

# **XIV INTERNATIONAL BOTANICAL CONGRESS**



**Guide to Excursion  
No. 41**

**The vegetation and endemic flora  
of the Spanish Pyrenees**

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# **XIV INTERNATIONAL BOTANICAL CONGRESS**

Excursion no. 41

The vegetation and endemic flora of  
the Spanish Pyrenees

## **EXCURSION GUIDE**

by Prof Dr. P. Montserrat  
and Dr. L. Villar

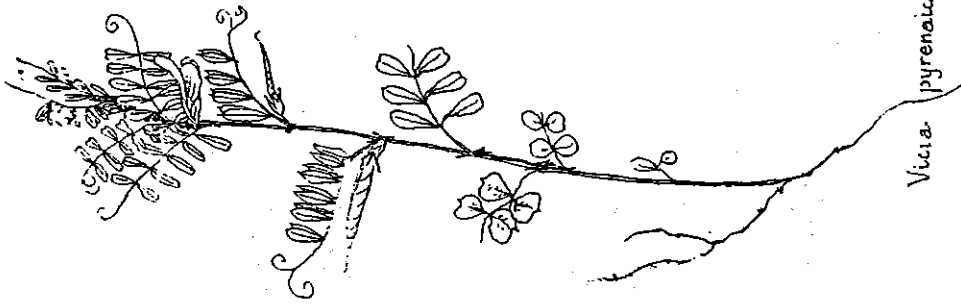
Berlin 1987

*[Faint, illegible text, likely bleed-through from the reverse side of the page]*

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*Vicia onobrychioides* L.

J. BOUCHARDI -

*Vicia pyrenaica* Ram.*Valeriana globularifolia* Ram.

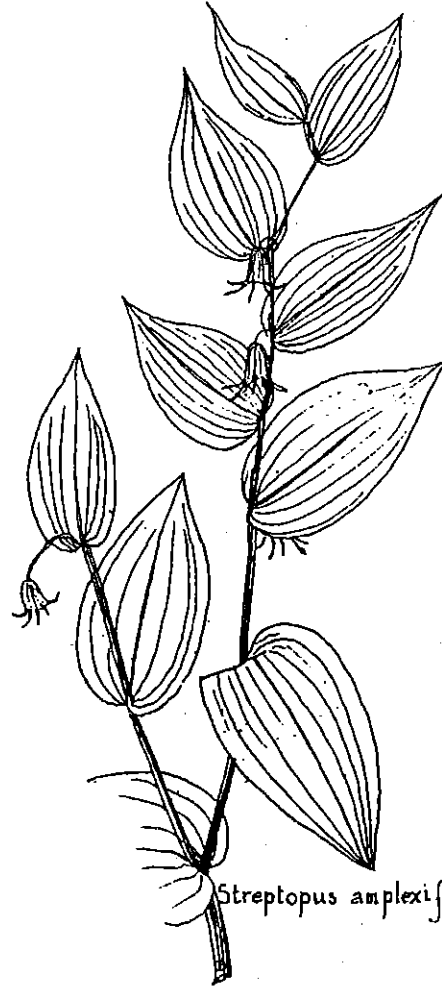
X I V   I N T E R N A T I O N A L   B O T A N I C A L  
C O N G R E S S

Excursion Guide n. 41

THE VEGETATION AND ENDEMIC FLORA  
OF THE SPANISH PYRENEES

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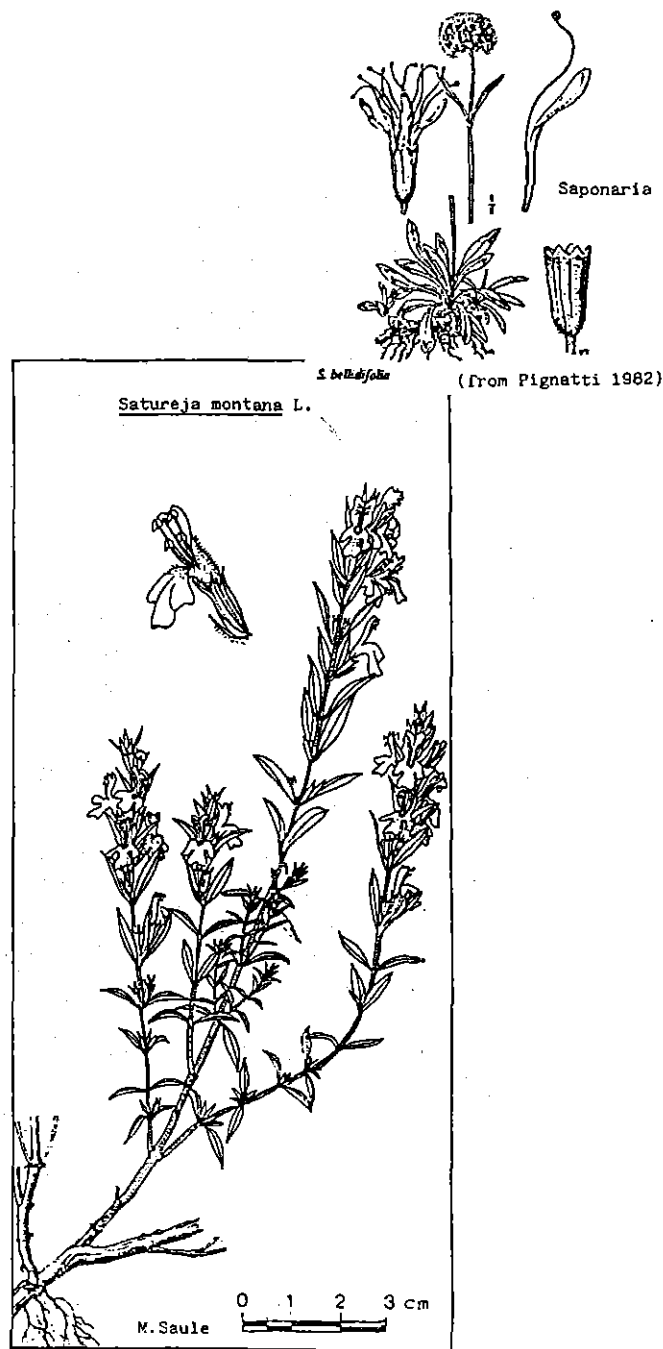
2 August (evening) to 10 August (morning) - 1987.



*Streptopus amplexifolius*  
DC.



*Telephium Imperati* L.



"THE VEGETATION AND ENDEMIC FLORA OF THE SPANISH PYRENEES"

by P. MONTSERRAT & L. VILLAR

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AIMS OF THIS EXCURSION

In a week's time, we will see a varied and very attractive landscape through the Spanish Pyrenees, where strong ecological contrasts are conditioned by the topography with its high mountains (from 2600m in the Sierra del Cadí, to 3404m in the Aneto) cut across by deep valleys (Segre, N. Pallaresa, Garona, N. Ribagorzana, Esera, Cinca, Ara and Gállego rivers), and by the differences in soil and mother rock.

Leaving the maritime mediterranean climate of Barcelona, with its vineyards, olive trees, Alep pine and Ulex parviflorus, and sight-seeing the mediterranean maquis, we will soon arrive to the "Pla de Bages" dominated by the Pinus nigra and Quercus pubescens submediterranean forests. Far to the North, after Berga and on the other side of the Cadí, we suddenly arrive to the more continental valley of our excursion, "La Cerdanya", with its irrigated meadows.

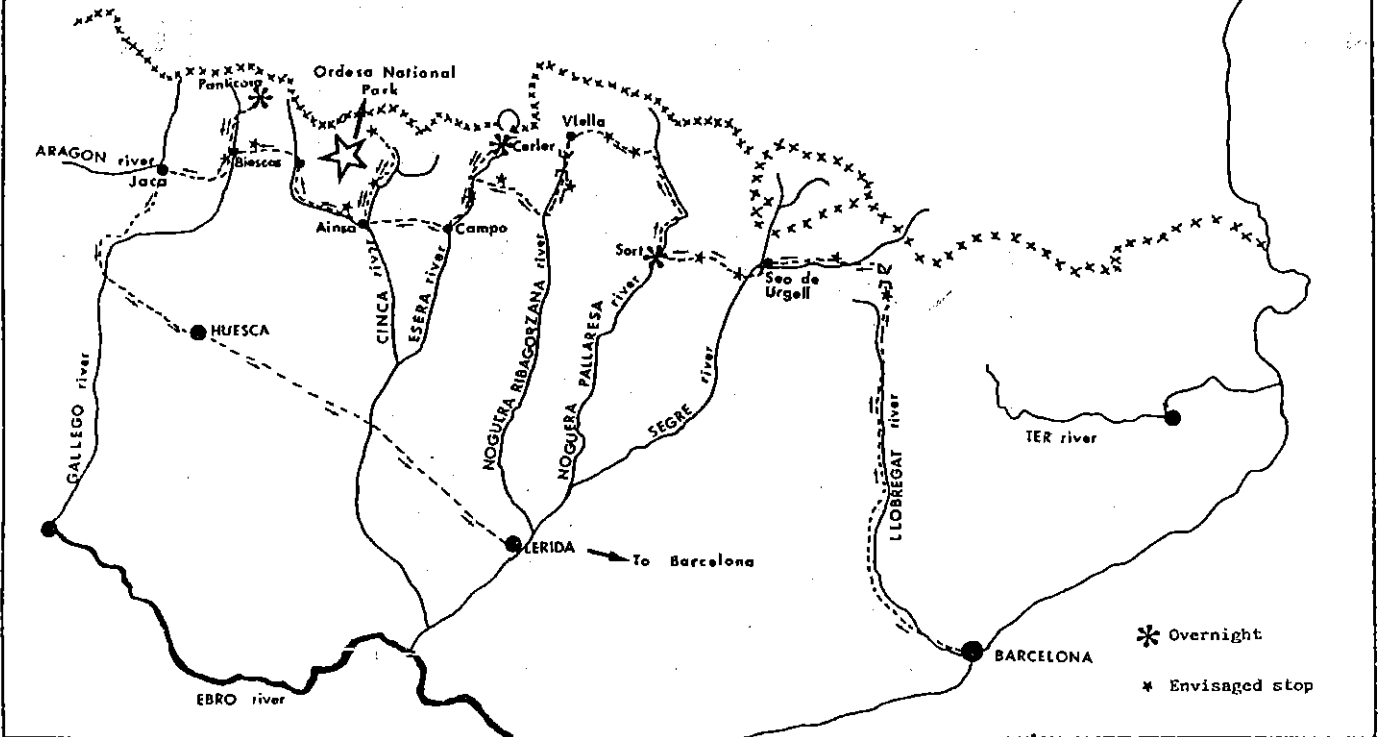
The dryness of these internal valleys determine the dominance of an evergreen oak as Quercus rotundifolia and pine forests (P. nigra and P. sylvestris). Ascending in altitude, near the "Puerto de la Bonaigua", the excellent fir forests indicate the best soils like the "Mata de València" and Aran Valley, a county more open to the oceanic influences and quite different from the Sort area.

Coming back to the south pyrenean slopes, through the "Túnel de Viella", much of the former forest cover has been destroyed, mainly burned by the shepherds, and replaced by pyrophyte scrubs. Nevertheless, in spite of these grassland and pasture landscapes, some patches of oaks, beech and other trees are adorning this portion of the Central Pyrenees.

During the three days in Benasque valley, we will discover a series of high mountain endemic species on the surroundings of Maladeta massif, while on the bottom of the valley, the meadow's landscape became reticulated as the french "bocage" ("fraginal", Fraxinus excelsior, a forage tree).

XIV INTERNATIONAL BOTANICAL CONGRESS

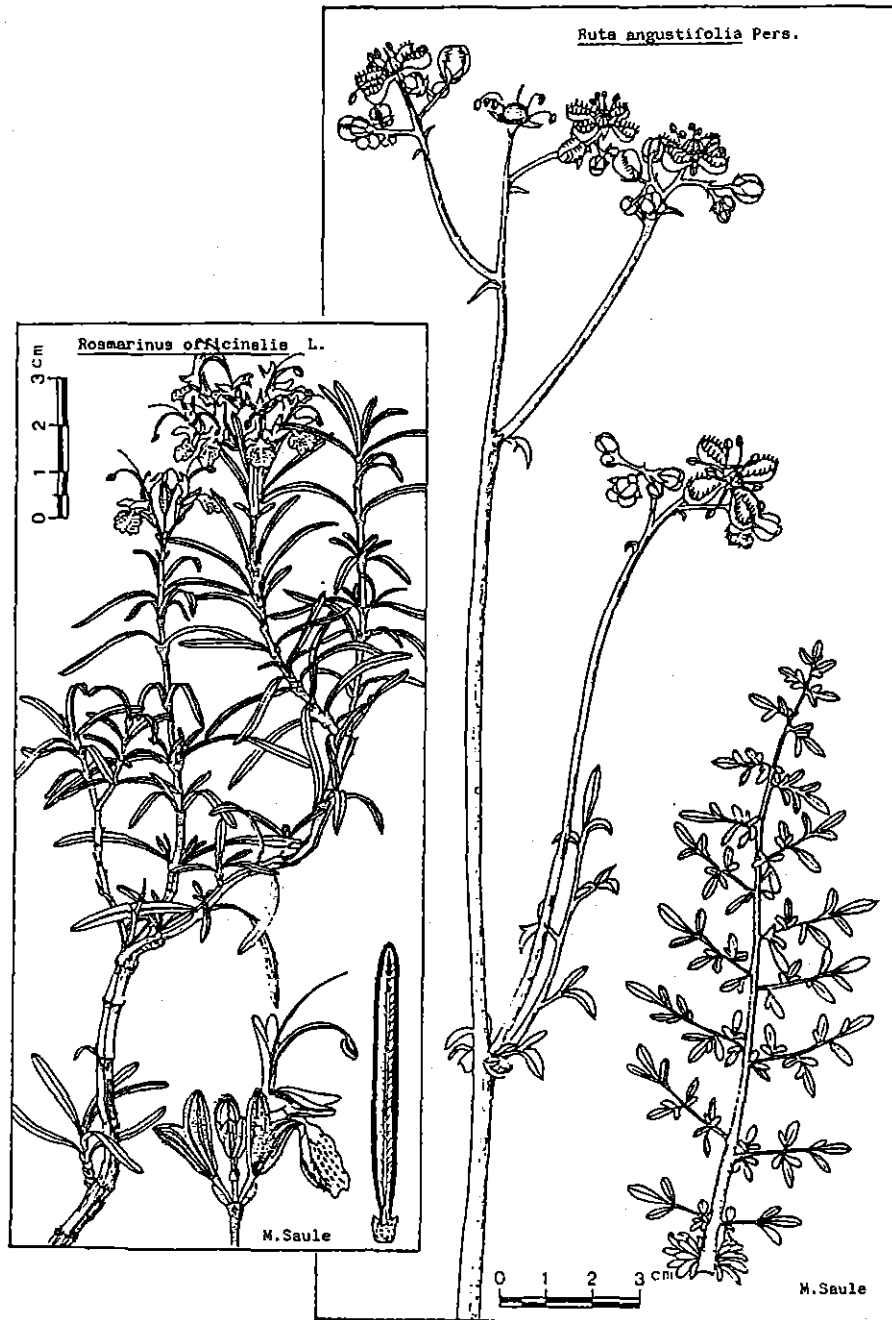
The vegetation and endemic flora of the Spanish Pyrenees . \*\*\*Itinerary\*\*\*



*Solix sativoides* L.: a, pie ♂; b, flor ♂; c, pie ♀; d, flor ♀; e, hoja scabris.  
 (From C. Viciatoso 1951)

*S. Millium*





Afterwards we will go to the West, passing through the "region of the canyons" (Congosto del Ventamillo, Desfiladero de las Devotas, Foz de Jánovas) and making a short visit to the National Park of Ordesa-Monte Perdido at Pineta valley. In this Middle Age County, Sobrarbe, forest remaining well conserved on the steep slopes, together with small and nice meadows. Marls and limestone soils predominate at every level and are full of endemics.

