

JCA

Trip No 2

Morocco

4th July 1962 - 20th August 1962

JCA074 - JCA301

ATLAS MOUNTAIN EXPEDITION

During July and August 1962, an expedition will spend six weeks in the mountains of the Middle and High Atlas Ranges of Central Morocco, the main object being the collection of seeds of the many species of alpine and other plants native to this region. Most of these species are no longer in general cultivation and it is hoped, as well as effecting the re-introduction of many such plants, to introduce several species new to horticulture.

The expedition members will be three in number and all plant-collection will be supervised by James C. Archibald, recently returned from a collecting trip in North-western Corsica, during which he was accompanied by the present expedition photographer Janette Stephen. The third member, Barrie Gilliatt, is in charge of all transportation and organisation, both matters in which he has some considerable experience. All advance organisation is being handled by Miss Margaret Richardson of the British Consulate, Rabat, directly with the Moroccan authorities.

The route to be taken has been arranged to include as wide a selection of habitats as is possible throughout the 200 mile long range. From Ifrane (5,143 ft.) and other bases, a short time will be spent during July collecting in and above the cedar forests of the Middle Atlas to an altitude of over 6,500 ft. This area,

sub-alpine and snow-covered throughout the winter, should yield some interesting seeds of bulbous and herbaceous species. The remainder of the expedition's time will be spent in the Grand Atlas collecting primarily seed of the higher-growing alpine species, the main bases being Midelt, Azilal, Demnat, Asni and Askaoun for collection in the Djebel Ayachi (12,260 ft.) and the Djebel Toubkal (13,751 ft.) massifs. The High Atlas will be crossed three times by all three passes: Tizi-n-Talrhemt (6,440 ft.), Tizi-n-Test (7,220 ft.) and the Tizi-n-Tichka (8,256 ft.), enabling expeditions to be made on foot directly into the highest regions of the range. Approximately 1,250 miles will be covered by motorised transport and the less accessible areas will be reached on foot and by mule.

The expedition is financially independent of any one particular body or organisation and is of a non-profit-making nature. It is relying entirely on support from horticultural enthusiasts both in Britain and abroad, for whom shares in the collected seeds are available in £5, £10 and £25 units, (\$15.00, \$28.00 and \$70.00 for the U.S.A.). The purchase of any of these will entitle the shareholder to a share of the collected seed, a copy of the relevant field-notes of the expedition and a subsequent list of all identified collected specimens. In this last respect, the Royal Botanic Gardens, Edinburgh, has kindly offered to undertake the identification of all collected herbarium specimens. The prices of shares are inclusive of postage on the distributed seeds (by air, if abroad) and all incidental expenses. In the distribution of seed, the number of species supplied being in accordance with the value of the share purchased, the particular interests of subscribers will be taken into account as far as is possible and they are asked to state such on the attached application form. The last date for receipt of remittance in respect of the purchase of shares will be 18th June 1962, but it is stressed that, as only a limited number of shares are available, the earliest possible purchase is advisable and the right is reserved to refuse any application received after the available number of shares have been disposed of. In this respect, it is requested both in the interests of the expedition and shareholders that payment for shares be made before 14th May 1962.

It is some time since the general public had the opportunity of subscribing to an expedition such as this and it is hoped that the response from the amateur enthusiast will merit the not inconsiderable efforts of the members. While they are only too willing and able to prove that such persons do indeed exist, who, in the words of recent Alpine Garden Society and American Rock Garden Society Bulletins, "can be encouraged to venture into the wilds and bring back at least a few of the wonderful plants known to us only from the pages of 'The Present-day Rock Garden'", they must rely on **your** support in their venture.

ATLAS MOUNTAIN EXPEDITION

APPLICATION FOR PURCHASE OF SEED SHARES

All subscriptions from
U.S.A. and elsewhere
overseas should be sent to:

All British subscriptions
should be sent to:

**Miss Janette Stephen, M.A.,
3 Mountcastle Grove,
Edinburgh, 8,
Scotland, U.K.**

**James C. Archibald,
27 Woodside Gardens,
Musselburgh,
Midlothian,
Scotland, U.K.**

Name

Address

.....

.....

£5/£10/£25

PAYMENT ENCLOSED

\$15.00/\$28.00/\$70.00

All Cheques, Postal Orders, etc., should be made payable to "The Atlas Mountain Expedition" (Bankers: The Bank of Scotland, Piershill Branch) and crossed.

I enclose Remittance to the Above Value as Payment for the Purchase of a Share in the Material Collected by the Atlas Mountain Expedition, 1962. This will entitle me to a proportion of the collected seeds in accordance with the value of the subscription. My particular interests (if any preferences) are listed overleaf. I agree to the terms as stated overleaf.

Date.....

Signed.....

PREFERENCES OF SUBSCRIBER

All subscribers are invited to give some indication of their particular interests among the species which may be collected. A general indication will suffice (e.g. high-alpine species only, crevice plants only) but particular families or genera may be listed (e.g. scree Composites, *Saxifraga* spp.) or even single species (e.g. *Centaurea takredensis*, *Sarcocapnos speciosa*). Wherever possible, the expedition will do its utmost to accommodate shareholders in this respect.

TERMS

The last date for receipt of payment for purchase of shares will be 18th June 1962.

The expedition reserves the right to refuse any application for the purchase of shares received after the available number of shares have been disposed of. The expedition reserves the right to cancel the entire scheme at any time should insufficient financial support be forthcoming. In this event, no agreement between the expedition and shareholders will be in any way binding, provided that any payment received from such shareholders is returned to them in full on or before 31st October 1962.

The expedition reserves the right to retain 20 per cent. of all collected seeds and all live, collected material (bulbs, corms, plants, etc.), unless, in the latter respect, any special arrangement has been made with the expedition regarding the collection of live specimens.

No guaranteed minimum or maximum quantities are given as to the number of species or the amounts of seeds to be supplied per each unit share.

80 per cent. of all collected seeds will be distributed to subscribers in amounts according to the value of the share held.

The expedition reserves the right to dispose of all collected herbarium specimens wherever and whenever it wills.

ABBREVIATED FIELD-NOTES ON ALL SPECIES FROM
WHICH SEED WAS COLLECTED DURING
JULY AND AUGUST, 1962
IN THE RIF MOUNTAINS AND THE MIDDLE AND HIGH ATLAS RANGES,
MOROCCO.

=====

COLLECTIONS NUMBERED FROM J.C.A. 74 - 301

Subscribers should note that it is important that all doubtfully named collections should be referred to by the number in the left hand columns, preceded by either my name : Archibald or by my initials : J.C.A. These numbers correspond with field-notes, herbarium specimens, living material and seed collections ; this is essential to avoid subsequent confusion in subsequent verification of naming. At present, every species named in these notes has yet to be finally checked ; in many cases it may be some years before definite identification is possible ; names, where given, are based on field identification only and many will certainly be subject to alteration. As soon as definite names are available, these subscribers concerned will be informed ; in the meantime, all subscribers are asked to keep any resulting plants carefully labelled with the correct number.

