopalxochia phyllanthoides* (D.C.) Br. & R.



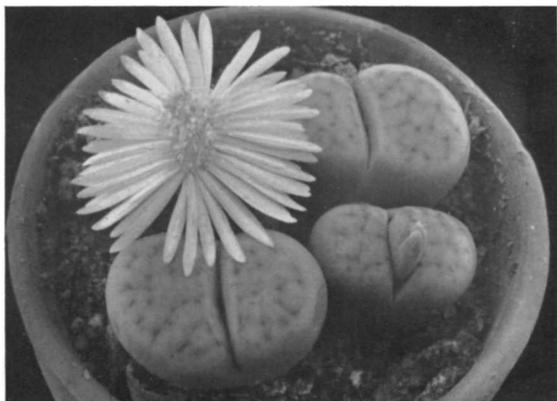
Rebutia grandiflora

B. C. Marshall



Echinopsis eyriesii

B. C. Marshall



Lithops triebnerii



Lithops helmutii

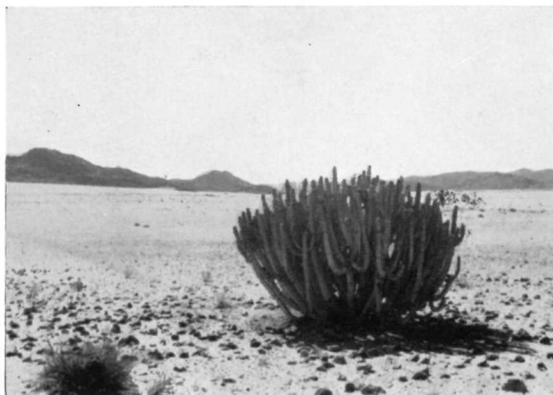


Lithops eberlanzii



Lithops bromfeldii

Four *Lithops* photographs by W. Beeson.



Euphorbia virosa near Orange River.



Euphorbia multiceps near Springbok.



Desert near Sendelings Drift, Richtersveld.



Water hole in the Richtersveld.

Four photographs by H. Hall showing habitats in South Africa.

In summer I always apply the water with a fine spray over all the plants, irrespective of whether green, red or white. I have never yet been able to ascertain any scorching due to the droplets of water acting as lenses. I usually give the water at midday, or in the evening, that is to say before the flowers open or after they have shut.

The past summer was again very cool, so that I gave water usually every 7 to 10 days only. *Lithops*, *Argyroderma*, *Titanopsis* on these occasions received 2 to 3 litres (approximately 3 to 5 pints) of water per square metre (approx. 11 sq. ft.). *Haworthias*, pans of seedlings and *Pleiospilos*, with the exception of *P. hilmari* and *P. prismaticus*, get 3 to 5 litres (approx. 5 to 9 pints) over the same area. Thanks to these small quantities of water and the constant stream of air over the plants, the latter remain very stocky and possess an intensive colour.

During the first half of September I reduce the air circulation to about half, by placing panes of glass in front of the wire netting at the back of the frame. Towards the end of the month I only leave a few air holes open. In this manner I retain the warmth of the sun in the frames, which assists the growth and the forming of buds.

Due to the cool weather, flowering time started several weeks later this year, too. Not until end of July did the first *Lithops* flower open, this time it was *L. volkei*. The main flowering time of the *Pseudotruncatella* group began middle of August only; at the same time *Glottiphyllum oligocarpum*, *nelii*, *Frithia* and *Neohenricia* flowered. Subsequently, and right into December, the other *Lithops* species flowered. *L. kuibisensis* produced no bloom, other years this species was always in flower too. But *L. ruschiorum* with two flowers, and *L. lineata* with five flowers were among those that flowered freely. Would *L. ruschiorum* fail to flower during a hot summer due to frequent watering?

The main flowering time of *P. bolusii* and *simulans* took place at the end of September and beginning of October. Again I had two marvellous, large, apricot-coloured *bolusii* flowers, apart from the many yellow ones of this species. Two-thirds of the little bodies of *P. hilmari*, which were fit for flowering, had buds. At the beginning of October the same *Pleiospilos prismaticus* flowered as during the preceding year. As Prof. Dr. Schwantes informed me, this is a rare occurrence.

The cool summer appears to have been a blessing for *Conophytum* and *Ophthalmophyllum*. Both genera flowered profusely.

A *Conophytum cinereum*, received from Germany in 1952, opened seven yellow flowers. In the new work on the genus *Conophytum*, by Dr. Tischer, I was not able to see this name mentioned. But some years ago I saw an illustration of this plant in specialist literature, under this very name. Outwardly the plant resembles *C. muscosi-papillatum* and *C. sitzlerianum*.

Argyroderma species too flowered from October till far into December. The first flower of *A. ovale* was a marvel, coloured a wonderful violet-red, and it measured 4 cm. (ca. 1½ ins.) in diameter. Further late flowers were produced by *Glottiphyllum album*, various *Titanopsis* species, *Nananthus malherbii*, *Gibbaeum dispar*, *pilosulum* and *Rabiea difformis*.

For the better control of my collection, I have provided all pots, individual plants and plant groups in pans, with aluminium number labels. In a copy-book I have reserved a line right across the two pages for each number. To each genus I have allocated 20, 50, 100 or several hundred consecutive numbers. Small genera are together under "Sundry Genera." In addition to number and name, the following data are entered in abbreviated form: Year, Origin, whether seedling, cutting or import, also concise information on size and flower production. If a plant dies, a paper strip is gummed over the old data, and fresh space is available for the new plant. I consider this control-book more practical and more lucid than card indexes.

I welcome the winter months. It is the time for resting and relaxing and one sees all things in the correct perspective again. Plans are prepared for the coming year and use is made of the experiences of the past year.

On a Sunday I sometimes get hold of one of the new books on our favourite plants. How well ordered is everything, and comprised in one and the same volume what previously I had to pick laboriously from two dozen books and journals. I always made myself copies and thus absorbed more of the matter than when reading the normal way. What I had read became impressed upon my mind and was always present and ready to be applied.

If anybody doubts the advertising powers of the Journal they should have been at the receiving end of letters written to every one of the officials of the Society as a result of the publication of Mr. Marsden's article on a new remedy to exterminate mealy bug. Mr. Marsden's address was not given and, as a result, every officer of the Society has been deluged with enquiries as to where the new mixture can be obtained, wholesale and retail chemists have written in for the same information. Please accept this, the only intimation, that Mr. Marsden's address is 27a Elgin Crescent, London, W.11, to whom all enquiries should be sent. It would seem that the population of mealy bug, root and otherwise, on collections in this country is very high, not withstanding the continual references to various exterminators.

DIGITOREBUTIA 'A. V. Fric'

By J. D. DONALD & Dr. W. CULLMANN (Members of I.O.S.)

A plant long known to students and collectors of the *Rebutinae* on the continent is '*Rebutia fricii*.' As far as can be ascertained after an exhaustive search of the literature from 1931 onwards, no Latin diagnosis has ever appeared for this plant, in fact no description or reference has been found for this plant in any journal or commercial catalogue whatsoever. J. D. D. also has found no reference to the plant in private letters to A. F. H. Buining from A. V. Fric, which J. D. D. has been privileged to study. The plant is quite distinct and deserves a description at least of varietal status. However, in view of the obscurity of its origin, it has been decided to give the plant a cultivar name in honour of A. V. Fric, one of the pioneers of *Rebutia* study. Originally it had been decided to give a Latin name '*fricana*,' but at the 3rd I.O.S. Congress this decision was criticised on the basis that there was no evidence to show that the plant was neither a cultural variant of a known species nor a hybrid, but a true imported species. Although both J. D. D. and W. C. are themselves personally convinced of the integrity of the plant as a true imported species from Bolivia, the evidence is of an entirely negative character and therefore, in the absence of any positive proof of collection in the field and subsequent importation, they have agreed to publish the description of the plant under the cultivar name '*A. V. Fric*,' until such evidence is produced, when it is proposed to name the plant *Digitorebutia oculata* var. *fricana*.

Body : short cylindrical, very caespitose, individual bodies up to 50 mm. high x 15-20 mm. broad. Epidermis deep grass-green to grey-green, becoming slightly tinted reddish-bronze only on exposure to strong sun and subsequent desiccation.

Ribs : 16, resolved into prominent tubercles ; vertical or slightly spiralled ; tubercles 4 mm. diam. x 2 mm. high.

Areoles : Small, oval, 1.5 x 1.0 mm., 4-5 mm. apart, sparsely filled with light woolly felt, situated centrally on the tubercles.

Spines : Radials only present, 8-10, mostly pectinate, 2-4 mm. long, one or two of the uppermost spines often longer, up to 7 mm. long ; all brownish-white, weak, bristly, darker and thickened onion-like at their base.

Flower : Funnelform 25-30 mm. long and broad.

Pericarp : small, light brown, 5 mm. diam., beset with olive-green scales with white woolly hairs in the axils.

Tube : Short, thick, 3-3.5 mm. diam., 8-10 mm. long ; pinkish-yellow with olive-green sheen ; beset with pale grass-green scales, scales with thick white woolly hairs in the axils.

Bud : conical, deep grass-green with whitish woolly hairs.

Perianth : 12 sepals or elongated scales, lanceolate, greenish up to 3 mm. wide x 8 mm. long ; outer petals, spathulate-mucronate, greenish with red midstripe, up to 4 mm. wide x 8 mm. long ; inner petals, spathulate-mucronate, red-orange to cherry-red, up to 5 mm. wide x 12 mm. long ; inner and outer petals both 12 in number.

Throat : light rose to greenish.

Receptacle : greenish-yellow, restricted for 3 mm. above base by thickening of tube wall, so that style appears connate with tube wall.

Filaments : numerous, up to 12 mm. long, deep carmine-purple, arise in three series from the tube wall within the receptacle.

Anthers : pale yellow, bilobed, 1.5 mm.

Style : 15 mm. long, pale green, with 8-10 stigma lobes, usually clenched up to 3 mm. long.

Fruit : Typical, flask-shaped, thick-walled berry, brownish and very woolly, 5 mm. diam.

Seed : Typical, small rounded cap-shaped, 1.5 mm. diam., dull brown.

The flower bud and general floral characteristics are typical of *Digitorebutia oculata*, but the body characters are intermediate between those of *haagei* and *nigricans*. The deep carmine purple stamens readily distinguish this plant from the *haagei* complex and from *D. nigricans*. In view of the close resemblance in all floral parts and in the green flower bud and scales typical of *D. oculata*, it is suggested that this plant is best placed in the *oculata* group and as a variety of *D. oculata*. The structure of the plant body and flower also establish it as a member of genus *Digitorebutia* of the *Rebutinae*.

Rebutinae Donald Succulenta 1955, vi, 84.

Digitorebutia Fric, Kreuzinger and Buining, Succulenta XXII, 1940, 51-54.

Digitorebutia oculata (Werd. 1935) Buining ibid.

Rebutia oculata, Werdermann 1935, Blühende Kakteen, Pt. 25, pl. 98.

NORCO CACTUS FARM PLANTS EXOTIC TO EASTERN FOLK

(Reprinted from "The Daily Enterprise," Riverside, California, 19th Oct., 1956)

By WILL THORNE

NORCO, Oct. 18—Spiny, green cactus is an everyday affair for us on the edge of the desert.

But potted on an eastern window-sill it's nothing less than exotic.

That demand for cactus as a house plant in the eastern United States means money for Howard Gates, 66-year-old former Anaheim florist, who is one of the largest cactus farmers in the world.

Gates, who because of a rheumatic condition uses an electric cart to cover his 15-acres of cactus fields and greenhouses, has maintained the farm at 2514 Hillside here since 1930.

Takes Climate

"It's not hardy in most parts of the country," said Gates of his 200 varieties of cactus. "It takes a climate like that of citrus.

"Let me put it this way: whenever the citrus growers get a heavy frost, we do too. Some things will freeze at 30 and some are more hardy but every time you drop a degree or two something else gets hurt."

Cactus—or properly cacti when in the plural—is grown from both seed and cuttings in a mixture of sand, peat moss and fertilizer developed at UCLA and known as the "UCLA mix."

Redwood Flats

It is planted in redwood boxes, or flats, 18 inches square and nearly three inches deep and placed in heated greenhouses. Planting is done by spreading the seed across the top of the mixture, pressing them gently in, then covering with a layer of specially selected sand.

"The temperature in the greenhouses," said Gates, "is kept to a minimum of 70. Then, depending on the type, it is replanted by hand."

Replanting is done from three to nine months after the cactus is first planted. Five women employed at the Gates farm transplant the tiny seedlings into flats holding several hundred plants. Cuttings also are used.

"First they must be trimmed and cleaned," said Elisa Andrade, 3703 Hillside, Norco, "then treated with this yellowish rooting powder."

Again the cactus goes into the greenhouse—this time until it is large enough to be shipped to markets or replanted in outside fields.

Seed cactus is carefully chosen. Some plants, said Gates, will bloom in a few years and some, such as the "Echinocactus grussoni" take as long as 20 years to bloom.

The Mexican Old Man Cactus—so called for the fluffy white beard-like spines it grows—must be 20 feet high before it blooms.

Cactus Fruit

"Some produce fruits in one big crop while others scatter fruits for several months," said Gates. "It's a year round job."

Seeds are grown in fleshy fruit and must be separated (one exception: a variety which holds three seeds in a fruit. When ripe the fruit "explodes" shooting out the seeds).

Fruit pulp is placed on a screen held over a bucket. A jet of water is shot over the screen, washing seeds to the bucket's bottom.

The seeds are then dried and stored. Although some seeds can be planted immediately, many need "rest" periods and germination tests are taken to determine proper planting times.

In packing, soil mixture is washed from roots and boxes insulated against the colder climates of the east.

First head packer Freddie Villa, 27, 319 W. Grand, Corona, places thicknesses of newspapers inside the box, then lays a further insulation layer of shredded papers inside.

"Then I put in more paper and the cactus plants. After that you do it all over again," said Villa who has worked 15 years for Gates, never had another job except for a short period in the Army.

"There is a market all over the world," said Gates. "But most of it is in the east and northeastern states.

"It's an interesting business all right, but don't write that it's a particularly profitable one.

"I had a florist shop in Anaheim before I came here. I've been operating the farms since 1930 and moved out here in 1940."

(I thought this American newspaper article might interest our members.—Ed.).

REPORTS OF MEETINGS

28th August, 1956. *Haworthias* : C. E. L. GILBERT

The Chairman, Mr. A. J. Edwards, took the opportunity of thanking the Show Judge, Mr. A. Boarder, and the Show Secretary, Mr. K. Walden, together with all those who had given assistance, not omitting the exhibitors, for their respective contributions towards making the Autumn Show a success.

The speaker, Mr. C. E. L. Gilbert, was then introduced.

Mr. Gilbert opened his talk by saying that he was very keen on *Haworthias*, a neglected genus, and it was his aim to endeavour to pass on some of his enthusiasm to other members. He had brought with him some excellent examples, most of which he had grown on from cuttings. These were passed round as he spoke. His plants were augmented by some taken from the Show.

He said that he was not an authority on nomenclature, in fact, in this regard there was very little organised information available and very few real experts existed.

He described the genus as consisting of many "contrasty" plants when compared with cacti and most of the other succulents. There is such amazing variety that some types do not even appear to be related; compare *H. planifolia* with *H. reinwardtii*, or either with *H. truncata*.

In describing their growth habit he instanced that of *H. reinwardtii*, in particular, of being alive at one end whilst dying off at the other, thus moving along the soil. Many varieties form clumps, some are of stemless rosette form whilst others grow upwards on stems. Some varieties, *H. truncata* and *H. maughanii* could be classed as mimicry plants, whilst *H. retusa* develops windows in its leaf tips.

Propagation is quite simple by offsets and all are amenable to increase by leaf cuttings. For this purpose the stout fleshy-leaved types are the best.

Plants should be re-potted each year. On examination it will be found that about half of the root system will be dead. Clip off at the central stem where the dead part meets the good. Then keep them for a week or two in an empty pot. If the dead roots are left on there is a danger that they may rot and adversely affect the plant.

Compost should not be too heavy, in fact similar to that which he had described on previous occasions. He had found that large lumps of breeze were helpful to the root systems. The best time for re-potting, which should be done in dry compost, was in the spring after the plants have finished their rest. Water should not be given directly after repotting.

When considering a watering schedule it should be borne in mind that *Haworthias* are South African plants, which, in their natural arid habitat, where they grow in the shelter of rocks, are subjected to long periods of drought broken by heavy downpours. One grower, who can really be described as an expert, had not started watering at the beginning of August, and he favoured either watering by hose or by leaving the plants out in the rain. The genus certainly benefits from being grown in the open, but in this country it is difficult to reconcile the long droughts with rare downpours with what we habitually get. It might be achieved by leaving the plants outdoors over a Bank Holiday. It is general practice to grow *Haworthias* in shade or partial shade, but he advocated giving them plenty of sun in the spring and autumn and providing shade during the intervening period. He suggested a spring watering by dipping and from July by overhead watering. If a shady spot can be selected they could be kept outdoors from July onwards until Autumn develops. During the winter the plants should be kept dry, i.e., from October onwards. The roots develop through seeking out moisture.

Among the many varieties, he referred especially to the *retusa* types and the striking *Apicra* types with their upwards pointing leaves. He gave particular praise to *H. bolusii* as a much sought after and beautiful species.

With regard to the flowers, except for a very few, he found these uninteresting and, except for those borne on short stems like *H. batesiana*, it was better to pull them off. During their growing period the plants turn green but later develop a delightful variety of colouration; amber to pink, to a deep purple.

Under the heading of pest, the mealy bug is the principal offender, getting deep into the interstices of the leaves and being difficult to discover. Only too often this occurred when the centre of the plant died off and came away after watering. Root mealy also had to be considered. He advised members to use their normal anti-mealy treatment. He now used his hot water method, as described on another occasion, but this was still in the research stages.

The scorching of leaf tips was not necessarily due to the effect of the sun. It might well be a characteristic of the species, such as *H. glabrata*. In a discussion on what temperatures *Haworthias* could stand during the winter months, Mr. Walden said that he had recorded 24 deg. whilst Mr. Heathcote said that he had lost none at 12 deg. last winter.

In conclusion Mr. Gilbert suggested that his hearers collect at least some of the genus and build up a collection of distinct varieties. This would more than repay the small amount of trouble involved.

13th November, 1956 : From Town to Country. A. W. HEATHCOTE

Hornchurch was on the edge of the built-up area, whereas Bishopstone is on a hilltop with two sides to the sea and open downs to the others. It was necessary to dispose of the Hornchurch residence before the move. The plants were packed into apple trays, boxes, etc., two dustbins, some tea chests, a watering can and a trowel were obtained in readiness. About half the plants were cacti, mostly globular including a *Chamaecereus sylvestrii* in a nine inch pot, which was eventually broken. This plant sat on a cold floor, survived a 70 mile journey, and afterwards flowered vigorously. The succulents were mainly composed of *Haworthias*, *Echeverias*, *Crassulas*, *Aeoniums* and mixed *Mesemb.* The bedding *Echeverias* and *Sempervivums* were placed in the two halves of a costume box and left till March, being only occasionally watered. Whilst good weather prevailed the plants remained packed.

The plants were de-potted during October, and each wrapped in a piece of the 'Financial Times.' They were then packed into the two dustbins. The succulents were placed in apple trays, and covered with a sheet of newspaper. All weathered the first cold spell of the new year. During muggy weather, drips and condensation caused the paper to collapse, and the *Haworthias* and *Faucarias* were all consequently killed by frost as a result. These formed the bulk of the casualties up to the time of removal. Several *Euphorbias* left uncovered, were unharmed. The *Chamaecereus* still sat on the floor, quite all right. After six months, the succulents were de-potted, being quite dry. They were wrapped in newspaper, and packed into wooden boxes. Removal took place with only minor damage.

At Bishopstone, it was decided to create a lean-to greenhouse. This faced east. It was heated by a radiator connected to the house heating system. A ventilator over the heater gave a measure of control over the temperature. The house was erected on brickwork, its size being 15 ft. x 6 ft. Asbestos was used for staging.

The plants were steadily unpacked and laid up in the garage. Of the cacti in the dustbins, only three had to be scrapped. It was a different story with the succulents, as the majority were a mass of mildew, probably due to moisture respired from the plants, although they were dry when packed. The plants in boxes, merely covered, were intact.

Potting compost was made up, using builders sand, which was not sharp enough. This caused losses and was soon amended. Some 'genuine' John Innes compost, bought locally, contained several large stones and a nut and bolt. Breeze block was used in the compost, and it was broken up, riddled, and the dust was removed by the simple expedient of tossing it in the air. The Bishopstone breeze did the rest.

Eventually the plants were re-potted and moved into the greenhouse. The house was much lighter than the previous one, and all plants grew and flowered better than before. *Lithops* grew quickly, but did not produce flowers.

Seed was sown on the 21st May, and the germination was good. The *Lithops* were large in a short time, but the cacti were only average.

Quite a few insect pests invaded the house. Ants and earwigs, also woodlice were dealt with successively. A snail and an occasional toad were disposed of.

REPORT OF THE COUNCIL, 1956—Continued from page 44**Shows**

The Society held two Shows during the year in conjunction with R.H.S. Shows : both were well represented and a larger number of members entered classes specially inserted in the Schedules to encourage less experienced members. To make our Shows an even greater success more entries are needed and members are asked to seriously consider making an effort to exhibit, if only in one class. We tender our best thanks to Mr. A. Boarder for his difficult and unbiased judging at both Shows, also to those members who assisted in meeting the many visitors and answering questions.

Social Activities

The 25th Anniversary Dinner was held on 28th November. It was a light-hearted occasion and a great success. The dinner was followed by a showing of slides.

Treasurer

We cannot complete our report without paying tribute to the energies of the Honorary Treasurer, Mr. E. W. Young. We thank him for the efficient handling of the Society's accounts and for his continued enthusiasm in so many other ways. We also desire to thank Mr. Naylor and Mr. Cole for auditing the accounts.

Our 25th year has been a highly satisfactory one and we look forward to increasing facilities being available to members, also to receiving the co-operation of all our members in maintaining and increasing the interest in our hobby.

REPORT OF THE COUNCIL, 1956

It is with pleasure that the Council presents the Accounts and Report for 1956.

The membership has again increased from 819 in 1955 to 1,082 at the end of 1956. This has greatly increased the volume of work so willingly undertaken by the officers of the Society; complaints have been non-existent and everything has, as usual, proceeded smoothly and efficiently.

Enthusiasm and general interest to serve the Society and its members has been shown by all the officers and other willing helpers. Much of their time spent in this direction is lost to them in the care of their own plants.

Booklet

The sales of the Booklet during the year have continued beyond all expectation. Nearly 40,000 copies have been sold. The sales have given the Society profits which will enable further facilities to be provided to the members. We wish to again record our appreciation to Mr. and Mrs. Shurly who have coped so ably with the sale and despatch of the Booklets.

Branches

We are indebted to the Secretaries of the Branches for their activities during the year in arranging local Shows, Meetings and Outings, also in maintaining and fostering further local interest. One new Branch has been formed in N.W. London during the year and arrangements are in hand by Mr. A. Heathcote to assist in the negotiations for the formation of other Branches.

Exchange

Mr. A. Boarder has had an extremely busy year dealing with the distribution of thousands of packets of seed to members, and his efforts in this direction, together with the many other duties he has performed, whether it be Judging, Lecturing, or dealing with correspondence on culture of plants, have been untiring and his work could not be too highly praised. Mr. Boarder has requested to be relieved of the task of the distribution of seed to members. Mr. G. L. Hedges has agreed to undertake the duty in future.

Journal

This has continued on similar lines to past issues. It is our most important feature and is highly appreciated. Special mention must be made of the 25th Anniversary Number. Letters of appreciation have been received from numerous sources. The work entailed in the preparation and production by Mr. Shurly indicates his continual practical interest and untiring enthusiasm for the benefit of all members. We wish to record our sincere thanks and appreciation to him. We should also like to thank the many contributors of articles in the Journal.

Library

This activity continues to be so extremely popular and consequently means long waiting lists of applications for books. Mr. P. V. Collings still has difficulties in satisfying members' requirements. We would take this opportunity of again appealing to members to return books with as little delay as possible. Copies of new publications and popular books that are out of print are purchased as they become available.

Six books have been purchased during the year. The Librarian's task of despatching, receiving and keeping a watchful check on the books is considerable and we wish to record our thanks to Mr. Collings.

Meetings

Meetings were well attended during the year. Two Exchange meetings were popular and many plants and cuttings found new homes. Lectures were interesting and well received. Our thanks are due to Mr. A. Boarder, Mr. C. Gilbert, Mr. A. Heathcote, Mr. G. Hedges, Mr. E. Shurly, Mr. R. West and others for giving the lectures. We should also like to thank Mr. A. J. Edwards for the able manner in which he has acted as Chairman at General and Council meetings during the year.

Royal Horticultural Society

We desire to thank the Society for their continued help during the year, also to the Press for publishing notices of Shows, etc.

Secretary

Last year's comments equally apply, but it would be wrong to simply repeat. We all appreciate what he is doing and know from our own activities what it entails and that it, necessarily so, hardly ever is realised by the members. Believe us it is vital to the proper efficiency, health, progress. We, the Council, pay tribute to the unseen, but vital work he is doing.

Continued at foot of preceding page

We Specialise in
**SUCCULENTS
AND CACTI**

Write for Price List

Succulenta Nurseries
(Bernard Carp)
"Suvla," Military Rd., Hout Bay,
Cape Province, South Africa

A new and revised edition

**Cacti &
Succulents**

G. GILBERT GREEN

"Should be in the hands of all who want to know and grow cacti and succulents."—*Cactus & Succulent Journal of Great Britain.*
"An authoritative book that may well become a standard reference work on its subject."—*Nurseryman & Seedsman.*

"Produced on a lavish scale . . . this work ranges over the whole subject and contains a wealth of information . . . A library in one volume."—*National Cactus & Succulent Journal.*

With 80 pages of photographs and 10 plates in full colour. 36/-

FABER & FABER LTD
24 Russell Square, London, W.C.1

**CACTI
AND SUCCULENTS**

WRITE NOW
FOR INTERESTING NEW
SEED LIST
AND LIST OF SEEDLING
PLANTS AT REASONABLE
PRICES

STANLEY V. SMITH
WYCK HILL, STOW-ON-THE-WOLD
GLOUCESTERSHIRE
Telephone: Stow-on-the-Wold 216

**CACTUS AND
SUCCULENT
SEEDS**

**400 DIFFERENT
MANY RARITIES**

Send 2d. Stamp for lists

W. H. RICHARDS
103 WILBURY ROAD
LETCWORTH HERTS.

WORFIELD GARDENS

BRIDGNORTH

Telephone : Worfield 259

SHROPSHIRE

CACTI AND SUCCULENT SPECIALISTS

GOLD MEDALS—

R.H.S. Chelsea
R.H.S. Great Autumn Show

LARGE GOLD MEDALS—

Shrewsbury
Southport

Mullard Perpetual Silver Trophy for an outstanding non-competitive exhibit—Southport, 1955
Latest lists of attractive and rare plants sent on application, price 4d. We are especially interested in helping Collectors and in giving advice to Beginners.

1957—Come to our **FOURTH OPEN DAY**. You will meet many of the leading Cactus and Succulent personalities in Britain.

Saturday, June 29th Admission 1/-

Sunday, June 30th Admission 1/-. Numbers will be limited on Sunday to avoid overcrowding. A Panel of well-known Horticultural and Cactus experts, including Mr. and Mrs. Higgins, Mr. E. W. Macdonald, Mr. G. D. Rowley, Mr. F. R. McQuown, Mr. P. J. Thrower and Mr. C. P. Quarrell will preside at a Brains Trust.

Special terms for parties from Cactus Societies. Branch Secretaries may apply for tickets now

Show Plants, Collection and Growing Houses on view

Plants for sale to suit every interest and every purse

Tudor House and Garden open.

Lady Leese's Dolls House on view

Light Refreshments available

Edinburgh, 12
25.2.57

Dear Sirs,

Some time ago I purchased a tin of Cactus Health Salts from you.

Although last year was most unfavourable for cactus growing, my cacti thrived very well, several flowering.

Send me a further two tins.