By the Ara bassin, between the Canciás and La Solana, we will see, at the Ribera de Fiscal the *Berberis* communities, as a result of strong and dry wind. Just before Broto, in the Llanos de Planduiar, the very big gravels show us the importance of snow melting in late spring.

Linás de Broto offer a very harmonious landscape--meadows, oak woods-- in contrast with prickly *Echinopartum* scrub of Cotefablo, as a consequence of centuries of burning and grazing.

Coming down versus Biescas, we will see a sample of different types of forest, now attacked by the ravin erosion of eocenic flysch. After the very nice oak forest on sunny slopes, we traverse the Santa Elena Pass and will arrive to the Valle de Tena, in the High Bassin of the Gállego river, where mountains are yet under a oceanic climate.

In the Balneario de Panticosa, as well as in Benasque valley, we will study the subalpine on granite rocks and may be some chionophilous communities, near the alpine zone.

The last day, after the scientific visit to the Instituto Pirenaico de Ecología, at Jaca, and the farewell luncheon, the bus come back directly to Barcelona.

#### DAY-BY-DAY ITINERARIES

##### Aug. 3, Monday

Departure: Hotel NUMANCIA (Numancia, 74) at 9 o'clock

Leaving Barcelona along the Llobregat river, we will see the Montserrat slopes, covered by a mediterranean forest (*Pinus halepensis*,

Rosmarinus, Thymelea tinctoria, Erica multiflora, Pistacia lentiscus...)

The high part of this mountain was unfortunately burned last year and a evergreen oak forest with Viburnum tinus was destroyed.

Near Berga we find the first pyrenean counterforts as the limestone cliffs of Queralt and the vegetation changes so that between oaks and and Scotch pine there are also some beech trees.

First Stop.- SOUTHERN MOUTH OF CADI TUNNEL, nr. Greixa (BARCELONA)

Altitude: 1175 m. U.T.M.: DG 06 83

Half an hour

We intend mainly to have a schematic vision of the vegetation of these southern slopes of the Pyrenees. Following the exposition, we will observe Quercus petraea and Buxus sempervirens mixed with Pinus sylvestris, this pine dominating until 1600 m-1800 m, and over this level Pinus uncinata. Shadow and wetter places are indicated by Corylus avellana and also Fagus sylvatica where fog is persistent.

In general, soils are calcareous, but there are also sandstones and bleached soils, well indicated by some calcifuge species.

Shrubs are represented by:

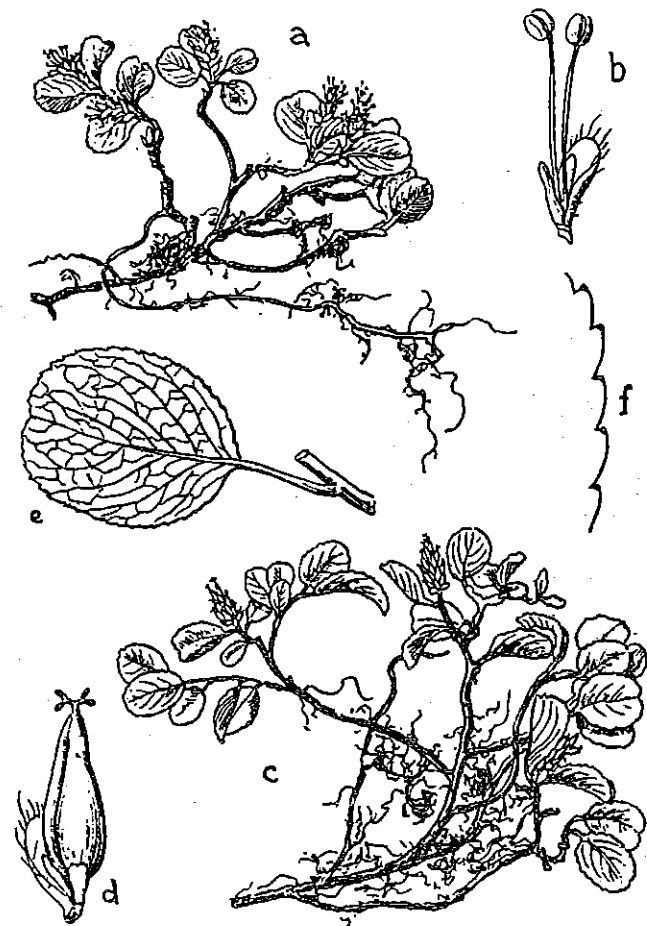
Coronilla emerus	Amelanchier ovalis
Viburnum lantana	Acer opalus
Lonicera xylosteum	Ilex aquifolium
L.etrusca	Crataegus monogyna

Here we have the main herbs:

Arabis turrita	Pimpinella saxifraga
Digitalis lutea	Pyrethrum corymbosum
Melica uniflora	Primula veris
Lilium martagon	Knautia arvensis
Potentilla micrantha	Stellaria holostea
Trifolium medium	Galium maritimum

Acide soil species like: Calluna vulgaris, Deschampsia flexuosa, Prunella grandiflora ssp.pyrenaica, Stachys officinalis, Genistella segetalis, Asplenium adiantum-nigrum, Festuca gr.ovina are present.

Sedum maximum, Hieracium amplexicaule, Sempervivum tectorum, Campanula hispanica, Acinos alpinus and Polypodium vulgare colonise crevices.



*Salix herbacea* L.: a, pie ♂; b, flor ♂; c, pie ♀; d, flor ♀; e, hoja adulta; f, borde foliar.

(from. C.Vicioso 1951)



Some ruderals can be seen in the parking: *Reseda luteola*, *Thlaspi arvense*, *Lepidium campestre*, *Centaurea cyanus*, *Artemisia cf. vulgaris*, *Bilderdykia convolvulus*, *Polygonum aviculare*, *Sinapis arvensis*,

After the Tunnel we arrive to the large valley La Cerdanya, full of meadows established on good soils -laky origin- and under a sunny climate. Summer is warm but the storms are frequent. Landscape do not presents trees, excepting the surrounding of meadows and some apple and pear trees.

South slopes are very dry and conserve some steppic plants. Some years is too late to collect good specimens, but it is always interesting; we will profite the ancient road between Bellver and Martinet for the next stop of the day.

Second stop.- DRY AND SUNNY SLOPES, 2 km. before MARTINET (LERIDA)  
near the river Segre.  
Altitude: 1000 m. U.T.M.: CG 9491  
Half an hour- 1 hour

This is the most continental area of the Pyrenees as is marked by the following plants, some of them endemic:

<i>Reseda alba-barrelieri</i>	<i>Satureja montana</i>
<i>Linum austriacum ssp. collinum</i>	<i>Achillea odorata</i>
<i>Echinops sphaerocephalus</i>	<i>Matricaria punctata</i>
<i>Veronica cf. jacquinii</i>	<i>Teucrium aragonensis</i>
<i>Tragopogon crocifolius</i>	
<i>Melica ciliata</i>	

<i>Anthriscum molle</i>	<i>Centaurea alba</i> -special-
<i>Sideritis bubani</i>	<i>S. hirsuta</i> X <i>bubani</i>
<i>S. hirsuta</i>	
<i>Dianthus pyrenaicus</i>	

<i>Jasonia glutinosa</i>	<i>Lactuca viminea</i>
<i>Telephium imperati</i>	<i>Linum narbonense</i>
<i>Lathyrus sphaericus</i>	<i>Geranium pratense</i>
<i>Galium maritimum</i>	<i>Hyparrhenia hirta</i>
<i>Osyris alba</i>	<i>Euphorbia nicaensis</i>
<i>Santolina pectinata</i> Benth.	<i>Botriochloa ischaemon</i>
<i>Cynodon dactylon</i>	<i>Lavandula pyrenaica</i>
<i>Artemisia campestris ssp. glutinosa</i>	<i>Euphorbia serrata</i>
<i>Thymus vulgare</i>	<i>Plantago sempervirens</i>
<i>Hippocrepis glauca</i>	<i>Delphinium verdunense</i>
<i>Biscutella gr. laevigata</i>	<i>Erysimum gr. grandiflorum</i>

Some isolated trees of *Pinus nigra ssp. salzmannii* remember us the

affinities of this vegetation with the oro-mediterranean element well distributed in Eastern Spain (Cazorla, Teruel...). This penetration of iberian plants arrives until de french part of Cerdanya (Saillagouse, Mont-Louis).

Following the Segre, we will pass through the "Canal Baridana" narrow part cutted into the granite and schistes rocks colonized by the Asarina procumbens endemic community of the East Pyrenees. This area was dedicated to the vineyards, terraced in south slopes; but the mediterranean floristic element comes here with Quercus rotundifolia, Juniperus phoenicea, Arceuthobium oxycedri, Pistacia terebinthus, Globularia alypum, Lavandula latifolia, Celtis australis, Ficus carica...

In the bottom of the valley, we found Coriaria myrtifolia, Cirsium monspessulanum, etc.

SEO DE URGEL. Shopping and lunch at the Hotel MUNDIAL.

Departure: 16 h -30 p.m.

Seo de Urgel-Castellciutat-Adrall

Third stop .- Nr. PARROQUIA D'ORTO (LERIDA)

Altitude: 750 m. U.T.M.: CG 6687

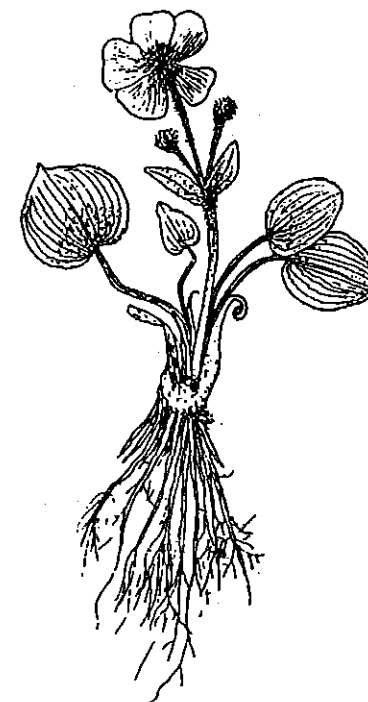
Half an hour, facultative (time-table or very hot)

Soil: schists.

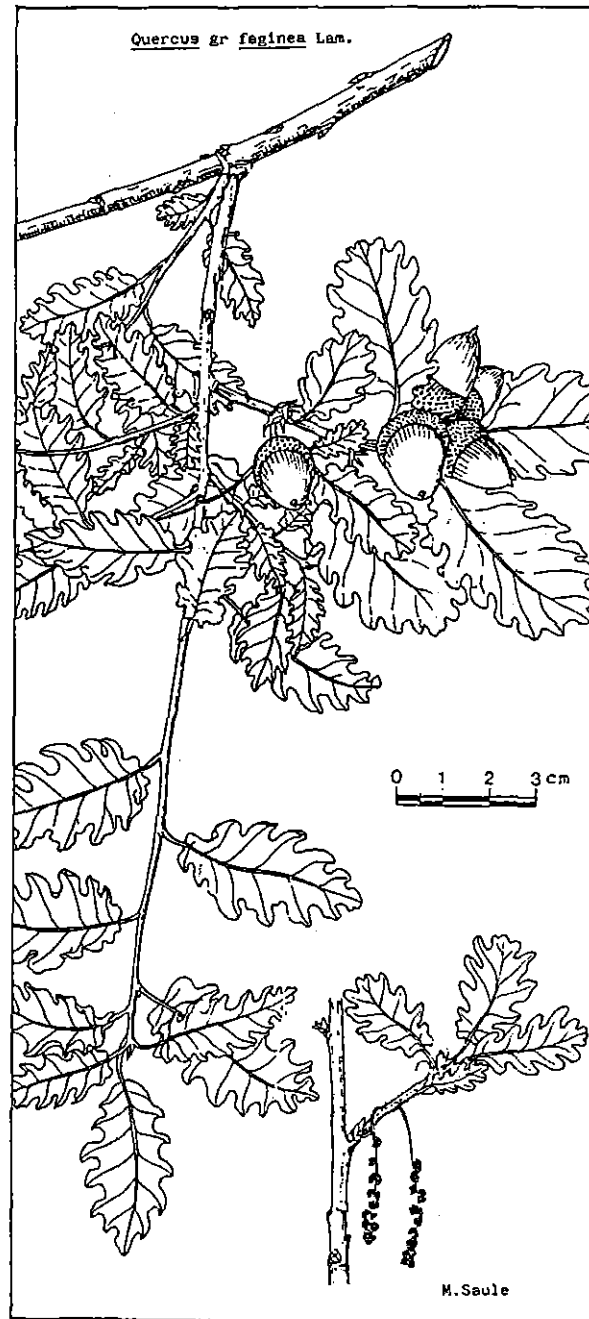
This is a dry forest community, composed by Quercus rotundifolia, Q. gr.faginea, Celtis australis, Prunus mahaleb, Pistacia terebinthus, Prunus mahaleb, Cistus laurifolius, between the trees and shrubs.