JANUARY, 1963.

James C. Archibald,
27 Woodside Gardens,
Musselburgh, Midlothian,
Scotland, U.K.

Rif Mountains : a. Raven east to
Ketama
b. due south of
Ketama

74. Urginea sp. : bulbs only (a)
75. Daphne gnidium : herbarium specimens only (b)
76. Campanula sp. : 4,700 ft., vertical bank of rotten, crumbling shale facing due east with water percolating through it ; annual, large pure violet fls., few downy grey lvs., 2-3 ins. high. (b)
77. Echium sp., brick pink : seed infertile ; herbarium specimens only. (b)
78. Papilionaceae : 4,800 ft., dry, hot place - S.E. exposure, powdery clay mixed with shale flakes ; close, prostrate with flattened grey lvs., white fls., flushed and veined cerise-pink. (b)
79. Djebel Tazzeke massif :
a. 20 km. south of Taza.
b. above Bab bou Idir.
c. Djebel Tazzeke.
80. Rosa sp. : seed not viable (a)
81. Allium sp. ; herbarium specimens only (a)
82. Campanula sp. : " " " (a)
83. Juniperus sp. : 4,100, at base of limestone cliff and between boulders in marly clay ; gnarled shrubs, 4-7 ft. high. (a)
84. Silene sp. : 4,100 ft., in vertical crevices on dry, limestone cliff ; aspect - due N. ; close clumps of greyish lvs., creamy white fls. clustered on stems to 9 in. (a)
85. a. Dianthus sp. cliffs as above ; clumps of lax, green lvs., many long stems to 18 in., clear rose-pink fls., 1 1/2 in. across. (a)
85. b. Saxifraga ? nevadensis : seed unfortunately dispersed ; few plants collected. (a)
86. Sedum sp. : herbarium specimens only. (a)
87. Sedum sp. : " " " (a)
88. Urginea sp. : bulbs only (b)
89. Muscari sp. : " " (b)
90. Sedum sp. : herbarium specimens only (b)
91. Teucrium polium form : 4,500 ft., s.-e. aspect, limestone screes and boulder crevices ; hot and dry ; very fine, compact, silver-leaved form, 6 in. high, clusters of tiny cream fls. (b)
92. Catananche coerules ssp./var. : 4,000 ft., hot banks in marl ; deepish violet blue. (b)
93. Cistus sp. : 4,000 ft., as above ; shrubby clumps to 1 ft ; woolly lvs. (b)
94. Campanula filicaulis : 4,000 ft., heavy clay between limestone boulders in a pasture-land ; open aspect ; prostrate stems radiating from central, tap-rooted rosette, fls. variable, pale-deep violet (b)
95. ? , prostrate perennial : herbarium specimens only (b)
96. Convolvulus sp. : 4,000 ft., dry 'terra rossa' in full sun ; compact, clumps to 1 ft., grey lvs., pale-deep pink fls. (b)
97. Campanula sp. : herbarium specimens only. (c)
98. Rosa sp. : 5,300 ft., clay on shale, semi-shaded by evergreen-oak scrub arching 7 ft. stems, fls. borne in clusters of up to five. (c)

98. Romulea sp. : corms only (c)
 99. Papilionaceae : 6,100 ft., clay between shale, dry sunny ; hairy, white
 lvs. and stems, cluster-headed, 9 in. high. (c)
 100. Narcissus sp. : bulbs only (c)
 101. Lavandula sp. : 4,500 ft., open N.W. aspect, steep slope of shale,
 in gravelly clay ; rounded 13in, grey-leaved shrubs.(c)
 102. Aschodelus sp. : roots only (c)
 103. ? Ornithogalum sp. : bulbs only (c)
 104. Cistus ? laurifolius : 4,500 - 5,000 ft., open exposures, clothing
 var. atlanticus acres of hillside ; clay ; 4ft. shrubs. (c)

Djebel Erdouz massif, High Atlas :

105. Salvia taraxacifolia : 5,300ft.,
 e east-facing crevices, compacted sandstone (?), slight
 shade ; dry, sandy gravel ; close rosettes
 of notched, grey lvs., blush-pink fl. spikes.(a)
 a. gorge of Oued n'Fis
 below Azegour.
 b. n'Fis valley below
 Djebel Erdouz.
 c. Djebel Erdouz.
106. ? Jasione atlantica : herbarium specimens only. (a)
~~107.~~ Hypericum sp. : 5,300 ft., as 105, but more shaded ; thready, prostrate
 growth, deep gold fls., 1in. across (a)
 108. Dianthus sp. : as above ; tall, small-flowered species. (a)
 109. Sedum ? atlanticum form : herbarium specimens only. (a)
 110. Pteroccephalus depressus : 5,300 ft., rocky bank in very gravelly clay ;
 tight, prostrate mats of crinkled, grey-
 green lvs., absolutely stemless mushroom-pink 'scabiousses', 1½-2in. across,
 fluffy 'dryas' seed-heads of silver-pink ; a most exciting thing.(a)
 S.S. second collection : 8,900 ft. (b)
111. Romulea sp. : corms only.(a)
 112. Catananche coerulea var. tenuis : 5,300 ft., granite crevices. (a)
 113. Monocot. : bulbs only. (a)
 114. Monocot. : " " (a)
 115. Allium sp. : " " (a)
 116. Erodium atlanticum : 8,600 ft., basalt crevices, shaded, N.E. aspect ;
 flat rosette of woolly lvs., pale-deep rose-
 pink fls. ; 2-3ins. high. (b)
117. Campanula ? mairei : 8,600 ft., herbarium specimens taken from among
 grasses by streamside - long, lax stems, large
 imperial,violet fls. ; seed collected from plants in pockets on cliffs (as
 116) : may be two spp. here but difficult to distinguish as slight
 differences in habit could be caused by different habitats. (b)
118. Ribes groseularia form : 8,500-8,700 ft., scree and crevices ;
 prostrate or erect shrubs to 1ft. (b)
 119. Labiatae : as 116, tight crevices ; mats of glossy, purple-green lvs.,
 topped by clusters of white fls., 1½-2in. high. (b)
 120. Orchis ? manbyana : 8,500 ft., streamside marshes among grasses, etc.
 in rich, stony alluvium ; sodden conditions ;
 sun and shade ; spikes to 3ft.
 121. Aquilegia vulgaris var. ballii ? 8,500 ft., streamside among grasses,
 in shade of walnut-tree ; one or
 two plants only, growing in limited area ; should be good with white fls.

ADDENDUM

I43 a : Saxifraga sp. : 10,000 ft., Djebel Erdouz, High Atlas ;
thin, vertical fissures up at the tops
of high, sheer, basalt cliffs ; N.W. aspect ; Dactyloides
section : clumps of bright-green, sticky leaves adhering closely
to the rock, flowering over ; this may be the same as I75 - I
don't think so, though - but I did not have the chance to make
detailed observations owing to the position of the plants and
myself when collecting them.