(Signed)

NOW IS THE TIME TO USE

PROF. DR. F. BUXBAUM'S

WORLD FAMOUS

CONCENTRATED HEALTH SALTS

FOR CACTUS and ALL SUCCULENT PLANTS

The Only Commercially Available Health Salts

IT CONTAINS ALL THE ESSENTIAL TRACER ELEMENTS. PROMOTES STURDY GROWTH. ENCOURAGES PROLIFIC FLOWERING. A MUST FOR ALL WHO WANT PLANTS OF WHICH TO BE PROUD.

After many years of scientific study these HEALTH SALTS were produced specifically for CACTI and other SUCCULENTS by Prof. Dr. F. BUXBAUM, a leading Continental authority on Cacti and lecturer in botanical subjects at the University of Graz, Austria.

ECONOMICAL IN USE. MINUTE QUANTITIES ARE EFFECTIVE **OVERDOSING** is wasteful, yet entirely **HARMLESS**

OBTAINABLE FROM :

ATRA LTD. 3 St. Mary's Mansions London, W.2

Price 3/9 per packet, plus 6d. postage

CASH WITH ORDER



Wattisfield Ware

DECORATED CACTUS POTS



Designed especially for their job — these most attractive, hand decorated cactus pots allow ample porosity — their glazed rims cover only one third of the pot surface.

Saucers are completely glazed on the inside bottom and rim. They may be placed on any surface with complete safety.

Pot sizes from 2in. up to 5in. wide (larger sizes to order).

London Agents :—
Priest Marians & Co. Ltd., 56, St. Mary Axe, London, E.C.3.

Send for illustrated leaflet
giving full range and prices

HENRY WATSONS POTTERIES LTD., WATTISFIELD, SUFFOLK

The Best House in the West

FOR

**CACTI AND
SUCCULENTS**

Gold and Silver Medallists

UPLANDS NURSERY

(G. G. FUGE. F.R.H.S.)

BLACK HORSE LANE

DOWNEND - BRISTOL

Tel. 53675

The most exclusive selection of rare Cacti
and Succulents obtainable.

Inspection invited.

Complete Nursery List available on request

SEND STAMP FOR LIST

**WHEN IN LONDON
VISIT THE "DAINTEE"
SUCCULENT NURSERIES**

MY SHOW GREENHOUSE IS UNIQUE AND
CLAIMED TO BE THE ONLY ONE OF ITS
KIND IN THE WORLD.

A LARGE RANGE OF CACTI & SUCCULENTS
FOR SALE. ALSO LITHOPS AND OTHER
MIMICRY PLANTS (I AM THE LARGEST
GROWER OF LITHOPS IN THIS COUNTRY).

For Lithops List send stamp.

VISITORS ARE WELCOME, BUT DO LET ME
KNOW THE DAY AND TIME YOU WILL
BE COMING.

ERNEST H. HEPWORTH

F.R.H.S.

'London's Cacti and Succulent Specialist'

**"DAINTEE," 142 ELLISON RD.,
STREATHAM . LONDON,
S.W.16**

Phone Pollards 4563

F. W. LEALAN & SON

NEW NURSERIES
SHIPLEY, PATTINGHAM
Nr. WOLVERHAMPTON

Phone : Pattingham 209

If you wish to see a good collection of
Cacti and Succulents visit our Nurseries,
you will not be disappointed.

Large or small parties welcome

CACTI AND SUCCULENT PLANTS

Strong, Healthy Plants at Reasonable Prices

Send Stamp for 1956 List

Nurseries : On the main
Wolverhampton—Bridgnorth Road.

6 miles from Wolverhampton

7 miles from Bridgnorth

A. E. GREEN

Normandale Nurseries
Sheffield, 6

Phone 44703

Gold Medal Cacti and Succulents

Members of the BRITISH SUCCULENT
GROWERS ASSOCIATION

See our
NEW PICTORIAL LISTS
of RARE PLANTS and
SPECIAL SEED OFFERS

6d. Post Free

We invite you to visit our Nurseries

Second Edition of
"CACTI AND SUCCULENTS"

By G. G. GREEN

17 Colour Plates 200 Illustrations

From any booksellers. 36/-

IMPORT

EXPORT

GOLD MEDAL

CACTI & SUCCULENTS

CHOICE SPECIMENS FOR THE COLLECTOR
ALWAYS AVAILABLE

BEAUTIFUL COLLECTIONS FOR THE
BEGINNER AT REASONABLE PRICES

Satisfaction assured at

"BLACKBURNS"

Catalogue—Price 4d.

T. N. BLACKBURN

CACTI SPECIALIST & GROWER
WOODPLUMPTON, nr. Preston

Telephone: Catforth 255

WHOLESALE

RETAIL

With over 20 years 'Specialist experience'
in Cacti and other Succulent Plants:
We can offer you the finest

PLANTS SEEDS and BOOKS

1957 named list will be ready early in
the New Year.

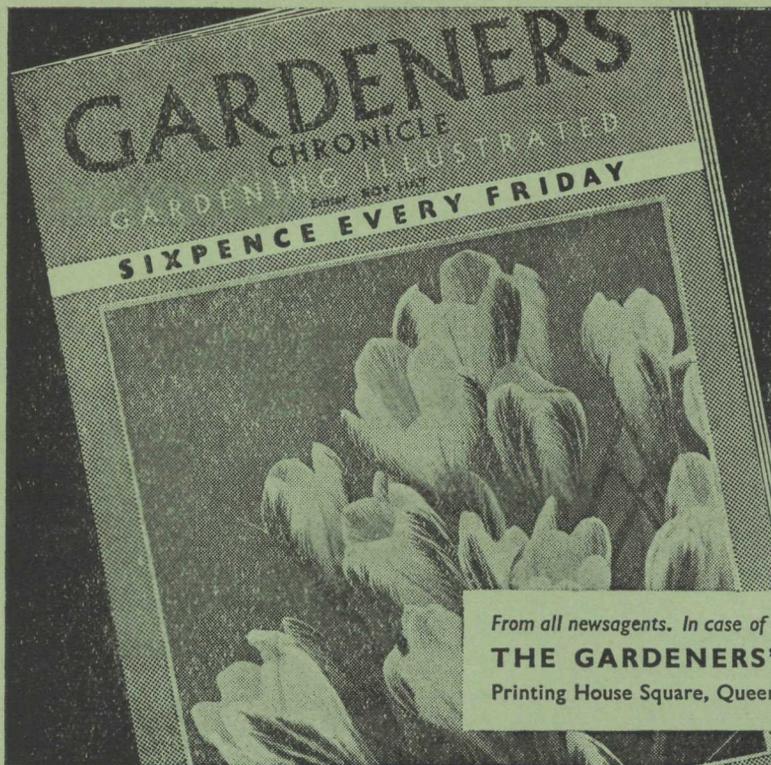
(Stamped self-addressed envelope is appreciated)

1957 Membership to PHOTOGRAPHIC
REFERENCE PLATES with Monthly
Notes (Sent every month) . . £1-5-0

Agents for Membership to Cactus &
Succulent Society of America.

W. T. NEALE & CO. LTD.

16 FRANKLIN ROAD
WORTHING, SUSSEX, ENGLAND



Britain's Finest Gardening Weekly

You will enjoy gardening with GARDENERS CHRONICLE & GARDENING ILLUSTRATED—the finest gardening aid you can buy. Packed with new ideas and expert information, with special pages for women, students and specialists.

Reading it is like gardening with a friendly expert at your elbow. For only 6d. a week, Britain's leading horticultural team can be at your service. Try it to-day.

From all newsagents. In case of difficulty please write to:

THE GARDENERS' CHRONICLE LIMITED
 Printing House Square, Queen Victoria Street, London, E.C.4.

A. S. JONES

CACTI and SUCCULENTS

WELL GROWN STOCK
 IN GOOD VARIETY

ASK FOR SELECTED LIST
 REASONABLE PRICES
 VISITORS WELCOME
 SEND ME YOUR 'WANTS LIST'

'WESTGARTH,' BAILES LANE,
 NORMANDY, Nr. GUILDFORD

Tel. : Normandy 3289

WHELDON & WESLEY LTD.

Buy and Sell

BOOKS

on all branches of

NATURAL HISTORY

especially

Botany & Horticulture

in all languages

83/84 BERWICK STREET
 London, W.1

Telephone : GERrard 6459

THE
CACTUS
AND SUCCULENT
JOURNAL
OF GREAT BRITAIN

Established 1931

Vol. 19

JULY, 1957

No. 3

Contents

	PAGE
From the President	49
Cactus Cultural Notes	50
Cultivation of Succulents	52
Pierre-Joseph Redouté	54
The Genus <i>Echidnopsis</i>	58
Phylogenetic System	64
<i>Pilosocereus</i>	66
Chemical Aids	68

*Published Quarterly by the Cactus and Succulent Society of Great
Britain at 7 Deacons Hill Road, Elstree, Herts.*

Price 2/6 Post Free 2/9



President : E. W. Shurly, F.L.S., F.C.S.S.

Vice-Presidents : A. Boarder, P. V. Collings

COUNCIL :

A. J. EDWARDS, A.M.Tech.I.(Gt. Bt.)	Mrs. A. HEDGES
H. J. AYLOTT	G. R. IBBOTSON
P. V. COLLINGS	A. S. JONES
A. W. HEATHCOTE, A.C.I.S., Chairman.	Miss A. M. PILCHER
G. L. HEDGES	Mrs. M. STILLWELL

Secretary : K. H. Walden, 152 Ardgowan Road, Catford, London, S.E.6.

Treasurer : E. W. Young, 35 Castle Drive, Ilford, Essex.

Editor : E. Shurly, 7 Deacons Hill Road, Elstree, Herts.

Librarian : P. V. Collings, St. John, Northumberland Road, New Barnet, Herts.

Exchanges : A. Boarder, Marsworth, Meadway, Ruislip, Middlesex.

Liaison Officer : A. W. Heathcote, Southwold, Station Road, Bishopston, Seaford, Sussex.

Seed Distribution : G. L. Hedges, 16 Buck Lane, Kingsbury, London, N.W.9.

Meeting Place : New Hall, Royal Horticultural Society, Vincent Square, London, S.W.1. 6 p.m. for 6.30 p.m.

Annual Subscription—21/-

SOCIETY NEWS

1957

July 16th Pests : P. V. Collings. Table Show : Echinocacti.
August 27th SHOW. Any questions. Panel. Table Show : Euphorbia.
Sept. 10th Plant Exchanges.

Branches

Berks & Bucks : Secretary : Mrs. M. Stillwell, 18 St. Andrews Crescent, Windsor.
West Kent : Secretary : Mrs. J. M. Hoather, 6 Cromwell Close, Bromley, Kent.
North Kent : Secretary : T. Holt, Orchard End, Downs Road, Northfleet, Kent.
Essex : Secretary : D. Stringer, 131a Fulwell Avenue, Barkingside, Essex.
North London : Secretary : Mrs. C. M. Allen, Shirley, Beech Hill Avenue, Hadley Wood, Herts.
Hertfordshire : Secretary : Miss A. Dixon, 19 Batchwood Drive, St. Albans.
North Surrey : Secretary : W. F. Maddams, 55 College Road, Epsom.

Back Numbers of the Journal.

The following are still available :—

Volume 3	Part 3.	Volumes 9, 10, 11 and 12	Complete.
Volume 4	Complete.	Volume 13	Complete.
Volume 5	Parts 1, 2 and 3.	Volume 14	Parts 2, 3 and 4.
Volume 6	Part 1.	Volume 15	Complete.
Volume 7	Part 4.	Volume 16	Parts 2, 3 and 4.
Volume 8	Parts 3 and 4.	Volumes 17 and 18	Complete.

Prices : Volumes 10/9 each, post free. Single parts, 2/9 each, post free.

Reprint : *Plantae succulentae In Horto Alenconio*, by H. A. Duval, 1809, with introduction by W. T. Stearn. 1/2 each, post free.

From the Editor, 7 Deacons Hill Road, Elstree, Herts.

THE
C A C T U S
AND SUCCULENT
J O U R N A L
OF GREAT BRITAIN

ESTABLISHED 1931

Vol. 19

JULY, 1957

No. 3

FROM THE PRESIDENT

I do not know what has been the experience of readers in regard to the flowering of their plants this spring. From what I have heard from those I have met it seems to be a mixed bag. Some have told me of a really wonderful opening of the season with plenty of flowers, others have not been so successful. For my own part, this opening of the season has been most successful with flowers springing up everywhere and in most unusual places. I have some 70 odd hooked *Mammillarias*. They usually give me a grand display in the spring, but this year they have surpassed themselves and when they are full open with the sun streaming in it has been an exhibition I am not likely to forget with many hundreds of blooms fully extended, in many cases hiding the plant itself completely. Another wonderful display has been my *Epiphyllum* hybrids. They have been hugely successful and one in particular has had well over one hundred pink and white flowers. When the size of an *Epiphyllum* flower is remembered it will be understood what a wonderful show we have had. It goes without saying that the *Rebutias*, *Lobivias*, *Aylosteras*, etc., have contributed their usual contribution to a display of colour and beauty. One thing has also impressed itself upon me, viz., that so many of the common plants, easily grown even, have such fine shows of bloom. Many small plants, such as *Monanthes polyphylla* with its quite hundred flowers and many of the *Euphorbias* which flower in profusion, have very small flowers. Have you ever examined these flowers with a magnifying glass? Do so and you will enter a world of beauty that you never suspected.

I am just able to put in a line or two to congratulate members on the excellent June Show. It was a treat to find such a fine display and to see so many new names appearing among the exhibitors. The Show surpassed, in my opinion, previous shows and was a great compliment to exhibitors, not forgetting our organiser, Mr. K. H. Walden. It is needless to say that Mr. Boarder judged the show with his usual competence and impartiality.

The New Zealand Cactus Journal prints extracts from an article by H. Rudolph in the American Cactus Journal of May, 1939, and lists fourteen diseases of succulent plants: black rot, damping off, dry rot, root rot, cork like spots, black spot, black fungus, soot fungus, moulds, rust, chlorosis, dying back, dropping off (branches), dropping off (buds). Reference to the original American Journal also gives glassy spots, red coloration, shrivelling, sunburn, algae, mosses. It surprises us that there are so many diseases. Most are stated to be caused by fungi, etc.

E. W. SHURLY.

We learn that Mr. E. Lamb, of W. T. Neale & Co. Ltd., will be the author of yet another book that will be published in the autumn. We understand it will be on *Stapeliads* of which Mr. Lamb has a considerable collection and of which he makes a study. We understand there will be over a hundred pages of photography.

At the Council Meeting of the Society on the 19th March, Mr. A. W. Heathcote was elected Chairman of the Council to replace Mr. A. J. Edwards who resigned from that post at his own request owing to pressure of business.

CACTUS CULTURAL NOTES

By A. BOARDER

The month of May is usually the time when many of the Cacti are in flower and as I write early in that month there are very many plants in flower in my collection. The *Mammillarias* are a splendid sight and the *Rebutias* have done exceptionally well. I mentioned in the April Journal that I had raised from seed a number of *Rebutias* to take the place of some of my older plants of that genus. There were sixteen different species and although only sown in 1955, all of them are in flower now. Many of us are rather inclined to despise *Rebutia minuscula* because it is common, but it is always such a ready flowering plant that it must be regarded as one of the easiest and floriferous of the Cacti suitable for the veriest novice. My seedling was completely surrounded by flowers but I think that so far pride of place must go to a *Rebutia chrysacantha*. This is a two year old seedling, now two and a half inches across. It had seven flowers out at once, each an inch and three-quarters in diameter and this flush of bloom was followed by eight more flowers. It was indeed a grand sight.

One *Digito-rebutia steinmanni* was not as thick as my little finger, but it has had two flowers each quite large. The *Aylostera* types are a little different in their flowering. The buds come higher up the plant at times and do not all come out together. Such plants can give a succession of flowers over a fairly long period. *R. violaciflora* is also a very prolific one and produces the many flowers around the base of the plant. The seed pods almost always form without a lot of pollinating, but my plant of *R. marsonieri*, although flowering splendidly with its deep yellow flowers, is very reluctant to set any seed pods at all. My experiment with these *Rebutias* has convinced me that it is a good plan to replace the older plants of this genus after about four years with fresh seedlings. After all, two years is not a long time to wait for flowers on a seedling.

Last year was not a good one for the growing of seedlings, but for all that I find that several of my 1956 sown plants were in flower in April of this year. Those which have flowered so far are : *Mammillaria bocasana splendens*, *M. wildii*, *M. trichacantha* and *M. schelhasei*. It is noticeable that it is always the larger and best grown plants which have flowered first. It is not that there is a plant here and there in flower, but many in the same box are in full bloom. I do find that many of the *Mams*. I have flowered the year after sowing the seeds, have been those types with soft tubercles and hooked spines. I can think of at least a score of such plants. Many of the small-spined types such as *M. potosina* and *M. vaupelii* are not likely to flower when so young. Many fresh *Mams*. have flowered for me this year and it is always very encouraging to find a flower or two on a plant which has never flowered previously.

The scented flowers are always an extra thrill to the grower as some can scent the whole greenhouse. When I enter my greenhouse in the mornings before the lights have been opened, the whole place is scented by just one or two plants in flower if there has been sufficient sunshine to bring them out. One of the loveliest is *M. viereckii*. The flowers are a pale cream but the smell is grand. *Mams. surculosa* and *M. baumii* also smell sweetly, like lemons, and both have yellow flowers. I have found in my travels that many collectors have plants named *M. baumii* which are in fact *M. surculosa*. I don't know who is supplying these plants wrongly named, but I find that a great number must have been sold in the last few years. These two plants are very different in formation, they both are cespitose and have yellow flowers, but there the resemblance ends. *M. surculosa* has fairly large fleshy tubercles and few spines. The central is strongly hooked and the radials are yellow in colour. *M. baumii* has no hooked spines at all and is much more covered with spines. The spines are white or almost so and the thinner tubercles are almost hidden by the numerous radial and central spines. *M. surculosa* is often found under the name of *M. saffordii* which Craig gives as a synonym of *M. carretii*.

I often get wrongly named seeds, especially from the Continent, and last year I sowed seeds of supposedly *M. pettersonii longispina* and the few plants I have from the packet are more like *M. plumosa* than anything else. Another kind I sowed were named *Dolichothele aylostera*, and I have three plants of *Mamilloopsis senilis* from the packet, that is all. In my collection of *Mams*. are several plants which I know are wrongly named which I have raised from seed. I keep them under this name until I am able to name them correctly, which may take some years in certain cases. After all, as long as I have patience to wait the correct name will come along some time or other, meanwhile I can enjoy seeing the plant grow and flower even though I know the plant is wrongly named.

I am glad to report that the surgical spirit which I recommended for killing mealy bug has proved so successful with many members and I have now heard that it is equally deadly to root-bug. I am never troubled much with this pest, but a member assures me that he added some surgical spirit to some water and soaked the roots of a bug-infested plant in the solution. The result was that all the bug were killed and the plant was not harmed in any way. Unfortunately the member did not measure the amount of spirit which he added to the water. When I get an opportunity of making some experiments with the spirit against root-bug, I will let members know the best strength to use. Meanwhile I shall be interested to hear of any other member who has tried this treatment.

I am often asked when is the best time to repot Cacti ? It will be found that they respond to this treatment better when they are making good growth, that is when they are quite active. At this time the fresh rootlets are soon formed and the plant is able to get over the move far more quickly than if the repotting was done when the plant was in a dormant state. A very good sign that a plant needs repotting is when the soil in the pot remains damp for long periods. When a plant is repotted correctly the soil soon dries out, but after a time the roots grow and create impacted conditions of the soil, added to this is the action of repeated waterings. In consequence, the soil in the pot is no longer porous and so remains wet long after those pots which have recently been dealt with.

Some growers appear to have trouble with flowering their *Echinocereus*. I find that on the whole they are very free-flowering with me except an occasional plant. I flower many species at two years from seed but have one very large plant of *E. triglochidiata* which I raised from seed in 1946. Although one of my largest and healthiest *Echinocereus* this plant has never flowered yet.

On the other hand such plants as *E. perbellus*, *E. oklahomensis*, *E. websteriana*, *E. scheeri*, *E. berlandieri*, *E. longispinus*, *E. salm dyckiana* and *E. blankii* flower every year. It is often noticeable, however, that each year *E. scheeri* will form several flower buds, but all of them do not develop properly. This year the plant had seven or eight buds start to form, but only four appear to be going to open out.

With regards to the time to transplant seedling cacti, it will be found that it is easier done when the cotyledon or food-sac has been absorbed. It is then that the seedling has developed a decent root and can be more safely handled. When small the food-sac is small and mostly roundish and the root is just a thin tiny thread. The junction of this with the body of the seedling is very tender and can easily be broken. Once the seedling has developed good spines and a proper root system it can be moved without the fear of the tiny rootlet being broken. If such a rootlet is broken it is almost certain that the seedling will die. Some growers have shown me seedlings of over a year old which appear to have stopped growing and their owners say that they do not appear to have moved since they were three months old. There are several reasons why the seedlings have stopped growing. One may be that the soil is not right. It must be remembered that if John Innes Seed compost is used in the first place it cannot be expected to contain sufficient nourishment to keep the seedlings growing for a long time. This compost is only intended as a start for seedlings and they are then supposed to be removed to something a little more nutritious. There is no sulphate of potash or hoof-and-horn grist added to the compost for seed sowing and so a move into a new soil with these additions will often bring on renewed growth. Not that it is easy to get these seedlings growing along well once they have had a bad check, but it can be done.

Another cause of growth cessation is when the seedlings have been subjected to strong sunlight. The tops go red and the fresh growth is almost burnt up. Some types of seedlings always look rather red, but one can generally tell whether the redness is natural or not. Once the seedlings have reddened it will be necessary to place them in partial shade for some time when they will recover.

Over-watering and under-watering can also check the seedlings. If they have been under-watered it will be found that they soon respond to good watering, whereas if they have been over-watered it is often impossible to get them round again and they may rot off completely. It is easy to under-water seedlings when they are in a propagating frame. There is generally bottom heat and the seed-pans soon dry out. If a spray is used for watering it is possible to damp the top of the soil whilst the lower parts may remain quite dry. I have known pans which have never had the lower soil properly damped during months. When you do water pans with seedlings well up and growing, see that you give enough at a time and then wait until the soil has almost dried out again before giving any more. Whilst it is necessary to keep the soil damp while the seeds are actually germinating it is not necessary to keep the soil always wet once the seedlings are up.

Another question I am asked is, "When can seedlings be exposed to the sun" ? The answer to this is that so much depends on the genus and even the species of plant ; also on the rate of growth. Generally speaking, it is as well to keep all the current year's seedlings shaded from strong sun for the first summer. If they have grown well and have well formed spines they may be exposed to sun by the October, but not before. Some exceptions are types of *Opuntias* which grow so rapidly from seed that they are able to stand the sun in about six months from sowing. The older plants may need some shade. If the greenhouse is very exposed to strong sunshine it will be found that some plants can be scorched unless a little shading is given. It need not be a lot, a thin application of "Summer Cloud" will usually be all right. If a frame contains the current year's seedlings the glass can be fairly well shaded with the material for the whole of the summer and early autumn. Plants in greenhouses are less likely to be scorched if there is plenty of air available and so during hot periods it is essential to make sure that plenty of lights are opened and even the door when it is really hot.

The handsome re-built Succulent House at Kew must make all cacti growers green with envy and it is to be hoped that in future we shall be able to see thousands of flowers on the Cacti there similar to the show in our own greenhouses.

CULTIVATION OF SUCCULENTS

By Mrs. M. STILLWELL

Most of the succulents will be looking at their best at this time of the year and can take a fair amount of water. They should have a real good soaking at least three times a week if the weather is really hot, as small pots dry out very quickly. When re-potting there should be at least half to three-quarters of an inch of space left at the top of the pot for watering and this can be safely filled right to the brim every time, providing the drainage is good and that the plant has dried out from the previous watering. On a hot evening when the sun has left the house, it is very beneficial to give a good spray with a fine syringe, including roof and floor and then close up for the night; you will be surprised how fresh everything looks the next morning.

I have found after experimenting that the use of surgical spirit for killing mealy bug seems ideal. It can be applied with a small camel hair brush and later sprayed off with luke warm water. As an experiment I have completely covered some of my commoner plants in the spirit and neglected to spray it off afterwards and, provided they have been kept away from the sun, it does not seem to have harmed them or marked them in any way; but I would advise everyone for the sake of being safe to always spray it off after use. Its chief asset is that it is non-poisonous to the skin and, although it has a rather unpleasant smell, it is otherwise harmless and easily obtained from any chemist without being requested to sign the poisons book.

To give my plants a little extra nourishment this year I have added a little coarse crushed bones to the potting compost. This can be purchased quite cheaply and already sterilized. It is not advisable to use any that are unsterilized as there is always the danger of maggots. Coarse crushed bones are more satisfactory than bone meal as it really gives the roots something to cling to.

An interesting little plant that flowered well for me in April was *Scaletium anatomicum*. It has pale lemon flowers which absolutely glisten in the sun. After flowering the plant goes to rest and the outer leaves turn to papery scales, to protect the new growth when it starts again. It should be kept dry most of the summer until it shows signs of becoming active again. It likes a good sunny position. Another little plant that always keeps very compact and is rather slow growing is *Bergeranthus vespertinus*. It has a tremendously thick root stock for the size of the plant above ground. It has the usual yellow *Bergeranthus* type flower, but on a much smaller scale in keeping with the size of the plant and the leaves are more the colour of *Cheiridopsis* and very compact.

This year I have found a few more of the outsize scale insects on some of my succulents. When adult, they measure a quarter of an inch across. I shall be interested to hear if any one else has experienced the same thing. They are never found on cacti, but this year I have found them on the following plants: *Titanopsis*, *Pleiospilos*, *Crassula argentea*, *Gibbeaums* and *Conophytum*. They are very easily removed, and the plant appears to be quite unmarked. When young they are pale green and very fleshy, but with age turn brown and become raised up from the plant on what appears to be a tuft of cotton wool. I presume this contains the eggs or next generation. They seem to make their appearance in early spring and, with careful watch and hand picking, I soon manage to get rid of them, or so I think, until the following year when another batch crop up.

I repotted my *Stapeliads* in the spring and removed some of the old growth where necessary and they have since made plenty of new stems and many in May were showing buds. I always find difficulty in getting some of the more uncommon ones through the winter as they rot so easily.

I had a nasty experience with the plant known as *Euphorbia caput medusae cristate*. It had deteriorated badly during the winter, so I decided to operate and remove all the old growth and allow the new shoots to grow up from the base. After removing the plant from its five-inch pot, I started to work with the knife and, of course, my hands were soon covered in the horrible thick milky latex. After sealing all the cut surfaces with flowers of sulphur, I proceeded to re-pot the plant and all before washing my hands and by this time the latex was beginning to set. I hurried indoors and got some nice hot soapy water, but to my surprise my hands now appeared to be cased in rubber. It took me nearly half an hour to remove the final traces, with scouring powder and pumice stone. I quite forgot about our old friend the surgical spirit which would, no doubt, have helped a great deal. This latex is very poisonous and could have caused a lot of trouble had I had a cut or any scratches on my hands. I see now that it was worth all my trouble as I now have a lovely pot of fresh new growth. I always find that these particular plants seem to exhaust themselves after a year's growth and always tend to die back during the winter when they must obviously be kept on the dry side.

My *Euphorbias* seem to have flowered well again this year, as they usually do, but the *Gibbaeum* flowers have been very sparse. My *Gibbaeum petrense*, which usually flowers from almost every head, had about six flowers, *Gibbaeum velutinum* had two, *Gibbaeum pubescens* one, and so on. It was very disappointing, and I feel it was possibly due to last year's bad summer and lack of sufficient sunshine to ripen the plants off. The *Lithops* in many cases were very late in losing their old skins, and many were not ready for watering until well into June. The *Conophytums* should be ready for water by the end of July, but they too may be late, like the *Lithops*.

Do not be in too great a hurry to start watering, it is quite safe to let them take their time in losing the old skins. *Pleiospilos* should also be about ready for watering. *Argyrodermas* need the same treatment as *Lithops*, with a little extra limestone grit in the soil. *Ophthalmophyllums* require watering from June onwards until after they have flowered, when, as with the others, water can be gradually withheld. One of the best is *Ophthalmophyllum lydiae* with beautiful little shining bodies which flower well and increase annually. They must be watered very carefully at all times, as they soon split from top to bottom, if allowed to become bloated.