Special herbs as Lathyrus cirrhosus, Peucedanum oreoselinum, Hieracium sabaudum, Satureja montana, Silene inaperta, Convolvulus cantabrica, Psorelea bituminosa, Astragalus monspessulanus, Odontites sp., Centaurea leucophaea, Asplenium onopteris, Phleum phleoides, Rubia peregrina, Fumana procumbens, Stachys recta, Euphorbia cyparissias, Achillea odorata, Carex divulsa, Herniaria glabra, etc. can be found.

This place is very nice to see the strong contrast between the irrigated meadows -on the bottom of the valley- and the dry woods, glaucous, full of thermophilous plants.



274 Ranunculus parnassifolius L.



After Pallerols del Cantó, little village, we regain the *Pinus sylvestris* woods with *Epilobium angustifolium* and *Heracleum sphondylium* in the border, together with *Sambucus racemosa*.

Some burned surfaces are indicated by *Senecio adonidifolius*, *Cytisus purgans*, *Festuca gautieri*, *Arctostaphylos uva-ursi*, *Calluna vulgaris* and other (nr. 1400 m).

Fourth stop.- Cross-road to GUILS DEL CANTO (LERIDA)

Altitude: 1500 m. U.T.M.: CG 5891

Half an hour- 1 hour.

Beautiful belvedere of the Sierra del Cadí and Alt Urgell region, to the East. We can study two types of vegetation, a grassland now derelict, and the *Anthyllis montana-Ononis striata* community.

Situated on a deep soil, the grassland contains:

<i>Geum hispidum</i> var. <i>albarracinense</i>	<i>Carum carvi</i>
<i>Carlina cynara</i>	<i>Eryngium bourgati</i>
<i>Cirsium eriophorum</i>	<i>Rumex crispus</i>
<i>Leucanthemum pallens</i>	<i>Gentiana cruciata</i>
<i>Armeria gr. plantaginea</i>	<i>Dianthus carthusianorum</i>
<i>Rhynanthus mediterraneus</i>	<i>Cirsium acaule</i>
<i>Carduus carlinifolius</i>	<i>Trifolium montanum</i>
<i>Lathyrus pratensis</i>	<i>Achillea millefolium</i>
<i>Filipendula vulgaris</i>	<i>Lotus alpinus</i>
<i>Carex contigua</i>	<i>Potentilla reptans</i>
<i>Plantago serpentina</i>	<i>Centaurea jacea-pratensis</i>

On the permotriassic red sandstone rocks, exposed to the strong wind, we will note some typical species of crevices as *Saxifraga paniculata*, *Asplenium fontanum*, *Lonicera pyrenaica*, *Plantago holosteum*, *Achnatherum calamagrostis*. On the same place a dry pasture is developed:

<i>Ononis striata</i>	<i>Astragalus danicus</i>
<i>Medicago suffruticosa</i>	<i>Coronilla minima</i>
<i>Paronychia kapela serpyllifolia</i>	<i>Helianthemum alpestre</i>
<i>Achillea odorata</i>	<i>Trinia glauca</i>
<i>Festuca indigesta</i>	<i>F. gautieri</i>
<i>Seseli montanum</i>	<i>Centaurea alba</i>
<i>Helianthemum nummularium</i>	<i>Campanula hispanica</i>
<i>Teucrium chamaedrys</i>	<i>Thymus praecox</i>
<i>Anthyllis montana</i>	<i>Centaurea scabiosa</i>
<i>Bupleurum ranunculoides</i>	<i>Ptychotis heterophylla</i>
<i>Reseda lutea</i>	<i>Trifolium scabrum</i>
	<i>Asperula cynanchica</i>

By the Col del Cantó, near Rubió (1600 m) from the bus we will see on the batters the surprising Polygonum alpinum, Stellaria uliginosa, Epi-lobium tetragonum, Plantago monosperma, Jasione crispa and others.

Sort (overnight).

#### Aug. 4, Tuesday

Departure from the Hotel, after banking, at 9h.15 a.m.

Between Sort and Esterri d'Aneo, people is making a new road as a consequence of the heavy and catastrophic rains ocurred some years ago; eventually we risk to be stopped during about 30 m.

Over this trajet, the Noguera Pallaresa river excavated a deep and narrow valley in the slaty soils, becoming very hot in summer. On these steep slopes, Quercus rotundifolia is dominant, sometimes together with Juniperus phoenicea.

In contrast with this mediterranean landscape, near Esterri and Valencia d'Aneo, the valley will be wider than before, the soils are deeper and wetter and the landscape also changes; the meadows are now common.

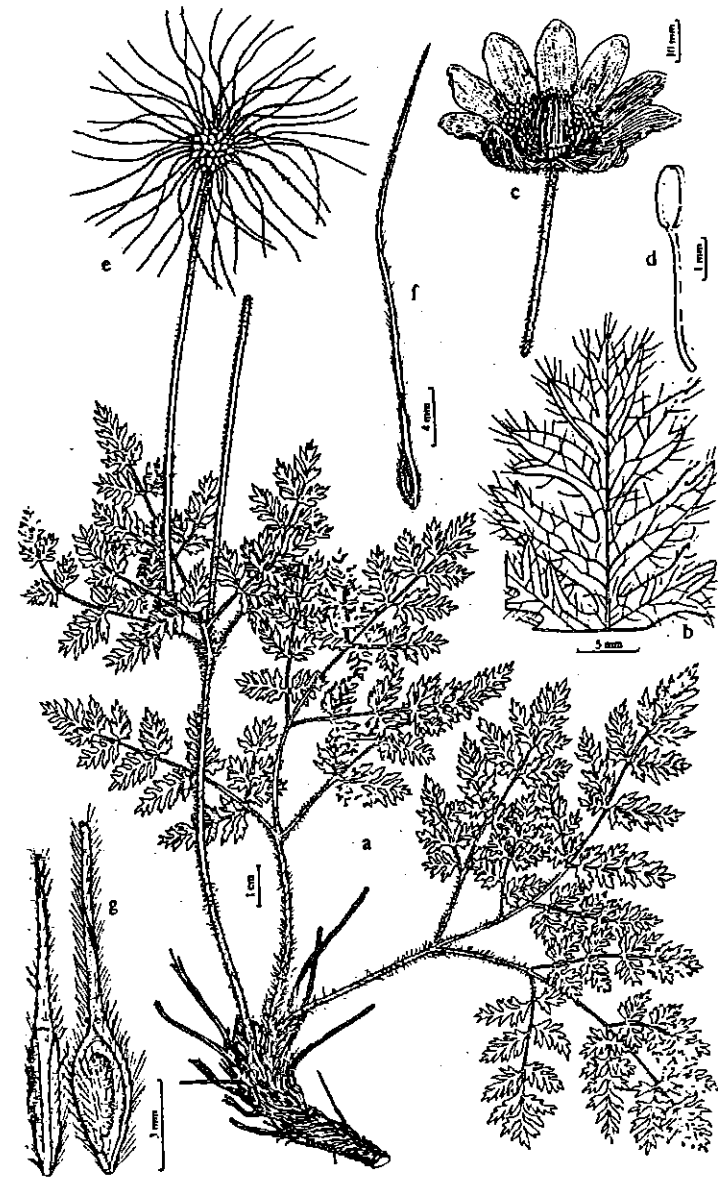
Near the road conducting to the Puerto de la Bonaigua, we will find everywhere Corylus avellana communities, and also Alnus glutinosa, Populus tremula, Fraxinus excelsior colonizing a colluvium that are unstable and humid. On this environment, at 1450 m, the fir is beginning on the north slopes. On the contrary, south slopes were traditionally burned, and we find Cytisus purgans and Senecio adonidifolius.

First Stop.- PLANELL DE LA COMA, BOSCO DE JARDA, also called "MATA DE VALENCIA" (LERIDA)

Altitude: 1550-1600 m. U.T.M.: CH 3822

We are now studying one of the better fir woods of the Pyrenees, very rich in species well adapted to the intense shadow and humide soils. But there are upstairs a very big cliff and periodically some rocks break down the wood and allow the germination of megaphorbic plants (Betulo-Ade-nostyletea). As it is very interesting, we can remind 1 hour.

Ferns are represented by Dryopteris filix-mas, D.oreades, Gymnocarpium dryopteris, Polystichum lonchitis, P. x illirycum, P. aculeatum, Dryop-teris dilatata, Athyrium filix-femina and Cystopteris fragilis.



*Pulsatilla alpina* subsp. *font-queri*, Sierra de Guara, Huesca (JACA 376474): a) hábito; b) detalle de un segmento foliar; c) flor; d) estambre; e) pedúnculo fructífero; f) carpelo con estilo; g) aquenio en vistas dorsal y lateral.



As typical species of the fir pyrenean woods (*Abies alba*), we can consider:

<i>Dentaria pentaphyllos</i>	<i>Lonicera nigra</i>
<i>Veronica urticifolia</i>	<i>Luzula nivea</i>
<i>Rosa pendulina</i>	<i>Phyteuma pyrenaicum</i>
<i>Pulmonaria affinis</i>	<i>Pyrola minor</i>
<i>Pyrola secunda</i>	<i>Micelis muralis</i>
<i>Melampyrum pratense</i>	<i>Helleborus viridis occidentalis</i>
<i>Ranunculus nemorosus</i>	<i>Asperula odorata</i>
<i>Prenanthes purpurea</i>	<i>Oxalis acetosella</i>
<i>Actaea spicata</i>	<i>Lathyrus vernus</i>
<i>Galeobdolon luteum</i>	<i>Paris quadrifolia</i>
<i>Polygonatum verticillatum</i>	<i>Allium victorialis</i>
<i>Lilium martagon</i>	<i>Melica nutans</i>
<i>Monotropa hypopitys</i>	<i>Crepis lampsanoides</i>
<i>Ulmus montana</i>	<i>Prunus padus</i>

To the stony wood belong the next group:

<i>Sambucus racemosa</i>	<i>Salix caprea</i>
<i>Lonicera alpigena</i>	<i>Myrrhis odorata</i>
<i>Acer platanoides</i>	<i>Ribes alpinum</i>
<i>Ribes petraeum</i>	<i>Heracleum sphondylium</i>
<i>Epilobium spicatum</i>	<i>Elymus caninus</i>
<i>Brachypodium sylvaticum</i>	<i>Chaerophyllum aureum</i>
<i>Astrantia major</i>	<i>Acco nitum pyrenaicum</i>
<i>Rubus idaeus</i>	<i>Geranium sylvaticum</i>
<i>Poa nemoralis</i>	<i>G. robertianum</i>
<i>Stellaria graminea</i>	<i>Conopodium majus</i>
<i>Carlina acaulis</i>	<i>Verbascum nigrum</i>
<i>Cirsium eriophorum</i>	<i>Carduus carlinifolius</i>
<i>Stachys alpina</i>	<i>Knautia cf. arvernensis</i>
<i>Campanula latifolia</i> (very rare, do not collect, please)	

Climbing to the Puerto, near La Verge d'Ares, plenty of granitic scree's with *Rhododendron ferrugineum* and pastures progressively snow-covered with *Carduus carlinoides*, can be seen.

Second Stop. - PORT DE LA BONAIGUA (LERIDA)

Altitude: 2070 m. U.T.M.: CH 3425

1 hour

Subalpine vegetation, pastures and cold springs, etc.

Beautiful sightseen versus Aran Valley. Horses, cows and sheep graze intensively this area.

First of all, we visit the *Rhododendron-Empetrum* community on the north slope, snow-covered til june:

Rhododendron ferrugineum	Vaccinium uliginosum
Empetrum hermaphroditum	V. myrtilus
Calluna vulgaris	Gentiana burseri
Veronica bellidioides	Lychnis alpina
Homogyne alpina	Leontodon pyrenaicus
Androsace carnea	Campanula recta
Rosa pendulina	Sorbus aucuparia
Primula integrifolia	Carex sempervirens pseudotristis
Pedicularis pyrenaica	Luzula nutans
Festuca eskia	Nardus stricta
Dryopteris expansa	Athyrium distentifolium
Juniperus communis ssp. alpina	Thesium pyrenaicum
Rumex acetosa	Festuca cf. nevadensis
Soldanella alpina	Silene rupestris
Phleum alpinum	Luzula spicata
	Oxalis acetosella

In august, grasslands are heavy grazed and we will go to the Eriophorum latifolium communities, besides the water:

Sphagnum sp. cushions are covered by Loiseleuria procumbens, Parnassia palustris, Viola palustris, Potentilla erecta, Comarum palustre, Saxifraga stellaris, Luzula multiflora ssp. pyrenaica, Euphrasia minima ...