122. Delphinium balansae subvar. pallidiflorum : herbarium specimens only. (b)
123. Compositae : Anthemis sp. ? : 8,300-8,700 ft., sunny place s, in dry stream-bed and W.-facing hillsides, stony clays ; sub-shrubby growth, 'mound s' of 18-24in. stems, grey-green lvs., small but profuse, deep-yellow 'daisies'. (b)
125. Ptilotrichum spinosum : 8,300 ft - 10,000 ft., dry, rocky hillsides, inscrees, beside boulders ; 1ft., grey spiny hummocks; all forms here are pink - seed taken only from deep, carmine-pink forms but may not come true - all should be pink though. (b,e)
126. Dianthus sp. : 8,500 ft., clay among grasses ; pale/deep pink fls., 9-12in. high. (b)
127. Silene sp. : herbarium specimens only. (b)
128. Erysimum ? wilczekianum : 8,900 ft., sandy gravelly soil, always at base of shrub or boulder ; narrow, pointed grey-green lvs., clusters of deep, lemon-gold 'wallflowers'; 3-9 in. (c)
129. ? Anacyclus sp. : 8,300 - 8,900 ft. - probably higher ; dry, sandy clay in pockets and crevices, usually slightly shaded by overhang ; grey, dissected lvs., possibly white, red-backed 'daisies'. (c)
130. Berberis hispanica : 8,500 - 9,000 ft.; various open aspects - E., W., and N. ; bushes to 4.5ft. ; black berries. (c)
131. ? Paronychia argentea : 8,300 ft. ; dry, gravelly places - not particular ; flat silvery mats, 'hop' heads. (c)
132. Papaver rupifragum ? var. atlanticum : 8,500 ft., among short grass, open N.W. aspects among rocks ; compact clumps of notched, roughly hairy, grey lvs., fragile tangerine orange fls. on 9 - 18in. stems. (c)
133. Allium sp. : bulbs only. (c)
134. Daphne laureola var. latifolia : seed lost in transit. (c)
135. Silene sp. : 9,000 ft. and above, crevices in N. and E. facing cliffs; tight clumps of grey-green lvs. ; probably white fls., 1in. (c)
136. Adonis aestivalis : herbarium specimens only (c)
137. Prunus prostrata : 8,700 - 10,000 ft., rock crevices and ledges on sloping rock slabs, open aspects ; forming great flat mats up to 3ft. across ; not many berries available. (c)
138. Stachys villosa var. saxicola : 9,000 - 10,000 ft. ; rock fissures usually shaded - under overhang or at base of boulder ; running clumps of grey lvs., cream fl. clusters, 1", (c)
139. Astragalus ? ibrahimianus : 8,000 - 10,000 ft. ; driest, exposed positions on open hillside, screes, etc. spiny, tufted clumps, grey lvs., pale lemon fls., to 9in. (c)
140. Rosa sp. 9,000 ft., rough, loose scree ; suckering clumps, 1½-2ft. (c)
141. Papilionaceae : as above, more gravelly scree ; tight, grey hummocks to 6in., ? pink fls.; very few seeds only. (c)
142. ? Chrysanthemum atlanticum : 10,000 ft. ; crevices on N. facing cliffs, both dry and dampish places, basalt ; 3in. clumps of dark green, dissected lvs., white daisies turning scarlet (c)
143. Silene sp. : 10,000 ft., crevices on N., E. and W. basalt cliffs, ?pink
144. Viola ? saxifraga : 9,000 - 10,000 ft., tightest crevices and 'caves' on large boulders, positions deeply shaded ; tiny tufts of darkest-green, leathery lvs. ; should have white fls. (c)

145. Draba ? hispanica : 10,000 ft. probably higher, dry but shaded places in vertical crevices on basalt cliffs ; great, loose cushions WITH many old fl. stems to 3in. (c)
146. Veronica rosea coerulea : seed not viable (c)
147. Sempervivum atlanticum : plants, herbarium specimens only. (c)
148. Ornithogalum orthophyllum : bulbs only - seed dispersed (b)
149. Medicago suffruticosa ? : a little seed - mostly unripe ; habitat as for 123, etc. (b)
150. Scabiosa sp. : herbarium specimens only. (b)
151. Euphorbia ? nicaeensis : 8,300ft., as for 123 ; fleshy stems to 1 ft., pink; blue-green lvs. ; yellow bracts ; (b)
var. demnateasis.
- majority of seeds collected have proved to be infertile - a few only viable
152. ? Hieracium sp. : herbarium specimens only. (b)
153. Compositae, blue : " " " (b)
154. Compositae, yellow : " " " (b)
155. Aconitum lycostonum ssp. neapolitanum ? var. rerayense. 8,300 ft., occurring along the length of a single stream only, open W. facing aspect, rich, wet, alluvial clay ; branching spires of sulphur fls. to 5ft.; very fine. (b)
156. Salvia sp. 6,000ft., above valley of Oued n'Fis, north of Azegour ; S.W. aspect on bank of stony clay ; 2-2½ft., shrubby, aromatic, blue-grey lvs., clusters of pink fls.; menthol-scented.

Djebel Toubkal, High Atlas :

157. Viola ? dehnhardtii var. atlantica: a. High Reraya valley betwe
(a) herbarium specimens only. Ouenkrim and Toubkal.
158. Ranunculus ? bulbosus : Herbarium sp.(a) b. Djebel Ouenkrim.
159. Veronica sp. : herbarium specimens.(a) c. Djebel Toubkal.
d. Cirque d'Arround region.
160. Gentiana verna ssp. penetii : 10,500 ft., rich alluvial turf - peaty and fibrous - sodden with icy water percolating down from the melting snows ; clumps on little grassy hummocks, closely associated with grasses, etc.; open aspect but shaded in early morning and afternoon ; not in fl. but should be good(a)
161. Narcissus bulbocodium ssp. vulgaris var. nivalis : bulbs only (a)
162. Carduncellus pinnatus : 10,500 ft., dry places in turf among rocks ; stony clay ; flat rosettes of spiny leaves with a stemless blue "thistle" sitting centrally. (a)
163. Carduncellus pinnatus albus : as above, seed not sufficiently mature.
164. ? Cerastium sp. : herbarium specimens only. (a)
165. ? Caryochyllaceae : " " " (a)
166. Linaria sp. : " " " (a)
167. Arabis ? erubescens : 10,000 - 12,000 ft., damp, shady places in crevices, at bases of cliffs, near waterfall ; Cardamine-like ; round, grey lvs., clusters of white or mauve fls., 3-6in. (c)
168. Campanula filicaulis : herbarium specimens only (n.b. a superb violet form but seed had not been set when collected)
169. Silene sp. 11,000 ft. (c, b) and lower (a), crevices on cliffs and between rocks ; white, brown or grey-blue backed fls. on 1in. stems ; calyx striped brown ; seed probably not sufficiently mature. (a,b,c)