For those people who do not possess a greenhouse, it is well worth growing a few of the shrubby *Mesembryanthemums* outdoors, preferably on a sunny bank where the water will drain away easily. In some districts it is possible to leave them out all through the winter by covering with panes of glass and protecting them on frosty nights with old pieces of coconut matting or thick sacks. They make a tremendous amount of growth in the summer and flower well. It is a good idea to keep small rooted cuttings of each indoors on the window sill ready for the following year, just in case the original ones do not survive the winter. It will be necessary to prepare the ground in advance before planting by adding plenty of sharp gritty material and some crushed bone and broken brick, etc. It is worth acquiring a few small cuttings from generous friends and making the experiment, and by the end of the year you will no doubt find that most of these little cuttings have grown so rapidly with this outdoor cultivation that you will be able to return cuttings a thousandfold.

Seedlings sown at the beginning of the year should be making good sized plants by now, but should not be exposed to strong sunlight too soon, as the growth may become checked.

We have received a further specimen of Mr. Krainz' "Die Kakteen." It is part 3. It contains useful articles on the areole, the development of ribs and tubercles in cacti. The following genera are fully described: *Neobuxbaumia*, *Mamillopsis* and *Pseudomamillaria*. *Facheiroa blossfeldiorum*, *Gymnocalycium oenanthemum*, *Thelocactus schwarzii*, *Mamillaria yaquensis*, *Mamillaria tolimensis*, *Mamillaria hidalgensis*, *Mamillaria roseoalba*, *Mamillaria melanocentra* are all very fully described, each profusely illustrated, the *Gymnocalycium* and *M. yaquensis* in colour. As each part of this work appears it is impressed upon one its value and importance. When the material reaches bulk the work will prove to be an indispensable reference book as to letterpress and, even more, to the illustrations as an aid to identification of plants.

LISTS RECEIVED

H. E. Gates, P.O. Box 247, Corona, California, U.S.A. : sixteen paged printed retail price list of cacti and succulents.

T. N. Blackburn, Woodplumpton, near Preston. Thirty-paged printed list of cacti and succulent plants.

G. G. Fuge, Uplands Nursery, Blackhorse Lane, Downend, Bristol. Twenty-four paged multigraphed list of cacti and other succulent plants.

J. W. Churchman & Sons, 151 Leeming Lane North, Mansfield Woodhouse, Notts. : a 28-paged printed catalogue of cacti, succulents.

Library. Recent additions :—"A.B.C. of Cacti & Succulents," by W. E. Shewell-Cooper and "The Giant Cactus Forest and its World," by P. G. Howes. Please do not forget to quote your Membership Number when applying for books.

ELECTRICAL TUBULAR HEATERS. New elements for these heaters can be fitted at a reasonable cost by Mica Elements (1937) Ltd., Lotus Works, Heigham Road, East Ham, London, E.6.

Do cacti flower ? A correspondent reports that a *Mamillaria wildiana* in his collection, with eighteen heads in a five-inch pot, had 327 blooms, dead, open flowers and buds.

PIERRE-JOSEPH REDOUTÉ—
 “RAPHAEL OF THE SUCCULENTS”—*cont.*

With bibliographical and botanical details of over two hundred published plates.

By GORDON D. ROWLEY

A. P. DE CANDOLLE & P. -J. REDOUTÉ

Plantarum Succulentarum Historia ou Histoire Naturelle des Plantes Grasses

Collation of Plates

L=Large and S=Small paper editions

Fascicle and
presumed

date	Page	De Candolle's name	Modern name	Authority
	136	Aizoon canariense	Aizoon canariense L.	Sond. in Fl. Cap. II
24 1804	137	Cactus coccinellifer ("cochenillifer" on plates)	Opuntia tomentosa S.D.	Br. & R. "fide Berger."
	137*	In flower		
		In fruit		
	138	Cactus opuntia nana	Opuntia humifusa Rafin.	Br. & R. as <i>Opuntia opuntia</i> (L.) Karst.
	138*	Cactus opuntia tuna	Opuntia vulgaris Mill.	Br. & R.
	[138**]	Cactus opuntia inermis	Opuntia stricta Haw.	Br. & R.
	[138***]	Cactus opuntia polyanthos	Opuntia tuna (L.) Mill.	Br. & R.
25 1804	139	Euphorbia meloformis ("Euforbia" on L text)	Euphorbia infausta N. E. Br.	N. E. Br. in Fl. Cap. V
	140	Euphorbia canariensis Habit	Euphorbia canariensis L.	Berg.
	140*	Do. Stem and flower close-up		
	141	Sempervivum canariense Inflorescence	Aeonium canariense (L.) Webb & Berth.	Praeg.
	[141*]	Do. Barren rosette		
	142	Mesembryanthemum pinnatifidum	Micropterum pinnatifidum (L.f.) Schwant.	Berg. as <i>Mesem. pin- natifidum</i> L.f.
26 1804	143	Sedum rhodiola (<i>Rhodiola rosea</i>) Male plant	Sedum rosea Scop.	Praeg. as <i>Sedum roseum</i> Scop.
	143*	Female plant		
	144	Euphorbia tridentata (<i>E. anacantha</i> Ait.)	Euphorbia tridentata Lam.	N. E. Br. in Fl. Cap. V
	145	Cactus philanthus (page heading) Cactus phyllanthus (in syns. and on plate)	Epiphyllum phyllanthus (L.) Haw.	Br. & R.
	146	Mesembryanthemum glaucum ("claucum" on S text)	Lampranthus glaucus (L.) N. E. Br.	Berg. as <i>Mesem. glaucum</i> L.
	147	Mesembryanthemum longistylum ("longiftylum" on S text)	Aridaria reflexa (Haw.) N. E. Br.	N. E. Br. in J. Bot. 1928
27 1804 or 1805	148	Stapelia cespitosa	Duvalia radiata (Sims)	W. & S.; N. E. Br.
	148*	(in text) Stapelia coespitosa (on plate)	Haw. <i>hirtella</i> (Jacq.) W. & S.	MSS. as "D. <i>hirtella</i> non D. <i>coespitosa</i> ."

Fascicle and presumed date	Page	De Candolle's name	Modern name	Authority
	149	<i>Stapelia variegata</i>	<i>Stapelia variegata</i> L. <i>planiflora</i> (Jacq.) N. E. Br.	N. E. Br. In Fl. Cap. IV
	150	<i>Euphorbia caput-medusae</i>	<i>Euphorbia bergeri</i> N. E. Br.	N. E. Br. in Fl. Cap. V
	151	<i>Euphorbia uncinata</i>	<i>Euphorbia stellata</i> Willd.	N. E. Br. in Fl. Cap. V
	152	<i>Mesembryanthemum felinum</i>	<i>Faucaria felina</i> (West.) Schwant.	N. E. Br. in J.L.S. 1920 as <i>Mesem. felinum</i> Hill.
	153	<i>Mesembryanthemum spectabile</i>	<i>Lampranthus spectabilis</i> (Haw.) N. E. Br.	Berg. as <i>Mesem. spectabile</i> Haw.
28	154	<i>Zygophyllum album</i>	<i>Zygophyllum album</i> L.f.	Don I
1805	155	<i>Sedum nudum</i>	<i>Sedum nudum</i> Ait.	Praeg.
	156	<i>Sempervivum tortuosum</i>	<i>Aichryson x domesticum</i> Praeg.†	Praeg.
	157	<i>Sempervivum monanthos</i>	<i>Monanthes polyphylla</i> Haw.	Praeg.
	158	<i>Mesembryanthemum micans</i>	<i>Drosanthemum micans</i> (L.) Schwant.	Berg. as <i>Mesem. micans</i> L. "t. 167"
	159	<i>Mesembryanthemum viridiflorum</i>	<i>Aridaria viridiflora</i> (Ait.) L. Bol.	N. E. Br. in G.C. 1928 as <i>Sphalmanthus viridiflorus</i> (Ait.) N. E. Br.
29 ?	[160]	<i>Stapelia hirsuta</i>	<i>Stapelia hirsuta</i> L.	N. E. Br. in Fl. Cap. IV "not seen."
1829 plates ; 1832 text	[161]	<i>Cactus royeri</i> (<i>C. lanuginosus</i>)	<i>Harrisia gracilis</i> (Mill.) Br. & R.	Salm-Dyck in Cact. In Hort. Dyck. 1849, 44 as <i>Cereus repandus</i> Haw. non L.
	162	<i>Umbilicus pendulinus</i>	<i>Umbilicus rupestris</i> (Salisb.) Dandy	Dandy in Riddelsdell Flora of Gloucs. 1948, 622.
	[163]	<i>Anthericum asphodeloides</i>	<i>Bulbine asphodeloides</i> (L.) Spreng.	
	[164]	<i>Mesembryanthemum lateriflorum</i>	<i>Drosanthemum erigeriflorum</i> (Jacq.) Stearn	Stearn
	[165]	<i>Mesembryanthemum scabrum</i>	<i>Lampranthus scaber</i> (L.) N. E. Br.	
30	166	<i>Stapelia asterias</i>	<i>Stapelia asterias</i> Mass.	N. E. Br. in Fl. Cap IV
?	167	<i>Stapelia reticulata</i> (<i>Huernia reticulata</i>)	<i>Huernia reticulata</i> (Mass.) Haw.	
1829 plates ; 1832 text	168	<i>Cotyledon unguolata</i>	<i>Cotyledon decussata</i> Sims‡	
	169	<i>Mesembryanthemum albidum</i>	<i>Machairophyllum albidum</i> (L.) Schwant.	
	170	<i>Mesembryanthemum tuberculatum</i> (<i>M. hispifolium</i>)	<i>Drosanthemum hispifolium</i> (Haw.) Schwant.	Sond. in Fl. Cap. II as <i>Mesem. striatum</i> Haw. ♂ <i>hispifolium</i> S.D.
	171	<i>Mesembryanthemum radicans</i>	<i>Disphyma australe</i> (Sol.) N. E. Br.	

† N. E. Br. MSS. : "D.C. not of Ait. *S. lindleyi* Webb" (= *Aeonium lindleyi* Webb & Berth.).

‡ N. E. Br. MSS. : "C. spuria L."

Fascicle and presumed date	Page	De Candolle's name	Modern name	Authority
31	172	<i>Stapelia grandiflora</i>	<i>Stapelia grandiflora</i> Mass.	N. E. Br. in Fl. Cap. IV
?	173	<i>Talinum patens</i>	<i>Talinum patens</i> Willd.	
1829 plates ;		(<i>T. paniculata</i> ; <i>Portulaca patens</i> ; <i>P. paniculata</i> ; <i>Rulingia patens</i>)		
1832 to 1837 text	174	<i>Kalankoe crenata</i> (<i>Kalanchoe</i> in L text)	<i>Kalanchoe crenata</i> Haw.	
	175	<i>Reaumuria vermiculata</i>	<i>Reaumuria vermiculata</i> L.	
	176	<i>Mesembryanthemum lacerum</i> (<i>M. milleri</i> ; <i>M. gladiatum</i>)	<i>Semnanthe lacera</i> (Haw.) N. E. Br.	
	177	<i>Mesembryanthemum crassifolium</i>	<i>Disphyma crassifolia</i> (L.) L. Bol.	Berg. as <i>Mesem. crassifolium</i> L. "t.175."
[32]	[178]	<i>Stapelia punctata</i> Fig. 1	<i>Piранthus decorus</i> (Mass.) N. E. Br.	
? never issued	[179]	<i>Sesuvium revolutum</i> Fig. 2	<i>Sesuvium portulacastrum</i> L.	Kew Index
No text seen	[180]	<i>Agave vivipara</i> Fig. 3		? Artistic chimaera†
	[181]	<i>Mesembryanthemum apetalum</i>	<i>Mesembryanthemum nodiflorum</i> L.	
	[182]	<i>Crassula scabra brevifolia</i> Fig. 4	<i>Crassula scabra</i> L. <i>minor</i> Schonl.	

† Unidentifiable : probably a rejected or suppressed plate. Mr. E. W. Macdonald has kindly compared this with the fine *Agave* collection at Kew for me and we agree that the rosette is not *A. vivipara* of any author. The inflorescence (which looks more like *Sempervivum* than any *Agavaceae*) was probably added to the original painting later from some misunderstanding between botanist and artist.

BIBLIOGRAPHY

- 1 Berg.=ALWIN BERGER, 1907 Sukkulente Euphorbien
- 2 1908 Mesembryanthen und Portulacaceen
- 3 1908 Liliaceae-Asphodeloideae-Aloineae
- 4 1910 Stapelien und Kleinien
- 5 1915 Die Agaven
- 6 1930 Crassulaceae
- 7 Br. & R.=N. L. BRITTON & J. N. ROSE, 1919-23 The Cactaceae
- 8 Don=GEORGE DON, 1831-8 General History of the Dichlamydeous Plants, 4 Vols. (Volume stated as I, II, III or IV).
- 9 Fl. Cap.=HARVEY & SONDER 1859-1897 Flora Capensis,
(Volume stated as I, II, etc.)
- 10 Fl. Trop. Afr.=OLIVER & PRAIN 1868-1913 Flora of Tropical Africa,
(Volume stated as I, II, etc.)
- 11 N. E. Br.=N. E. BROWN, 1920 in J. Linn. Soc. Bot. XLV, 53-140
- 12 1921-36 in Gardeners' Chronicle, London.
- 13 1928-32 in Journal of Botany
See also Fl. Cap. and Fl. Trop. Afr.
- 14 Praeg.=R. L. PRAEGER, 1921 in J. Roy. Hort. Soc. XLVI, 1-314

- 15 1932 An Account of the Sempervivum Group.
 16 Reyn.=G. W. REYNOLDS, 1950 The Aloes of South Africa.
 17 Schonl.=S. SCHONLAND, 1929 in Trans. Roy. Soc. S. Afr. XVII, 151-293.
 18 Stearn=W. T. STEARN, 1938-9 in Cactus J. Gt. Brit. VII, 34-44, 66-85.
 19 W. & S.=A. WHITE & B. L. SLOANE, 1937 The Stapelieae.

INDEX TO PLATES

Numbers refer to the plates of the "Plantae Grasses," although actually printed on the adjacent text pages.

Where the name is the accepted one, the number is in heavy type.

ACRODON subulatus	41	ANTHERICUM alooides	26
ADROMISCHUS hemisphaericus	87	annuum	8
AEONIUM arboreum	125, 125*	asphodeloides	163
canariense	141, 141*	frutescens	14
lindleyi	156	APICRA spiralis	56
AGAVE foetida	126, 126*	APOROCACTUS flagelliformis	127
vivipara	180	APTENIA cordifolia	102
AICHRYSOON x domesticum	156	ARIDARIA fastigiata	35
x domesticum aizoides	4	geniculiflora	17
AIZOON canariense	136	nitida	129
hispanicum	30	noctiflora	10
ALOE abyssinica	27	plenifolia	35
arachnoides	50	reflexa	147
arborescens	38	viridiflora	159
atrovirens	51	ASTROLOBA spiralis	56
brevifolia	81	BULBINE alooides	26
brevifolia depressa	80	annua	8
carinata	63	asphodeloides	163
ferox	32	caulescens	14
glauca	44	BULLIARDA vaillantii	74
humilis	39	CACALIA cylindrica	48
linguiformis	68	ficoides	90
linguiformis verrucosa	68*	kleinia	12
margaritifera	57	laciniata	18
marginalis	31	repens	42
mitriformis	99	CACTUS coccinellifer	137
obliqua	91	cochenillifer	137
picta	97	flagelliformis	127
plicatilis	75	grandiflorus	52
retusa	45	lanuginosus	161
rhodacantha	44	mammillaris	111
rigida	62	melocactus	112
rubescens	15	opuntia inermis	138**
saponaria	? 97, 98	opuntia nana	138
serra	80	opuntia polyanthos	138***
soccotrina	85	opuntia tuna	138*
spiralis	56	parasiticus	59
succotrina	85	peruvianus	58
umbellata	98	phyllanthus	145
variegata	21	royenii	161
vera officinalis	15	CARPANTHEA calendulacea	135
viscosa	16	candollei	135
vulgaris	27	CARRUANTHUS caninus	95
ANACAMPSEROS telephiastrum	3	CEPHALOPHYLLUM loreum	108

To be continued

THE GENUS ECHIDNOPSIS IN TROPICAL EAST AFRICA

By P. R. O. BALLY, Botanist, The Coryndon Museum, Nairobi, Kenya

(Published with permission of the Museums Trustees of Kenya)

PART II

In Part I of this series it was stated that since 1880, when Hildebrandt discovered *Echidnopsis virchowii*, it has not been collected again, neither in the type locality, nor elsewhere. However, shortly after Part I was published the present writer had the good fortune to rediscover the plant in a remote corner of Somaliland Protectorate, oddly enough in an area also visited by Hildebrandt as early as 1873. Somaliland Protectorate, Al Madu Range (generally known as "Ahl Mountains") near Guri Ijer, 4,900 ft., Bally 11143, 15-10-1956. (Fig. 5) Phot. Bally.

Echidnopsis nubica N. E. Br. syn. : *E. dammanniana* Schweinf. in Kew Bull., 263 (1895) was discovered by the explorer and naturalist Schweinfurth in 1868 between Suakin and Berber, Kassala Province, Sudan, in the foothills of the Red Sea Hills. It is also recorded from several localities in Eritrea, and from the Yemen in Southern Arabia. In growth it is similar to *E. cereiformis* with which it shares the absence of an outer corona. The corolla is even smaller than that of the former species : with a diameter of 3-4 mm., it is the smallest-flowered of all known *Echidnopsis*.

Echidnopsis angustiloba Bruce et Bally in Cact. & Succ. Journ. Amer. XIII, 180 (1941) and Flow. Pl. Afr. 26, 1003 (1947) is known from its type locality only, where it was collected by Mrs. Hugh Copley on 17-12-1939.

With its 11-angled, thick, erect stems the plant approaches the growth-forms ascribed to the genus *Trichocaulon*. A perennial succulent, 7-10 cm. high, stems 1-2 cm. diam., simple, occasionally branched, 11-angled, tuberculate, tubercles prominent, 2 mm. diam., with a horny shield at the apex. Leaves rudimentary, narrowly triangular, caudate-acuminate, 2 mm. long. Flowers produced near the apex of the stems, 2-6 from one flowering eye, developing successively ; calyx-lobes ovate-lanceolate, acuminate, 1.5-2 cm. long, glabrous. Corolla rotate, 12 mm. diam., glabrous, 5-lobed, lobes 3 mm. long, very shortly ovate-triangular at the base, with strap-shaped, acute tips. Tube very short, widely campanulate, about 2 mm. diam. Corona : outer corona saucer-shaped, 2.75 mm. diam., with an undulate, crenate-dentate margin ; inner corona lobes linear-subulate, incumbent over the staminal column, then erect and connivent over the tips. The colour of the corolla is pale yellow with a star-shaped centre of pale, dull maroon. The corona is pale lemon yellow. Kenya Colony, Northern Frontier Province, five miles South of Archers Post. Collected by Mrs. Hugh Copley (Bally S 26) 17-12-1939. (Fig. 6) (Drawing of the type plant by the author).

Echidnopsis bihendulensis Bally, sp. nov., affinis *E. planiflorae* Bally sed corollae campanulatae haud rotatae, coronae interioris lobis brevi oribus, haud erectis, sepalis et foliis hispidis differt.

Planta succulenta, haud ramosa, caule erecto ad 12 cm. alto, 2-3 cm. crasso, 16-angulato, tuberculato, tuberculis profunde separatis, 3 mm. elevatis, in parte superiore caulis seta 3 mm. longa, hispida, basi incrassata coronatis. Flores pauci in apice caulis ex angulis producti, subsessiles, sepalis 5, lanceolatis, crassis, minute hispidis, apice elongato, acuto, 3 mm. longis.

Corolla 6 mm. diametro, basi late campanulata, lobis surgentibus, 3 mm. longis, triangularibus, apice reflexo, acuto marginibus reflexis, extra glabra, flavo-viridis, intus minutissime papillata, flava.

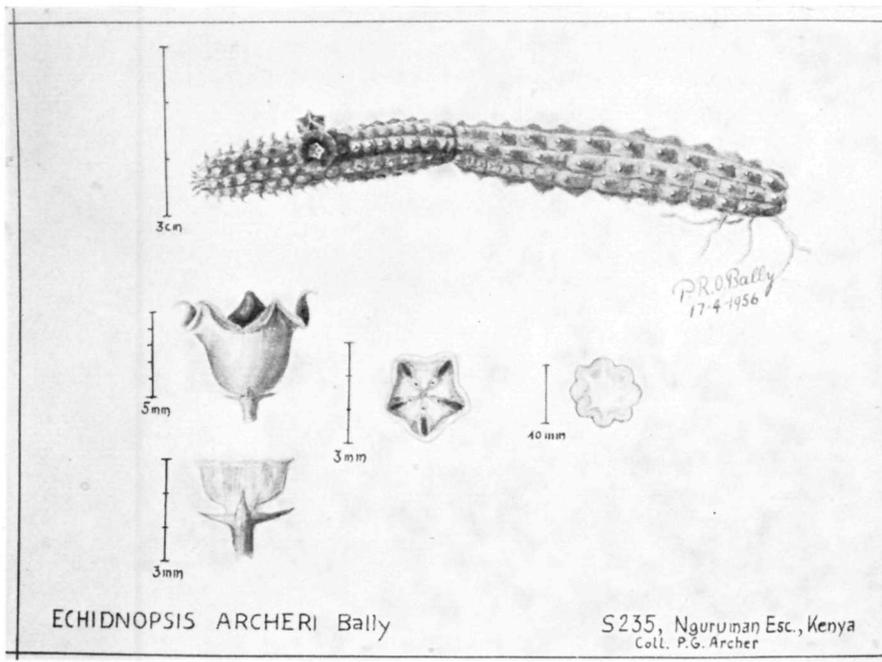
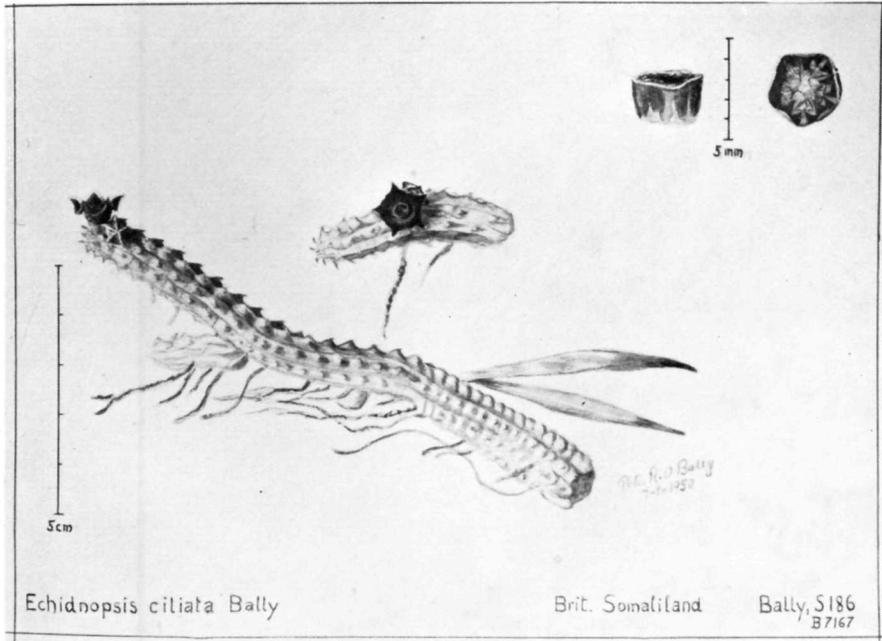
Corona tubo inclusa, 1.5 mm. alta, 3-3 mm. diametro, obtuse 5-angulata, marginibus incrassato, lobis exteriori 5, brevibus, apice dilatato, erectis, 0.25 mm. altis ; lobis internis 5, staminibus incumbentibus, 0.6 mm. longis, margine brevibus, apice dilatato, erectis, 0.25 mm. altis ; lobis internis 5, staminibus incumbentibus, 0.6 mm. longis, marginem coronae haud excedentibus.

Somaliland Protectorate, below the Sheik Pass at Behendula, 2,000 ft. alt., on rocky hillside in the shelter of bushes. Somali name : "ghora warabe." Bally, S 125, January 1944. The type plant is deposited in the Kew Herbarium.

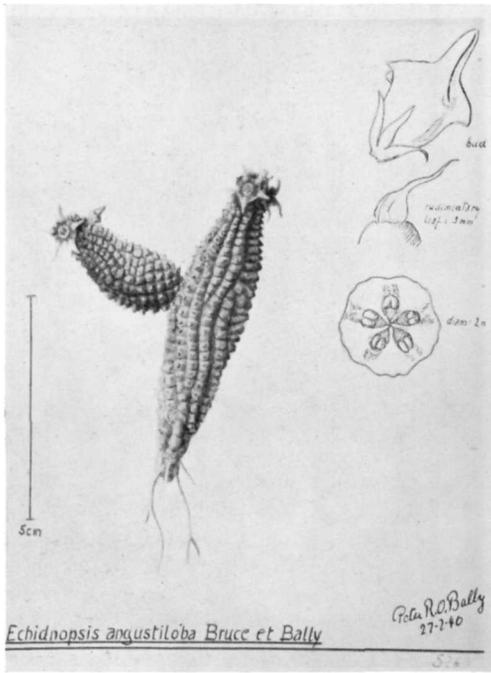
Stems and habit are similar to those of *E. planiflora* Bally but the scale-like leaves and the sepals are hispid, the corolla is cupular with upwards spreading lobes, their margins sharply reflexed ; the inner or upper surface is minutely papillate, giving it a velvety appearance and varies from pure sulphur yellow to maroon. The corona is more broadly cupular, with much shorter inner corona lobes, horizontally incumbent over the staminal column, with broadly spatulate tips. Fig. 7 (drawing of a flower, parts thereof and one leaf enlarged).

Echidnopsis ciliata Bally, sp. nov. aff. *E. bentii* N. E. Br., sed habitu prostrato, marginibus corollae coronaeque ciliatis, lobis coronae interioribus brevioribus, haud ascendentibus differt.

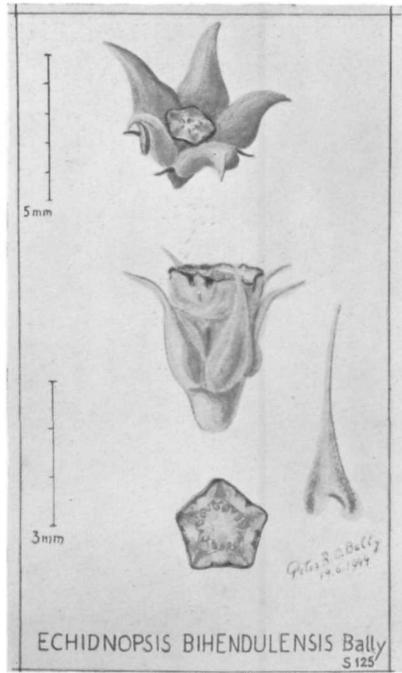
Planta succulenta prostrata, pauce ramosa, caulibus teretibus, 8-costatis, costis rectis, tuberculatis, 1.5-2 mm. elevatis, ad 13 cm. longis, 8-10 mm. latis, tuberculis primum foliis minutis squamosis reflexisque coronatis. Flores



Illustrations to Mr. P. R. O. Bally's article.



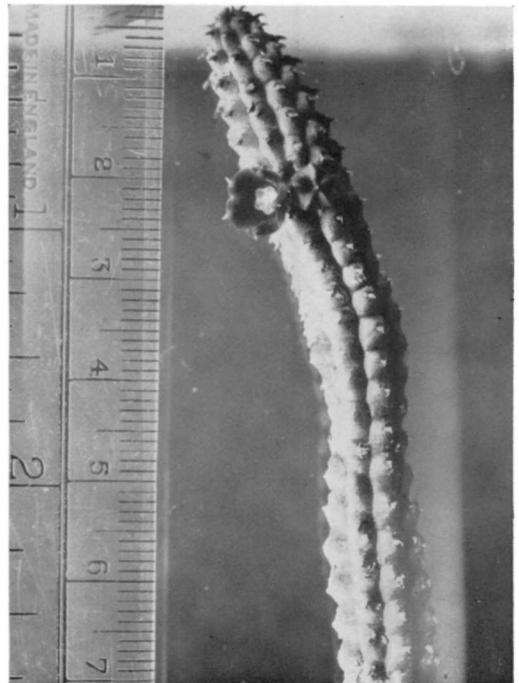
Echidnopsis angustiloba Bruce et Bally



Echidnopsis bihendulensis Bally



Echidnopsis virchowii K. Schum.