After this stop, we begin to descend into the Aran Valley and just on the turning of the road we will watch on limestone soils, the typical Arctostaphylo-Pinetum uncinatae wood, with:

Pinus uncinata	Scabiosa velutina
Arctostaphylos uva-ursi	Leuzea centauroides
Cotoneaster integerrima	Iberis sempervirens
Ononis rotundifolia	Crepis albida
O. natrix	Lactuca perennis
Anthericum liliago	Geranium sanguineum
Rhamnus alpina	Stachys recta
Bupleurum falcatum	Amelanchier ovalis
Laserpitium siler	Festuca paniculata
L. latifolium	Seseli libanotis
L. nestleri	Ranunculus thora
Sideritis hyssopifolia	Convallaria majalis
Helianthemum nummularium	Thesium alpinum
Teucrium pyrenaicum	Sesleria albicans
	Valeriana montana

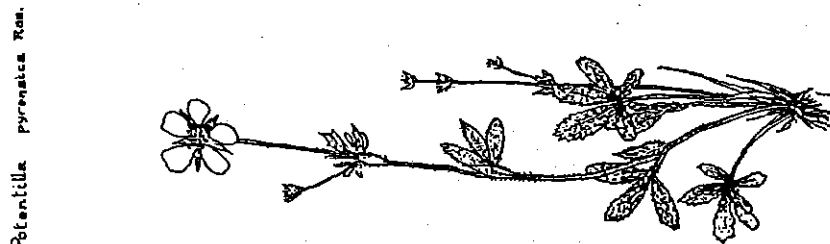
Just in this place, so-called "Solana de Ruda", was found Saponaria bellidifolia, very rare Caryophyllaceae, only known from another pyrenean locality (near Gavarnie).

Salardú: Hostal LACREU, lunch, 1270 m.

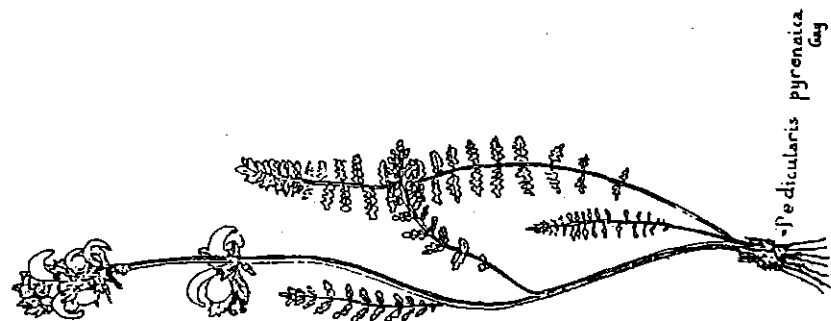
In the afternoon, we pass Viella and will take direction to the South to gain the "Túnel de Viella". Aran valley is currently one of the more tourist site of the Pyrenees, because of the cool summer, sky stations, french border, and so on. Nevertheless, meadows are unfortunately more



*Boraginaceae hibernica L.*

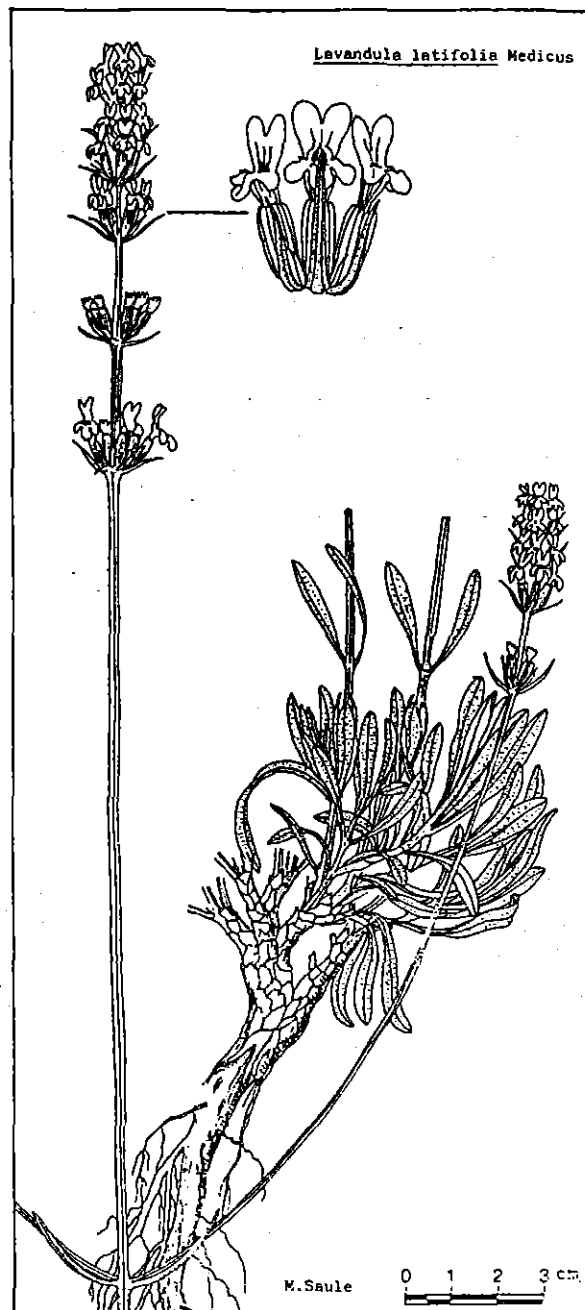


*Potentilla pyrenaica Ram.*



*Pedicularis pyrenaica Gay*





and more abandoned.

Third Stop.- University Laboratory (Hospital de Viella, on the south mouth of the Tunnel, Noguera Ribagorzana bassin).

SCIENTIFIC VISIT. University of Barcelona, Fac. of Geology and Biology conductors.

1 hour

Fagus sylvatica and Abies alba forest are here very damaged by tourist campers in summer (trampling).

Following the itinerary, after Vilaller village, we will turn to the west, and just on the other side of the Ribagorzana, on the beginning of the Baliera valley we will observe gypse and red sandstones from the Keuper. Not far from here, around Pont de Suert, this formation are covered by Ononis tridentata shrubs and other gypsicolous, but the dryness of the moment don't advise its visit.

Passing by the "Col de la Espina" (1407 m) we enter in the Isábena valley, offering us a very beautiful landscape of meadows surrounded by trees, submitted to a traditional management.

On the neighbouring of Laspaúles, is still conserved the rare Armoracia rusticana, formerly cultivated as medicinal or condimentary plant, but now disappearing.

Fourth Stop.- Col de Fades (HUESCA)

Altitude: 1470 m. BH 9806

1 hour

Lovely belvedere to the west and south, looking upon the Turbón, Sierra de Chia and Possets Massifs, limiting the Esera valley.

In spite of the dominance of sandy siliceous soils, the heavy grazed pastures between Buxus, Pinus sylvestris, Cytisus purgans, Echinopartum horridum (spiny legume of the Central Pyrenees), show us many calcicole species related to the Bromion communities:

Globularia cordifolia  
Seseli montanum  
Avenula pratensis ssp. iberica  
Vicia onobrychioides  
Prunella laciniata  
Plantago media  
Teucrium pyrenaicum guarensis

Lavandula angustifolia  
Koeleria vallesiana  
Juniperus communis  
 ssp. hemisphaerica  
Sanguisorba minor  
Coronilla minima  
Festuca gr. ovina

Stachys officinalis

*Carex caryophyllea*  
*Pimpinella saxifraga*  
*Hippocrepis comosa*  
*Cirsium acaule*  
*Salvia pratensis*

*Scabiosa columbaria*  
*Genista scorpius*  
*Bromus erectus*  
*Dianthus monspessulanus*  
*Ononis cristata*

Near the small springs we find more humid grasslands, indicated by *Genista tinctoria*, *Dianthus deltoides*, *D. armeria*, *Leontodon autumnalis*, *Euphrasia hirtella*, *Centaureum pulchellum*, *Succisa pratensis*, *Deschampsia caespitosa* *asp. hispanica*, *Senecio jacobaea*, *Juncus conglomeratus*, *Carex ovalis*, *C. pallescens*, *Agrostis capillaris*, *Holcus mollis*...

We will take the bus and descend to Castejón de Sos. From this village we will turn to the north and after Benasque, very nice village, we will climb till Cerler, for staying during three nights.

Aug. 5, Wednesday CERLER (1500m)- EMPRIU (1900m)- COL DE BASIBE (2230 m)  
 Departure from the Hotel, at 8 h.30m.

By bus till Empriu. On foot after. (take mountain boots and rainproof wear, as well as a canteen)

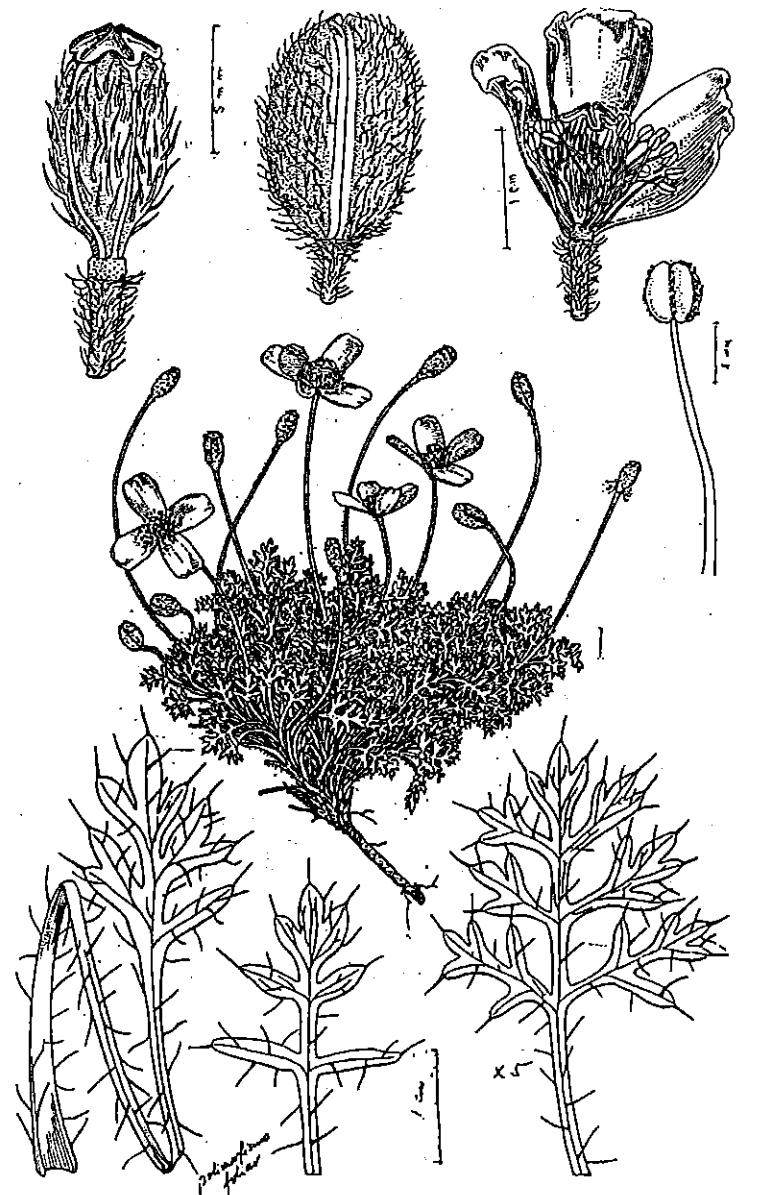
We will spend all day in a high mountain journey. The Empriu's pasture -and also Basibé-- are forbidden to cattle until 12 August, so that we will profit luxuriant grassland to collecting good specimens before cows. But upstairs, about 2300 m, sheep and goats have already grazed; nevertheless, many endemics from screes are allways in good conditions.

Near the shepherd's refuge, first of all, we find nitrophilous species like *Chenopodium bonus-henricus*, *Carum carvi*, *Thlaspi arvense*, *Galeopsis tetrahit* *Polygonum aviculare*, *Sisymbrium pyrenaicum*, *Rumex crispus*, *Urtica dioica*, *Echium vulgare* and specially the endemic *Achillea pyrenaica* in bloom. (1920 m).

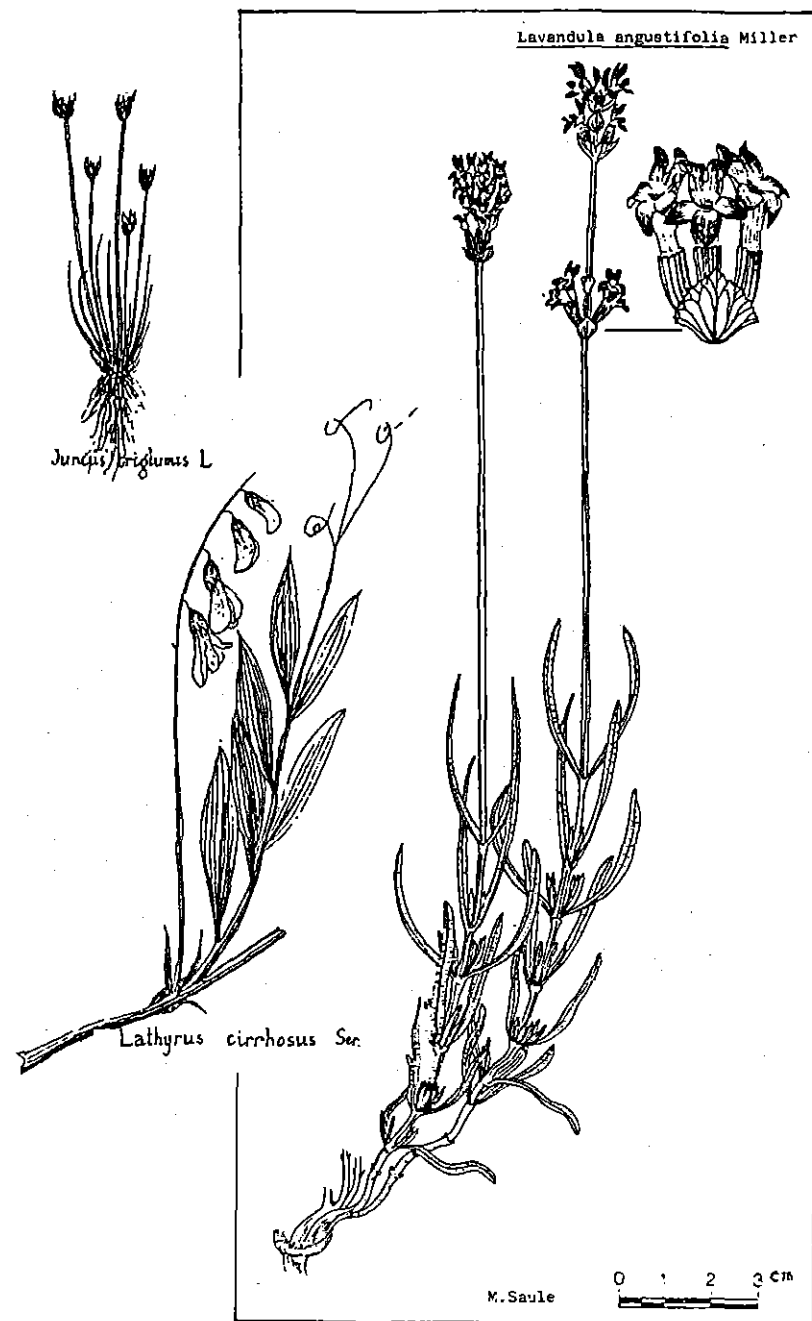
Really, the bottom of the valley remembers a meadow (*Trisetum-Polygonum*), and we noted the following species:

*Arrhenatherum elatius*  
*Phleum pratense*  
*Valeriana officinalis*  
*Centaurea endressii*  
*Hypochoeris maculata*  
*Crepis pyrenaica*  
*Carlina cynara*  
*Rhinanthus mediterraneus*

*Dactylis glomerata*  
*Ph. alpinum*  
*Trollius europaeus*  
*Gentiana lutea*  
*Crepis grandiflora*  
*Trisetum flavescens*  
*Leucanthemum vulgare*  
*Epilobium alpestre*



*Papaver lepeyrousianum* Guterm. (*P. suaveolens* Lapeyr.)