170. Viola dyris : II,500 ft., very loose porphyry scree on steep W. facing slope ; rooted in heavy clay lying some 1-2 ft. below the scree - stem running almost a yard downhill with the movement of the scree before rising to the surface in a close 'bun' of little rosettes of grayish, brownish green, hairy margined lvs., each ringed with tiny porcelain-white fls., flushed with mauve and pencilled with gold ; this 'cushion-form' I believe to be the plants typical habit but I also found it running along the bases of a boulder, which no doubt afforded better protection from the goats, which are grazed right up to 12,000 ft. in summer. (c)
171. Linaria tristis ssp. lurida ? var. genuina : II,000 - II,500 ft., porphyry screes as above but subterranean mass of 'spaghetti-like' stems rising through stones from central tap-root ; grey lvs., prostrate stems bearing clusters of apricot and slate coloured fls. with maroon velvet lip and stripes ; a very distinct thing worthy of specific rank - unlike tristis (b) (c)
172. ? Chrysanthemum atlanticum. 12,000 ft., dry and dampish ledges on and at base of N.W. facing basalt cliffs, always shaded, among mosses and grasses in gravelly clay; large incandescent white, gold-centred daisies turning to brilliant scarlet as they age on 2-3 in. stems, above clumps of dissected, shiny green lvs. (c)
173. Erigeron mairei: 12,000 ft., more stable screes at bases of shrubs, etc open positions ; very dwarf - 2 in. - and variable - purple-rose daisy can be quite large and open. (b,c)
174. Draba ? oreadum : 12,500 ft., crevices and ledges on cliffs, W. aspect; compact cushions, not in fl. but should be white. (c)
175. Saxifraga ? dennatensis : 12,500 - 12,700 ft., tight fissures at tops of sheer cliffs (igneous rock) ; compact tufts of sticky, bright-green lvs., 6-9 in. sprays of many large white fls. - certainly the finest species seen in flower, a superb thing. (c)
176. Gentiana ? tornezyana : II,500ft., 'wet-flush' in short turf with mosses ; very minute annual with pale blue-white fls. , less than 1/2 in. high (c)
177. Campanula mairei var. atlantica: about 9,500 ft., among long grasses by stream ; long, lax stems trail and hang out large pure, deep violet fls. (a)
178. Dianthus sp. : 9,500 ft., crevices on E. facing cliff ; masses of 1ft. stems, probably small-flowered. (a)
179. Phagnolon ? helichrysoides : as above ; forming hanging mats of stiff grey lvs. from crevices ; creamy (a) 'button' fls. ; most seed had dispersed - distributed seed may be infertile.
180. Sempervivum atlanticum : plants only. (d)
181. Daphne gnidium var. lanatum : 7,000 ft., dry slopes of stony clay and in rock crevices ; exposed positions ; 1 ft., erect shrubs, grey leaved, clusters of cream fls., orange berries. (d)
182. ? Cytisus sp. : 7,000 ft., hot, dry, S.-facing bank in clay ; large, blue-green leaved shrub to 3ft. (d)
183. Anagallis monellii ssp. collina var. hispanica : 7,000 ft., dry stony places among dwarf bage ; 'giant scarlet pimpernel' - large soft orange fls., prostrate.

184. Anacyclus sp. ? / Chrysanthemum sp. ? : seed infertile (unfortunately as
fls. were over 2in. across on 3" stems)(d)
185. ? : 7,300 ft., dry places at bases of boulders in gravelly clay ; prostrate, herbaceous perennial - no suggestions regarding identity - not in fl. (d)
186. ? Cruciferae. as above ; another puzzle ; very glaucous blue-green lvs. ; ? yellow fls. ; may be Umbelliferae!! (d)
187. ? Ranunculaceae. as above: the last of a trio of problems - 9in., delicate growth ; ? compound lvs. ; only in shaded N. facing crevices (d) (n.b. field-notes for 177-193 tend to be vague!)
188. ? Armeria allicoides : 7,300 ft., semi-shaded and open ledges and rock-pockets ; small, neat basal rosette and tall slender stems to as much as 18 in. ; not in fl. but probably same as 253.(d)
189. Urginea sp., mauve-pink : bulbs and herbarium specimens only. (d)
190. Delphinium balansae subvar. caeruleum : seed proved to be insufficiently mature - unfortunate again as it is a good thing.
191. Papaver ? rupifragum form : 6,800 ft., N. from Cirque d'Arround on E. aspect ; among boulders and in crevices ; dwarfer and more compacted than 132 but probably same species ; 6in., tangerine orange fls. (track to Imellil, exposed dry clayey slope)
192. Prunus prostrata ? var. glabrifolia : as above ; exactly same appearance as 137 - prostrate shrubs in rock crevices, black berries, but on examining seeds I have some doubts as to whether it is a Prunus at all!
193. Salvia ? battandieri : as above ; plants only.
194. Umbelliferae. herbarium specimens only) misplaced specimens
195. Potentilla sp. " " ") collected Dj. Toubkal.
- Tizi n'Tichka pass - surrounding area.
196. ? Ornithogalum sp. : bulbs only
197. Stachys villosa ? var. saxicola : 7,300 ft., N.W. facing crevices in shale ; generally like 138 but not so compacted in growth.
198. Sedum ? atlanticum : as above ; hanging mats of blue-grey lvs., many small french-grey or pinkish fls.
199. Labiatae : 7,500 ft., clay on rock-ledges ; darkest green needle-like, aromatic lvs., clusters of pure-white fls., shrubby, about 6in.
200. Draba lutescens ? : as above, crevices ; hard cushions ; collected capsules were all but devoid of seeds.
201. Allium sp. : bulbs only
202. Narcissus sp. : " " " ")
203. Romulea sp. : corms only
205. Colchicum ? longifolium var. " " " "
204. Asphodelus sp. 7,300 ft., vast colony occupying about 1/2 acre of level turf centering on a dried-up stream ; heavy clay - dry, baked in summer but no doubt soaking in spring ; tall stems, 4-5ft.
206. Crataegus sp. : 7,200 ft., decomposed shale in small 'valley' by barely trickling stream ; only a single tree seen throughout the whole area ; about 20 ft. high.
207. ? Anacyclus sp. : 7,200 ft., crevice in rotten shale ; whole plant very dessicated - most seed dispersed ; what was collected has proved almost wholly infertile.

Tizi n'Tichka area. (cont.)