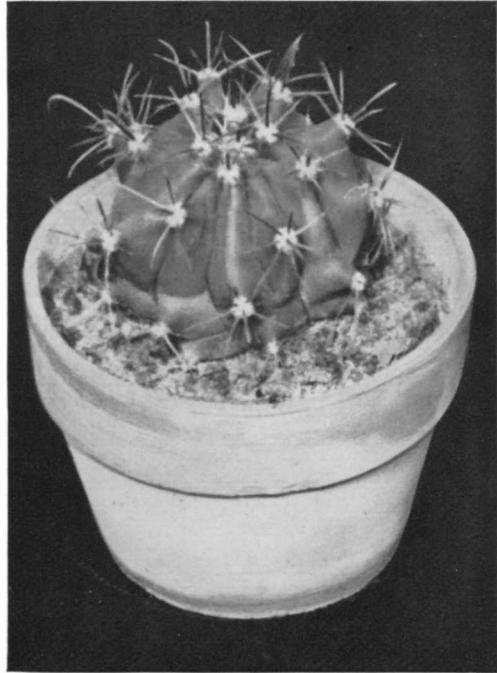


Echidnopsis archeri Bally

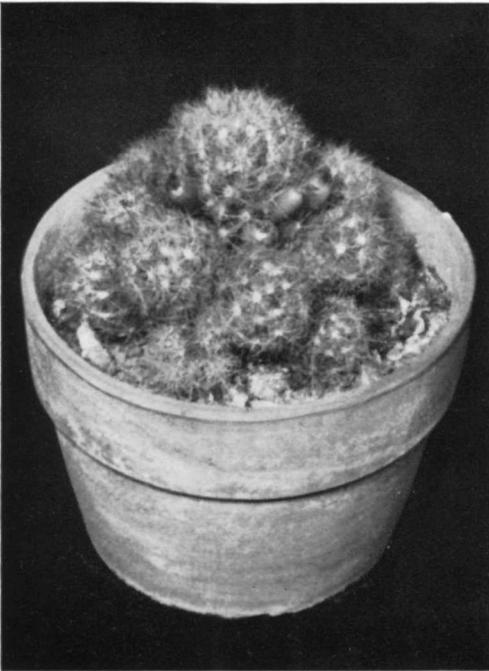
Illustrations to Mr. P. R. O. Bally's article.



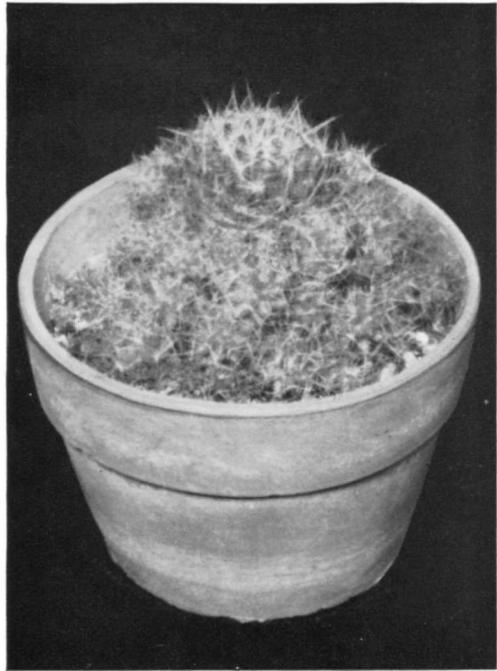
Mammillaria kunzeana



Ferocactus wislizeni



Mammillaria prolifera multiceps

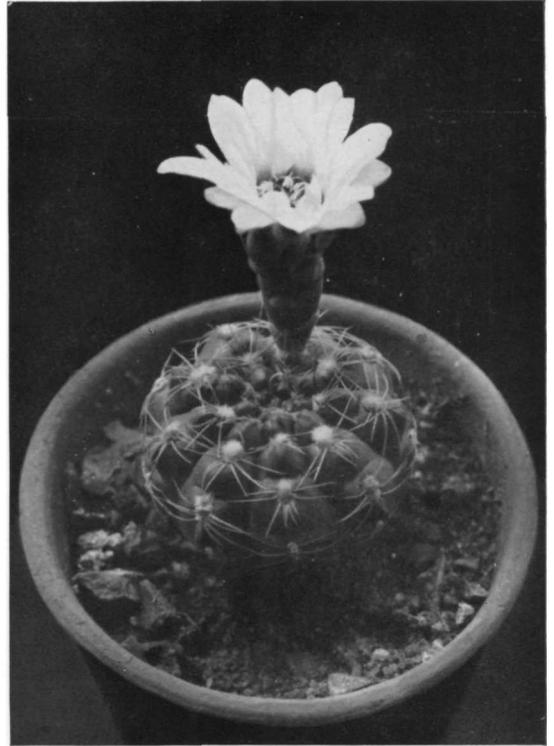


Mammillaria erythrosperma

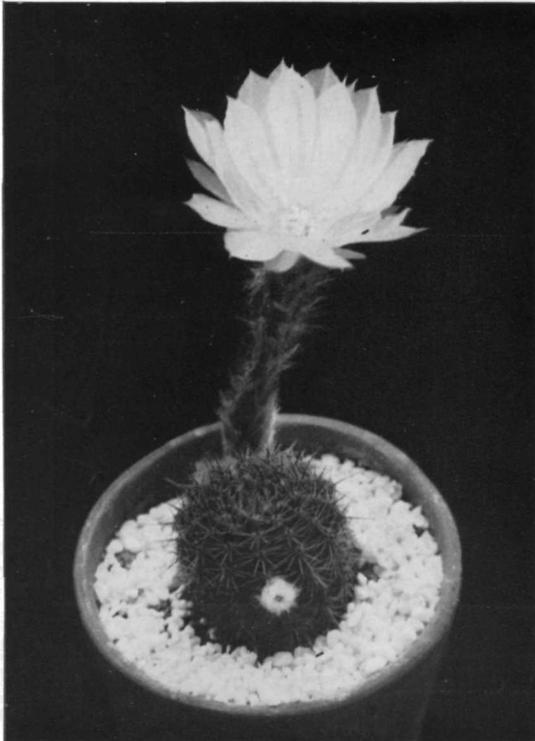
Four photos by Mr. B. C. Marshall

*Notocactus leninghausii*

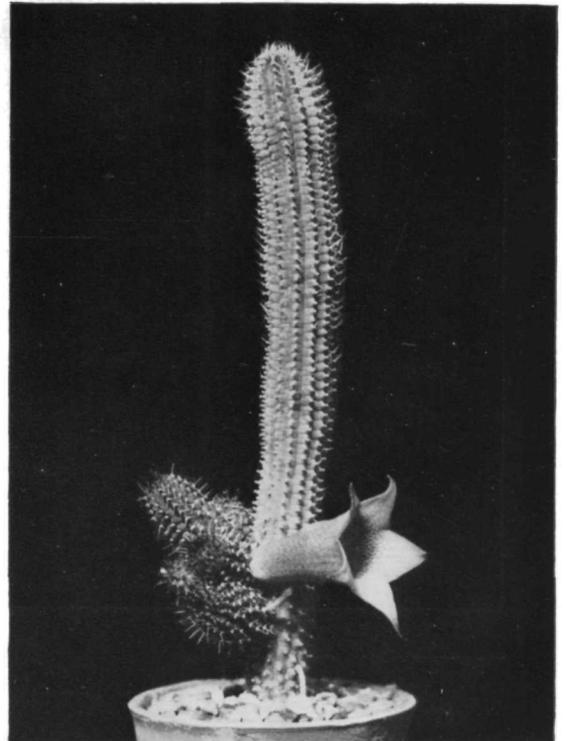
D. Collings

*Gymnocalycium netrielianum*

W. Beeson

*Lobivia aurea*

W. Beeson

*Tavaresia grandiflora*

W. Beeson

bini as apicem ex angulis producti, breviter pedicellati, 11-12 mm. diametro ; sepalis 5, glabris, ovato-lanceolatis, 2 mm. longis, apicibus reflexis.

Corolla late campanulata, tubo 3.2 mm. longo, in fauce 4 mm. lato, extra glabro, purpureo, intus minute papilloso, atropurpureo, lobis 5, late triangularibus, acutis, 3 mm. longis, 5 mm. latis, extra glabris, purpureis, intus minute papillosis, atropurpureis, marginibus reflexis, rigidis ciliis coronatis. Corona tubo incluso, externa obtuse 5-angulata, purpurea, margine paene plano, albo-viride, ciliato ; corona interna 5-lobata, lobis cuneatis, staminibus incumbentibus, in basi atropurpureis, in apice spatulato flavis, 1 mm. longis. Follicula bina, teretia, apice exili, ad 54 mm. longi, 3.5 mm. diametro.

Somaliland Protectorate, Upper Sheik, 4,685 ft. alt. in an old Mahometan cemetery, among stones in the shelter of low bushes. Bally, B 7148, 1.5-1949.

Stems green, cylindrical, prostrate, 8-angled, tubercular, producing few adventitious branches which detach themselves easily and form new plants.

Flowers usually produced in twos from leaf-axils near the tip of the growth, 11-12 mm. diam., glabrous outside, dark purple and minutely papillate inside ; tube 3.2 mm. long, 4 mm. wide at the throat, lobes broadly triangular, acute, with reflexed ciliate margins. Outer corona rim-like, obtusely 5-angled, dark purple, with stiff, obliquely spreading hairs along the margin ; inner corona 5-lobed, lobes triangular, dark purple at the base, yellow towards the spatulate tips, horizontally incumbent over the staminal column, 1 mm. long.

In growth, this species is not unlike *E. virchowii* and *E. sharpei*, while its flowers with up to 12 mm. diameter are unusually large and resemble closely those of *E. bentii*, known from Hadramaut on the Arabian shore of the Gulf of Aden. Fig. 8 (Drawing from the type).

Echidnopsis archeri Bally, sp. nov. aff. *E. scutellata* (Defl.) Berg. sed sepalis brevioribus, corolla majore, profunde campanulata, haud maculata, margine exteriori coronee haud dentato distinguitur.

Planta succulenta, caulibus prostratis ad 35 mm. longis, 15 mm. diam., 8-angulatis, tuberculatis, tuberculis longitudinaliter profunde separatis, transversaliter tenuius separatis, primum foliis minutis, squamosis, reflexis, 1 mm. longis, mox deciduis coronatis. Flores pauci (1-2) ex angulis orientes, subsessiles ; pedicelli crassi, teretes, 1 mm. longi, sepalis acute lanceolatis, 1 mm. longis. Corolla late cupularis, cum lobis 6 mm. alta, 7-8 mm. diametro, tubo 4 mm. alto, 5 mm. lato, intus puniceo, extus pallide rubro ; lobis late et breviter deltoideis, 3.8 mm. latis, 2 mm. altis, apice incrassato, apiculato, pallido.

Corona tubo inclusa, glabra, flava, externa cupularis, obtuse 5-angularis, margine integro incrassato ; lobi interiores breves, triangulares, apicibus rotundatis, staminibus incumbentibus, 0.8 mm. longis.

Kenya Colony, South. Prov., Masailand, Nguruman Esc., Oloibitoto River, near Hayton's Falls, P. G. Archer 11-9-1952. Description made from a plant in cultivation in Nairobi (Bally S 235).

Stems cylindrical, tessellately 8-angled, to 35 mm. long, to 15 mm. thick, procumbent, occasionally branching, sometimes forming a spreading tangle. Leaves scale-like, cordate, acute, with reflexed tips, soon withering, but persistent. Flowers produced in twos, near the tips of the stems, but not strictly terminal. Pedicel glabrous, terete, fleshy, 1 mm. long. Sepals lanceolate, acute, glabrous, 1 mm. long. Corolla cupular with broadly triangular, apiculate lobes, 3.8 mm. wide at the base, 2 mm. high, thickened near the tip, with revolute margins, crimson and minutely papillate inside, pale pink, and glabrous outside, 6 mm. high, 7-8 mm. diam.

Corona cupular, lemon yellow, the outer lobes forming an entire, obtusely 5-angled rim 2.8 mm. diam. with 5 narrow pockets in the angles, reaching about 2/3rd of the height of the corolla tube.

Inner corona lobes triangular, with rounded tips, horizontally incumbent over the staminal column, 0.8 mm. long.

Closely allied to *E. scutellata*, it is easily distinguishable by the deeply cup-shaped, uniformly cherry-red corona and by the entire margin of the pure yellow corona. Fig. 9 (drawing made from the type).

To be continued

JOURNAL BINDER. A self binder, capable of holding four years' Journals, finished in green cloth with gilt lettering on the spine, is now available, price 12/- post free, to Members. This is a very efficient binder and is adjustable to each year. Apply to the Hon. Treasurer.

LABELS. A new triangular type of label has been designed, one which can be read without turning the head and will stay in place when watering. It is made in white ivory, cost 3/6 per hundred, post free. Apply to the Hon. Treasurer.

BLAZER BADGES. These are obtainable on black or navy ground, price 10/- from the Hon. Treasurer.

PRELIMINARY WORK ON A PHYLOGENETIC SYSTEM OF THE CACTACEAE

By Dr. F. BUXBAUM

(First published in the German Cactus Journal, March, 1953. Afterwards published in "The Spine," Australian Cactus Journal, Vol. 5, No. 1, Translator W. Walton).

The eventual necessity to choose a system of classification for Cacti, for future work in common, has been, of all problems, the one which has given me the most worries.

There is no workable "System" for Cacti.

To justify this assertion, let me first explain what I mean by such a "System." It does not merely mean a grouping of *generas* under any one scheme, nor, in this case definitely not, when for the sake of that particular scheme, one divides groups which have followed the same historic line of development into a quantity of "Monotypic" *generas*.

It is not sufficient, in particular or on the whole, to squeeze *generas* together because they are similar, in order to simplify a "System." Today, the demand made of any system is that, as far as human intellect permits, it represents an adequate arrangement of phylogenetically united *generas* following the same philogenetic development.

All previous "Systems" of the Cactaceae have suffered because of insufficient knowledge of morphological facts, partly attributable regarding the construction of the flower in particular and the dynamism of the development and partly due to the scanty description of species and *generas*. Therefore they are all, without exception, already faulty in their very foundations.

We shall examine critically the "Systems" used nowadays, Schumann's old system can be dismissed immediately; its "collective" (in contradistinction with "worked out") *generas*, do not answer in any way today exigencies.

It is difficult to understand that Vaupel too, in "Natural Families of Plants" (Engler-Prantl) 2nd edition, did not find knowledge and—as he himself admits—followed his "own personal taste" in constructing his collective *generas*.

The system of Fric and Kreuzinger was already without recognition at the time it was made; it has no systematic order whatever, so much so, that nobody would waste time on it.

There remain then only the following "Systems": The one from Britton and Rose, with its later alteration by Taylor Marshall; the one from A. Berger and also two, perhaps even more, from Backeberg.

The one from Britton and Rose dominates the greater part of today's literature, but on closer examination one perceives very quickly that it consists mostly of an extension of Schumann's old system, without any substantial alteration of classification and, as the latter, is therefore also faulty in its initial phylogenetic premises. One has only to consider the classification of: *Austrocactus*—*Rebutia*—*Lobivia* and even *Echinopsis* among the *Echinocereae* and that of *Zygocactus* to the *Epiphyllaneae*, instead of the *Rhipsalideae*, to be convinced. Marshall has only enlarged the system in the light of later discoveries and changed it, in parts. But, in lumping together part of Britton-Rose *generas* with later erected *generas*, he committed so many errors, that his classification is even less worthy of discussion than the one of Britton and Rose.

The most valid system, in my opinion, is the one of A. Berger (Lines of development of the Cacti, Jena 1926). Alwin Berger is the first, and to this day the only author who has tried to build a system on an historical, developmental continuity. Unfortunately, he did not have the morphological grounding, nor the necessary knowledge of the tendencies of progression of the Family, so that he faltered also. I will show that by a couple of examples:—

A. Berger considers that the single, small flower is primitive and the large one a derivation. (A very prevalent fault in the Botany of other Families of plants). Therefore he has represented *Wittia* and *Disocactus*, *Rhipsalis* even, as primitive steps, whereas in reality they are very highly evolved steps. He commits another early fault in that he divides the *Cereoideae* into four branches from the ground up, namely: *Rhipsalideae*, *Hylocereae*, *Epiphyllaeae* and *Cereae*.

In the meantime I have proved that, as well as the *Epiphyllaeae*, the *Rhipsalideae* also descended from the *Hylocereae*, the latter being the descendants of the *Nyctocereae* of A. Berger, which he, himself, took as a branch of *Cereae*.

The linking of the *Rhipsalideae* with the *Hylocereae* shaped, as I proved, the enigmatical *genera*—*Pfeiffera*, of A. Berger. But even in its very foundations, the system of Berger is at fault. In the branching out more faults

were made as Berger did not know, at the time, of the importance attached to the "converging" development in several branches of the Family.

Backeberg now monopolizes A. Berger's ground work and combines it with Schumann's idea of a geographical branching. In doing so he came to the correct conclusion of a "Central American" primitive spring of the family with a North American branch and a South American one and introduced in these branches a blood division. But as he pushes this principle sketchily forward, without knowledge of a real, developmental, historical Dynamism, he tears apart very often, lines of progression into several genera and brings these "Stumps" under several groups of his system.

I, myself, however, proposed to the German Cactus Society that Backeberg's first classification (1938) could be utilised as a basis for work and could be saluted as a counter-weight to the "collective" genera.

But we soon found out, unluckily, that Backeberg did not work in a responsible or knowledgeable manner. The "Diagnoses" of his genera are very often based on the literature without intimate knowledge of the plants themselves, vide: *Glandulicactus-Reicheocactus*, etc., and are therefore shoddy, so much so that one cannot start anything with them. Often the type species is missing (*Haageocereus*), often problems are complicated instead of simplified by his methods (*Binghamia* problem), without mentioning the further complications arising from his use of obsolete names. Finally, in his search for a "Scheme," he proceeds in erecting more and more untenable genera on minor differences which are only worthy of varietal mention. If one were to do the same for other plant Families, genera such as *Campanula-Iris-Dianthus*, etc., would be divided into untold genera.

His works are further disparaged by himself and his "Systems" are unworkable; so much so, that he could not even bring himself to publish a list of species of his "Proteus-like" diagnosed genera. The immediate reaction to this "splitting," was the alteration of the Britton-Rose system by Marshall.

So today, we remain where we were. Badly founded and insufficiently described genera, a synonymy without bounds and in front of one, a variety of "Systems" which are all faulty in their groundwork.

Since the idea of an International Council began to take concrete shape, I have been busy with this dilemma.

I eventually came to the work to work, at first, on the laying out of a frame-work which, as far as I was able, bore in mind the philogenetic "continuity," as for the rest, that is especially the foundations themselves, they had to be so fashioned that the philogenetic ramifications would not stand in the way of described genera.

I did not allow the majority of "New" genera which were taken literally out of the "Old" genera, as, until exact observations have been made of the whole plant, especially in regard to the structure of both the flower and the seed of these dubious genera, a decision on their validity is out of the question.

Diagrams (to be published in a later issue) show the "Qualified" classification very much better than so many words. But one must take into consideration that they are purely provisional, with the exception of the one on *Euechinocactinae* (published in Sept. 1955 issue), with one correction: the type species of the genus *Mammillaria*, *Mam. simplex*, is only a derivation of the *Neobesseyeae* and not of the *Coryphanthae*, as I previously thought.

That they will be possibly altered in their inner structure is certain, in the light of necessary more thorough philogenetic studies. Up to date it has not been possible to do so, partly that the vital necessary material is unavailable, partly the continuity processes are unduly hard to follow. In the near future, I shall endeavour to sketch the ramifications of the *Hylocereideae* but possibly the genera of *Nyctocereae* (A. Berger), will have to be drawn in also.

The provisional Tribe, *Archicereideae*, requires special elucidation. As the diagram shows, we can presume that these, undoubtedly very primitive genera, will include whole groups. But in the present very faulty knowledge of the morphological foundations, it is virtually impossible to attempt to give an exact phylogenetic grouping. We must leave that to the American botanists to attempt as only a minimum of these genera exist in Europe and most of them do not come to flowering or fruition. I can already indicate a possible solution to some of these thorny problems but it may not be faultless.

The sense of that "Tribe" is not to unnecessarily tear these primitive forms apart (most of them have a spiny pericarpel and tube) but to leave the question open so as to be able to group them naturally when we have the answer. If we consider these in this manner, we have to recognise those geographically linked, allied tribes which go: left, to the South American Continent, right, to the North American and in the middle, the vital in-between link. This is not to be taken as a phylogenetic "follow-through," but only as a practical, suitable succession which will be broken up, as for example the genus *Astrophytum* which, undoubtedly, belongs to the *Pseudotrilocereideae* of North America.

Even geographic facts do not lend themselves to planning. Finally, one must emphasize again: I have laid this overall picture before the Zurich Congress so that one may find a common working ground. I would have kept it to myself and not made it public had I not received ever so many requests about it. I repeat it is only provisional. . . .

PILOSOCEREUS Byl. & Rowl. nom. gen. nov. (Cactaceae)

(*Pilocereus* K. Schum, non Lem.)

By R. S. BYLES and G. D. ROWLEY

In this Journal for April, 1955, reasons were given why the name *Pilocereus* Lem. is untenable for a genus since it is based upon the same type as *Cephalocereus* Pfeiff. (Typ. *Cactus senilis* Haw.). At the same time no alternative was validated although two were suggested, the writers feeling reluctant to do so while the genera in Cactaceae are still in such a state of flux. However, it now seems that *Pilocereus* sensu K. Schum. non Lemaire deserves retention as a genus, and Mr. C. Backeberg has requested us to make valid the new name *Pilosocereus* for it in time for inclusion in his new monograph of the Family. In accordance with the Code of Nomenclature it is necessary also to make new transfers for all species now considered to belong to *Pilocereus* K. Schum. The two sub-genera proposed by Backeberg ("Cactaceae," Jahrb. D.K.G. 2 : 51 (1941)) are likewise transferred; *Eupilocereus* now becoming *Pilosocereus* subgen. *Pilosocereus* (including the type species of the genus, *P. leucocephalus* (Poselg.) Byl. & Rowl.), *Mediopilocereus* transferred without change as provided for in the Code (Type: *Cereus minensis* Werd.).

PILOSOCEREUS Byl. & Rowl. nom. gen. nov. (Cactaceae)

syn. *Pilocereus* K. Schum. in Engl. & Prantl, *Naturl. Pflanzenf. Ed. i*, 3 (6A) ; 179 (1894), descr. emend. Backeb.

in *J. Cact. & Succ. Soc. Amer.* 23 (4) : 123-4 (Jul.-Aug. 1951) non Lemaire in *Cact. Gen. Nov. et Sp.* 6 (1839).

Typ. *Pilocereus leucocephalus* Poselg. in *Allg. Gartenz.* 21 : 126 (1853).

Combinations novae :

Pilosocereus alensis (Web.) Byl. & Rowl. **comb. nov.**

syn. *Pilocereus alensis* Weber in *Bull. Mus. Hist. Nat. Paris* 11 : 508 (1905).

Pilosocereus arenicola (Werd.) Byl. & Rowl. **comb. nov.**

syn. *Pilosocereus arenicola* Werd. *Bras. und seine Säulenkakteen* 109 (1933).

Pilosocereus arrabidae (Lem.) Byl. & Rowl. **comb. nov.**

syn. *Pilocereus arrabidae* Lem. in *Rev. Hort.* 34 : 429 (1862).

Pilosocereus aurisetus (Werd.) Byl. & Rowl. **comb. nov.**

syn. *Pilocereus aurisetus* Werd. *Bras. und seine Säulenkakteen* 103 (1933).

Pilosocereus backebergii (Weing.) Byl. & Rowl. **comb. nov.**

syn. *Cereus backebergii* Weing. in *Monatss. d. D.K.G.* 2 (viii) : 167 (Aug. 1930).

Pilosocereus bahamensis (Britt.) Byl. & Rowl. **comb. nov.**

syn. *Cephalocereus bahamensis* Britt. in *Contr. U.S. Nat. Herb.* 12 : 415 (1909).

Pilosocereus barbadensis (Britt. & Rose) Byl. & Rowl. **comb. nov.**

syn. *Cephalocereus barbadensis* Britt. & Rose, *Cactaceae* 2 : 44 (1920).

Pilosocereus bradei (Backeb.) Byl. & Rowl. **comb. nov.**

syn. *Pilocereus bradei* Backeb. & Voll in *Blatt. f. Kakteenf.* [1] (1935).

Pilosocereus brooksianus (Vaup.) Byl. & Rowl. **comb. nov.**

syn. *Cereus brooksianus* Vaupel in *Monatss. d. D.K.G.* 22 : 66 (1912).

Pilosocereus catalani (Ricco.) Byl. & Rowl. **comb. nov.**

syn. *Pilocereus catalani* Riccobono in *Boll. R. Ort. Bot. Palermo* 11 (1921).

Pilosocereus catingicola (Guerke) Byl. & Rowl. **comb. nov.**

syn. *Cereus catingicola* Guerke in *Monatss. f. Kakteenk.* 18 : 54 (1908).

Pilosocereus chrysacanthus (Web.) Byl. & Rowl. **comb. nov.**

syn. *Pilocereus chrysacanthus* Weber in *K. Schum. Gesamtb. d. Kakt.* : 178 (1897).

Pilosocereus chrysostele (Vaup.) Byl. & Rowl. **comb. nov.**

syn. *Cereus chrysostele* Vaupel in *Zeitschr. f. Sukkulenteenk.* 1 : 58 (1923).

Pilosocereus claroviridis (Backeb.) Byl. & Rowl. **comb. nov.**

syn. *Cereus claroviridis* Backeb. *Neue Kakt.* 69 (1931) et in *Moellers Deutsche Gartenz.* 81-82 (1931).

Pilosocereus collinsii (Britt. & Rose) Byl. & Rowl. **comb. nov.**

syn. *Cephalocereus collinsii* Britt. & Rose, *Cactaceae* 4 : 269 (1923).

Pilosocereus colombianus (Rose) Byl. & Rowl. **comb. nov.**

syn. *Cephalocereus columbianus* Rose in *Contr. U.S. Nat. Herb.* 12 : 416 (1909).

Pilosocereus cometes (Scheidw.) Byl. & Rowl. **comb. nov.**

syn. *Cereus cometes* Scheidweiler in *Allg. Gartenz.* 8 : 339 (1840).

Pilosocereus cuyabensis (Backeb.) Byl. & Rowl. **comb. nov.**

syn. *Pilocereus cuyabensis* Backeb. in *Blätt. f. Kakteenf.* 1935—[1].

Pilosocereus deeringii (J. Small.) Byl. & Rowl. **comb. nov.**

syn. *Cephalocereus deeringii* J. Small in *N.Y. Bot. Gard. J.* 18 : 201 (1917).