Some hygrophilous species are found in the more humid parts, or near the streams: *Allium schoenoprasum*, *Triglochin palustre*, *Veratrum album*, *Polygonum bistorta*, *Carex nigra*, *Trollius europaeus*, *Festuca rivularis*, *Saxifraga aizoides*, *Scirpus pauciflorus* ...

On the gravels here we have:

<i>Vicia pyrenaica</i>	<i>Crepis albida</i>
<i>Rumex scutatus</i>	<i>Sideritis hyssopifolia</i>
<i>Linaria alpina</i>	<i>Astragalus sempervirens</i>
<i>Galeopsis pyrenaica</i>	<i>Trifolium thalii</i>
<i>Hutera cheiranthus</i>	<i>Epilobium collinum</i>
<i>Silene vulgaris prostrata</i>	<i>Linum catharticum</i>

More or less widespread are the pasture composed by:

<i>Festuca nigrescens</i>	<i>Senecio adonidifolius</i>
<i>Nardus stricta</i>	<i>Ornithogalum orthophyllum</i> (O.tenuif.)
<i>Meum athamanticum</i>	<i>Bellardichloa violacea</i>
<i>Iris latifolia</i>	<i>Trifolium alpinum</i>
<i>Ranunculus amplexicaulis</i>	<i>Juniperus communis</i>
<i>Luzula nutans</i>	<i>Pinus uncinata</i> (young)

About 2000-2100 m, around many small springs, grow :

<i>Eriophorum latifolium</i>	<i>Triglochin palustris</i>
<i>Molinia coerulea</i>	<i>Epilobium palustre</i>
<i>Carex davalliana</i>	<i>Primula farinosa</i>
<i>C.panicea</i>	<i>Cardamine pratensis</i>
<i>C.nigra</i>	<i>Bartsia alpina</i>
<i>Juncus alpinus</i>	<i>Parnassia palustris</i>
<i>Pedicularis mixta</i>	<i>Dactylorhiza maculata</i>
<i>Selinum pyrenaicum</i>	<i>Swertia perennis</i>

*Juncus triglumis*

The last one is very rare on the Pyrenees and follows the coldest water.

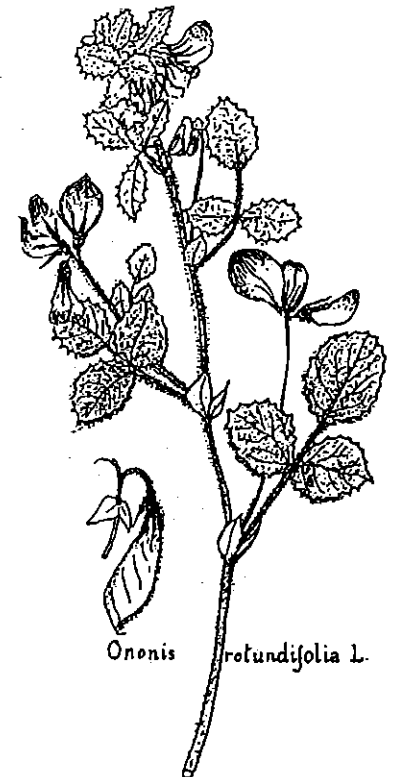
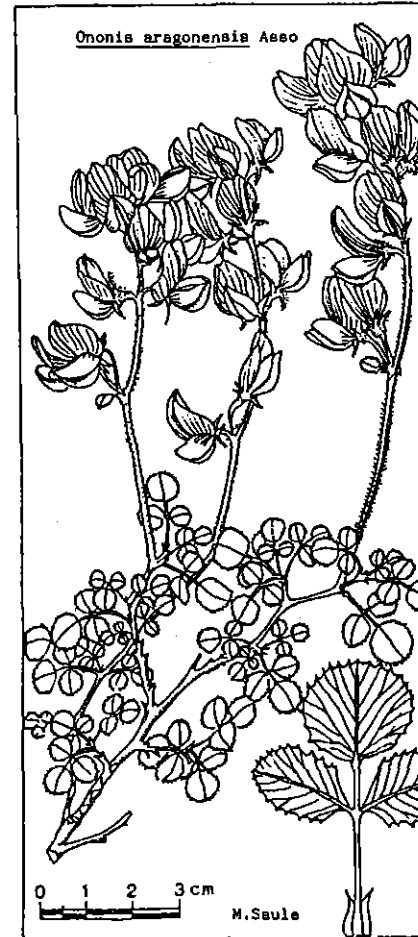
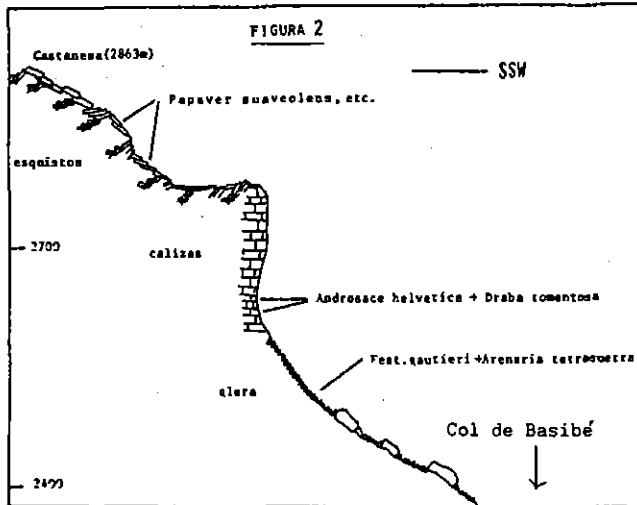
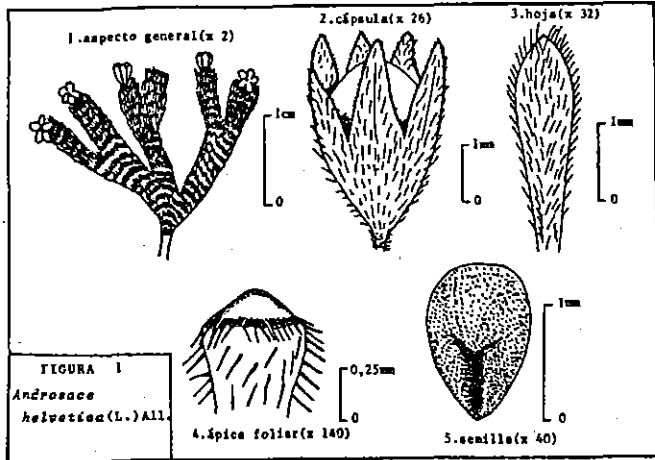
In addition, we cannot forget *Adonis pyrenaica*, endemic alpine-pyrenean-cantabrian, and:

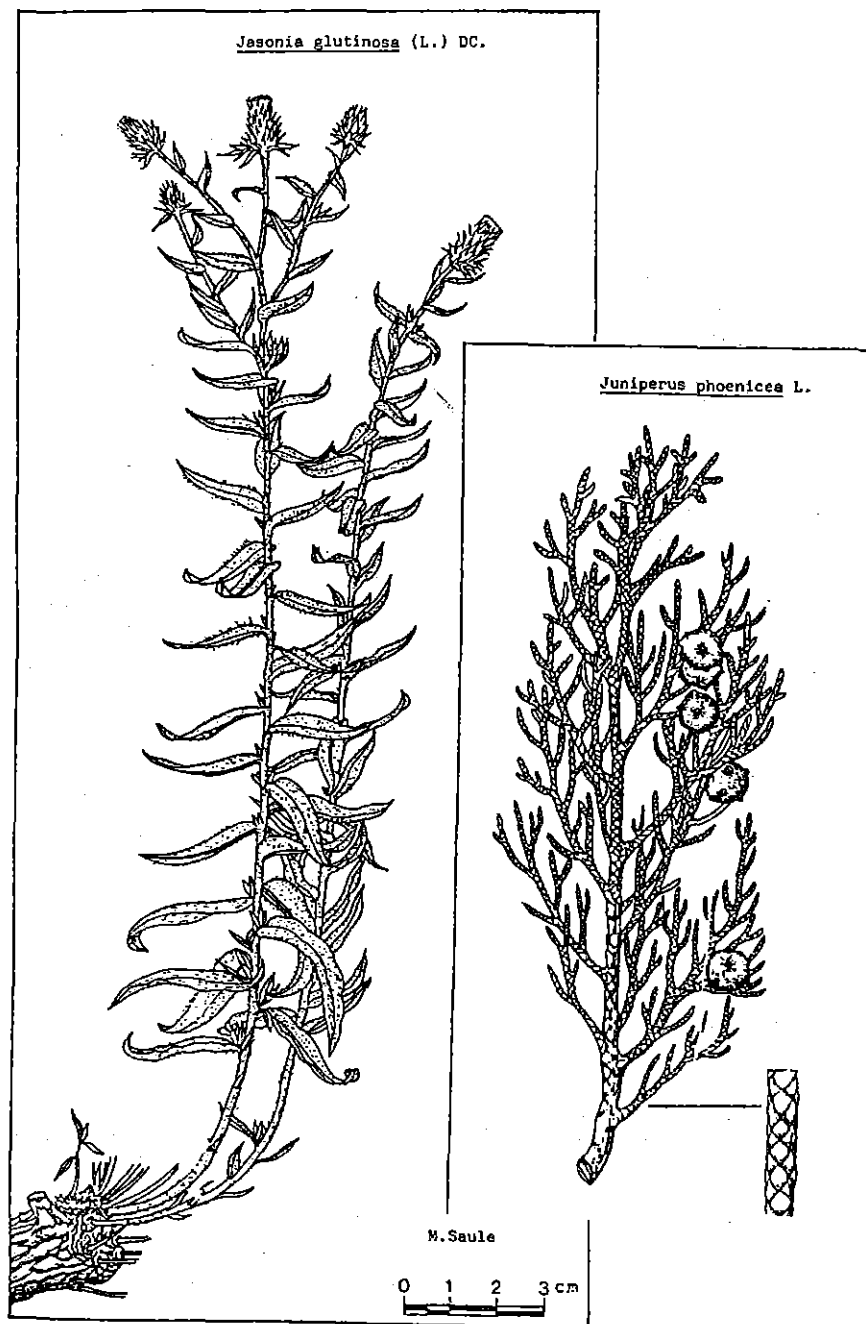
<i>Brimeura amethystina</i>	<i>Daphne mezereum</i>
<i>Ononis cristata</i>	<i>Scutellaria alpina</i>
<i>Gentiana nivalis</i>	<i>Dianthus geminiflorus</i>
<i>G.alpina</i>	<i>Poa cenisia</i>
<i>Silene ciliata</i>	<i>Tussilago farfara</i>
<i>Festuca eskia</i>	<i>Aconitum napellus</i>
<i>Botrychium lunaria</i>	<i>Lathyrus pratensis</i>
<i>Veronica langei</i>	<i>Plantago monosperma</i>
<i>Helictotrichon planifolium</i>	<i>Gregoria vitaliana</i>
<i>Daphne cneorum</i>	<i>Thesium pyrenaicum</i>

COL DE BASIBE. (2230 m) U.T.M.: CH 0214.

If eventually some persons do not follow the group, please come back to this point or to the descending way about 5 h. p.m.

185  
186  
187





Open to the strong wind coming from the North-west to the South-east, versus Castanesa valley, the vegetation of Col is very discontinuous and the soils eroded. Of course, the flora is very specialized and rich, forming a very heterogeneous complex.

As the cryoturbation is very active, many pioneer species can be found:

<i>Carex rupestris</i>	<i>Crepis pygmaea</i>
<i>Elyna myosuroides</i>	<i>Iberis spathulata</i>
<i>Festuca gautieri</i>	<i>Saxifraga oppositifolia</i>
<i>Galium pyrenaicum</i>	<i>Minuartia verna</i>
<i>Plantago monosperma</i>	<i>Poa cenisia</i>
<i>Scleranthus perennis</i> ssp. <i>polycarpus</i>	<i>Thymus nervosus</i>
<i>Gregoria vitaliana</i>	<i>Festuca pyrenaica</i>
<i>Linaria alpina</i>	<i>F. glacialis</i>
<i>Arenaria tetraquetra</i> (regional endemic)	<i>Alyssum cuneifolium</i>
<i>Silene acaulis</i>	<i>Oxytropis pyrenaica</i>
<i>Ranunculus parnassifolius</i> ssp. <i>heterocarpus</i>	<i>Potentilla nivalis</i>
<i>Draba aizoides</i>	

The interdependence between ecological factors, like exposition, soil erosion... and plant communities are extremely illustrative on this area, and surely people could spend there much time, but we must to continue not too far, until the base of Pico de Castanesa.