206. Compositae : plants only.
208. Rosa sp.; as 206.; between lumps of rotten shale along margins of stream bed ; 1-3 ft. high.
210. Narcissus sp. : bulbs only
211. Helianthemum sp. : 7,000 ft., hard-baked, stony clay ; common in open places due N. of Tichka ; 1ft. clumps, yellow.
Plateau between H. Atlas and Dj. Sarhro.
212. ? , about 3,500 ft., stony desert (Northern edge of Sahara), herbaceous perennial to 2½ ft.; plant absolutely dehydrated - quite unidentifiable. (n.b. 212 could not possibly survive outside)
213. ? , xerophyte, 'vegetable sheep' : herbarium specimens only.
- Djebel Ayachi massif :
215. Campanula filicaulis. : 7,500ft., a. various areas around clayey Cirque de Jaffar. turf among stones ; see 93 - mostly b. Gorge of Barrem. paler, rosy-mauve forms ; little seed. (a) c. above and E. of gorge.
216. ? Calamintha sp. : 7,000 ft., W. facing crevices in hard limestone ; more or less shaded ; 3-6in. high, not in fl. (a)
217. Asphodelus sp. : plants only. (a)
218. ? Compositae : 7,000 ft., clay filled ledges on hard limestone, quite deeply shaded ; mats of evergreen lvs. and many 6in. stems bearing sulphur 'buttons'. (a)
219. Pedicularis sp. : herbarium specimen only. (a)
220. Acer ? monspessulanum : 6,900 ft., N. facing cleft in limestone cliff; small tree of about 15ft. with small, rounded palmate lvs. and decorative masses of reddening 'keys'. (a)
221. ? , 6,900 ft., in shingle of dried-up stream-bed ; rounded, evergreen hummocks, 1ft. high ; 'vaccinium-like' best describes it! (a)
222. ? Iberis sp. : 6,900 ft., ledges on N.-facing limestone cliff ; erect shrubby growth to 9 in. ; 2nd collection - similar position on sides of Barrem Gorge (a,b).
223. ? Ephedra sp. : as above ; 'mares-tail', dark-green foliage, cerise-carmine berries, 9-12in.; one or two berries only. (a)
224. Salvia ? battandieri : 6,900 ft., 'meadow conditions', stony, clayey turf over limestone ; compact rosettes of crinkled lvs., 6-9 in., branching spikes ; numerous but much seed gone. (a)
225. Labiatae : 6,700 ft., holes and crevices on flat limestone slabs ; fully exposed - very hot (during the day!) ; prostrate, very woolly leaved. (c)
226. Allium sp. : 6,700 ft., hot, vertical cleft in limestone ; 1ft. (c)
227. Ruscus sp. : berries insufficiently matured - rotted. (b)
228. Scabiosa sp. : herbarium specimens only (b)
229. Papilionaceae : 6,800 ft., level grassy area, hard stony clay ; flat mats with many fls., rose-pink with white keel(a)
230. Romulea sp. : coras only (a)
231. Fraxinus sp. : 6,500 ft., hot, dry bank at N. entrance to gorge, clay - surrounding rock : very distinct crumbling shale ; small trees - about 20ft. high. (b)
232. Dianthus sp. : 6,700ft., herbarium specimens only - collected seed proved insufficiently mature (d)

233. Campanula sp. - ?filicaulis aggregate : 8, 300 ft., among scrub and rocks in dried stream-bed, shale and clay ; longer stems than C. filicaulis, softly hairy lvs. - appearance much like the Spanish C. malacitana - no doubt all these Campanulas join up in a continuous series through innumerable intermediate forms. (a)
234. Allium sp. : as above ; 1ft. (a)
235. Cedrus atlantica : case containing these and several other extra collections of heavy seeds has not yet emerged from transit!
236. Labiatae : 8,200 ft., shaley clay by dried up stream, shaded by cedars ; tall herbaceous perennial to 3ft., many-whorled stems - may be absolutely worthless or quite good. (a)
237. ? Phlomis crinita : plants only - seed already dispersed (a)
238. Labiatae : 8,000 ft., gravelly clay (very wet) at edge of stream ; 'humusy' shingle ; trailing, prostrate stems with clusters of brilliant yellow fls. in clusters at the ends ; one plant only seen (a)
239. Papaver sp. : 6,900 ft., heavy stony clay (cultivated (!) land - a few families of desert nomads graze their flocks in summer up in the Cirque de Jaffar, sowing their sparse corn without clearing the ground of boulders, scrub, etc.) ; slender 6 in. stems, hairy lvs., dusky crimson fls. - looked likely to be biennial if not annual. (a)
240. Helianthemum sp. : herbarium specimens only (a)
241. Asphodelus sp. : plants only (a)
- Djebel Hebri Plateau, Middle Atlas
242. Paeonia corallina ssp. coriacea a. extinct volcanic crater
var. maroccana : of Mischliffen.
6,500 ft., N.W. facing slope, rich b. open Cedar forest around
leafy, volcanic clay & pure leaf-soil ; Mischliffen
open grassy places shaded by cedars & c. Djebel Hebri
in evergreen oak scrub ; this species
provides one of the most spectacular sights of the Middle Atlas in May or
June ; even when we collected it the fine foliage was most decorative (a)
243. Cephalaria sp. : as 242 but more open positions on hillside ; tall,
leucantha (?) branching stems to 5ft., bearing hundreds of sulphur
yellow fls., massively cut dark-green lvs. ; not quite so good as C. tatarica
but certainly a worthwhile plant, especially if sited well. (a)
244. Erodium ? vieillardii : 6,000 ft., S.E. facing position in stony clay
among rocks - mainly limestone but with some
volcanic debris ; hot, open situation ; 2-6 in. stems with fairly large (b)
pale magenta, mauve or pink fls. - permissible but there are better Erodiums
245. Verbascum sp. : herbarium specimens only (b)
246. Dianthus arrostii (?) : " " " (b) ; seed had not matured
sufficiently - a superb little species, which,
though variable, could almost surpass neglectus
247. Catananche coerulea ssp./var. ? : 6,000 ft., stony clay among grasses,
open, sunny places ; many forms
occurring - pale blue to deeper mauves ; black centred, crimson centred. (b)
248. Calamintha ? granatensis : 6,000 ft., almost pure gravel over clay -
limestone, sunny place ; compact 6 in. (b)
'shrubs', clusters of violet fls. - will need to be starved to preserve habit
249. Malva sp. : herbarium specimens only. (b)

? *Lavatera* sp.