- Pilosocereus floccosus* (Backeb. & Voll) Byl. & Rowl. **comb. nov.**
syn. *Pilocereus floccosus* Backeb. & Voll in Arq. Jard. Bot. Rio de Janeiro 9: 150 (Dec. 1949).
- Pilosocereus glaucescens* (Lab.) Byl. & Rowl. **comb. nov.**
syn. *Pilocereus glaucescens* Labouret in Monogr. Cact.: 279 (1853).
- Pilosocereus glaucochrous* (Werd.) Byl. & Rowl. **comb. nov.**
syn. *Pilocereus glaucochrous* Werd., Bras. und seine Säulenkakteen, 106 (1933).
- Pilosocereus gounellei* (Web.) Byl. & Rowl. **comb. nov.**
syn. *Pilocereus gounellei* Weber in K. Schum. Gesamtb. d. Kakt. 188 (1897).
Pilosocereus gounellei (Web.) Byl. & Rowl. var. *zehntneri* (Britt. & Rose) Byl. & Rowl. **comb. nov.**
syn. *Cephalocereus zehntneri* Britt. & Rose, Cactaceae 2: 35 (1920). ;
Pilocereus gounellei Web. var. *zehntneri* Backeb. in Backeb. & F.M. Knuth, Kaktus—ABC: 331 (1935).
- Pilosocereus guerreronis* (Backeb.) Byl. & Rowl. **comb. nov.**
syn. *Pilocereus guerreronis* Backeb. in Beitr. z. Sukk. und Pflege i, 3 (1941).
- Pilosocereus hapalacanthus* (Werd.) Byl. & Werd. **comb. nov.**
syn. *Pilocereus hapalacanthus* Werd. Bras. und seine Säulenkakteen: 110 (1933).
- Pilosocereus hermentianus* (Monv.) Byl. & Rowl. **comb. nov.**
syn. *Cereus hermentianus* Monville in Illustr. Hort. 6: 90 (1859).
- Pilosocereus keyensis* (Britt. & Rose) Byl. & Rowl. **comb. nov.**
syn. *Cephalocereus keyensis* Britt. & Rose, in Contr. U.S. Nat. Herb. 12: 416 (1909).
- Pilosocereus lanuginosus* (Linn.) Byl. & Rowl. **comb. nov.**
syn. *Cactus lanuginosus* Linn. in Sp. Pl. ed. i: 467 (1753).
- Pilosocereus leucocephalus* (Poselg.) Byl. & Rowl. **comb. nov.**
syn. *Pilocereus leucocephalus* Poselger in Allg. Gartenz. 21: 126 (1853).
- Pilosocereus luetzelburgii* (Vaup.) Byl. & Rowl. **comb. nov.**
syn. *Cereus luetzelburgii* Vaupel in Zeitschr. f. Sukkulente. 1: 57 (1923).
- Pilosocereus maxonii* (Rose) Byl. & Rowl. **comb. nov.**
syn. *Cephalocereus maxonii* Rose in Contr. U.S. Nat. Herb. 12: 417 (1909).
- Pilosocereus millsbaughii* (Britton) Byl. & Rowl. **comb. nov.**
syn. *Cephalocereus millsbaughii* Britton in Contr. U.S. Nat. Herb. 12: 417 (1909).
- Pilosocereus minensis* (Werd.) Byl. & Rowl. **comb. nov.**
syn. *Cereus minensis* Werd. Bras. und seine Säulenkakteen: 93 (1933).
- Pilosocereus monoclonos* (D.C.) Byl. & Rowl. **comb. nov.**
syn. *Cereus monoclonos* D.C., Prodr. 3: 464 (1828).
- Pilosocereus moritzianus* (Otto) Byl. & Rowl. **comb. nov.**
syn. *Cereus moritzianus* Otto in Pfeiffer Enum. Cact. 84 (1837).
- Pilosocereus nobilis* (Haw.) Byl. & Rowl. **comb. nov.**
syn. *Cereus nobilis* Haworth, Syn. Pl. Succ. 179 (1812).
- Pilosocereus oligolepis* (Vaup.) Byl. & Rowl. **comb. nov.**
syn. *Cereus oligolepis* Vaupel in Notizbl. Bot. Gart. Berl. 5: 285 (1913).
- Pilosocereus palmeri* (Rose) Byl. & Rowl. **comb. nov.**
syn. *Cephalocereus palmeri* Rose in Contr. U.S. Nat. Herb. 12: 418 (1909).
- Pilosocereus pentadrophorus* (Lab.) Byl. & Rowl. **comb. nov.**
syn. *Cereus pentadrophorus* Labouret in Monogr. Cact. 365 (1853).
- Pilosocereus perlucens* (K. Schum.) Byl. & Rowl. **comb. nov.**
syn. *Cereus perlucens* K. Schum. in Monatss. f. Kakteenk. 10: 173 (1900).
- Pilosocereus piauhyensis* (Guerke) Byl. & Rowl. **comb. nov.**
syn. *Cereus piauhyensis* Guerke in Monatss. f. Kakteenk. 18: 84 (1908).
- Pilosocereus polygonus* (Lam.) Byl. & Rowl. **comb. nov.**
syn. *Cactus polygonus* Lamarck in Encycl. 1: 539 (1783).
- Pilosocereus purpusii* (Britt. & Rose) Byl. & Rowl. **comb. nov.**
syn. *Cephalocereus purpusii* Britt. & Rose, Cactaceae 2: 56 (1920).
- Pilosocereus robinii* (Lem.) Byl. & Rowl. **comb. nov.**
syn. *Pilocereus robinii* Lemaire in Illustr. Hortic. 11: 74 (1864).
- Pilosocereus royenii* (Linn.) Byl. & Rowl. **comb. nov.**
syn. *Cactus royenii* Linn. Sp. Pl. ed. i: 467 (1753).
- Pilosocereus rupicola* (Werd.) Byl. & Rowl. **comb. nov.**
syn. *Pilocereus rupicola* Werd. Bras. und seine Säulenkakteen, 109 (1933).
- Pilosocereus salvadorensis* (Werd) Byl. & Rowl. **comb. nov.**
syn. *Pilocereus salvadorensis* Werd. in l.c. 110 (1933).

CHEMICAL AIDS TO THE CLASSIFICATION OF CACTI

By W. F. MADDAMS, M.Sc., A.Inst.P.

Although the occurrence of alkaloids in certain species of cacti was reported more than fifty years ago, and sporadic work on this topic has continued, the chemical examination of the cactus family has attracted less interest than that given to most other important families in the plant kingdom. This omission is now being rectified by Professor Carl Djerassi and his co-workers at Wayne University, in the United States, and, although the work is not complete, the results to date are of considerable interest and warrant an interim report.

While this investigation has produced a certain amount of new information on cactus alkaloids, the results in another direction, consisting of the isolation of a series of substances known as triterpenoids, are of much greater significance. Since these materials have not previously been encountered in the Cactaceae, the term triterpenoid requires some explanation. This class of chemical compounds is derived from quite a simple material called isoprene, and the best known member of the group is rubber, which consists of a large number of isoprene units added together in a chain. The group of compounds formed from two isoprene units are known as monoterpenoids, and include such well-known substances as camphor, menthol, pinene, which is found in turpentine and limonene, the active constituent of the essential oils obtained from citrus fruits. The linking together of three monoterpenoid units (and hence six isoprene units) gives the triterpenoids now to be discussed.

The examination of fifteen species, mostly belonging to the genus *Lemaireocereus*, has revealed the existence of eleven triterpenoids, a number of which have been named after the species from which they have been derived, so that the chemist's vocabulary is now enriched with terms such as dumortierigenin and thurberogenin. Very significantly, however, this total of eleven compounds can be separated into two classes, for which the chemical structures differ appreciably, whereas the triterpenoids in each class are very closely related, and this points to similar biogenetic origins.

On this basis, the *Lemaireocereus* species investigated can be divided into three classes :—

Class I. *L. aragonii* and *L. laetus* which are devoid of triterpenoids. This seems to place them apart from other members of the genus. A number of botanists have suggested that these two species should be added to the genus *Cereus*, but the present method of approach cannot be so specific, at least until the *Cereus* family has been investigated.

Class II. *L. thurberi*, *L. stellatus* and *L. dumortieri*. These contain the first type of triterpenoids.

Class III. *L. hystrix*, *L. longispinus* and *L. pruinosus*, containing the second basic class of triterpenoids. Since *L. stellatus* contains a certain amount of this type of material also, it has some affinity to this class. However, any method of classification will always produce borderline cases.

Lemaireocereus weberi is quite unique, giving no triterpenoids but the alkaloid anhalonidine, well known as a constituent of the notorious mescal button. This observation, together with some work by Reti and Castrillon on *Trichocereus* species strongly suggests that triterpenoids and alkaloids are not found together in any species, a fact which may be of considerable biogenetic importance. Using the above classification, other species can be separated as follows :—

Class I. *Espostoa lanata*, *Neoraimondia macrostibas* and *Trichocereus peruvianus*.

Class II. *Machaerocereus eruca*.

Class III. *Machaerocereus gummosus* and *Myrtillocactus cochal*.

Considerable caution should be adopted in using this chemical classification for botanical purposes, at least until more data have been obtained, although its potentialities certainly cannot be disputed. The absence of triterpenoids may prove to be a negative characteristic, useless for practical purposes, but the occurrence of one or other of the two classes in a group of species must point to a biogenetic relationship. Hence a close affinity between the genera *Lemaireocereus*, *Machaerocereus* and possibly *Myrtillocactus* (on the basis of limited data) is indicated. This conclusion is therefore in agreement with taxonomical studies. The precise significance of the fact that, chemically, the triterpenoid containing *Lemaireocereus* species may be divided into two groups, is not clear, and it is probably unwise to draw definite conclusions at present.

If the method is to be of value for taxonomical purposes, a number of outstanding questions must be answered, calling for a more extensive study embracing less related genera. It should be realised at this juncture that the isolation of these triterpenoids requires the services of a trained chemist, and more particularly, the determination of their precise chemical compositions, necessary to assign them to their respective class, calls for research work of considerable skill. Hence a thorough investigation of the subject is a project of some magnitude, but until such work has been done it will not be possible to decide if triterpenoids are confined to a limited number of genera, with a consequent restriction of the possibilities. It must also be established that the biogenesis of these compounds is a characteristic of a particular species or genus, and not merely an environmental factor, but pending a detailed confirmation, this point may be accepted by drawing an analogy with the known variation of alkaloid contents of *Trichocereus* species. In conclusion, therefore, it may be said that the work of Professor Djerassi opens up very definite possibilities for a new approach to the classification of cacti and further results should be awaited with great interest.

PILOSOCERUS Byl. & Rowl. nom. gen. nov. (*Cactaceae*)—continued from page 67*Pilosocereus sartorianus* (Rose) Byl. & Rowl. **comb. nov.**syn. *Cephalocereus sartorianus* Rose in Contr. U.S. Nat. Herb. 12: 419 (1909).*Pilosocereus sergipensis* (Werd.) Byl. & Rowl. **comb. nov.**syn. *Pilocereus sergipensis* Werd., Bras. und seine Säulenkakteen, 106 (1933).*Pilosocereus sublanatus* (S.D.) Byl. & Rowl. **comb. nov.**syn. *Cereus sublanatus* Salm-Dyck in Hort. Dyck. 337 (1834).*Pilosocereus swartzii* (Griseb.) Byl. & Rowl. **comb. nov.**syn. *Cereus swartzii* Grisebach in Fl. Brit. W. Ind. 301 (1860).*Pilosocereus tehuacanus* (Weing.) Byl. & Rowl. **comb. nov.**syn. *Pilocereus tehuacanus* Weingart in Zeitschr. f. Sukk. 3: 58 (1927).*Pilosocereus tuberculatus* (Werd.) Byl. & Rowl. **comb. nov.**syn. *Pilocereus tuberculatus* Werd., Bras. und seine Säulenkakteen, 101 (1933).*Pilosocereus tweedyanus* (Britt. & Rose) Byl. & Rowl. **comb. nov.**syn. *Cephalocereus tweedyanus* Britt. & Rose, Cactaceae 2: 54 (1920).*Pilosocereus ulei* (K. Schum.) Byl. & Rowl. **comb. nov.**syn. *Pilocereus ulei* K. Schum. in Gesamtb. d. Kakt. Suppl.: 64 (1903), (non *Cephalocereus ulei* Guerke 1908).*Pilosocereus urbanianus* (K. Schum.) Byl. & Rowl. **comb. nov.**syn. *Pilocereus urbanianus* K. Schum. in Gesamtb. d. Kakt.: 193 (1897).**Additional new species**, published in advance of the generic name, are:—*Pilosocereus gironensis* Rauh & Backeb. in Backeb. Descr. Cact. Nov. 34 (1956).*Pilosocereus tuberculatus* Rauh & Backeb. in Backeb. Descr. Cact. Nov. 34 (1956).*Pilocereus campinensis* Backeb. & Voll probably belongs in *Monvillea* and *P. macrocephalus* Weber in *Mitrocereus*, according to Backeberg in the course of correspondence. *Pilocereus vollii* Backeb. & F. M. Knuth in Kaktus-ABC: 334, 417 (1935) is not combined as above because its status is uncertain; the suggestion has been made that it is an intergeneric hybrid, *Pilosocereus arrabidae* x *Cephalocereus fluminensis*.**REFERENCES**Byles, R. S. & Rowley, G. D.
Werdermann, E.in Cact. & Succ. J. Gt. Brit. 17(2): 32 (Apr. 1955).
in Kakteenk. 8:116-8 (Aug. 1937), 9: — (Sept. 1937).**Fourth Edition!**

(Over 20,000 sold)

**HOW to GROW CACTI
and SUCCULENTS****By E. SHURLY, F.L.S., F.C.S.S.**
(Editor of the Society's Journal)A booklet of 42 pages, including 36
illustrations of flowering cacti and
succulents.An elementary introduction to the
subject intended for beginners.**1/- per copy; post free 1/2**
Wholesale: 8/- per dozen**Cactus and Succulent Society
of Great Britain**
7 Deacons Hill Road, Elstree, Herts.
Phone: Elstree, 1067**WANTED****Surplus Small Rooted
Cacti and
Succulent Cuttings**

Any Quantity

**CONISTON GARDEN
ORNAMENTS****28, Court Lane, Highroad Well,
HALIFAX, YORKS**SET OF SIX GAILY PAINTED
PLASTER ORNAMENTS
7/6 Post FreeChurch, Watermill, Bridge, Three Cottages
JAPANESE PAGODA, BRIDGE AND
ARCH

Set of three 3/9 Post Free

We Specialise in
**SUCCULENTS
AND CACTI**

Write for Price List

Succulenta Nurseries
(Bernard Carp)
"Suvla," Military Rd., Hout Bay,
Cape Province, South Africa

**Cacti for
Everyone**

G. GILBERT GREEN

*An ideal beginner's guide—an
up-to-date, practical book on the
cultivation of cacti and succulents.
Illustrated with 42 photographs,
1 in colour. 10/6*

FABER & FABER LTD
24 Russell Square, London, W.C.1

**CACTI
AND SUCCULENTS**

WRITE NOW
FOR INTERESTING NEW
SEED LIST
AND LIST OF SEEDLING
PLANTS AT REASONABLE
PRICES

STANLEY V. SMITH
WYCK HILL, STOW-ON-THE-WOLD
GLOUCESTERSHIRE
Telephone: Stow-on-the-Wold 216

C. GILBERT
F.R.H.S.

**Cacti, and Succulent
Specialist**

**16 SEABROOK GDNS.
ROMFORD, ESSEX**
PHONE: ROMFORD 3583

Please send stamp for List
of choice and rare varieties

We invite you to visit our
Nurseries, by appointment
(Please phone or write)

WORFIELD GARDENS

BRIDGNORTH

Telephone : Worfield 259

SHROPSHIRE

CACTI AND SUCCULENT SPECIALISTS

GOLD MEDALS—

R.H.S. Chelsea
R.H.S. Great Autumn Show

LARGE GOLD MEDALS—

Shrewsbury
Southport

Mullard Perpetual Silver Trophy for an outstanding non-competitive exhibit—Southport, 1955

Latest lists of attractive and rare plants sent on application, price 4d.

We are especially interested in helping Collectors and in giving advice to Beginners.

We can now supply a fine selection of epiphyllums and other jungle-loving epiphytic plants. Open to visitors Monday to midday Saturday. During weekends we are not open unless an appointment has been made previously by post or telephone.

Parties are welcome at our Open Days held annually during one weekend in the summer. Details sent on application. In 1958—Saturday, June 28th and Sunday, June 29th.

Gates open 2 p.m. to 7 p.m.

TRADE TERMS will be sent on application to bona fide traders or to Secretaries of Cactus Societies.

Edinburgh, 12
25.2.57

Dear Sirs,

Some time ago I purchased a tin of Cactus Health Salts from you.

Although last year was most unfavourable for cactus growing, my cacti thrived very well, several flowering.

Send me a further two tins.

(Signed)

NOW IS THE TIME TO USE

PROF. DR. F. BUXBAUM'S

WORLD FAMOUS

CONCENTRATED HEALTH SALTS

FOR CACTUS and ALL SUCCULENT PLANTS

The Only Commercially Available Health Salts

IT CONTAINS ALL THE ESSENTIAL TRACER ELEMENTS.
PROMOTES STURDY GROWTH. ENCOURAGES PROLIFIC
FLOWERING. A MUST FOR ALL WHO WANT PLANTS
OF WHICH TO BE PROUD.

After many years of scientific study these HEALTH SALTS were produced specifically for CACTI and other SUCCULENTS by Prof. Dr. F. BUXBAUM, a leading Continental authority on Cacti and lecturer in botanical subjects at the University of Graz, Austria.

ECONOMICAL IN USE. MINUTE QUANTITIES ARE EFFECTIVE
OVERDOSING is wasteful, yet entirely **HARMLESS**

OBTAINABLE FROM :

ATRA LTD. 3 St. Mary's Mansions London, W.2

Price 3/9 per packet, plus 6d. postage

CASH WITH ORDER



Wattisfield Ware
DECORATED CACTUS POTS



Designed especially for their job — these most attractive, hand decorated cactus pots allow ample porosity — their glazed rims cover only one third of the pot surface.

Saucers are completely glazed on the inside bottom and rim. They may be placed on any surface with complete safety.

Pot sizes from 2in. up to 5in. wide (larger sizes to order).

London Agents :—
Priest Marians & Co. Ltd., 56, St. Mary Axe, London, E.C.3.

Send for illustrated leaflet
giving full range and prices

HENRY WATSONS POTTERIES LTD., WATTISFIELD, SUFFOLK

The Best House in the West
FOR
**CACTI AND
SUCCULENTS**

Gold and Silver Medallists

UPLANDS NURSERY

(GARNETT G. FUGE, F.R.H.S.)

BLACK HORSE LANE

DOWNEND - BRISTOL

Tel. 653675

The most exclusive selection of rare Cacti
and Succulents obtainable.

Inspection invited.

Complete Nursery List available on request
Please send stamp

**WHEN IN LONDON
VISIT THE "DAINTEE"
SUCCULENT NURSERIES**

MY SHOW GREENHOUSE IS UNIQUE AND
CLAIMED TO BE THE ONLY ONE OF ITS
KIND IN THE WORLD.

A LARGE RANGE OF CACTI & SUCCULENTS
FOR SALE. ALSO LITHOPS AND OTHER
MIMICRY PLANTS (I AM THE LARGEST
GROWER OF LITHOPS IN THIS COUNTRY).

For Lithops List send stamp.

VISITORS ARE WELCOME, BUT DO LET ME
KNOW THE DAY AND TIME YOU WILL
BE COMING.

ERNEST H. HEPWORTH

F.R.H.S.

'London's Cacti and Succulent Specialist'

**"DAINTEE," 142 ELLISON RD.,
STREATHAM . LONDON,
S.W.16 Phone Pollards 4563**

F. W. LEALAN & SON

NEW NURSERIES
SHIPLEY, PATTINGHAM
Nr. WOLVERHAMPTON

Phone : Pattingham 209

If you wish to see a good collection of
Cacti and Succulents visit our Nurseries,
you will not be disappointed.

Large or small parties welcome

CACTI AND SUCCULENT PLANTS

Strong, Healthy Plants at Reasonable Prices

Send Stamp for 1957 List

Nurseries : On the main
Wolverhampton—Bridgnorth Road.

6 miles from Wolverhampton

7 miles from Bridgnorth

A. E. GREEN

Normandale Nurseries
Sheffield, 6

Phone 44703

Gold Medal Cacti and Succulents

Members of the BRITISH SUCCULENT
GROWERS ASSOCIATION

See our
NEW PICTORIAL LISTS
of RARE PLANTS and
SPECIAL SEED OFFERS
6d. Post Free

We invite you to visit our Nurseries

Second Edition of
"CACTI AND SUCCULENTS"

By G. G. GREEN

17 Colour Plates 200 Illustrations
From any booksellers. 36/-

IMPORT

EXPORT

GOLD MEDAL

CACTI & SUCCULENTS

CHOICE SPECIMENS FOR THE COLLECTOR
ALWAYS AVAILABLE

BEAUTIFUL COLLECTIONS FOR THE
BEGINNER AT REASONABLE PRICES

Satisfaction assured at

"BLACKBURNS"

Catalogue—Price 4d.

T. N. BLACKBURN
CACTI SPECIALIST & GROWER
WOODPLUMPTON, nr. Preston
Telephone: Catforth 255

WHOLESALE

RETAIL

ANNOUNCING A NEW BOOK

(Further details shortly)

To be published about 30th September

STAPELIADS in CULTIVATION

by EDGAR LAMB

This new book will contain well over
100 pages of first class photography by
the author, including some lavish
colour pages.

JUST the information you require for successful
culture, etc. etc., will be found in this newest
publication.

W. T. NEALE & Co. Ltd.
16 FRANKLIN ROAD, WORTHING,
(ENGLAND).

We have over 20 years' specialist experience
to our credit).



Britain's Finest Gardening Weekly

You will enjoy gardening with GARDENERS CHRONICLE & GARDENING ILLUSTRATED—the finest gardening aid you can buy. Packed with new ideas and expert information, with special pages for women, students and specialists.

Reading it is like gardening with a friendly expert at your elbow. For only 6d. a week, Britain's leading horticultural team can be at your service. Try it to-day.

From all newsagents. In case of difficulty please write to:

THE GARDENERS' CHRONICLE LIMITED

Printing House Square, Queen Victoria Street, London, E.C.4.

A. S. JONES

CACTI and SUCCULENTS

WELL GROWN STOCK
IN GOOD VARIETY

ASK FOR SELECTED LIST
REASONABLE PRICES
VISITORS WELCOME
SEND ME YOUR 'WANTS LIST'

'WESTGARTH,' BAILES LANE,
NORMANDY, Nr. GUILDFORD

Tel. : Normandy 3289

WHELDON & WESLEY

LTD.

Buy and Sell

BOOKS

on all branches of

NATURAL HISTORY

especially

Botany & Horticulture

in all languages

LYTTON LODGE,
CODICOTE, Nr. HITCHIN,
HERTS.

Telephone : Codicote 370

Telegrams : Wheldwesly, Codicote, Hitchin

THE
CACTUS
AND SUCCULENT
JOURNAL
OF GREAT BRITAIN

Established 1931

Vol. 19

OCTOBER, 1957

No. 4

Contents

	PAGE
From the President	73
Cactus Cultural Notes	74
Cultivation of Succulents	76
Conophytum extractum	78
Conophytum parvipunctum	79
Show Results	80
Reports of Meetings	82
Succulent Plants on the Italian Riviera	87
Medley	88
Pierre Joseph Redouté	89

*Published Quarterly by the Cactus and Succulent Society of Great
Britain at 7 Deacons Hill Road, Elstree, Herts.*

Price 2/6 Post Free 2/9



President : E. W. Shurly, F.L.S., F.C.S.S.

Vice-Presidents : A. Boarder, P. V. Collings

COUNCIL :

A. J. EDWARDS, A.M.Tech.I.(Gt. Bt.)	Mrs. A. HEDGES
H. J. AYLOTT	G. R. IBBOTSON
P. V. COLLINGS	A. S. JONES
A. W. HEATHCOTE, A.C.I.S., Chairman.	Miss A. M. PILCHER
G. L. HEDGES	Mrs. M. STILLWELL

Secretary : K. H. Walden, 152 Ardgowan Road, Catford, London, S.E.6.

Treasurer : E. W. Young, 35 Castle Drive, Ilford, Essex.

Editor : E. Shurly, 7 Deacons Hill Road, Elstree, Herts.

Librarian : P. V. Collings, St. John, Northumberland Road, New Barnet, Herts.

Exchanges : A. Boarder, Marsworth, Meadway, Ruislip, Middlesex.

Liaison Officer : A. W. Heathcote, Southwold, Station Road, Bishopston, Seaford, Sussex.

Seed Distribution : G. L. Hedges, 16 Buck Lane, Kingsbury, London, N.W.9.

Meeting Place : New Hall, Royal Horticultural Society, Vincent Square, London, S.W.1. 6 p.m. for 6.30 p.m.

Annual Subscription—21/-

SOCIETY NEWS

1957

October 22nd Succulent Collection at Kew ; E. W. Macdonald. Table Show : Lithops.

November 19th A visit to Monaco, 1953 ; G. D. Rowley.

December 3rd Members' photographic slides.

1958

January No meeting.

Branches

Berks & Bucks : Secretary : Mrs. M. Stillwell, 18 St. Andrews Crescent, Windsor.

West Kent : Secretary : Mrs. P. V. Griggs, 48 Kings Hall Road, Beckenham, Kent.

North Kent : Secretary : T. Holt, Orchard End, Downs Road, Northfleet, Kent.

Essex : Secretary : D. Stringer, 131a Fulwell Avenue, Barkingside, Essex.

North London : Secretary : Mrs. C. M. Allen, Shirley, Beech Hill Avenue, Hadley Wood, Herts.

North West London : Secretary : G. L. R. Hedges, 16 Buck Lane, Kingsbury, N.W.9.

Hertfordshire : Secretary : Miss A. Dixon, 19 Batchwood Drive, St. Albans.

North Surrey : Secretary : W. F. Maddams, 55 College Road, Epsom.

North West Counties : Secretary : F. Crumbie, 2 Laburnham Avenue, Hyde, Cheshire.

Back Numbers of the Journal.

The following are still available :—

Volume 3 Part 3.

Volume 4 Complete.

Volume 5 Parts 1, 2 and 3.

Volume 6 Part 1.

Volume 7 Part 4.

Volume 8 Parts 3 and 4.

Volumes 9, 10, 11 and 12 Complete.

Volume 13 Complete.

Volume 14 Parts 2, 3 and 4.

Volume 15 Complete.

Volume 16 Parts 2, 3 and 4.

Volumes 17 and 18 Complete.

Prices : Volumes 10/9 each, post free. Single parts, 2/9 each, post free.

Reprint : *Plantae succulentae in Horto Alenconio*, by H. A. Duval, 1809, with introduction by W. T. Stearn. 1/2 each, post free.

From the Editor, 7 Deacons Hill Road, Elstree, Herts.

THE
C A C T U S
AND SUCCULENT
JOURNAL
OF GREAT BRITAIN

ESTABLISHED 1931

Vol. 19

OCTOBER, 1957

No. 4

FROM THE PRESIDENT

With this issue concludes the nineteenth volume of our quarterly Journal and we can feel that we have contributed some material of real value to all who are interested in our plants.

It is not often that I have to make a confession, but I did not realise the length of Mr. Rowley's article on De Candolle. I have heard in one or two quarters that it is not of the greatest interest to some of our readers. That is to be understood, but it is not always wise to confine ourselves to articles on purely cultivation material. This particular article is of the utmost importance as it is the first attempt to clarify to present day standards the very fine book written by De Candolle and illustrated by Redoute and understanding of what it contains helps everybody. If every Journal confined itself to elementary articles, matters of real importance would be neglected and records that are of extreme value, interpretations without which we cannot do, would be lost entirely. Any Journal worthy of the name must take due notice of such articles of not everybody's interest, but are of vital importance to our subject as a whole. While a word of regret about its length is not out of place, yet it must be remembered that history will enhance our reputation by its publication. Mr. Rowley is one of the brightest stars that is rising in our world and his work will go down through the years as of great importance to our subject.

A very peculiar season has now been completed. Varying reports have reached me as to the success achieved by cacti enthusiasts. Many report an extraordinarily successful season for flowers. Is success in flowering cacti due to the previous season's experience or to the present season's good weather? I feel that it is a combination of the two. Last year's weather was bad for flowers, but this year's good weather has been very beneficial even if it was a little late. At the same time, it must not be forgotten that when a plant experiences bad weather or cultivation in one season it frequently happens that if the following season is favoured by fine weather, coupled with good cultivation, it is more likely to produce flowers in abundance as the purpose of a plant's life is to reproduce itself. At the same time, good weather in one season enables the plant to keep in good condition and helps flowers the following season when the weather may not be so good. My own experience this year has been that while many of the plants that usually flower every year did so this year, some of them did not, but I had the great pleasure of flowering many plants with which I have had no success in the past.