Schistose screes south-faced, about 2450 m of altitude, are colonized by *Cirsium glabrum* (a pyrenean endemic), *Festuca pyrenaica*, and so on. We took there the following releve:

Inclination and exposition: 20-30 ° to the South

Cover: 10-15 %. Unstable soil, on the foot of the cliff.

Surface: 16 (100) m<sup>2</sup>.

2.2 <i>Alyssum cuneifolium</i>	(+) <i>Helictotrichon planifolium</i>
+3 <i>Arenaria tetraquetra</i>	+ <i>Koeleria vallesiana</i>
+ <i>Iberis spathulata</i>	(+) <i>Arenaria grandiflora</i>
+ <i>Crepis pygmaea</i>	(+) <i>Leucanthemopsis alpina</i>
+ <i>Festuca gautieri</i>	(+) <i>Saxifraga oppositifolia</i>
+ <i>Galium pyrenaicum</i>	(+) <i>Reseda glauca</i>

Figures of a limestone cliff exhibit the *Androsace helvetica*, only known from five pyrenean localities (Salettes, Troumouse, Vallivierna, Castanesa and Midi de Bigorre), *Potentilla alchemilloides*, *P. nivalis*, *Lonicera pyrenaica*, *Rhamnus pumila*, *Globularia repens*, *Ononis cristata*, and so on.

On the biggest scree, now exposed to the south, very steep (40-50 °), but more densely covered (80 %), at 2460 m., U.T.M.: CH 0214, we discover

the endemic *Vicia argentea* community, (see MONTSERRAT, 1983), Surface:  
50(100) m2.

1	2	3	
1.3	5.4	4.3	<i>Vicia argentea</i>
2.2	2.2	2.2	<i>Sideritis hyssopifolia</i>
2.2	1.2	1.2	<i>Helianthemum nummularium</i>
3.3	1.1	2.2	<i>Festuca gautieri</i>
.	1.2	1.2	<i>F. cf. nevadensis</i>
(+)	3.3	2.2	<i>Achillea masclansii</i> (A.gr.odorata)
(+)	2.1	2.1	<i>Carduus carlinifolius</i>
1.2	1.3	1.3	<i>Cerastium arvense</i>
2.2	1.3	+	<i>Scutellaria alpina</i>
+	1.1	1.1	<i>Erysimum pyrenaicum</i>

1	2	3		1	2	3	
1.1	(+)	+	<i>Rhinanthus mediterraneus</i>	1.1	.	+	<i>Anthyllis vulneraria</i>
+	+	+°	<i>Cirsium glabrum</i>	+	.	+	<i>Biscutella</i> sp.
.	1.1	2.2	<i>Sisymbrium pyrenaicum</i>	(+)	+	.	<i>Rumex scutatus</i>
(+)	2.2	2.2	<i>Arrhenatherum elatius</i>	.	1.1	.	<i>Carduus carlinoides</i>
(+)	+	1.1	<i>Adonis pyrenaica</i>	.	1.2	.	<i>Acinus alpinus</i>
.	+	1.2	<i>Dactylis glomerata</i>	.	1.1	.	<i>Aconitum compactum</i>
.	1.2	(+)	<i>Viola pyrenaica</i>	1.1	.	.	<i>Vicia pyrenaica</i>
+	+	(+)	<i>Carlina acaulis</i>	1.1	.	.	<i>Helianthemum alpestre</i>
2.3	.	.	<i>Sesleria albicans</i>	1.2	.	.	<i>Bupleurum ranunculoides</i>
1.2	+	.	<i>Helictotrichon planifolium</i>	1.2	.	.	<i>Koeleria vallesiana</i>
(+)	+	.	<i>Orobanche</i> sp.	1.2	.	.	<i>Thymus praecox</i>

In addition: *Euphorbia cyparissias*, *Euphrasia salisburgensis*, *Campanula ficarioides*, *Gentiana verna*, *Arenaria grandiflora*, *Astragalus sempervirens*, *Erigeron alpinus*, *Linaria alpina*, *Festuca cf. durissima*, *Taraxacum* sp., *Alyssum cuneifolium*, *Minuartia verna* (in n° 1); *Frimula veris*, *Echium vulgare* (in n°2); *Solidago virgaurea*, *Potentilla alchemilloides*, *Poa nemoralis* var., *Rhamnus pumila* (in n°3).

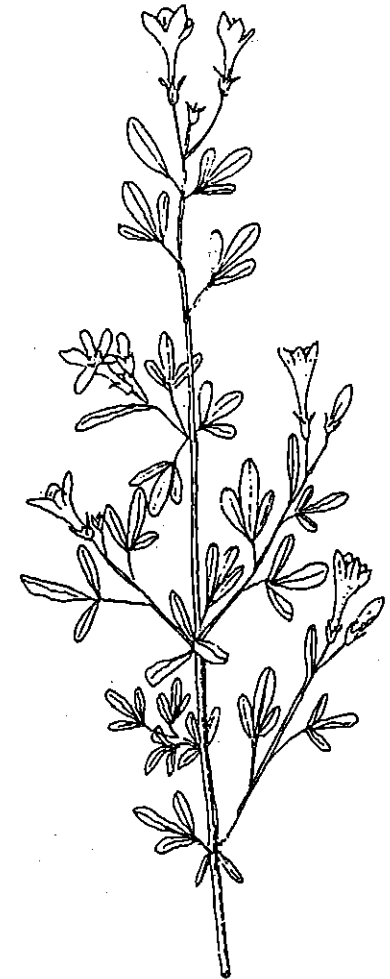
In a shade and concave place, protected from the rain by the limestone cliff, at 2460 m., grows the rare iberopyrenean and N-african fern *Asplenium seelosii*, together with *Chaenorhinum origanifolium* and *Phyteuma charmelii*.

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And if such a quantity of thinks could be studied, now we could merrily return by the same way to Col de Basibé and come down to the bus and Cerler village.



*Hieracium pallidiflorum* Jord.  
(inlybaceoides) prenanthoides



*Jasminum fruticans* L.

Aug. 6, Thursday CERLER (1500 m)- HOSPITAL DE BENASQUE (1800 m)- AIGUALLUT (2050 m)

Departure from the Hotel, at 8 h.30m.

By bus til Hospital plane. On foot after (take mountain boots and rainproof wear, as well as a canteen)

First Stop.- Belvedere near Cerler, 1350 m. CH 9720

20-30 minutes

Beautiful sight of Benasque Valley and its meadow's complex.

Termophilous plants in a dry Buxo-Quercetum wood. Dry slate soil.

Ligneous species: Arctotaphylos uva-ursi, Lonicera pyrenaica, and Amelanchier ovalis. Other plants: Satureja montana, Astragalus monspessulanus, Laserpitium siler, Carex hallerana, Globularia cordifolia, Lavandula pyrenaica, Crepis albida. Dianthus geminiflorus and many other related forms from the D.monspessulanus group became interesting.

Also Onobrychis gr. supina and Thymus vulgaris var. palaearensis -a prostrate form of this mediterranean plant- can be mentioned.

Coming down to the main road of the valley, we will ascend by the Esera river until the end of the new road (to be prolonged till France by a projected tunnel), at 1780 m., in a typical sub-alpine wood.

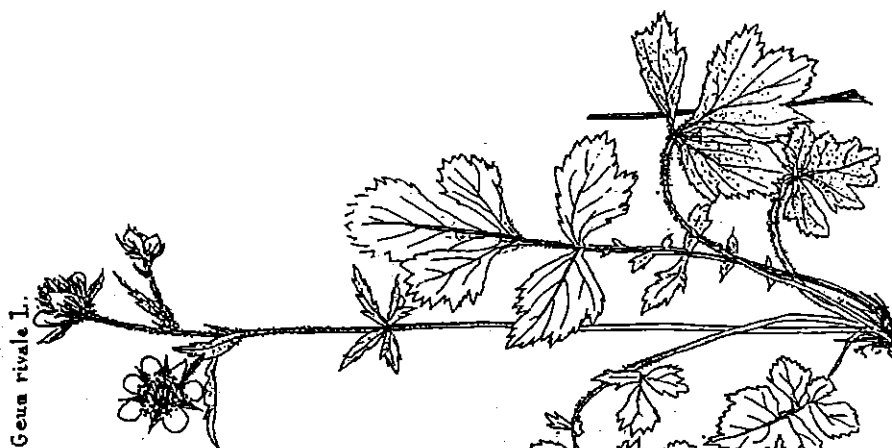
Along this way, we will see some fir woods near the Vallhivierna valley at right, and everywhere the mixed forest of Tilia platyphyllos, Betula pendula, Ulmus montana, Populus tremula, Corylus avellana, Sorbus spp., Acer spp., Pinus sylvestris and P. uncinata, the last tree beginning at 1650 m, not far from the "Baños de Benasque".

Second Stop.- Plano del Hospital, south and SE slope, 1800 m. U.T.M.:CH0429.

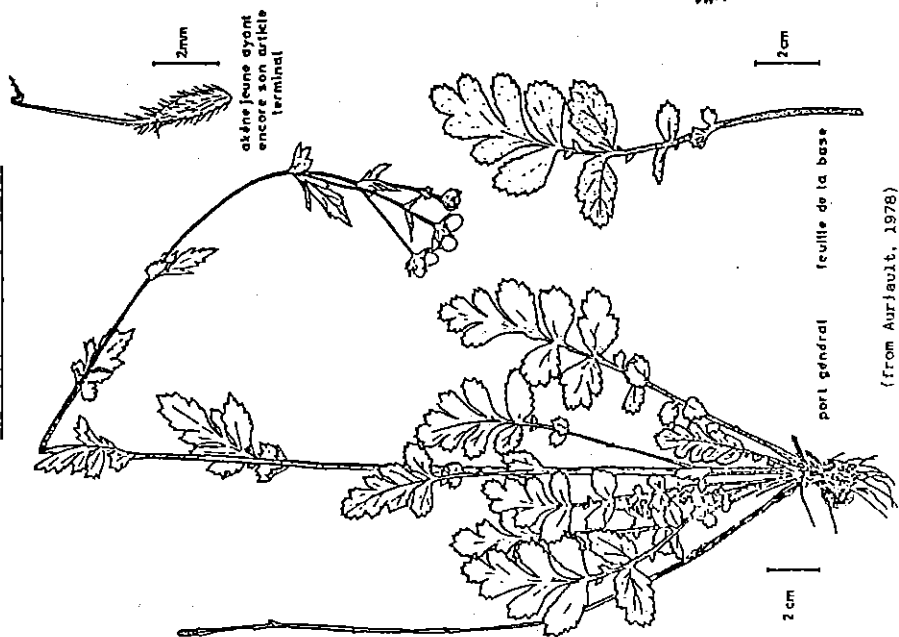
Granite soil.

Half an hour.

Under a discontinuous tree layer of Pinus uncinata, a sub-alpine shrub composed by Rhododendron ferrugineum, Vaccinium myrtillus, Rhamnus alpina, Sorbus aucuparia, and so on is found. Among the herbs: Scrophularia alpestris, Blechnum spicant, Hypericum burseri, Festuca paniculata, Carex sempervirens, C. umbrosa, C. ericetorum, Dactylorhiza macu-



*Geum rivale* L.



*Geum nasicum* Fries de Cerdagne

(from Auriault, 1978)

lata, Senecio adonidifolius, Luzula multiflora ... On the border of this forests, some communities of Rubus idaeus, Sambucus racemosa, Digitalis purpurea and D.lutea will be seen.

\* \* \* \* \*

After this stop, we must follow to the east, but the very narrow road prevents the access of the bus, so we would try to continue 7 km with the aid of some private cars.

Third stop.— Between Pla d'Estany and Pla d'Aiguallut (1900-2050 m)

U.T.M.: CHO727 - 0926

Sub-alpine shrub very rich. Granite fissures and also karstic limestone areas.