250. ? *Malope* sp. : 6,000 ft., as 248 ; a magnificent thing - prostrate compact growth, rough dull-green lvs., huge 'hollyhock' fls. of satin-textured, silvery pink, over 2 in. across, about 3 in. high ; this may be too coarse in leaf for the more fastidious alpine-house enthusiast but if it could be persuaded to flourish in the rock-garden and retain its prostrate habit, it could be a very fine thing ; incidentally I can't equate this plant with anything recorded from Morocco to my knowledge but there is ample material and photographs for the botanists. (b)
251. *Campanula filicaulis* : 6,000 ft., as 244, among short grass and stones herbarium specimens only. (b)
252. *Helianthemum* ? *glaucum* : 6,000 ft., as above, etc. ; blue-green lvs. shrubs to 1 ft. or less ; bright lemon fls. (b)
253. ? *Armeria allioides* : 6,000 ft., as 247 ; n.b. see 188 ; tall wiry stems from small-leaved basal rosettes (b)
254. ? *Asphodelus* sp. : plant only. (c)
255. *Romulea* sp. : corms only (c)
256. *Cytisus battandieri* : 6,300 - 6,500 ft., N. facing hillside between occasional cedars ; clay over lava ; huge spreading shrubs to 10 ft., blue-green lvs., massed with old seed-heads ; n.b. this is about the highest limit of this species - snow-covered for (c) much of the winter - Dj. Hebri is one of the main Moroccan ski-ing centres.
257. *Paeonia corallina* ssp. *coriacea* var. *maroccana* : as above, grassy clearings between *Cytisus* bushes in good, rich clay ; see 242. (c)
258. *Sambucus ebulus* : 6,300 ft., open N. facing hillside among volcanic debris ; large-leaved shrubs to 5 ft., massed with the translucent, black-crimson berries (c).
259. ? : unidentified tubers only (c)
260. *Crocus* ? *salzmannii* : corms only (c)
261. ? *Ornithogalum* sp. : bulbs only (c)
262. *Romulea* sp. : corms only (c)
263. ? : unidentified tubers (c)
264. *Gensita* sp. : herbarium specimens only ; collected capsules were not sufficiently mature. (c)
265. *Polygonatum officinale* - *odoratum* : 6,300 ft., at margins of Elder thickets (see 258) in volcanic debris ; arching 1 ft. stems set with black berries (c).
266. ? , 6,400 ft., situation as for 256, 257 ; erect, twiggy shrub to 5 ft. ; sparse foliage ; green (?) berries. (c)
267. *Cistus* ? *laurifolius* : 6,500 ft., open position among adjacent cedars, var. *atlanticus* heavy clay ; leathery-leaved, 4 ft. shrubs (c)
268. *Lonicera* sp. 6,500 ft., heavily shaded situation among cedars, evergreen oak, etc. ; trailing, twining stems to about 3 ft. ; stony clay ; few berries only (c)
269. *Cotoneaster fontanesii* : 6,400 ft., similar position to 256 ; erect *nummularia* var. shrub, 5-6 ft. ; red berries (c)
270. *Arabis* ? *albida* (= *A. alpina* ssp. *caucasica*) ; 6,500 ft., holes and pockets in a strange little cliff of pumice, heavily shaded, north-facing and all grown over with the dried summer skeletons of a multitude of species ; felted grey rosettes, lax-growing, many old fl. stems to 9 in. - looks suspiciously like *A. albida*, which is recorded from the area but so are several others, so seed is worth a try (c)
271. *Linaria* sp. : cliff as 270 ; prostrate ; 2 green capsules only (c)

272. Dianthus sp. : 6,500 ft., cliff as for 270, 271 ; many 1 ft. stems (c)
 273. Galium sp. : herbarium specimen only (b)
 274. ? Scabiosa sp. : " " " (b)
 275. Delphinium balansae subvar. pallidiflorum : 6,000 ft., as for 244, 252, etc. ; erect, wiry stems 9 - 18 in. high, clothed with a few, tiny, narrow, grey lvs. and bearing flights of many small, slate-blue and cream 'butterflies' ; Linaria-like (b)
 276. Cephalanthera rubra : plants only (a)
 277. Arabis ? josiae : 6,500 ft., holes and pockets, filled with leafmould in a N. facing cliff of weathered limestone (a limestone equivalent to 270's cliff) and among rocks in humus at margins of evergreen oak woodland ; neat rosettes, 1-2in. across, of rough, dark green lvs., stems to 6in. ; if it is A. josiae will have very fine, intense violet coloured fls. ; looks quite good in any case. (a).
 278. Muscari sp. : bulbs only (a)
 279. Endymion cedretorum : bulbs only (a)
 280. Arabis ? albida : 6,500 ft. same habitat as 277. ; probably same species as 270 - similar appearance and habitat.
 281. Saxifraga ? atlantica : in spite of the fact that I collected a large amount of old seed capsules - not a seed was left ; plants only (a)
 282. ? Ornithogalum sp. : bulbs only (a)
 283. ? Ononis sp. : herbarium specimens only (a)
 284. Compositae : " " " (a)
 285. Linaria sp. : " " " (b)
 286.
- Tizi n'Tretten, Middle Atlas
286. Romulea sp. : corms only
 287. ? Ornithogalum sp. : bulbs only
 288. Crocus sp. : corms only
 289. Carduncellus rhaponticoides : by the end of August seed of this species had been long dispersed ; a few plants were procured after protracted excavations but succumbed to the intense heat of our homeward journey.
 290. Draba ? lutescens : seed dispersed but a few plants collected
 291. Orchidaceae : tubers collected.
- Mixed woodland, 5km. S.E. of Ifrane, Middle Atlas.
292. Crocus ? salzmannii : corms only
 293. ? Ornithogalum sp. : bulbs only
 294. Muscari sp. : bulbs only.
 295. Romulea sp. : corms only
 296. ? Anemone sp. : tubers only.
 297. Asphodelus acaulis : roots only.
 298. Ophrys sp. : tubers only.
 299. Narcissus sp. : bulbs only.
 300. Narcissus sp. : " "
 301. ? Carduus sp. : ABOUT 5,000 ft., open, hot, dry pasture-land around Ifrane ; hard, baked clay ; fascinating royal-blue thistle with mauve spines on calyx ; 1 - 2 ft. and obviously biennial or annual but rather intriguing.

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FIELD NOTES ON LIVING MATERIAL

COLLECTED IN THE RIF AND MIDDLE &

HIGH ATLAS MOUNTAINS, MOROCCO, 1962, from

1st July to 25th August.

The following are abridged extracts from field-notes made during the Atlas Mountain Expedition, 1962. They refer only to the living material collected; all plant names are based on field identification only and are ~~subject~~ to subsequent confirmation.

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- * ARCHIBALD 74 : Urginea species. Rif Mountains east of Xaven towards Bab Berred; 3,000ft. ; deciduous forest ; shaded place among oak scrub among rock slabs in rich, friable loam.
- ARCHIBALD 87 : Urginea species. Djebel Tazzeka massif near Bab bou Idir ; 4,500ft. ; dry, baked, south-east facing hillside in clayey, humusy crevices between limestone boulders ; slightly shaded.
- ARCHIBALD 88 : Muscari grandifolium rifaunum ? As above ; open and slightly shaded crevices between limestone boulders ; very small quantity only collected.
- ARCHIBALD 98 : Romulea species. Near summit of Djebel Tazzeka ; 6,100ft. ; SUNNY, dry, exposed position between slabs of flaking basalt ; gravelly clay.
- ARCHIBALD 100 : Narcissus species. Djebel Tazzeka ; 4,500ft. ; dry, basalt crevices filled with stoney clay on steep, north-west facing slope ; position - open and sunny.
- * ARCHIBALD 102 : Asphodelus sp. Location as above ; in groups among Cistus and Lavandula bushes ; probably tall-growing.

I03 : Ornithogalum sp. ? Djebel TazzeKa ; 4,500ft. ;
Shaded basalt crevices under rock
overhang and beneath shrubs ; gravelly clay ; very small
quantity.