With the close of this year's Journals, I must pay my tribute to those loyal contributors to the Journal and to all those who have helped to make it a success. They are too numerous for me to mention each by name, but not one of them is forgotten by me and I am sure the readers will support me in this, but I cannot let the opportunity pass by without once more giving special thanks, first, to Mr. Boarder, who has contributed to the Journal for so many years and whose advice has been so welcome to readers and, secondly, to Mrs. Stillwell, who has not contributed so long, but on whom I can always depend, like Mr. Boarder, and whose articles very much help you. While they have no direct connection with the Journal, can we let the opportunity slip of also thanking the officers of the Society for the wonderful work they have done during the year with its increasing membership and increasing work on your behalf? If we only specially mention the secretary, Mr. Walden, and the treasurer, Mr. Young, for their good work, that is not to say the other officers are forgotten or that their work is of little importance. Every one of them is doing valuable work and I am sure the annual report of the Society will give due credit to them individually.

E. SHURLY.

CACTUS CULTURAL NOTES

By A. BOARDER

Another growing season has passed and it is once again time to make sure that all plants are ready for the winter. When one has a hobby the time passes so quickly that there never seems an opportunity for getting half the tasks finished before winter is upon one. Most of the watering will have been completed by the time that these notes appear. It is never possible to stop watering at any given time as some plants will need a little long after others have passed the need for it. Generally speaking the more mature the plant the less water it is likely to need during the autumn. Any growing seedling plant should be watered with care until the end of October if in a greenhouse. The main watering should finish about the middle of October, but great care must be taken once September is over as after a watering the weather may change and then in a cold dull spell the pots will take a long while to dry out and the roots can soon be in trouble.

At the beginning of November it is well to go over all the plants. Rake out the top half-inch of soil in the pot and remove any weeds or moss. Search round the base of the plants for mealy bug or scale and treat it at once with surgical spirit. Then top up the soil with some fresh. See that the drainage hole in the base of the pot is clear and look out for any mealy bug actually hibernating on the side of the pot. See that the label is clean and well defined and place each plant in a fresh place so that no plant is missed in the whole collection. No more repotting need be done now unless a plant appears to be going wrong, or the pot does not dry out. Never leave a plant in wet soil for long at this time of the year. See that there are no drips from the roof of the greenhouse. Some greenhouses are made with an insufficient fall to the roof. This should never be less than an angle of 45 degrees. If the over-lap of the glass was not enough then it is possible for some wetness to siphon up when it rains, and this can drip on to a plant and cause damage during the winter. When a greenhouse gets rather old it often happens that the putty becomes hard and faulty and a leak occurs at the junction of the glass with the glazing bars. There is now a sealing strip on the market which will enable you to seal this spot up quite safely. It is in the form of a treated tape which can be run down the length of the bar and pressed tightly into the corners with a penny or similar object. This will make the joint water-tight and the tape can be left as it is or painted over if required.

When painting a timber-framed greenhouse it will be found that the aluminium paint will last much longer than the ordinary oil-bound paints. I use a kind known as "Alpaste," which is bought in the form of a soft nugget.* A small piece is cut off and either clear varnish or a special medium is added to the required thickness. The advantage of this type of paint is that only enough for immediate use need be mixed at a time and so it lasts indefinitely. The aluminium paint lasts very well as a cover for either metal work or woodwork. It is easy to apply and looks quite good. Any old paint should be removed before adding the new. Where ordinary white lead paint has been used it will be found that most of it can be washed off with a fairly strong solution of sugar soap.

The cedar type timber greenhouse does not require painting but I think that a treatment with linseed oil would be an advantage as it would tend to keep the putty soft and pliable over a longer period. I would never have another greenhouse which required annual painting again. I would make a concrete one with rustless metal door and windows. The framework could be made with reinforced concrete bars bolted together. The idea would be similar to the concrete-framed garden frame I made. The concrete bars of this are $1\frac{1}{2}$ inches in diameter, and are quite strong enough for the ordinary greenhouse.

The heating apparatus must be got in working order in good time for the winter. If electricity is used it will be a good plan to examine everything to make sure that all connections are safe. All plugs should be thoroughly cleaned and thermostats examined. Some types have a degree numbering on a small plate. This is fixed by three small screws. If the screws are removed the plate will come away disclosing two large screws which, when removed, will allow the thermostat to be taken to pieces enough for cleaning. The contacts are usually of silvered copper and at the point of contact some soot will often form. This should be removed and the contacts thoroughly cleaned. With care the thermostat can be adjusted to make and break at a degree of variation. A nut controlled screw will be seen which regulates the distance of the contacts away from the magnets. The contacts should come on with a slight snap, but should not hold in position for too long when the regulator is moved or when the heater is in action the heat will remain on for too long at a time. It is not only that the contacts may get sooted up with use but earwigs and spiders have been known to make their homes in them during the summer months. I have found that the cable heating system I use is very much better than the tubular heaters I previously had. The cables run in sand on the staging so that no plant pot in the greenhouse is more than two inches away from a cable. This means that as soon as the thermostat switches on the electricity warmth becomes available beneath the plants

* The paint is sold under the name of "Noral," made by the Northern Aluminium Co. Ltd., Banbury, Oxfordshire. The medium which can be used besides varnish for running the paint down is known as 'Alpaste Medium,' and is sold by Will's Paints Ltd., London and Bristol.

and rises directly among them. With the old system of tubes it was necessary for the heat to rise to the top of the house, fill up the upper space with warm air before getting down to any plant more than a few inches away from an actual tube.

I keep the thermostat at 40 degrees F. in the main greenhouse and the one in the seedling frame is set at 42 degrees F. At such low levels it is surprising how little electricity one has to use. On many nights in the winter the heat never comes on at all. If 50 degrees F. was aimed at a great deal more electricity would have to be used. To really heat a sizeable greenhouse with electricity would be rather costly. Besides the four eighty-foot cable heaters in my greenhouse (20 foot by 9 foot) I run an oil lamp for most of the winter. This makes it more comfortable for me when I am in there and is a safety measure in case of an electricity cut. I use a Bryant heater with two 2-inch wicks. The lamp heats a couple of water pipes and I am able to keep a comfortable temperature by using five gallons of paraffin in two and a half weeks. The wicks can be turned down quite low during the day time, and they then keep the water in the pipes quite hot. At night time they are turned up again and soon raise the temperature of the house. If the lamp is not powerful enough during cold spells then the thermostat switches on the electricity as soon as the house drops to 40 degrees. The thermostat should be on the level of the plants and at the coldest spot in the house.

Many growers had a large number of flowers this year. Some have told me that they have had more than ever. This state of affairs does not always mean that the season has been more favourable than the last. It may just mean that more plants have become mature and of flowering size. The sudden hot spell in June was a mixed blessing; it came rather too quickly, before the plants had become hardened. In many cases it caused actual burning or scorching on certain plants. Some of the more open tender skinned *Mammillarias* do not like these sudden hot spells. Such a one is *M. longiflora*, which will dry up completely if left unshaded in a very sunny greenhouse. Some of the other *Mams.*, like *M. rhodantha* are rather prone to scorching.

The seed pods on many of my plants ripened very quickly. The various genera take varying times for the seed pods to ripen. *Astrophytums* all ripen their pods fairly quickly and in about a month after flowering the pod bursts. The *Stenocactus* pods will ripen in about six weeks; they break and the large seeds can be collected fairly easily. *Parodias* ripen in about six weeks and are very hard to deal with. If the dried flower is held and lifted it is almost certain that the pod will break leaving behind in the mass of wool at the top of the plant hundreds of tiny seeds. The only way to get them out then is to damp a camel hair brush and pick the seeds up a few at a time. *Rebutias* soon ripen their pods, about six to eight weeks as a rule. These pods can break as the dead flower is pulled and it is always a good plan to hold a teaspoon under each pod as it is removed so that the loose seeds drop into the spoon. The seed pods of *Malacocarpus* soon ripen and will go mouldy very quickly if not gathered. The pod is soft and the skin soon gets papery. The pods will easily break leaving half behind if you do not get a grip of the base of the pod with tweezers.

Notocactus ripen pods in about six to seven weeks, and the pod usually comes away with the dried flower as long as it is ripe. *Gymnocalyciums* have their pods ripen and split in about eight weeks. Although the pod splits when ripe the seeds do not fall out as they are firmly held in a jelly-like substance. It is wise to gather them, however, as soon as they split as wasps may enter the greenhouse and eat the fruits and seeds. Ants can also take away many seeds if they are not kept under control. The seed pods on *Epiphyllums* will last on the plant for at least a year, and again there is no fear that the seeds will drop when ripe, as again they are held in waxy substance which is very difficult to clear from the seeds—some of it sticks to the seeds like frog spawn.

Among the *Mammillarias* there are many types of seed pods. Some form fairly soon after flowering and are ripe in a couple of months. These kinds are the types like *M. bocasana*, *M. kunzeana*, *M. schelhasei*, *M. longicoma*, *M. hirsuta* and *M. wildii*. Types like *M. rhodantha* may take some months before the seed pods form and where they flower late in the year the pods may not show up until the following year. Once they get red they soon ripen and the pod dries up. The types such as *M. multiceps*, *M. prolifera*, *M. stellaris* and *M. castenoides* hold the seed pods a whole year before they ripen, although they remain red for many months. They are not ripe until the skin starts to wither and dry up.

Any plants which have summered in an unheated greenhouse or garden frame should be taken to a place of safety for the winter. This can be a spare room and if no fire is ever on in such room it is probable that the plants may not need any water at all for the whole of the winter. It is when plants are kept in a living room during the winter that they should have some water now and then. The warmer the room the more often must they be watered. No more water than is necessary should be given at a time. The idea is to keep the plants from actually shrinking without giving enough water to encourage them to grow. Do not keep the plants in a draught and remember that most Cacti can stand quite a low temperature as long as the whole root system is on the dry side. Cold together with damp are fatal to most Cacti.

Once again no seed pods have formed on my plant of *Rebutia marsonieri*, although many flowers opened. My *Mam. schiedeana* had over twenty seed pods but not one contained a seed.

CULTIVATION OF SUCCULENTS

By Mrs. M. STILLWELL

October can often be a trying month for some of the succulents, as, although we may get some very warm days, we often also have some very cold nights together with mist and damp. One should watch all watering carefully at this time of year as a lot of condensation in the house soon causes plants such as *Stapeliads* to rot off. Even some of the shade-loving plants, such as *Haworthias* and *Gasterias*, etc., do benefit from sunshine towards the end of the year. It helps to ripen them and harden them off for their winter rest. It is a mistake to keep some of these plants growing too long and too lush. Get them really hardened off before the weather breaks, and there will be far less winter casualties, particularly among the more leafy succulents. In my opinion all succulents should be grown slowly and carefully, keeping the plant as true to type as possible. These large bloated plants that we are sometimes confronted with are, in my opinion, no credit to the owners. They are quite unnatural and usually lacking the deep rich colourings that can only be obtained without forcing.

Many of the *Echeverias* make wonderful specimens if bedded out in the garden for the summer, but they must all be lifted by the beginning of October at the latest. If taken up with a good ball of soil round the roots, they can be stored in trays or boxes, under the staging until the following year. I store mine in large enamel bowls and they survive all through the winter with scarcely a drop of water, until the following late May, when they can be planted out again, after removing all the offsets. Outdoors the commoner kinds such as *Echeveria glauca* and *E. secunda* will flower almost all through the summer. I have a clay soil and, while other bedding plants found difficulty in getting established during the hot dry period we had, the *Echeverias* revelled in it, the leaves became beautifully coloured.

Pleiospilos should now be showing next year's new growth and should be rested from then on. *Lithops* and *Conophytums* should also be gradually allowed to rest after flowering. *Gibbaeums* start to grow in the autumn, but should be watered with great caution and only during the winter when they show signs of needing it. There are no hard and fast rules governing the watering of stemless *Mesembryanthemums*, one has to learn from experience together with the conditions under which they are grown. Each plant should be treated as an individual, and grown in a separate pot and not mixed with others in pans or bowls.

I was very pleased this year with two fairly recently acquired *Ceropegias*, *C. radicans* and *C. rendallii*. The former has a large brown and green tubular flower and blooms continually, while the latter is a smaller growing plant with dainty little green umbrella flowers. They both seem to like plenty of water during the growing season and a slightly richer, but very open soil. The commoner types such as *C. woodii*, etc., grow best in large flat pans and coiled round and round. All the leaves will then turn upwards to the light and the little flowers will be shown to advantage standing in an erect position above the leaves. If grown in the shade and freely watered *C. woodii* leaves become very large and beautifully marked.

Have a really good clean up in the greenhouse before the winter, particularly under the staging, where we are inclined to push our old plants that are not looking too good. This can lead to a breeding ground for all kinds of pests and diseases. It is surprising how quickly these seem to find their way up on to the staging where our best plants reside. It is never wise to keep an old diseased plant, however sentimental we may feel about it; harden your heart, and put it in the dustbin. When you have got your collection looking really clean, never sit back and relax, but always keep a watchful eye for that odd mealy bug that seems to come from nowhere and never mix a newly acquired plant with the rest of the collection until it has been thoroughly examined and, if possible, repotted.

I have had a lot of trouble with earwigs this year. In many cases they have chewed the unopened flower buds and also bitten deep holes in some of the seedlings. Apart from actually catching them and killing them I have not found a really satisfactory cure. I have found them bedded in such plants as *Faucarias* and I have placed the whole plant in a bucket of water, whereon they usually float to the surface and can be destroyed. They are usually active at night, and during the day hide away in odd corners, or bedded in the heart of a plant. This is the first year I have experienced this pest, it has usually been ants, but this year thanks to Nipon I have been quite free of them.

Most of the *Euphorbias* have flowered well this year and can be a pretty sight when dozens of these little flowers are open at once. *Euphorbia echinus*, although a common plant, flowers very freely and the seed pods, which also form readily, are a lovely coppery red if grown in the sun and give the plant a most attractive appearance. *E. obesa* again provided some seed as I was lucky enough to have a male and a female out at the same time. It is necessary to transfer the pollen from the male to the female by hand with a camel hair brush to ensure fertilization. Should

the male bloom before the female, it is possible to store a little of the pollen in an envelope until such time as it is required. *Euphorbias* benefit from being repotted annually without too much root disturbance, into a lime free soil. They are slow to root from cuttings and none should be taken after July. They should not be buried, but just allowed to rest on the soil and, if tall, tied to a stick or cane for support. The attractive flowered *Pedilanthus macrocarpus*, known as the slipper flower, has been in bloom for several months. It is allied to the *Euphorbias*. The red flowers are borne right at the top of these cane-like plants and do not generally bloom on young plants. Mine is about three feet high and almost touching the glass. I give it quite a lot of water and plenty of sun.

A good *Ophthalmophyllum* worth looking for is *O. pillansii*. It has the texture of a peach and a fine mauve flower. They should be treated similar to the *Lithops*, but be careful with the water as they soon split.

Select a few of the hardier colourful succulents to bring indoors for decoration in the winter when flowers are scarce. Here are a few you can keep for that purpose: *Sedum nussbaumii*, *S. guatamalense*, *S. sieboldii*, *S. treleasii*, *Kalanchoe granata*, *Crassula argentea*, *Crassula arborescens*, *Graptopetalum weinbergii*. Watch them carefully and water sparingly and they should come to no harm if kept fairly near to the daylight. Do not place too near a radiator or any gas burning appliance, or the leaves will probably discolour.

Check heating apparatus in the greenhouse in good time and have any cracked panes of glass repaired, as these can cause dangerous drips to fall on a precious plant. Clean off any shading on the house if it has been used during the summer as our plants want all the light they can get during the winter.

Any first year seedlings should be kept growing steadily through the winter without too much heat to force them. Get organized in the potting shed during the winter. Clean out all the bins and have a good supply of clean flower pots all ready for the spring repotting, and get in a fresh supply of new labels. Do not be tempted to buy your potting soil too soon as it does not improve with keeping. Throw away any soil that has been used before.

PIERRE-JOSEPH REDOUTÉ—Continued from page 93

BIBLIOGRAPHY

(Additional to the special refs. following *Plantes Grasses* review)

- 20 BLUNT, W. *The Art of Botanical Illustration*. Collins, London, 1950. (Esp. 173 et seq.)
- 21 CALLÉ, J. *Bibliographie Plantarum Succulentarum Historia*. In "Cactus" No. 42, Dec. 1954, 141-3.
- 22 LÉGER, C. *Redouté et son Temps*. Paris 1945.
- 23 (Anon.) in *Kew Bulletin* 1927, Appendix 43-4.
- 24 An ideal introduction to Redouté's style with non-succulents are the Ariel Press, London, volumes of "Roses"
- 25 (1954, 25/-; popular edition by Foyle, London 1955, 15/-); "Roses II" (1956, 30/-) and "Fruits and
- 26 Flowers" (1956, 35/-), each with 24 full-size facsimile plates in colour.

ADDITIONAL NOTE, OCTOBER, 1957

In view of the extreme rarity of copies of the "Plantes Grasses" complete with 31 fascicles of text and 187 plates, it may be as well to indicate where such can be found. One in folio in two volumes is in the Library of the Royal Botanic Gardens at Kew, the plates being arranged systematically²³. Another copy, also in folio is in the private library of M. Jean Callé, of Paris²¹. A third was in the library of Alph. de Candolle, together with the five extra unpublished plates, to judge from correspondence from him dated 1889 in the small paper copy at Kew. In 1952 a small paper copy lacking only the text to Fascicle 31 sold for £85 in London; two years later a fine folio copy of Fascicles 1-30 sold there for £150.

Twenty-three plates from Fascicle 29 onwards have been listed by Madol and Stearn in the recent reissue of the "Album of Redouté," Ed. S. Sitwell and R. Madol, 1954, 16.

A few copies of this article in booklet form are available from Mr. Rowley at 2/6 per copy.

* Seven in fasc. 12.

† A similar copy has also been seen at Oxford University Botany Department.

CONOPHYTUM EXTRACTUM Tisch. spec. nov.

By Dr. A. TISCHER

(Fam. *Ficoidaceae* Juss. em Hutch., Gen *Conophytum* N. E. Br., Subgen *Derenbergia* Schwant., Ser. *Cordiformia* (Bgr.) Schwant. Subser. 2).

Planta caespitosa corpusculis non dense aggregatis internodiis ad 0.75 mm. longis ; corpuscula cordiformia ad 18 mm. longa, ad 12 mm. lata, ad 9 mm. crassa, superne compressa, lobis ad 2 mm. altis rotundatis obtusis, lateris versus extractis, carina ; fissura rhomboidea ad 4 mm. longa minute papillosa ; glabra cinereo-viridia, in parte superiore punctis viridibus non dense aggregatis notata, fissura carinaque idem punctis sordide viridibus notata, zona fissurae parva ; ovarium inclusum ; calycis tubus ad 6 mm. longus, ad 3 mm. diam., albido-viridis, segmentis 4 carnosus viridibus ad 1 mm. longis ; corollae tubus ad 7 mm. longus albus, segmentis 40-50, 3-4 seriatis, ad 1 mm. latis spatulatis luteis ; stamina multa exserta filamentis superne luteis ; stigmata 5 ad 5 mm. longa, aurea ium stylo ad 5 mm. longo ; ovarium ad 3 mm. diam., supra conice elevata ; nectarium inconspicuum atro-viride ; flores diurni.

Coll. : H. Herre.

Loc. : Kommaggas, Little Namaqualand, South Africa.

Plant forming loose cushions by sprouting, internodes short, 0.75 mm. long ; body heart shaped, 18 mm. long, 12 mm. wide, 9 mm. thick, much flattened above and bi-lobed, lobes round, 2 mm. high, drawn outwards more or less chin like (hence the name—drawn out!), bluntly keeled ; fissure somewhat recessed, of rhombic contour, 4 mm. long, hairy (Type 21-24 of the Type Schedule according to Tischer) ; leaf surface flat-papillose, otherwise smooth, basic colour dark grey green ; around the fissure edge and over the keel line runs a row of larger dark green dots, fissure zone small ; keel line not reddish ; on the whole upper part of the bodies there are also a number of not crowded, fairly large dark green dots, occasionally slightly raised ; flower diurnal ; gynaecium enclosed ; calyce tube 6 mm. long, somewhat flattened, 3 mm. in diameter, greenish white, with 4 tips, 1 mm long ; somewhat succulent, green ; corolla tube 6-7 mm. long, flattened, white, somewhat expanded towards the top, with 42-45 segments, in 3-4 rows, 8 mm. long, 1 mm. wide, spatulate, notched above, or bluntly pointed, light yellow, individual inner ones shorter and narrower ; stamens fairly numerous, white below, yellow above, anthers from outlet of tube to rather projecting. 5 stigmas, 5 mm. long, orange yellow, on style 5 mm. long, golden yellow above, greenish white below ; ovary 3 mm. in diameter, flat conical above, disc dark green, low, narrow.

I had a plant of this species sent to me several years ago by Mr. H. Herre under the designation " Stellenbosch 44." The habitat was given as Little Namaqualand, near Kommaggas. The result was a complete conformity of habit and flower with another plant sent to me prior to the second world war, of which I know neither habitat nor collector as my notes thereon were lost during the war. *C. extractum* is characterised particularly by its clearly heart-shaped form, with the rounded lobes, drawn outwards, chin-like. Due to this peculiarity I have chosen the designation *extractum* (=drawn out). By this shape of the bodies, the new species distinguishes itself from the other known species of the bilobed forms.

C. halenbergense (Dtr. et Schwant.) N. E. Br. has somewhat similar bodies, but is characterised by its much smaller, nocturnal flower ; also *C. taylorianum* (Dtr. et Schwant.) N. E. Br. shows more distant similarity, but the lobes on this plant are keeled somewhat more sharply, the fissure notched more deeply and the flower is coloured red. Characteristic of *C. extractum* is also the comparatively dark grey green colouring and the distinct dotting which runs round the fissure and over the keel line ; the latter is not tinted or coloured red.

In cultivation, *C. extractum* presents no special difficulties. In the course of years it grows to somewhat loosened cushions, as it does not sprout particularly willingly.

I came across the London Suregrip Sylkette Gloves. We do not usually insert plain advertising among the editorial, but they seem to be peculiarly of use to cactus collectors. They are stronger than the usual rubber glove in that they have a firmly fused lining of soft flexible latex and I should imagine they are just the thing to wear when handling such plants as *Opuntias*. They can be obtained from London Rubber Co. Ltd., North Circular Road, Chingford, E.4.

CONOPHYTUM PARVIPUNCTUM Tisch. spec. nov.

By Dr. A. TISCHER

(Ficoideae Juss. em. Hutch., *Conophytum* N. E. Br., Subgen. *Carruicola* Schwant., Ser *Truncatella* Schwant.).

Planta caespitosa corpusculis non dense aggregatis; corpuscula obconica ad 15 mm. longa superne ad 12 mm. diam., apice plana et saepe irregulariter circuitu rotundata, fissura leviter depressa ad 3 mm. longa; glabra levia cinereo-viridia, superne punctis obscuris copiose ornata; ovarium inclusum vel exsertum; calysis tubus ad 2.5 mm. longus, ad 2.5 mm. diam., albo-viridis, segmentis 4 carnosus ad 2.5 mm. longis; corollae tubus ad 4.5 mm. longus leviter compressus non ampliatus albus, segmentis 22-28 lineatis 2-3 seriatis, ad 8 mm. longis ad 1/4 mm. latis acutis albis vel stramineis; stamina pauca filamentis albis in superiore parte tubi adnatis; stigmata 4 ad 2.5 mm. longa filamentosa alba, stylo ad 0.5 mm. longo; ovarium ad 3 mm. diam. supra leviter conice elevatum disco luteo-viride crenulato; flores nocturni.

Loc.: ignotus.

Typus in Botanische Staatsammlung Munchen Mes. Nr. 210.

Plant forming fairly dense, low cushions by shooting from the root; internodes c. 0.75 mm. long; body obconical, c. 1.5 cm. long, at top c. 1.3 cm., in diameter, upper side circular, occasionally obtuse quadrangular to hexagonal in contour, flat above, falling away fairly sharply towards the side of the bodies, fissure c. 3 mm. long, only slightly depressed, fissure edge not thickened, lip like, or only slightly so, fissure not hairy (Type 9-10 of Type Schedule according to Tischer); surface smooth, occasionally slightly humped; basic colour light grey green, upper side densely marked with mostly very small dark green dots (hence the name *parvipunctum*—marked with small dots), which here and there are arranged in short rows, the dotting not encroaching upon the sides; flower nocturnal, scented; ovary enclosed or looking out of the tube; calyce tube c. 2.5 mm. long, c. 2.5 mm. in diameter, above the ovary somewhat constricted, whitish green; with 4 tips c. 2.5 mm. long, succulent, pointed to obtuse pointed, with brownish tint; corolla tube c. 4.5 mm. long, somewhat depressed, white, not expanded towards above, with 22-28 segments, arranged in 2-3 rows, linear c. 8 mm. long, c. 1/4 mm. wide, pointed, white to light straw colour, inner ones occasionally shorter; stamens few, filaments attached from the middle of the tube, white; 4 stigmas, c. 2.5 mm. long, filament like, white, on pedicel 0.5 mm. long; ovary c. 3 mm. in diameter, above flat conical, disc somewhat erect, narrow, yellowish green.

The exact habitat is not known, neither the collector. The type plant illustrated was sent to me before the second World War from South Africa as a wild plant. My notes about it have, unfortunately, been lost during the war. The illustration clearly reproduces the characteristics of the new species. Particularly typical is the very flat, occasionally very slightly humped upper side which is sharply marked off towards the side, whereas on the remaining species of the series *Truncatella* Schwant, the edge of the upper side is more rounded. The very small dotting, which has given rise to the name chosen for this species, can also be recognised clearly on the illustration. No similar marking is known to me from any of the other species of the *Truncatella*. *C. multipunctatum* Tisch., which is also densely dotted on top, has a longer, more pear-shaped form with a deeper fissure, with small pits at the ends of the fissures, and markedly rounded transition towards the sides of the bodies. The flower distinguishes itself from the most closely related species particularly by the short calyx and corolla tubes and the smaller number of very narrow corolla segments.

In cultivation, *C. parvipunctum* causes no special difficulties. It sprouts very freely and grows to very considerable cushions. Cuttings root easily. In contrast to this, *C. multipunctatum*, which otherwise is closely related, belongs to the species of *Conophytum* which are the most difficult to cultivate.

LISTS RECEIVED

J. Zehnder, Kaktimex, Turgi AG, Switzerland: four paged mimeographed list of cacti plants.

Just before printing this issue and after the make-up was complete, Dr. G. Schwantes' "Flowering Stones and Mid-day Flowers" (Ernest Benn Ltd.) was received, also Mr. C. Marsden's second book in his Cacticulture Series, "Mammillaria" (Clever Hume). Reviews will appear in the January Journal.

The index for 1957 will appear with the January, 1958 issue.

SHOW RESULTS, 4th and 5th June, 1957

Class 1. *Three Echinocactanae.*

1st S. Reeds 2nd P. V. Collings 3rd R. H. West.

Class 2. *Three Coryphanthanae.*

1st S. Reeds 2nd R. H. West 3rd G. L. R. Hedges Highly commended P. V. Collings

Class 3. *Three Coryphanthanae* (for members who have not previously won a 1st in any class).

1st J. S. Ausden 2nd G. Gorrod 3rd Miss M. Hancock Highly commended Mrs. G. Watt

Class 4. *Three Cereeanae and/or Echinocereeanae.*

1st R. H. West 2nd P. V. Collings 3rd G. Gorrod

Class 5. *Three Notocacti.*

1st R. H. West 2nd J. S. Ausden 3rd G. Gorrod Highly commended Miss M. Hancock

Class 6. *Three Cacti* (any genera).

1st S. Reeds 2nd R. H. West 3rd G. L. R. Hedges

Class 7. *Three Cacti* (for members who have not previously won a 1st in any class).

1st J. S. Ausden 2nd Miss M. Hancock 3rd G. Gorrod Highly commended Mrs. G. Watt

Class 8. *One Specimen Cactus.*

1st P. V. Collings 2nd S. Reeds 3rd K. H. Walden Highly commended Miss D. E. Cutler

Class 9. *One Specimen Succulent* (other than Cacti).