Special ferns to be noted:

<u>Asplenium septentrionale</u>	<u>Athyrium distentifolium</u>
<u>Huperzia selago</u>	<u>A.filix-femina</u>
<u>Selaginella selaginoides</u>	<u>Polystichum lonchitis</u>
<u>Phegopteris connectilis</u>	<u>P.aculeatum</u>
<u>Gymnocarpium robertianum</u>	<u>Cystopteris fragilis</u>
	<u>Cryptogramma crispa</u>

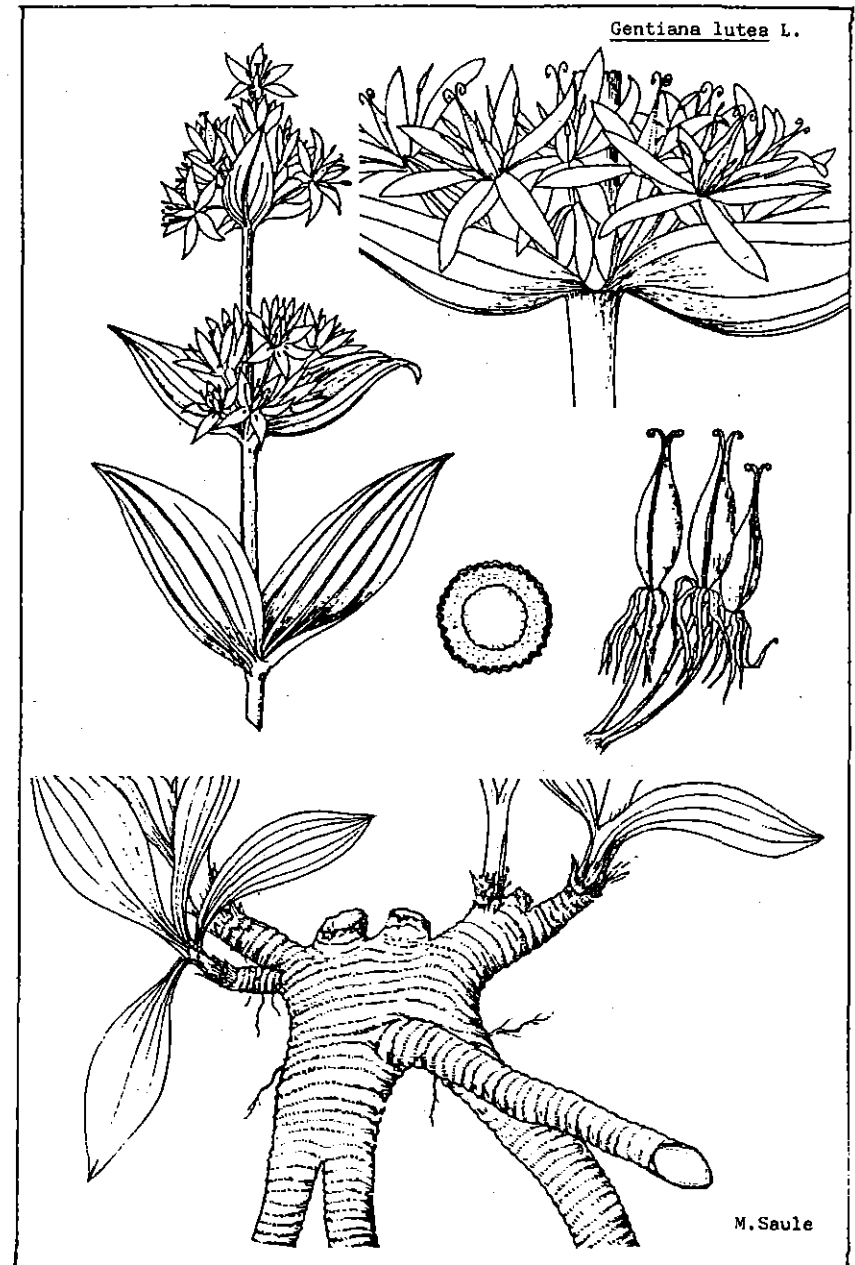
Along the stony way and among the shrubs will be found:

<u>Sorbus chamaemespilus</u>	<u>Homogyne alpina</u>
<u>S.aucuparia</u>	<u>Veratrum album</u>
<u>Vaccinium uliginosum</u>	<u>Streptopus amplexicaulis</u>
<u>Daphne mezereum</u>	<u>Polygonatum verticillatum</u>
<u>Salix pyrenaica</u>	<u>Myrrhis odorata</u>
<u>Prenanthes purpurea</u>	<u>Geum rivale</u>
<u>Aconitum vulparia</u>	<u>Sedum alpestre</u>
	<u>A.napellus</u>

Little bassins or temporary springs with water specially on the snow-melting period show: Caltha palustris, Scirpus pauciflorus, Cirsium palustre, Sparganium minimum, Carex nigra, Carex panicea, C.ovalis, C.rostrata, Roripa sylvestris ...

When arriving to the limestone area, covered by good grasslands, pay attention to a field of dolines, together with some Chenopodium bonus-henrichus communities (nitrophilous), Potentilla pyrenaica, Ranunculus gouani, Aconitum anthora, and so on. Now the stony places exhibit Potentilla alchemilloides, Globularia repens, Helianthemum alpestre, Sideritis hyssopifolia, Arabis alpina and others.

Around the most important karstic gully, called Aiguallut the course







disappear on the underground to reappear on the other watershed in Aran Valley. Its water-falls and humid walls, develop the extraordinary community of Peucedanum ostruthium, Adenostyles alliaria ssp. pyrenaica, Succisa pratensis, Gentiana burseri, Alchemilla xanthochlora, Saxifraga umbrosa, Salix pyrenaica...

Upstairs the hole, the lovely Pla d'Aiguallut, of glacial origin, is cutted by the meandrian stream and contains some marshes or little mires: we shall study, before or after picnic.

This is the Caricion fuscae, where Carex nigra is dominant; we also find Juncus alpinus, J. filiformis, Luzula sudetica, Tofieldia calyculata, Carex stellulata, Bartsia alpina, Carex gr. lepidocarpa, Leontodon duboisii, Sphagnum sp., Saxifraga stellaris, Primula farinosa ...

Near the persistent water here are Eriophorum latifolium, Ranunculus peltatus, Callitriche palustris, together with Saxifraga aquatica (endemic), Gentianella nivalis, Leucanthemopsis alpina and Arenaria moshringioides, the last three species colonizing the sandy soils.

Eventually, following the time we dispose, we could climb to the Escalera valley, where on limestone rocks, at about 2100 m., we noted:

<u>Asplenium viride</u>	<u>Sedum atratum</u>
<u>Valeriana apula</u>	<u>Silene acaulis</u>
<u>Saxifraga caesia</u>	<u>Saxifraga oppositifolia</u>
<u>Salix pyrenaica</u>	<u>Alchemilla plicatula</u>
<u>S. reticulata</u>	<u>Sesleria coerulea</u>
<u>Polygonum viviparum</u>	<u>Carex ornithopoda</u>
<u>Dryas octopetala</u>	<u>Ranunculus carinthiacus</u>
<u>Carex rupestris</u>	<u>Draba aizoides</u>
<u>Veronica aphylla</u>	<u>Anthyllis vulneraria</u>
	<u>Erigeron alpinus</u>

Some snow-patches can be characterized by Saxifraga praetermissa, Hutchinsia alpina, Geum montanum, Viola biflora, Carex pyrenaica, C. macrostylon, Leucanthemopsis alpina and may be Salix herbacea.

Unfortunately, we cannot climb to the further, north slopes of highest pick of the Pyrenees, the Aneto (3404 m), but its glacial could eventually be seen. This alpine granitic area conserves many interesting plants like Pulsatilla vernalis, Minuartia sedoides, Sedum rhodiola, Saxifraga bryoides, Sibbaldia procumbens, Potentilla frigida, Veronica alpina, Luzula austroalpina, L. spicata, Festuca borderii, Poa laxa, Oreochloa blanka, Carex curvula ...

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We could never finish the detailing list of this reach flora of High Esera valley, but perhaps near the Baños, on well-exposed slopes, under the pines, some colonies of the special ombelifere Molopospermum peloponnesiacum. Juniperus sabina could be regarded, as well as Saxifraga cotyledon on shady fisures.

Aug. 7, Friday CERLER- AINSA- LAS DEVOTAS- PINETA (Ordesa Nat.Park)- JANOVAS- COTEFABLO- BALNEARIO DE PANTICOSA (1670 m)  
Departure from the Hotel, at 9 o'clock. By bus (take luggage)

Leaving Bensasque valley, coming down to Castejón, we will regard another time the meadows and mixed forest on the wider part, now more or less dry excepting the irrigated parcels or near the river. After Castejón, the Sierra de Chia close the valley in front of the Turbón massif, so that the river cutted limestone rocks in a very narrow and long canyon, the Congosto del Ventamillo.

Because of the difficulty to parking the bus, we cannot stop here, but this is a very interesting area where many mediterranean plants present its north limit in Esera bassin, e.g.:

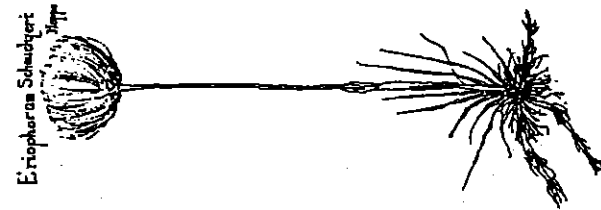
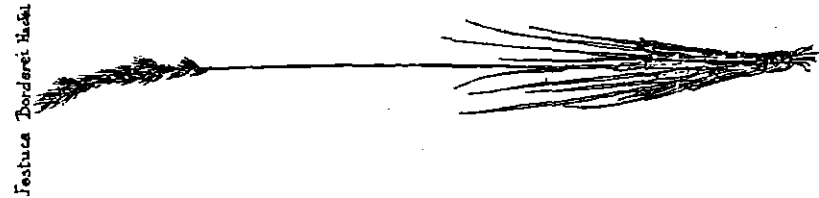
<u>Ficus carica</u>	<u>Euphorbia nicaensis</u>
<u>Acer monspessulanus</u>	<u>Sisymbrium polyceratum</u>
<u>Rhamnus alaternus ssp. myrtifolius</u>	<u>Jasminum fruticans</u>
<u>Cephalaria leucantha</u>	<u>Lithospermum purpureo-coeruleum</u>
<u>Cytisus sessilifolius</u>	<u>Ajuga chamaeptytis</u>
<u>Jasonia glutinosa</u>	<u>Teucrium botrys</u>
<u>Bupleurum rigidum</u>	<u>Legousia castellana</u>

Stipa offneri

As a typical calcicole flora here are the endemics Ramonda myconi, Scrophularia pyrenaica, Petrocoptis pseudoviscosa (loco classico), Chaenorhinum origanifolium var., Sarcocapnos enneaphylla, Hieracium flocliferum, H.cordifolium, H.niveum, H.phlomoides and Saxifraga longifolia.

To the right of Seira village, the biggest mountain is the Cotiella (2918 m), recently studied by G.Montserrat. A little far the evergreen oak and Juniperus phoenicea recommence, as a result of the dry and fast wind (Venturi and foehn effect).

In the surroundings of Campo the valley becomes wider and the marls (mixture of clay with calcium carbonate) appear and will be





common in the next two days. *Aphyllanthes monspelliensis*, *Thymelaea pubescens* and *Thymus fontqueri* are typical of these grasslands and *Pinus nigra* ssp. *salzmannii* will be everywhere till Salinas de Bielsa.

Some special plants as *Seseli elatum* marks here (near the Esera bridge) its western limit. Ascending to Foradada del Toscar, we will see the Sierra Ferrera and Peña Montañesa, studied by G. Gómez. To the left side, eocenic marks are heavily eroded and badlands are striking our attention.

Near Arro, the mediterranean forest of *Pinus halepensis* is mixed with *Pinus nigra* ssp. *salzmannii* and indicates the driest parts of slopes. On the contrary, *Coriaria myrtifolia* colonises the river banks and also marks here its west limit.

We also traverse some oak wood (*Quercus gr. faginea*) and between cultivated lands, almond and olive trees, bordered by arborescent *Juniperus oxycedrus*, we will arrive to Ainsa.

First Stop.— AINSA (shopping, half an hour)

The new village is situated in the confluence of the Ara and Cinca and we will follow the last one by Labuerda, Escalona and Lafortunada, leaving the imponent Peña Montañesa at right and Añisclo valley-Castillo Mayor to the left.

Second Stop.— LAS DEVOTAS PASS, 750 m. U.T.M.: BH 6814

Half an hour.

In this sector of the Sobrarbe county, the mediterranean vegetation is penetrating into the Pyrenees, as it is indicated by *Rosmarinus officinalis*, *Ficus carica*, *Phagnalon sordidum*, *Psoralea bituminosa*, *Asparagus acutifolius*, *Ruta angustifolia*, *Lactuca tenerrima*, *Coronilla minima* ssp. *clusii*, *Cytisus sessilifolius*, *Lavandula latifolia*, *Cléistogenes serotina*, *Thymus vulgaris*, *Piptatherum paradoxum* and others.

Limestone fissures are colonized by *Petrocoptis crassifolia* (loco classico), *Ramonda myconi*, *Saxifraga longifolia*, *Sarcocapnos enneaphylla*, *Thymelaea dioica*, *Hypericum nummularium*, *Globularia repens*, *Asplenium trichomanes*, *A. fontanum*, *Juniperus phoenicea* ...

Near Bielsa, on red sandy soil (permo-trías) we will regard some patches of the iberian scrub *Genista florida*, isolated between

this point and Parzán (on granitic soil).

Overpassing Bielsa we will enter into the Valle de Pineta, on the eastern part of the Ordesa-Monte Perdido National Park, nice deep glacial valley closed by enormous limestone walls and cirque.

Third Stop.- PINETA VALLEY, nr. 1300 m. U.T.M.: BH 6029

Picnic and walk versus Circo de Pineta. Do not collect, please.  
Three hours.

Near the river, the gravel are colonized by Buxus sempervirens and Salix bicolor, this one extremely localized in the Pyrenees.