ARCHIBALD III : Romulea sp. Azgour below Djebel Erdouz
(High Atlas) ; 5,300ft. ;
dry crevices between granite boulders ; very few only.

ARCHIBALD I13 : Liliaceae, Ift., brown-flowered. Curious
species
with soft, rounded bulbs and pendant racemes of small
brown, asphodel-like flowers on a slender Ift. stem ;
very dry, shaded clay pocket beneath the overhang of
a granite boulder ; Azgour ; 5,300ft. ; I cannot even
hazard a guess regarding the identity of this - any
suggestions would be welcome ; small number only.

Archibald II4 : Allium sp. 9in., greyish-pink. Location
as above ;
hot, granite crevices in sandy clay.

ARCHIBALD I20 : Orchis munbyana. Erdouz ; 8,500ft. ;
tubers failed to travel.

ARCHIBALD I33 : Allium sp. 6in. pink. High Atlas - Djebel
Erdouz ; 8,300 -
10,500ft. ; rose-pink striped carmine in the best forms
but sometimes deteriorating to pinkish-white ; rock crevices
in fairly heavy, sandy loam on west and north-facing
hillsides ; small number of high alpine forms collected
were only 2in. high and very deep in colour.

ARCHIBALD I48 : Ornithogalum orthophyllum. High Atlas -
Djebel Erdouz ;
damp places at streamsides among long grasses ; open,
sunny places ; rich alluvial soil - very stoney ; 7,000 -
8,000ft. ; a few bulbs located.

ARCHIBALD I6I : Narcissus bulbocodium ssp. nivalis. High
Atlas -
Djebel Toubkal ; 10,500ft. ; alpine meadow turf, almost
peaty and soaking with water from the melting snows ;
among grasses, etc. ; open situation.

ARCHIBALD I96 : Ornithogalum species ? High Atlas -
5 miles north of
Tizi n'Tichka ; 8,000ft. ; level, close-knit turfy area ;
sandy clay ; very dry.

201. : Allium species ? High Atlas : Tizi n'Tichka ;
8,000ft.; stoney clay among
grasses in dried-up stream-bed ; open, sunny position.

ARCHIBALD 202 : Narcissus sp. High Atlas : north of Tizi
n'Tichka ; 8,000ft. ;
level, tuffy area at edge
of stream (in summer all but dry) ; soil clayey loam
still moderately moist despite the arid conditions ;
open, sunny place ; limited quantity only.

ARCHIBALD 203 : Romulea sp. Situation as above.

ARCHIBALD 205 : Colchicum longifolium micrathum ? Situation
as above.
not collected in sufficient quantity for distribution.

ARCHIBALD 210 : Narcissus species. High Atlas : above
Tizi n'Tichka ; moist
turf on south-east facing hillside ; 8,300ft.; peaty
clay ; limited quantity only.

* ARCHIBALD 217 : Asphodelus sp. 18in. High Atlas :
Cirque de Jaffar,
Djebel Ayachi massif ; 7,500ft.; open hillsides among
grasses ; hot sunny places in stoney, gravelly clay.

ARCHIBALD 226 : Allium species : High Atlas : gorge
below Cirque de Jaffar ;
7,000ft.; hot, vertical limestone crevices ; very few.

ARCHIBALD 230 : Romulea species. High Atlas : Cirque de
Jaffar ; 7,300ft. ;
moist turf above
spring, slightly shaded by cedars ; not collected in
sufficient quantity for distribution.

ARCHIBALD 234 : Allium sp. Cirque de Jaffar ; 8,000ft.
between limestone boulders
in dry streambed ; among
grasses and herbaceous growth ; probably same as 226.

* ARCHIBALD 239 : Asphodelus species, 1ft. Cirque de Jaffar ;
8,000ft.; steep,
shaded bank below cedars ; very gravelly clay ; superficially
similar to 217 but dwarfer and not forming clumps - producing
one flower stem per plant only.

ARCHIBALD 255 : Romulea species. Middle Atlas : Djebel
Hebri plateau ; 6,300ft. ;
open, 'moorland' conditions ; very sandy clay among
volcanic rocks, often in lee of lava boulder or dwarf shrub.

ARCHIBALD 242 : Paeonia corallina ssp. coriacea var. maroccanal

Middle Atlas : Mischliffen, 6,500 ft.; N.W. facing slope, open grassy places shaded by cedars and in evergreen oak scrub ; rich humusy clay or pure leafmould ; seedlings collected.

ARCHIBALD 260 : Crocus ? salzmannii. Djebel Hebri plateau, 6,000 ft.; heavy loam in turf near 'azib' (enclosure for sheltering flocks during winter) ; very well manured ; a few corms only unearthed; open, sunny position.

ARCHIBALD 261 : ? Ornithogalum sp. As above.

ARCHIBALD 262 : Romulea sp. As above.

ARCHIBALD 276 : Cephalanthera rubra. I only risked collecting one or two rhizomes (quite numerous on Mischliffen) but these succumbed to the heat during the drive north.

ARCHIBALD 278 : Muscari sp. Mischliffen, 6,500 ft.; holes and pockets, filled with pure leafmould in N. facing cliff of weathered limestone.

ARCHIBALD 279 : Endymion cedretorum : As above { = SCILLA ALGERIENSIS
= ENDYMION HISPANICUS
VAR. ALGERIENSIS.

ARCHIBALD 282 : ? Ornithogalum sp. : As above but hot, sunny position in clay at top of cliff.

Archibald 286 : Romulea sp.) Tizi n'Tretten, Middle Atlas,
287 : ? Ornithogalum sp.) 6,100 ft. ; open position ;
288 : Crocus sp.) heavy clay in short turf.

ARCHIBALD 291 : Orchidaceae. 6,300 ft., above Tizi n'Tretten, STONY clay among evergreen oak ; all tubers of this (and all but one of 298 - Ophrys sp.) rotted off in the heat of the plain during our homeward drive.

ARCHIBALD 292 : Crocus sp.) All unearthed by 'blind-digging'
293 : ? Ornithogalum sp.) in holes and crevices, filled
294 : Muscari sp.) with heavy 'terra rossa', on and
295 : Romulea sp.) between flat slabs of limestone
296 : ? Anemone sp.) in clearings of evergreen oak
297 : Asphodelus acaulis) woodland, about 5 km. south
298 : Ophrys sp.) of Ifrane, Middle Atlas, about
299 : Narcissus sp.) 5,000 ft.; all mixed up with
300 : ? Narcissus sp.) shrivelled remains of dwarf
herbage ; very hot and dry - a thorough summer 'baking'.

* CASE CONTAINING THESE AND UNCLEANNED SEEDS — STILL SOMEWHERE IN TRANSIT !