1st S. Reeds 2nd Miss M. Halford 3rd W. T. N. Towler

Class 10. *Cacti raised from seed by Exhibitor* (sown on or after 1st January, 1955).

1st D. H. M. Brooks 2nd R. P. Pohlmann 3rd G. L. R. Hedges

Class 11. *Miniature garden of Cacti or Succulent plants.*

1st B. C. Marshall 2nd Miss M. Pilcher 3rd G. L. R. Hedges Highly commended S. Reeds

Class 12. *Three Stemless Mesembryanthemums.*

1st J. P. Measures 2nd P. V. Collings 3rd R. H. West Highly commended K. H. Walden

Class 13. *Three Agaves, Aloes, Gasterias and/or Haworthias.*

1st S. Reeds 2nd J. S. Ausden 3rd P. J. Measures

Class 14. *Three Euphorbias.*

1st P. J. Measures 2nd S. Reeds 3rd K. H. Walden

Class 15. *Three Succulents other than Cacti.*

1st K. H. Walden 2nd Mrs. F. Pooley

Class 16. *Three Succulents other than Cacti* (for members who have not previously won a 1st in any class).

1st Mrs. M. Halford 2nd R. H. Shepherd 3rd J. S. Ausden Highly commended J. Fletcher

Class 17. *Six South African Succulents in pots not larger than 3½" inside diameter.*

1st P. J. Measures 2nd K. H. Walden 3rd S. Reeds Highly commended J. S. Ausden

Class 18. *Group of Cacti and/or Succulents to cover table space not larger than 3 ft. x 3 ft.*

1st G. Gorrod 2nd J. Fletcher

Class 19. *Three Cacti and/or Succulents* (for Juniors under 18 years).

1st R. H. Melville 2nd G. Gorrod 3rd M. G. R. Reed

Class 20. *Group of new and/or unusual plants.*

1st Mrs. M. Stillwell

Amateur Gardening Bronze Medal—Mrs. M. Stillwell for group of new and/or unusual plants.

Amateur Gardening Award of Merit Certificate—G. Gorrod for Group of Cacti and/or Succulents.

The North London Branch of the Society gained a gold medal for their exhibit at the Southgate & District Horticultural Society's 26th Annual Show at Broomfield Park on Saturday, 31st June. This news came just too late to be inserted in our July Journal.

Dr. Tischer wishes a notice put in the Journal that the illustrations in the January Journal of *Conophytum glabrum* is 3x natural size and *Conophytum impressum* 15x natural size.

SHOW RESULTS, 27th and 28th August, 1957

Class 1. *Three Echinactanae.*

1st S. Reeds 2nd R. H. West 3rd P. V. Collings Highly commended G. L. Ibbotson

Class 2. *Three Coryphanthanae.*

1st S. Reeds 2nd R. H. West 3rd G. L. Ibbotson Highly commended P. V. Collings

Class 3. *Three Cereeanae and/or Echinocereeanae.*

1st S. Reeds 2nd R. H. West 3rd J. S. Ausden

Class 4. *Three Gymnocalyciums.*

1st S. Reeds 2nd R. H. West

Class 5. *One Specimen Succulent.*

1st P. J. Measures 2nd S. Reeds 3rd Mrs. M. Halford

Class 6. *Three Faucarias and/or Stomatiums.*

1st J. S. Ausden 2nd K. H. Walden 3rd Mrs. M. Halford

Class 7. *Three Euphorbias.*

1st P. J. Measures 2nd S. Reeds 3rd P. V. Collings

Class 8. *Three Agaves, Aloes, Gasterias and/or Haworthias.*

1st P. J. Measures 2nd S. Reeds 3rd K. H. Walden Highly commended J. S. Ausden

Class 9. *Three Echeverias and/or Cotyledons.*

1st P. V. Collings 2nd K. H. Walden 3rd Mrs. M. Halford

Class 10. *Three Stemless Mesembryanthemums.*

1st P. J. Measures 2nd R. H. West 3rd K. H. Walden.

Class 11. *Three Mesembryanthemums (for members who have not previously won a 1st in any class).*

1st Mrs. W. A. Reed

Class 12. *Three Succulents other than Cacti.*

1st P. J. Measures 2nd K. H. Walden 3rd S. Reeds Highly commended R. H. West

Class 13. *Three Succulents other than Cacti (for members who have not previously won a 1st).*

1st W. T. N. Towler 2nd Mrs. W. A. Reed 3rd W. R. Farwell

Class 14. *Three Stapeliads.*

1st P. J. Measures 2nd P. V. Collings 3rd J. S. Ausden

Class 15. *Succulents other than Cacti raised from seed sown by Exhibitor, sown on or after 1st January, 1955.*

No entries

Class 16. *Bowl of Succulents (excluding Cacti) not larger than 12 ins. x 12 ins.*

1st W. Farwell 2nd S. Reeds 3rd K. H. Walden

Class 17. *Six South African Succulents in pots not larger than 3½ ins. inside diameter.*

1st K. H. Walden 2nd P. J. Measures 3rd S. Reeds Highly commended J. S. Ausden

Class 18. *Group of Cacti and/or Succulents to cover space not larger than 3 ft. x 3 ft.*

1st G. Gorrod 2nd W. R. Farwell 3rd D. H. M. Brooks

Class 19. *Three Cacti and/or Succulents (for Juniors under 18 years).*

1st R. H. Melville 2nd G. Gorrod 3rd R. Penfold

Class 20. *Group of new and/or unusual plants.*

1st Mrs. M. Stillwell

Amateur Gardening Silver Bronze Medal—Mrs. M. Stillwell for Group of new and/or unusual plants.

Amateur Gardening Diploma—G. Gorrod for Group of Cacti and/or Succulents.

1957

Trophies awarded for Both Shows as follows :—

Sir William Lawrence Cup for Cacti	...	...	...	...	...	S. Reeds.
Evelyn Theobald Cup for Succulents	...	...	...	...	...	P. J. Measures.
R. S. Farden Memorial Bowl for Groups	...	...	...	...	...	G. Gorrod.
Mrs. E. B. Pryke Howard Cup for six South African Succulents	...	...	...	...	...	} K. H. Walden. P. J. Measures.
Mrs. J. A. Luty Wells Cup for three Cacti	...	...	...	...	...
S. J. Pullen Cup for Miniature Garden	...	...	...	...	...	S. Reeds.
W. Denton Memorial Medal for three stemless Mesembryanthemums	...	...	...	...	...	B. C. Marshall.
Challenge Shield for Juniors	...	...	...	...	...	P. J. Measures.
P. V. Collings Cup for Euphorbias	...	...	...	...	...	R. H. Melville.
Mrs. A. Hedges Cup for Succulents raised from seed	...	...	...	...	...	P. J. Measures.
						Not awarded.

All awards will be made at the next Annual General Meeting.

REPORTS OF MEETINGS

16th July, 1957. Pests : P. V. Collings.

He said that he considered that he had experienced most of the pests which were likely to attack succulents and he had tried various methods of defeating their activities. For Mealy Bug, Root Mealy and Scale he had found nothing better than treatment with a solution of 40 parts of methylated spirit to one part of nicotine. This would have to be made up by a chemist and it was likely that the Poisons Register would need to be signed.

Mealy Bug : This pest, which is only too well known to most succulent growers, is covered with a white mealy wax and is about one-sixth of an inch in length. It may lay several hundreds of eggs and these appear as a white woolly mass, usually in the areoles and growing points of cacti and in the joints of other succulents, but the bugs may be observed quite readily as they move about. The essential point in attacking this pest is in breaking down the waxy meal to get at the body of the insect. To do this methylated spirit—or surgical spirit—is essential. The nicotine does the rest.

Root Mealy : If a plant looks unhealthily yellowish, or does not appear to be growing, suspect root mealy or the soil. Whatever the time of the year de-pot and inspect. If the plant is pot bound repotting is probably the answer. In any case inspect the roots. Root mealy will be present if you observe little white mites, more elongated than mealy bug and of a different shape, or if the roots or part of the soil adhering to them has a waxy white appearance. This insect does not nest like the mealy bug.

Scale : In appearance these are like small barnacles and of a putty colour. This is a protective casing under which the insect lives and breeds. The offspring emerge and spread and grow into colonies. If there are only one or two they can be squashed with a match. Scale does not appear to be directly harmful until it covers large areas of a plant.

Treatment : All these conditions should be treated with the nicotine/methylated spirit solution using a spray of the calibre of a "Flit" gun. The treated plant should then be left for a few minutes. It is important that this operation should not be carried out in sunlight because of the scorching which is likely to result. Then using a really powerful syringe, wash off the solution with warm water. It is essential that considerable force be used for this stage. If the plant is still in its pot the soil should be protected, either by turning the pot on one side or by covering, to prevent the pests or eggs being taken into the soil. This washing also removes the solution which would otherwise interfere with the breathing of the plant.

Red Spider : This is really a tiny mite which can be observed only through a good magnifying glass. It is not truly a spider neither should it be confused with the red spider-like insect which can readily be seen running around almost anywhere during dry weather. This latter is quite harmless. The pest red spider has done its damage before it can be attacked and this damage is likely to be permanent. In appearance the plant has a rusty look. Do not use the nicotine/methylated spirit solution. De-pot and apply water under considerable pressure from a hose or tap. Dry weather conditions favour the operations of this pest. Dampness will prevent infection.

Ants : These do no great harm but may be considered a nuisance. During many of their operations they remove soil from pots. The only action needed is to repot, dumping the ants in a convenient spot. Ants farm and milk certain aphides, and also mealy bug, and to this end transport them to pens. This may lead to mealy bug being moved about in your collection. If you have an infestation of ants there are many ways of destroying them. Mr. Shurly suggested that the movements of ants up and down a plant may give valuable clues as to the whereabouts of mealy bug.

Earwigs : In small numbers these probably cause little harm. Vigilance and a pair of tweezers will usually do all that is necessary.

Wood Lice : These are difficult to eradicate or prevent. A few in a seed pan can cause much damage. Again vigilance seems to be the best answer.

Cutter Bees : These are not directly harmful but their operations are extremely interesting. In building their delicate leafy cylinders they may select the lower half of one of your pots and thus cause the dislodgement of part of the soil. The grubs when hatched do not eat the plants, but their movement does filter out more soil.

Black Fly : Mr. Collings said that he had had some infestation on his *Bryophyllums*. He could suggest nothing better than removing them with a camel hair brush. Not in the greenhouse, of course.

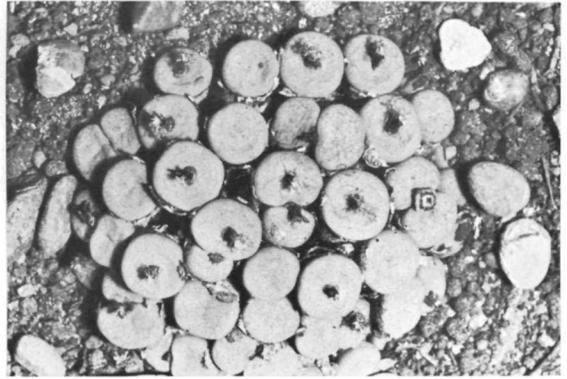
Skiara (?) Fly : This insect can be observed running about over the surface of the soil. This is not a regular pest to succulents but can be acquired through damp peat. The larvae do the damage, but dry conditions will defeat it. Check where the flies are operating from and repot the plant. In reply to a query on a major infestation Mr. Collings suggested the use of a fumigant such as Auto Shreds, under controlled conditions.

Continued on page 88



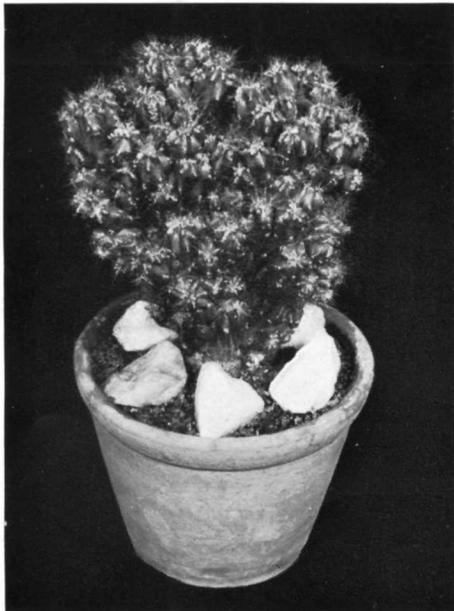
Conophytum extractum, natural size.

Prof. Dr. Rauh



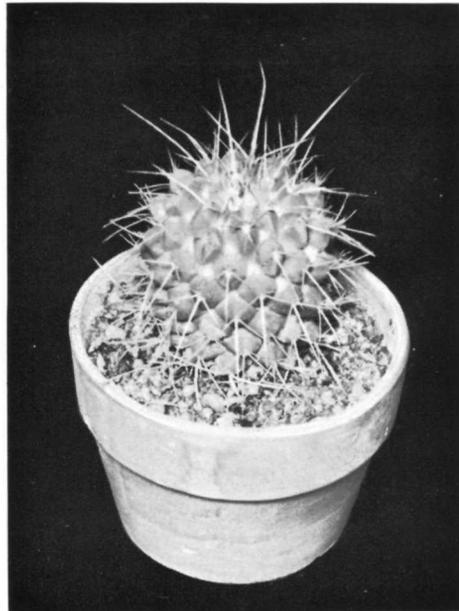
Conophytum parvipunctum, natural size

Prof. Dr. Rauh



Cereus pitahaya monstrosus

B. C. Marshall

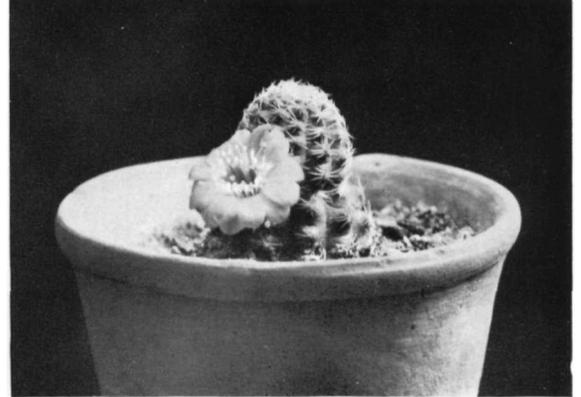


Mammillaria compressa

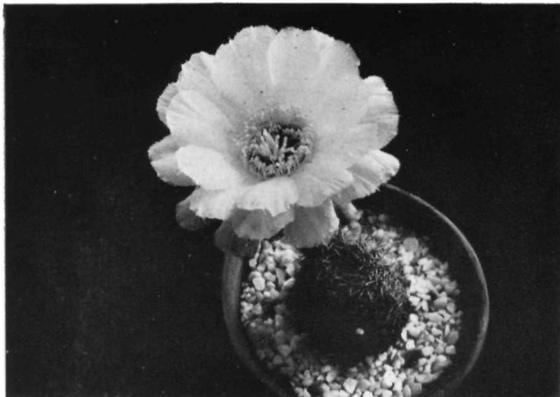
B. C. Marshall



Parodia aureispina



Lobivia neohaageana



Lobivia famatimensis albiflora

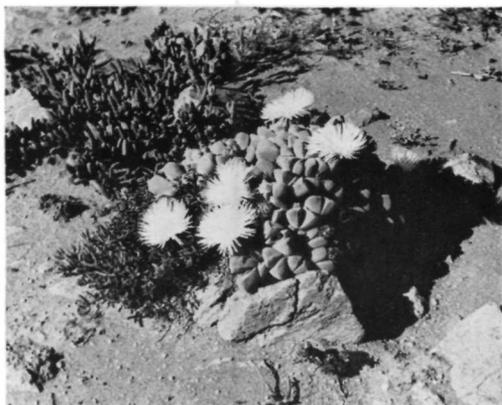


Pelecyphora aselliformis

Four photos. by W. Beeson.



Cheiridopsis candissima

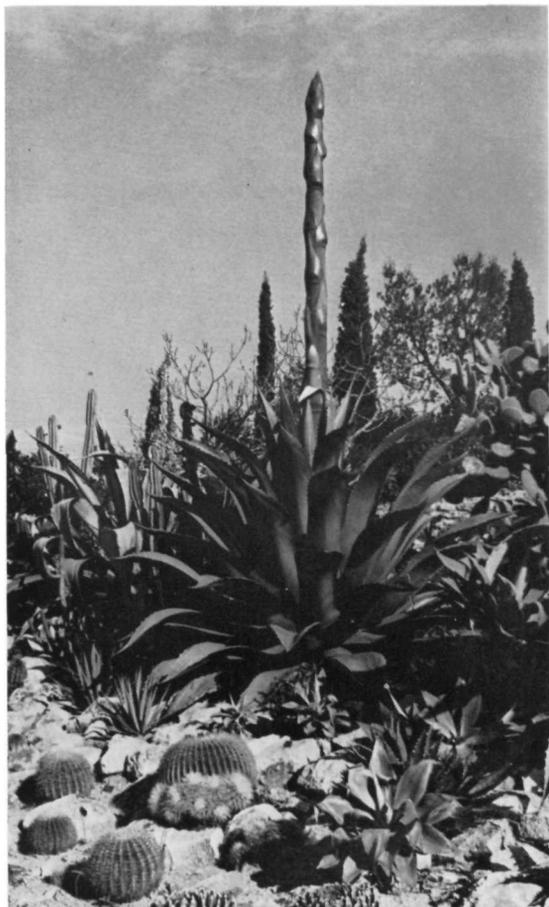


Cheiridopsis crassa



Aloe melanacantha

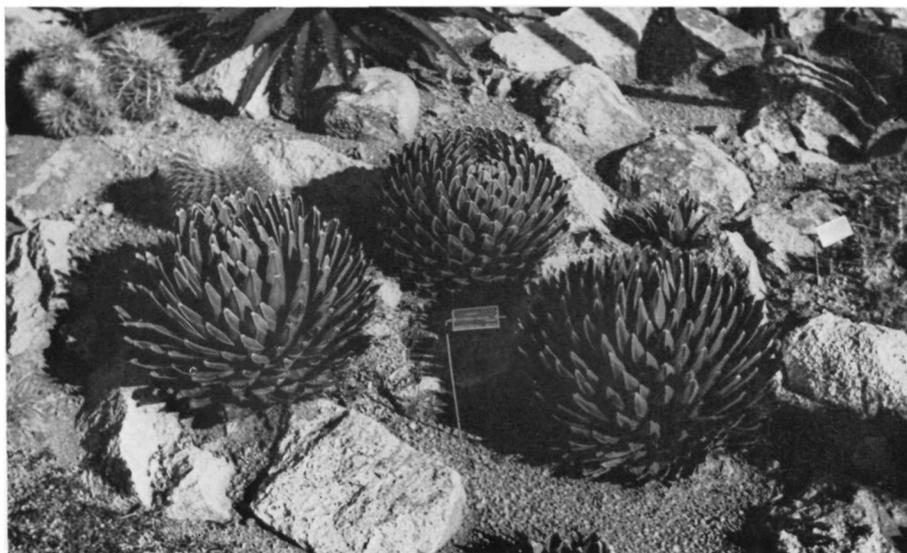
Photos. by Hy. Hall.



Agave ferox



Agave cernua



Agave victoriae reginae

Agaves at Pinya de Rosa, Blanes, Costa Brava, Spain.

SUCCULENT PLANTS ON THE ITALIAN RIVIERA

By C. G. DEWIN

The warm coastline between Savona and the French frontier has long been a great favourite with British visitors; it offers fine swimming, plenty of sun, and lovely views of the Mediterranean. This narrow strip between the Ligurian Alps and the sea is known as the Riviera of Flowers with good cause and among the flowers are to be found many succulent plants which are perhaps overshadowed by the elegant date palm, brilliant Bougainvillea, and handsome orange tree.

The greatest concentration of our plants is to be found around Bordighera where the central park, built on a massive rock outcrop, is covered with *Opuntia*, *Agave*, and *Aloe*. The *Agave americana* has been naturalised in this region, both the ordinary and variegated kinds grow to giant size and their twenty-foot flowering stems are a common sight along the Via Aurelia on the road to Nice. *Opuntias* of various kinds are also common, they flower well and are covered with tunas; many of these plants reach eight or ten feet in height and most of them develop woody or corky bases which in some cases eventually become substantial trunks.

There are several cactus nurseries in Bordighera and we were shown over one of these which had a most beautiful collection of specimen *Cereus*; huge *Espostoa*, *Cephalocereus* and *Cleistocactus* were growing in the open where they were evidently sheltered by sheeting in winter; these plants were the largest I have ever seen and, much more remarkable, were of a snowy whiteness right down to soil level, a tribute to the clear air and, of course, to the absence of fires with the consequent air pollution. Cultivation was mainly in frames which were shaded by mats of split reed and the crop was planted in a compost of the local sandy soil enriched by peat and perhaps manure, this treatment producing very rapid growth and it must be admitted handsome plants. Prices were reasonable, small seedlings selling for as little as 6d. each at the nursery, while a two-inch *Echinocactus grusonii* cost only 1/1.

A surprising feature of this visit was the sight of a number of imported plants on the staging of one of the greenhouses; they were fine *Astrophytum*, *Ferocactus* and *Coryphantha*, many of them a foot or more in diameter; these were without roots just as they had been chopped out of the ground, but were resting on sheets of corrugated iron, presumably to induce the formation of new roots. Some of these were in flower although it must have been many weeks since they were growing naturally. Our knowledge of Italian was limited, but we understood that these Mexican imports were to be used as seed growers.

This nursery did not seem to be interested in export but catered for the home market which seems to be healthy, even the poorest home displaying potted plants on the balcony or verandah, most of them Geraniums or Oleanders, but usually there are a few *Cereus*, *Echinopsis* or *Epiphyllums*. It can be observed that these are quick growing species and the average Italian buyer appears to prefer these as he gets a fair sized plant for his liras; as a result of this the stock at nurseries did not contain as many different species as may be seen here, in fact very few South American globular cacti were seen at all.

There were other interesting nurseries at Bordighera; unfortunately we arrived at midday and the truth of the saying that "mad dogs and Englishmen go out in the midday sun," was proved. All the houses were shuttered and silent and the only occupant of one nursery was a huge dog that rushed to the padlocked gate in its endeavour to get at us. We had tantalising glimpses of vast rows of *Cleistocactus straussii* and huge *Gasteria* growing in the usual reed-shaded frames through the hedge so we had to leave this quiet backwater behind the town to an undisturbed siesta.

Much has been written of the Jardin Exotique at Monte Carlo, but our own experiences may be of interest. Our visit was short and enquiry was made of an immaculate gendarme at the Casino Gardens who informed us that the garden was situated some three kilometres up the hill. He was amazed that we had no car and proposed to walk, which we did without any ill effects. The Jardin Exotique is built on a series of terraces up the cliff face looking towards the sea and is really most spectacular. Most of the largest plants are some 50 years old, so we were told, and have reached a great size, one group of *Cereus* contains a number of plants quite twenty feet tall while near their bases can be seen *Echinocactus grusonii* as large as forty-gallon oil drums, both kinds flowering well. The whole garden is densely planted and looks beautiful in the dazzling light with contrasting blue black shadows. Lovely glimpses of the blue sea, and the white palace on the headland opposite, can be seen through gaps in the flowering *Opuntias*, while purple Bougainvillea makes a delightful colour contrast.

Endeavour has been made in these few notes to avoid making a list of plants seen; this was, however, quite considerable, many species being naturalised in the region. I am sure anyone contemplating a holiday here will be well pleased. Most of us are like our plants, sun lovers, and a pleasant holiday atmosphere is created in the rather exotic conditions along this coast. We will long remember drinking the local wine at night under the palms and watching the fireflies winking in and out among the cafe tables.

MEDLEY

CONOPHYTUM CUPREIFLORUM Tisch.

In the first description of this species in *The Cactus and Succulent Journal of Gt. Britain*, Vol. 17, 1955, No. 4, page 79, it had not been possible to state the habitat and the discoverer. Meanwhile Mr. H. Herre, Stellenbosch, has informed me that *C. cupreiflorum* was found by Mr. Van Heerde, 1949, in Bushmanland. The exact habitat, though, is not known. The species is being cultivated in Stellenbosch under the No. 12242.

CACTUS MAKES 'EM STOP AND STARE . . . AND BUY !

(From the Peterborough Evening Telegraph)

A near-nude girl having a bubble-bath in a shop window never fails to attract passers-by. A scantily-clad girl asleep on "so-and-so's wonder mattress" can also cause a traffic jam. But Mr. Walter Pywell, manager of Williamson's Furnishing Co., Cowgate, had a more novel attraction for prospective customers. It's name? *Chamaecereus silvestrii* !

And to explain—that is not the name of a luscious beauty from Greece—nor is it any relation to Gina Lollobrigida or Cleopatra, as the name might imply.

Its age is only about 15, and its vital statistics are hard to calculate.

How does a cactus attract people? This fine specimen is round, about 24 inches in diameter, and is covered with wonderful orange blooms.

And it has been proved that about half of the people—young and old—walking by the shop, stop to admire it, because it is such an unusual sight.

Mr. Pywell explained that the cactus is being loaned by Mr. Fred Fordham, of 25 West Parade, Peterborough, who has two or three other similar plants.

Footnote : Needless to say, this type of attraction draws more women than men !

"It has always been our custom, having wide window sills facing south and west in our living room, to put plants which are in bloom there for our better enjoyment.

"Late in July (1957), having two mature plants of *Echinopsis* in very heavy bud, they were added to those already displayed. In due course one, *E. turbinata*, bloomed and its flower, five inches across on its very long tube was a focal point on the sill. Only the week before another *Echinopsis* had developed a bad split over two inches long, so our concern can be imagined when on coming into the room for lunch *E. turbinata* appeared, from the far end of the room, to have developed some large growth. In puzzled surprise we recognised the "growth." It was a blue tit. It was poised on the crown of the plant in the action of picking off a grub (in fact a mealy bug) about half-way down the globular body of the plant. Its wings were half opened to preserve its balance. I moved to pick it up. There was no fluttering, no disturbed feathers on the many spines. The tit was dead. It was held there firmly by one spine, impaled, straight through the heart." A. W. HEATHCOTE.

I have received my copy of G. Gilbert Green's latest book "Cacti for everyone." Mr. Green's writings are well known to readers of our Journal and I am sure this volume of 108 pages will be welcome by all. It is fully illustrated by 24 plates of plants with a further 17 plates made up of composite illustrations of plants. There is a coloured frontispiece of *Strombocactus disciformis*. There are chapters on Cacti and Succulents, Cacti in the Home, Table Gardens and Bowl Culture, The Small Greenhouse Collection, The Care and Cultivation of Cacti, The Kinds of Cacti and The Succulents and their Kinds. Also Appendices of Generic Names, Some Common Names, Index of Names, General Index. Under each chapter Mr. Green gives selections of plants suitable for cultivation under the heading of the chapter. Under The Kinds of Cacti is given a short description of the different Families in Cactaceae. The same descriptions are given in The Succulents and Their Kinds. A very useful book for the library.

REPORTS OF MEETINGS—continued from page 82

New Greenhouse : In reply to a question on the construction of a new greenhouse, Mr. Collings said that a concreted floor was a great deterrent to pests from outside and staging a marble slab made cleanliness much easier. Another member suggested asbestos sheeting as an alternative to the latter.

Bright Orange Patches on plants : In addition to Mr. Collings' reply that this was probably a fungus Mr. Shurly said that this was probably so if the patches were merely on the skin. If they penetrated deep into the plant it was Orange Spot Disease and the plant should be burned immediately.

General : Mr. Collings warned his hearers against the danger of indiscriminate use of proprietary sprays which, although killing the pests, may also damage the plants.

PIERRE-JOSEPH REDOUTÉ—
 “RAPHAEL OF THE SUCCULENTS”—*cont.*

By GORDON D. ROWLEY

INDEX TO PLATES—*contd.*

CEREUS peruvianus	58	DUVALIA coespitosa	148
repandus	161	hirtella	148
CLAYTONIA grandiflora	131	radiata hirtella	148
portulacaria	132	EPIPHYLLUM phyllanthus	145
virginica	131	EREPSIA mutabilis	60
CONICOSIA fusiformis	? 72	EUPHORBIA anacantha	144
COTYLEDON decussata	168	bergeri	150
grandiflora	86	canariensis	140, 140*
hemisphaerica	87	caput-medusae	150
hispanica	122	infausta	139
hispidula	69	lophogona	124
laciniata	100	meloformis	139
mucizonia	69	neriifolia	46
orbiculata	76	officinatum	77
pistorinia	122	stellata	151
spuria	168	tridentata	144
tuberculosa	86	uncinata	151
ungulata	168	FAUCARIA felina	152
CRASSULA acutifolia	2	FURCRAEA cubensis inermis	126, 126*
argentea	79	gigantea	126, 126*
ciliata	7	GASTERIA angustifolia	68, 68*
coccinea	1	disticha	68
cordata	121	pulchra	91
falcata	103	sulcata	68
glomerata	67	verrucosa	63
lactea	37	GERANIUM tetragonum	96
muscosa	73	GLOTTIPHYLLUM longum	71
nudicaulis	133	HARRISIA gracilis	161
obvallata	61	HAWORTHIA arachnoides	50
orbicularis	43	herbacea	51
perfoliata	13	margaritifera	57
perfossa	25	margaritifera polyphylla	57
portulacea	79	retusa	45
rubens	55	rigida	62
scabra brevifolia	182	viscosa	16
scabra minor	182	HUERNIA reticulata	167
spatulata	49	KALANCHOE aegyptiaca	64
tetragona	19	crenata	64, 65, 174
vaillantii	74	laciniata	64, 65, 100
CRYOPHYTUM crystallinum	128	spathulata	65
nodiflorum	88	KLEINIA articulata	18
CYLINDROPHYLLUM calamiforme	5	ficoides	90
DELOSPERMA echinatum	24	neriifolia	12
DISPHYMA australe	171	repens	42
crassifolia	177	LAMPRANTHUS aureus	11
DROSANTHEMUM erigeriflorum	164	coccineus	83
hispidum	66	glaucus	146
hispidifolium	170	scaber	165
micans	158	spectabilis	153
nitidum	129	tenuifolius	82
pallens	130	violaceus	84

LOMATOPHYLLUM purpureum	31	MESEMBRYANTHEMUM (contd.)	
MACHAIROPHYLLUM albidum	169	tortuosum	94
MACROCAULON candollei	135	tuberculatum	170
MAMMILLARIA simplex	111	tuberosum	78
MELOCACTUS communis	112	uncinatum	54
MESEMBRYANTHEMUM acinaciforme	89	verruculatum	36
albidum	169	violaceum	84
apetalum	181	viridiflorum	159
aureum	11	MESTOKLEMA tuberosum	? 78*
barbatum	28	MICROPTERUM cuneifolium	134
bellidiflorum	41	pinnatifidum	142
brachiatum	129	MONANTHES polyphylla	157
calamiforme	5	MUCIZONIA hispida	69
candollei	135	NEOMAMMILLARIA mammillaris	111
caninum	95	OPUNTIA humifusa	138
coccineum	83	opuntia	138
cordifolium	102	stricta	138**
corniculatum	108	tomentosa	137
crassifolium	177	tuna	138***
croceum	83	vulgaris	138*
crystallinum	128	OSCULARIA majus	53
cuneifolium	134	OTHONNA cylindrica	48
deltoides	53	PELARGONIUM tetragonum	96
deltoides majus	53	PIARANTHUS decorus	178
dimidiatum	89	PISTORINIA hispanica	122
dolabriforme	6	PORTULACA anacampseros	3
echinatum	24	oleracea	123
echinatum luteum	24	paniculata	173
expansum	47, 94	patens	173
felinum	152	PORTULACARIA afra	132
filamentosum	60	PRENIA pallens	47
geniculiflorum	17	REAUMURIA vermiculata	175
gladiatum	176	RHIPSALIS fasciculata	59
glaucum	146	RHOMBOPHYLLUM dolabriforme	6
helianthoides	135	ROCHEA coccinea	1
hirsutum	29	falcata	103
hispidum	66	RULINGIA patens	173
hispidifolium	170	RUSCHIA uncinata	54
lacerum	176	verruculata	36
lateriflorum	164	SCELETIUM expansum	94
linguiforme	71	SEDUM acre	117
longistylum	147	aizoides	4
micans	158	aizoon	101
milleri	176	album	22
mutabile	60	altissimum	40
noctiflorum	10	anacampseros	33
nodiflorum	88, 181	annuum	119
pinnatifidum	142	atratum	120
pugioniforme	72	dasyphyllum	93
radicans	171	nudum	155
scabrum	165	populifolium	110
spectabile	153	reflexum	115, 116
splendens	35	rhodiola	143
stellatum	29	rosea	143
striatum	130	rubens	55
striatum hispidifolium	170	rupestre	115, 116
striatum pallidum	130	saxatile	119
tenuifolium	82	sediforme	40

SEDUM (contd.)		STAPELIA (contd.)	
sexangulare	118	grandiflora	172
telephium	92	hirsuta	160
telephium purpureum	92	punctata	178
villosum	70	reticulata	167
SELENICEREUS grandiflorus	52	variegata	149
SEMNANTHE lacera	89, 176	variegata planiflora	149
SEMPERVIVUM arachnoideum	106	TALINUM anacampseros	3
arboreum	125	paniculata	173
canariense	141, 141*	patens	173
hirtum	107	TETRAGONIA crystallina	34
lindleyi	156	decumbens	23
monanthos	157	decumbens ovalifolia	23
montanum	105	echinata	113
sediforme	40	herbacea	113
tectorum	104	tetragonoides	114
tortuosum	156	TILLAEA aquatica	74
SENECIO articulatus	18	muscosa	73
ficoides	90	vaillantii	74
kleinia	12	TRIANTHEMA monogyna	109
serpens	42	portulacastrum	109
SESUVIUM portulacastrum	9, 179	TRICHODIADEMA barbatum	28
portulacastrum sessile	9	hirsutum	29
revolutum	179	UMBILICUS pendulinus	162
SPHALMANTHUS viridiflorus	159	rupestris	162
STAPELIA asterias	166	YUCCA aloifolia	20
coespitosa	148	ZYGOPHYLLUM album	154

II. OTHER ILLUSTRATIONS OF SUCCULENTS

The "Plantes Grasses" came as a welcome answer to Haworth's plea that his own monographs of succulents would one day be supplemented by illustrations. In turn these beautiful plates were to act as a source of inspiration to others. One such was the young Prince Salm-Dyck, who was so impressed with them that he became a friend and pupil of Redouté and eventually produced a splendid "Monographia Generum Aloes et Mesembryanthemi" with 352 illustrations, all by his own hand.¹⁸

However, Redouté produced other works beside which even the "Plantes Grasses" was eclipsed in grandeur and opulence. Two reasons contribute to this eclipse. The first is the plants themselves. Succulents do not lend themselves to the flamboyance of display of lilies and roses, and while offering a greater challenge to the artist the result has less immediate and universal an appeal to the public eye. Second, and in part as a result of this, the other books mostly adopted (at least in their de luxe editions) a large page and plate size. Just how great a difference this can make is seen by comparing side by side the succulents figured in both "Les Plantes Grasses" and the large paper edition of "Les Liliacées" (Fig. 5). In every case the plate in the latter work is double the size and has a wealth of minute detail and shading, a superb sweep and splendour that make its counterpart seem mean and pinched by comparison, in spite of the inclusion here of dissections and enlargements to add botanical interest in the smaller book. The eight succulents included in this work are:—

P. -J. REDOUTÉ		Les Liliacées* 1802-16 8 Vols.		
		Text by A. P. De CANDOLLE et alia.		
Vol.	Plate	De Candolle's name	Modern name	Authority
5	[283]	Anthericum alooides (plate)	Bulbine alooides	Bak. in Fl. Cap. VI
		Anthericum aloides (text)	(L.) Willd.	
		(c.f. Pl. Gr. 26)		
	[284]	Anthericum frutescens	Bulbine caulescens	Bak. in Fl. Cap. VI
		(c.f. Pl. Gr. 14)	L.	
		Fig. 5		

* It would be churlish and ungentle to ask what *Agaves* and *Furcraeas* are doing in a book entitled *Liliaceae*.

An artist of Redouté's standing could get away with Bananas and Pondweeds in the Lily family if he wanted to—in fact, he actually does! (Plates 443-4, 206). One glance at this sumptuous production and all such quibbles dissolve like icicles before a furnace.

Vol.	Plate	De Candolle's name	Modern name	Authority
6	328	<i>Agave yuccaeifolia</i>	Agave yuccaeifolia	Berg.
	329		D.C.	
7	[397]	<i>Anthericum annuum</i> (c.f. Pl. Gr. 8)	Bulbine annua (L.) Willd.	Bak. in Fl. Cap. VI
	[401-402]	<i>Yucca aloifolia</i> (c.f. Pl. Gr.20)	Yucca aloifolia L.	Trelease in 13th Ann. Rep. Miss. Bot. Gdn. 1902, 88.
8	[423]	<i>Anthericum longiscapum</i>	Bulbine altissima (Mill.) Fourc.	Bak. in Fl. Cap. VI as <i>B. longiscapa</i> Willd.
	[476]	<i>Furcraea gigantea</i> (non Pl. Gr.126, 126*)	Furcraea gigantea Vent.	J. R. Drummond in 18th Ann. Rep. Miss. Bot. Gdn. 1907, 72.
	[485]	<i>Agave spicata</i> Fig. 6	Agave brachystachys Cav.	Berg.

The same work contains superlative portraits of Bromeliads, Sansevierias and other occasional inhabitants of succulent collections.

Redouté's first published coloured illustration of a succulent seems to be that of *Cacalia articulata* L. (= *Senecio articulatus* (L.) Sch. Bip. ; c.f. Pl. Gr.18), the well-known "Candle Plant." It appears as Plate LXXXIII of L'HERITIER'S "Stirpes Novae aut minus cognitae illustravit," a beautiful flower album of 90 plates published in Paris in 1784-5, of which 54 of the plates are signed by Redouté. The plant is accurately portrayed although a little drawn up by lush cultivation. No other succulents are in this book.

The finest of his cactus studies are two plates in a folio volume by BONPLAND, "Description des Plantes rares cultivées à Malmaison et à Navarre" (Figs. 7-8). This came out in parts between 1812 and 1817, and 54 of its 64 coloured plates are by Redouté. The succulents are :—

Plate	Date	Bonpland's name	Modern name	Authority
3	1812	<i>Cactus speciosus</i> Fig. 7	Nopalxochia phyllanthoides (D.C.) Br. & R.	Br. & R.
36	1814	<i>Cactus ambiguus</i> Fig. 8	Nyctocereus serpentinus (Lag. & Rodr.) Br. & R.	Br. & R.
37	1814	<i>Cotyledon tardiflorum</i>	Cotyledon paniculata L.f.	N. E. Br. MSS.

Another lavish florilegium with 89 of its coloured plates by Redouté is VENTENAT'S "Jardin de la Malmaison" in two volumes folio, 1803-5. Three of these plates are beautiful and lifelike studies of succulents :—

Plate	Date	Ventenat's name	Modern name	Authority
49	1804	<i>Cotyledon crenata</i>	Kalanchoe crenata Haw.	Britten in Fl. Trop. Afr. II
65	1804	<i>Pelargonium radicum</i> (<i>Geranium ciliatum</i>)	Pelargonium radicum Vent.	Harv. in Fl. Cap. I
109	1805	<i>Mesembryanthemum carinatum</i>	Semnanthe lacera (Haw.) N. E. Br.	Sond. in Fl. Cap. II

Probably this does not exhaust the list, which could be greatly extended if monochrome plates were also considered. It is a little odd to have to admit that Redouté's finest published pictures of succulents are not to be found in the one book devoted especially to them at all !

INTERPRETATION

Flowers may be portrayed on a two-dimensional sheet of paper in various ways and to suit various tastes. A botanical drawing may boast little in the way of art, while the opulent canvasses of Van Huysum could scarcely be used to illustrate a flora or monograph. A degree of accuracy, of nature-copying, is inherent in both, but even that can be overdone if too much insisted upon. As early as 1530 Weiditz, who made the woodcuts for Brunfel's Herbal direct from nature, engraved plants that were obviously wilted or had the foliage diseased or nibbled. Few puritans would deny the artist the privilege of making good such flaws, otherwise we could dispense with his services in favour of a photographer. Interpretation, then, or "rubato," is the important point here. A painting or drawing can be made to satisfy both botanist and artist, but often one has to suffer at the expense of the other. Truly great flower painters are few in number, and their published work may be but a small or untypical part of their output, or ruined by coarse engraving and poor colouring. Certainly no estimate of Redouté's stature as a flower painter would be complete without studying the vellums in the Paris Museum and private collections. Here my aim is altogether more modest, and confined to notes on the value of his pictures of succulents as compared with his non-succulents, and with the succulents of other artists.

The more extreme succulent plants, because of their condensed form, simplicity of outline and intensified geometrical patterns, pose special problems in delineation. As anyone can find out who tries to sketch a *Mammillaria*, a steady hand and complete mastery of perspective and parallel lines are needed. The very stiffness and symmetry which is so characteristic a feature and endears them to their admirers can be anathema to an artist accustomed to the informality of a rose or a ranunculus. And so it was, I think, to Redouté, who exercised his genius on proving that the cactus is no less easy to apotheosize than any other flowering plant, and in similar fashion. We can see evidence of this in two ways: his choice of plants, and his treatment of them on paper.

An analysis of the plants grouped together in the "Plantes Grasses" reveals a curious and surprising situation. Only 30 stem succulents are included, mostly toward the end of the work, and the remaining 84% of the plates are of leaf-succulents plus one or two mesophytes. There are several plants like *Aizoon*, *Tetragonia* and *Triantha* on the borderline of succulence and horticulturally uninspiring, but almost a complete absence of the dwarf, highly specialised, xerophytic Ficoideaceae like *Conophytum* and *Argyroderma*, and of globular cacti. By modern standards the Malmaison collection would be considered dull and untypical of succulents as a whole. Now why is this? It could be because the more extreme succulents (which we know from Aiton and Haworth to have been in cultivation then) were not available to Redouté, or were beyond the skill of the Malmaison gardeners to grow. Since some of the plates show drawn and over-lush specimens, there is some support for this. But I think it more probable that Redouté picked just those plants least removed from their mesophytic ancestors as most amenable to what has been called his "feminine" style of presentation. We know that he had first choice of the plants for painting, not the botanist, who was called in afterwards to fit a literary frame to the masterpiece. Where he does undertake stiff, formal subjects like *Euphorbias* and cacti, we can marvel how skilfully he softens the rigidity and starkness with but the least departure from botanical accuracy. A Redouté *Opuntia* is still an *Opuntia*, but it looks fit almost for a lady's corsage. His cacti are beautiful in spite of their spines—not because of them.

In this respect it is instructive to compare his cacti with, for example, the famous steel engravings of George Engelmann's books, which in their own right deserve equal praise. In the Engelmann plates the spines are everything: a quite different type of beauty emerges from their interplay and extraordinary profuseness. If I may be forgiven a musical analogy here, the difference is as great as that of Sibelius interpreted by Beecham and by Serge Koussevitsky: the former links him with the nineteenth century romantics, the latter establishes him firmly among contemporary composers.

In daring to criticise Redouté's approach to succulents I hasten to add how much, in such a controversial subject, depends on personal tastes. A few will turn to Ehret, Jacquin and even the humbler Botanical Magazine and Britton & Rose plates for the truest illustrations of succulents, whereas others—notably those who share his aesthetic approach, or regard succulents merely as the ugly matrix to a beautiful bloom—will continue to enthrone Redouté as exponent supreme.

Redouté's art lives on today as ever, surviving changes of fashion and plant nomenclature. Unhappily for the botanist his books are much in vogue as collectors' pieces, and when fine copies come on the market the bidding can be expected to rise to the four-figure level. Even single plates, once a feature of Paris bookstalls along the banks of the Seine, are no longer cheap or easy to get. However, the books can be consulted in the larger libraries, though not always under ideal lighting conditions. The Ariel Press has recently issued first-class and very inexpensive reprints of some of Redouté's flowers and fruits,²⁴⁻²⁶ and so well reproduced by modern techniques as to invite comparison with the originals. It is to be hoped that public support will be strong enough to encourage them to extend this scheme to the succulents, which have never been re-issued.

SUMMARY

Over 200 published illustrations in colour of succulents by Pierre-Joseph Redouté have been examined and catalogued, together with their sources, dates and modern names. The greater number appeared in the *Plantarum Succulentarum Historia* (Plantes Grasses), usually cited under the authorship of A. P. De Candolle, who wrote nearly all the text. Thirty-one fascicles of six plates each* with text were published over about 32 years. Four additional plates, perhaps for a further but unpublished thirty-second fascicle, are reproduced here for the first time from a copy in the Library of the Royal Botanic Gardens, Kew.

Some aspects of Redouté's interpretation of succulent plants, and of succulent plant illustration in general are discussed.

ACKNOWLEDGMENTS

I want to express sincere thanks to the Director of the Royal Botanic Gardens, Kew, for allowing me use of the Library, and permission to have photographed and reproduce plates from Redouté's books. I am also indebted to Messrs. Wheldon and Wesley for enabling me to examine various copies of the *Plantes Grasses*, including one in original wrappers† which has established beyond doubt the composition of fascicles 1-28, and to Mrs. V. Higgins for reading and commenting on the typescript.

Continued on page 77

We Specialise in
**SUCCULENTS
AND CACTI**

—
Write for Price List
—

Succulenta Nurseries
(Bernard Carp)
"Suvla," Military Rd., Hout Bay,
Cape Province, South Africa

Sixth Edition!

(Over 40,000 sold)

**HOW to GROW CACTI
and SUCCULENTS**

By E. SHURLY, F.L.S., F.C.S.S.
(Editor of the Society's Journal)

A booklet of 42 pages, including 36
illustrations of flowering cacti and
succulents.

An elementary introduction to the
subject intended for beginners.

1/3 per copy; post free 1/5
Wholesale: 10/- per dozen

**Cactus and Succulent Society
of Great Britain**

7 Deacons Hill Road, Elstree, Herts.
Phone: Elstree, 1067

**CACTI
AND SUCCULENTS**

WRITE NOW
FOR INTERESTING NEW

SEED LIST

AND LIST OF SEEDLING
PLANTS AT REASONABLE
PRICES

STANLEY V. SMITH

WYCK HILL, STOW-ON-THE-WOLD
GLOUCESTERSHIRE

Telephone: Stow-on-the-Wold 216

WANTED

**Surplus Small Rooted
Cacti and
Succulent Cuttings**

Any Quantity

**CONISTON GARDEN
ORNAMENTS**

28, Court Lane, Highroad Well,
HALIFAX, YORKS

—
SET OF SIX GAILY PAINTED
PLASTER ORNAMENTS

7/6 Post Free

Church, Watermill, Bridge, Three Cottages

JAPANESE PAGODA, BRIDGE AND
ARCH

Set of three 3/9 Post Free

WORFIELD GARDENS

BRIDGNORTH

Telephone : Worfield 259

SHROPSHIRE

CACTI AND SUCCULENT SPECIALISTS

GOLD MEDALS—

R.H.S. Chelsea

R.H.S. Great Autumn Show

LARGE GOLD MEDALS—

Shrewsbury

Southport

Mullard Perpetual Silver Trophy for an outstanding non-competitive exhibit—Southport, 1955

Latest lists of attractive and rare plants sent on application, price 4d.

We are especially interested in helping Collectors and in giving advice to Beginners.

We can now supply a fine selection of epiphyllums and other jungle-loving epiphytic plants. Open to visitors Monday to midday Saturday. During weekends we are not open unless an appointment has been made previously by post or telephone.

Parties are welcome at our Open Days held annually during one weekend in the summer.

Details sent on application. In 1958—Saturday, June 28th and Sunday, June 29th.

Gates open 2 p.m. to 7 p.m.

TRADE TERMS will be sent on application to bona fide traders or to Secretaries of Cactus Societies.

Chester, 23.6.57. (excerpt).

Enclosed a snapshot of an Epiphyllum Ackermanii. It has had over 20 flower buds, the flowers are very large, measuring $7\frac{1}{4}$ " in diameter. Two years ago it was a sickly plant.

Since I gave my cacti regular doses of Dr. B's Health Salts I was awarded at our Society's show : 1, The Dobson Cup. 2, Diploma of Merit for best Succulent in Show. 3, Two first prizes and one second prize.

I attribute this to these Salts.

signed.

IT IS NOT A FERTILIZER !

PROF. DR. F. BUXBAUM'S

WORLD FAMOUS

CONCENTRATED HEALTH SALTS

for cactus and all succulent plants are a LIFE ELIXIR on which these plants can live ENTIRELY WITHOUT SOIL. They contain ALL the trace elements essential to sustain their life. The proportions are such that, added to the soil of potted plants, they not only rectify shortcomings of the soil, but also condition the soil reaction. This ENCOURAGES STURDY GROWTH AND PROFUSE FLOWERING nearly eliminates re-potting, and increases considerably the general health and resistance of the plants.

Economical in use. Minute quantities are effective.

OVERDOSING is wasteful, yet **HARMLESS**

OBTAINABLE FROM:

ATRA LTD. 3 St. Mary's Mansions London, W.2

Price 3/9 per tin, plus 6d. postage.

Cash with order.

Wattisfield Ware

DECORATED CACTUS POTS



Designed especially for their job—these most attractive, hand decorated cactus pots allow ample porosity—their glazed rims cover only one third of the pot surface.

Saucers are completely glazed on the inside bottom and rim. They may be placed on any surface with complete safety.

Pot sizes from 2in. up to 5in. wide (larger sizes to order).

London Agents:—
Priest Marians & Co. Ltd., 56, St. Mary Axe, London, E.C.3.

Send for illustrated leaflet
giving full range and prices

HENRY WATSONS POTTERIES LTD., WATTISFIELD, SUFFOLK

The Best House in the West

FOR

**CACTI AND
SUCCULENTS**

Gold and Silver Medallists

UPLANDS NURSERY

(GARNETT G. FUGE. F.R.H.S.)

BLACK HORSE LANE

DOWNEND - BRISTOL

Tel. 653675

The most exclusive selection of rare Cacti
and Succulents obtainable.

Inspection invited.

Complete Nursery List available on request
Please send stamp

**WHEN IN LONDON
VISIT THE "DAINTEE"
SUCCULENT NURSERIES**

MY SHOW GREENHOUSE IS UNIQUE AND
CLAIMED TO BE THE ONLY ONE OF ITS
KIND IN THE WORLD.

A LARGE RANGE OF CACTI & SUCCULENTS
FOR SALE. ALSO LITHOPS AND OTHER
MIMICRY PLANTS (*I AM THE LARGEST
GROWER OF LITHOPS IN THIS COUNTRY.*)

For Lithops List send stamp.

VISITORS ARE WELCOME, BUT DO LET ME
KNOW THE DAY AND TIME YOU WILL
BE COMING.

ERNEST H. HEPWORTH

F.R.H.S.

'London's Cacti and Succulent Specialist'

**"DAINTEE," 142 ELLISON RD.,
STREATHAM . LONDON,
S.W.16** Phone Pollards 4563

F. W. LEALAN & SON

NEW NURSERIES
SHIPLEY, PATTINGHAM
Nr. WOLVERHAMPTON

Phone : Pattingham 209

If you wish to see a good collection of
Cacti and Succulents visit our Nurseries,
you will not be disappointed.

Large or small parties welcome

CACTI AND SUCCULENT PLANTS

Strong, Healthy Plants at Reasonable Prices

Send Stamp for 1957 List

Nurseries : On the main
Wolverhampton—Bridgnorth Road.

6 miles from Wolverhampton

7 miles from Bridgnorth

A. E. GREEN

Normandale Nurseries
Sheffield, 6

Phone 44703

Gold Medal Cacti and Succulents

Members of the BRITISH SUCCULENT
GROWERS ASSOCIATION

See our
NEW PICTORIAL LISTS
of RARE PLANTS and
SPECIAL SEED OFFERS
6d. Post Free

We invite you to visit our Nurseries

Second Edition of
"CACTI AND SUCCULENTS"
By G. G. GREEN
17 Colour Plates 200 Illustrations
From any booksellers. 36/-

IMPORT

EXPORT

GOLD MEDAL

CACTI & SUCCULENTS

CHOICE SPECIMENS FOR THE COLLECTOR
ALWAYS AVAILABLE

BEAUTIFUL COLLECTIONS FOR THE
BEGINNER AT REASONABLE PRICES

Satisfaction assured at

"BLACKBURNS"

Catalogue—Price 4d.

T. N. BLACKBURN
CACTI SPECIALIST & GROWER
WOODPLUMPTON, nr. Preston
Telephone: Catforth 255

WHOLESALE

RETAIL

ANNOUNCING A NEW BOOK

By Post - - - 31/-

STAPELIADS in CULTIVATION

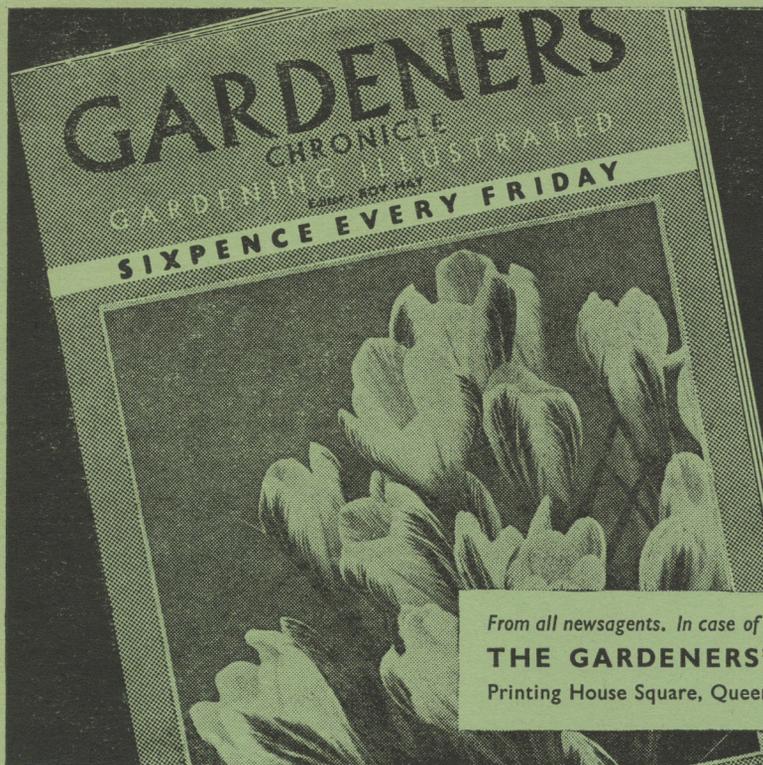
by EDGAR LAMB

This new book contains well over
100 pages of first class photography by
the author, including some lavish
colour pages.

JUST the information you require for successful
culture, etc. etc., will be found in this newest
publication.

W. T. NEALE & Co. Ltd.
16 FRANKLIN ROAD, WORTHING,
(ENGLAND).

We have over 20 years' specialist experience
to our credit).



Britain's Finest Gardening Weekly

You will enjoy gardening with GARDENERS CHRONICLE & GARDENING ILLUSTRATED—the finest gardening aid you can buy. Packed with new ideas and expert information, with special pages for women, students and specialists.

Reading it is like gardening with a friendly expert at your elbow. For only 6d. a week, Britain's leading horticultural team can be at your service. Try it to-day.

From all newsagents. In case of difficulty please write to:

THE GARDENERS' CHRONICLE LIMITED

Printing House Square, Queen Victoria Street, London, E.C.4.

A. S. JONES

CACTI and SUCCULENTS

WELL GROWN STOCK
IN GOOD VARIETY

ASK FOR SELECTED LIST
REASONABLE PRICES
VISITORS WELCOME
SEND ME YOUR 'WANTS LIST'

'WESTGARTH,' BAILES LANE,
NORMANDY, Nr. GUILDFORD

Tel. : Normandy 3289

WHELDON & WESLEY LTD.

Buy and Sell

BOOKS

on all branches of

NATURAL HISTORY

especially

Botany & Horticulture

in all languages

LYTTON LODGE,
CODICOTE, Nr. HITCHIN,
HERTS.

Telephone : Codicote 370

Telegrams : Wheldwesly, Codicote, Hitchin