SHRUBS

ADDITIONAL INFORMATION

NOTE I : J.C.A. 82 - the only *Juniperus* species collected ; the following are the recorded members of this genus in Morocco :

- J. communis* var. *hemisphaerica* ; *J. oxycedrus*
- J. phoenicea* ; *J. thurifera*

NOTE II : J.C.A. 97, 208 and 140 - the following are the *Rosa* spp. recorded from Morocco :

- R. sempervirens* ; *R. posinii*
- R. canina* (13 vars. and forms 1) ; *R. pouzianii* var. *yebalica*
- R. dumstorum* var. *platyphylla* ; *R. sicula* var. *veridicata*
- R. agrestis* ; *R. sicula* var. *maroccana*
- R. micrantha*, (9 forms and vars.)

NOTE III : J.C.A. 206, - the only *Crataegus* sp. - it must be either

- C. oxyantha* or *C. laciniata*

NOTE IV : J.C.A. 231 - the only *Fraxinus* sp. collected - must be either

- F. angustifolia* or *F. xanthoxyloides*

The names given in the field-notes are as found in Jahandiez and Maire : 'Catalogues de Plantes du Maroc' - the authorities for them will be found there ; this does not mean to say that, even if the plants are correctly named in accordance with the then authoritative nomenclature, these names are still valid ; and instance is J.C.A. 269, which I had in my field-notes as *Cotoneaster fontanessii*, Spach. This is, according to Jahandiez and Maire - *C. nummularia* Fisch. & Meyer subvar. *fontanessii* (Spach) Maire. There may well be others for similar treatment. Apart from all this, J. and M., along with the other pundits of Moroccan botany, Emberger, Litardiere and so on, are a group of notorious 'splitters' and many of their multitudinous subspecies, varieties and subvarieties and forms are of little account as far as the gardener is concerned. I shall continue to call 242 *Paeonia coriacea* ; others may do as they see fit.

APPENDIX

208. Rosa sp. : Tizi n'Tichka, as 206, q.v. ; between lumps of rotten shale along margins of stream-bed ; 1-3 ft. high.

212. ? , plateau between High Atlas and Djebel Sarkro - northern edge of Sahara, about 3,500 ft., stony desert ; herbaceous perennial to 2½ ft., plant absolutely dehydrated and quite unidentifiable ; this could not possibly survive out doors in Britain - temperatures go up to about 120° F in summer, when no rain falls - wet in spring when the snow melts on the Atlas.

ADDITIONAL INFORMATION

While I hope that the facts supplied in the field-notes will be to allow most species to be given the correct conditions in cultivation, I shall be glad to supply further details regarding any collection at any time (a stamped addressed envelope would be gratefully received as postages are not the least of our expenses). Other information can be gleaned from Farrer's "The English Rock Garden" for the odd species and especially from : Jahandiez and Maire : "Catalogue de Plantes du Maroc"

This gives much useful information regarding distributions and habitats of most species, while nothing about their appearance from the gardener's viewpoint. Clay's "The Present Day Rock Garden", as most gardeners will already have found, is of little account - the half-dozen words accorded to each species usually give little idea of where the plants come from, what they look like or how to grow them, Nevertheless, for the impatient gardener there are some photographs of species of which seed has been distributed :

Plate 5 Campanula filicaulis : (J.C.A. 93, 168, 251 and possibly 215 and 233) This is not a very typical situation - it is more of a meadow-plant, growing in turf among stones - not generally so saxatila. It is a very polymorphic species ; I have collected many series of herbarium specimens all under the name of 'C. ? filicaulis' - many may prove to be worthy of specific rank but all are on the same pattern for the gardener. The plant in the plate is quite representative in habit - I saw nothing in the least resembling the tangled mess illustrated under this name in Crook's "campanulas" - this may be a very low altitude form.

Plate 8. Chrysanthemum catananche. I was too late to find this in ~~xxxx~~ flower but the seeds may crop up under some of the more doubtfully identified 'daisies' collected.

Plate 24 Linaria lurida : (J.C.A. 171) Situation absolutely typical but you will have to look hard to distinguish the form of the plant accurately ; it is a really fine thing - now regrettably but correctly known as *L. tristis* sep. *lurida*, in spite of its distinction.

Plate 45. Salvia taraxacifolia (J.C.A. 105) Habitat, etc. absolutely right.

Plate 49. Saxifraga demnatensis (almost certainly J.C.A. 175) Absolutely typical but it still does not do full credit to the beauty of the plant - I wish everyone could see the herbarium specimens - the individual flowers are very large and the habitat is usually even more saxatila - too saxatila to be accessible to the photographer. The plant has been reduced by a botanist to a variety of *S. pedemontana* but I shall encourage the gardener to ignore this.

Plate 51. Stachys villosa var. saxicola (J.C.A. 138 and 197) Illustration most resembles 197 ; the species varies and can be very much of a crevice-dweller packing the tightest

fissures with its little leaves.

Regarding the other Atlas Mt. species illustrated in Clay and which escaped me : *Centaurea takredensis* and *Scorzonera deliciosa* I fear I must have passed wayside when out of flower - out of seed also perhaps ; *Matthiola scapifera* was a real disappointment, as I know where it should grow, high on Erdouz, but our base-camp had to be made too far from the mountain to allow a complete ascent (with collecting) in one day - mules could not be hired and so the *Matthiola* from above 10,500 ft. must await another day; if we did not collect high enough for this, we did not collect low enough for *Raffenaldia platycarpa*, which is no loss anyway ; *Sarcocapnos baetica* certainly is a loss but, in spite of my desire to collect this and other of its relations, we could not spare the time to make the trips to their particular mountains - if I had even tried to find it, it would have meant the loss of *Gentiana verna penetii* and many others. I hope that some of my other collections from other areas will compensate for my inability to bring these back.

Other illustrations of species collected can be found in the Alpine Garden Society Bulletin, No. 30 (Vol. 5 ; No. 4) ;

p. 324 *Gentiana verna* ssp. *penetii* (J.C.A. 160) : photographed in the same habitat as my collection - there are but one or two other habitats anyway. N.B. the sub-specific name is *penetii* not *pevetii* - the gentleman was a Monsieur Penet.

p. 332 *Chrysanthemum depressum* (= *Anacyclus depressus*) possibly J.C.A. 129.

p. 335 *Ptilotrichum spinosum* (= *Alyssum spinosum*) : J.C.A. 125.

p. 336 *Erodium atlanticum* : J.C.A. 116 - a typical situation for this.

p. 341 *Convolvulus sabatius* ssp. *mauretanicus* : there is a long sad story attached to my finding of the prostrate variety - var. *atlanticus* - and my subsequent inability to collect it, involving such dissimilar topics as glandular fever and a torrential hail-storm ; I may be able to tell it sometime!

p. 334 *Phagnalon helichrysoides* subvar. *lanatum* : (almost certainly J.C.A. 179 but my seed is probably not viable ; when I found this or a similar form later in the Barren Gorge below Djebel Ayachi, all the seed had dispersed.

A.G.S. Bulletin No. 33, (VOL. 6, No. 3) :

p. 253. *Paeonia corallina* ssp. *coriacea* var. *maroccana* : J.C.A. 242 and 257

Almost all of C.S. Garnett's photographs in the above and other issues deal with species from comparatively low altitudes, where I did not collect