To escape from the tourist pressure, we will take, inside the Park, the way of La Larry and Pineta Cirque, among big specimens of beech (Fagus sylvatica) and:

<u>Daphne mezereum</u>	<u>A. vulparia</u> ssp <u>pyrenaicum</u>
<u>Campanula speciosa</u>	<u>Clematis recta</u>
<u>Scabiosa graminifolia</u>	<u>Thymelaea nivalis</u>
<u>Rosa glauca</u>	<u>Reseda glauca</u>
<u>R. canina</u>	<u>Petasites niveus</u>
<u>Aconitum anthora</u>	<u>Lavandula angustifolia</u> ssp.
<u>A. napellus</u>	<u>pyrenaica</u>

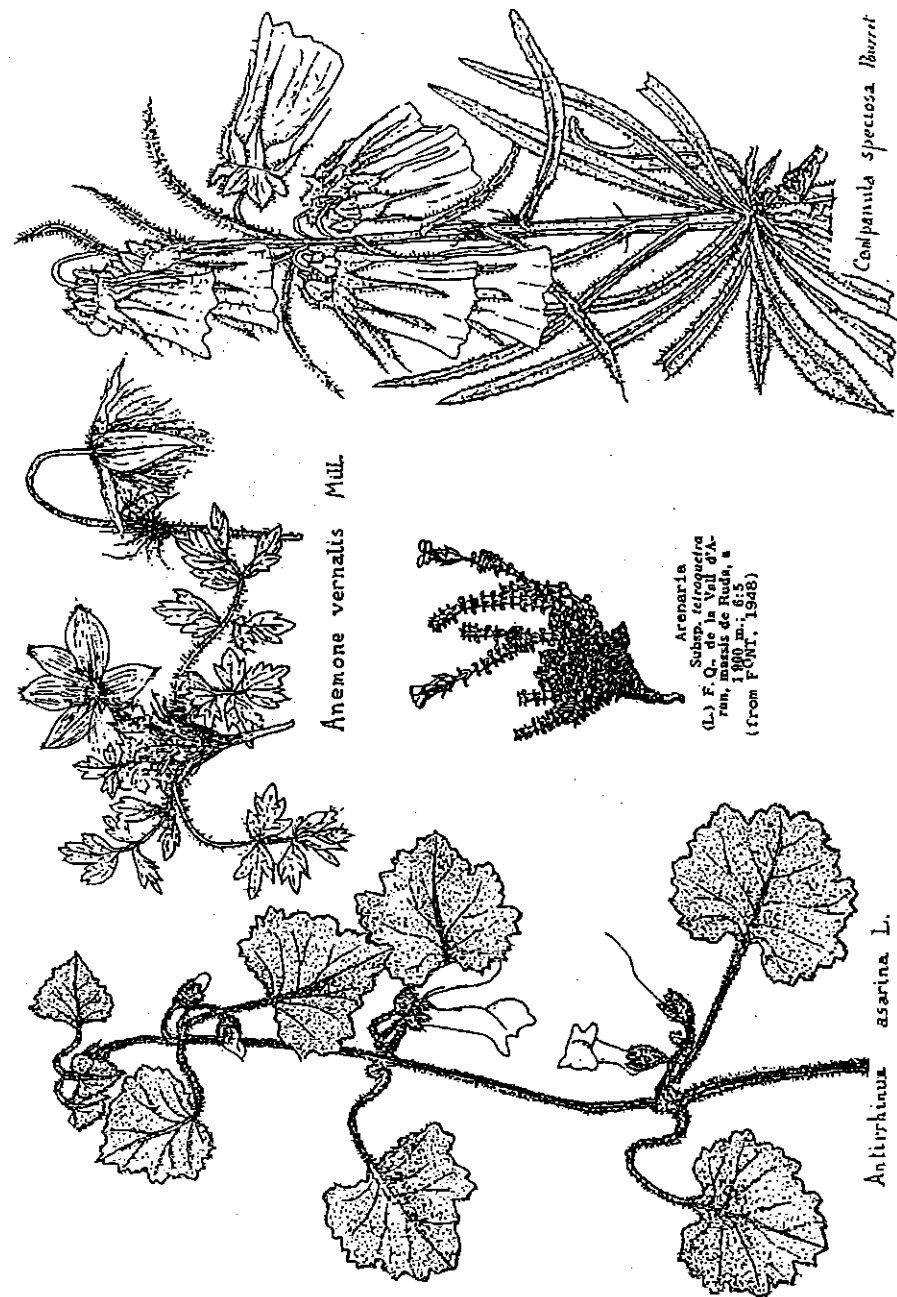
We found many other nitrophilous species in this place, traditionally manured by domestic animals: Viola cornuta, Malva moschata ...

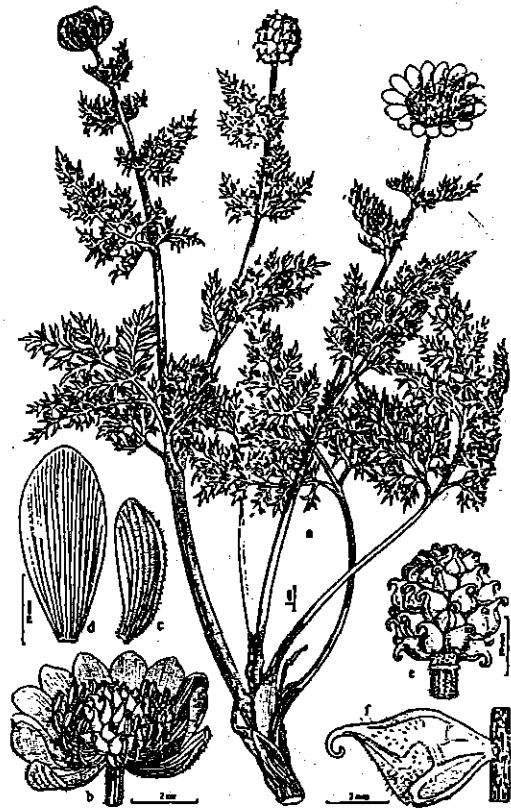
About 1500 m. of altitude, on stony and dry grasslands we note:

<u>Geranium cinereum</u>	<u>Helianthemum pyrenaicum</u>
<u>Sideritis hyssopifolia</u>	<u>Brassica repanda</u>
<u>Pulsatilla alpina</u>	<u>Cynoglossum germanicum</u>
<u>Asperula pyrenaica</u>	<u>Trifolium thalii</u>
<u>Campanula jaubertiana</u>	<u>Arctostaphylos uva-ursi</u>
<u>Leontopodium alpinum</u>	<u>Scorzonera aristata</u>
<u>Dryas octopetala</u>	<u>Anthyllis montana</u>
<u>Carduus carlinifolius</u>	<u>Potentilla alchemilloides</u>
<u>Crepis pygmaea</u>	<u>Thymelaea nivalis</u>
<u>Achnatherum calamagrostis</u>	<u>Carex sempervirens</u>
<u>Aster alpinus</u>	<u>Hutera cheiranthos</u>
<u>Carlina acaulis</u>	<u>Ranunculus gouanii</u>

Under the waterfall, here are a mosaic of:

<u>Trisetum baregense</u>	<u>Asperula hirta</u>
<u>Pinguicula alpina</u>	<u>Campanula cochlearifolia</u>
<u>P. longifolia</u> (endemic)	<u>Arenaria purpurascens</u> (endemic)
<u>Ramonda myconi</u>	<u>Saxifraga praetermissa</u>
<u>Borderea pyrenaica</u> (endemic)	<u>S. oppositifolia</u>
<u>Saxifraga arctioides</u>	<u>Oxytropis campestris</u>
<u>S. caesia</u>	<u>O. pyrenaica</u>





*Adonis pyrenaica*. Montaudó, Huesca (MA 102385): a) folio: b) flor; c) sépalo; d) pétalo; e) pistilo; f) estamo inserto al receptáculo.

*Achillea pyrenaica* Sibth.



*Horminum pyrenaicum*  
*Veronica ponae*  
*Erigeron uniflorus*  
*Dryopteris submontana*  
*Senecio pyrenaicus*  
*Salix pyrenaica*

*Doronicum grandiflorum*  
*Festuca pyrenaica*  
*Carex frigida*  
*C. curvula*  
*Bupleurum angulosum*  
*Epipactis gr. atrorubens*

From 1700 m. of altitude the splendid landscape offers a strong contrast between south faces (screes, *Pinus uncinata*-*Ononis aragonensis*), bottom of the valley (fir wood with *Goodyera repens*, *Melampyrum pratense*, *Odontites viscosa*, *Moneses uniflora*) and North-exposed walls ("paredes de Pineta") where avalanches don't permit the development of dense woods.

Coming back at 5 h.p.m. by Bielsa, Aínsa and there going to the West.

The neighbourings of Boltaña are mediterranean and the maquis of *Quercus coccifera*, *Jasminum fruticans*, *Rosmarinus officinalis* *Thymus vulgaris* became widespread, as a result of burning; this is a typical "goat's landscape" formerly heavy grazed and now less exploited; nevertheless, the fire danger is always present.

Fourth Stop.- (Optative) FOZ DE JANOVAS, 610 m. U.T.M.: BH 5605.

20 minutes.

On the canyon of the Ara river, the limestone cliffs conserve a form of *Petrococtis crassifolia* recently described as *P. crassifolia* ssp. *guinochetii* (loco classico); this endemic plant is only known from this area and there is a certain risk of extinction if the road is enlarged.

We can also find: *Dianthus hispanicus*, *Rhamnus saxatilis*, *Teucrium polium*, *Verbascum rotundifolium*, *Anthriscum majus*, *Hieracium flocculiferum* and on the screes *Poa flaccidula*.

Along the road we will see some specimens of *Celtis australis*, a very nice tree.

This region was almost depopulated forty years ago for the construction of a new dam never achieved. As a consequence, many lateral valleys were also affected and, after the abandon, fire becomes year by year more and more dangerous, and simplifies the vegetation.

Between Fiscal and Broto the Ara valley turns to the North and we will see the Canciás to the left. In the Llanos de Planduviar the valley is very large, with big gravels colonized by *Buxus*, *Berberis* and pastures.

Passed Broto, the road climbs to Torla, beautiful village protected by the striking cliffs of the Mondarruego, in the Ordesa Park.

By Linás de Broto with nice meadows and an equilibrated landscape, we suddenly arrive to the Echinopartum horridum communities, frequently burned, either accidentally or provoked by shepherds.

Fifth Stop. - PUERTO DE COTEFABLO (East), 1450 m. U.T.M.: YN 2921.

20 minutes.

The landscape shows the traces of the late glacial age. After the melting of ices in the valleys of Broto and Biescas (200-400m of ice thick mantle) erosion of the rivers Sorrosal and Sía was very active, and now progresses to the higher parts of every stream. This erosion is also favoured by the mineral composition of "flysch", an alternance of sandstones, marls and limestone.

Pinus sylvestris colonized the slopes together with Buxus sempervirens, Echinopartum horridum, Thymelaea nivalis, Laserpitium gallicum, Libanotis montana, Ligusticum lucidum, Festuca gautieri, Cirsium glabrum (high ravins, a pyrenean endemic) and many others.

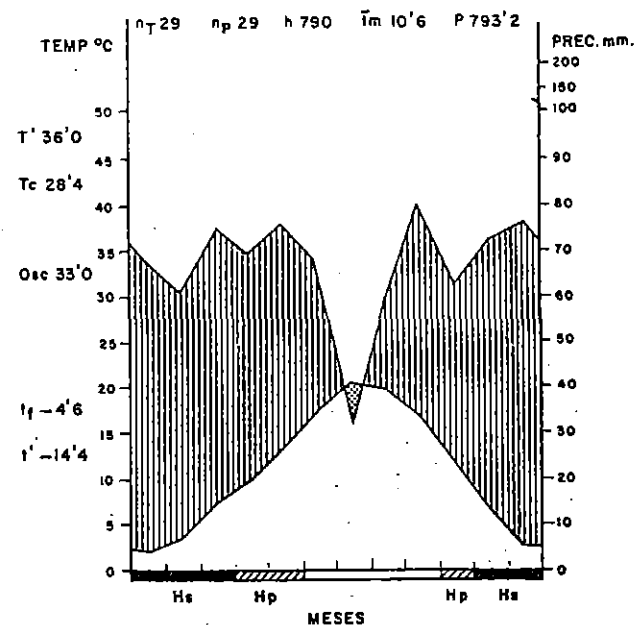
North slopes, to the left of the road, very big forests of scotch pine were recently exploited without care against erosion. We also find some patches of fir and beech, but the deeper soil were essential for establishing good meadows, as it is observed in Yesero and Gavín.

Little springs with Molinia coerulea and Cirsium monspessulanum and Carex flacca are common; Helictotrichon cantabricum, a very big grass coming from the western Pyrenees marks here its eastern limit of distribution.

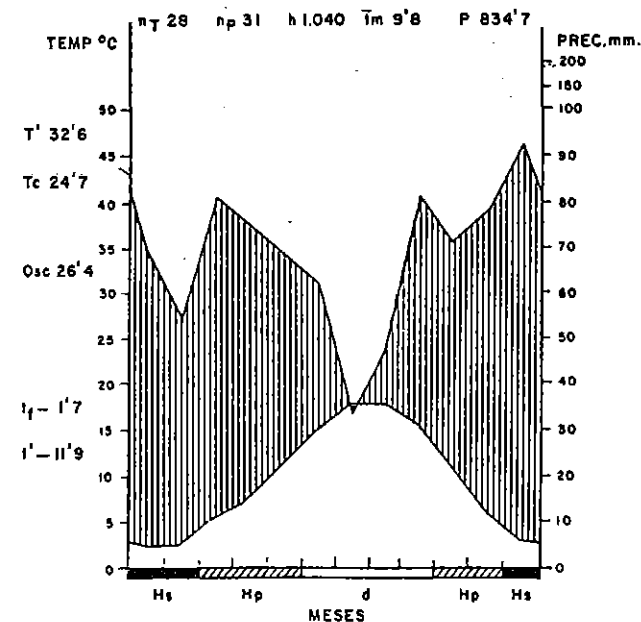
Biescas (nice woods of oaks, Quercus gr.faginea and related semideciduous forms).

River Gallego, by Santa Elena Pass, Búbal damm, Panticosa Village and Balneario de Panticosa, where we will stay during two nights, at about 1650 m.

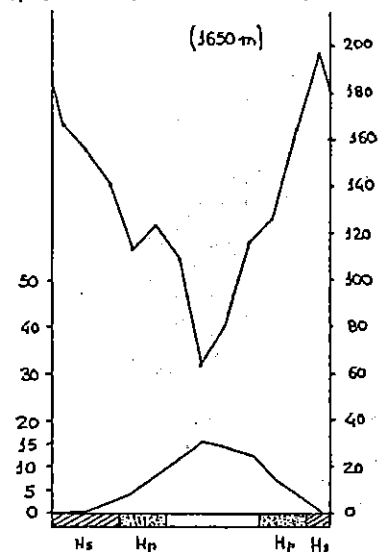
### N SABIÑANIGO (near Biescas)



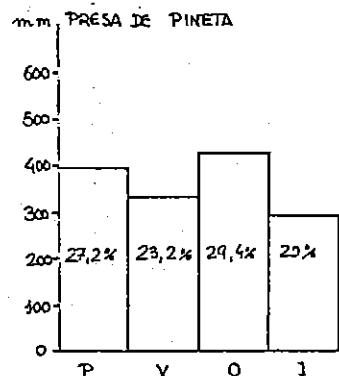
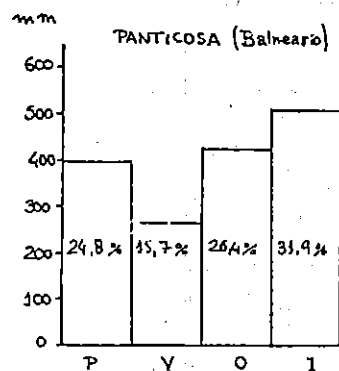
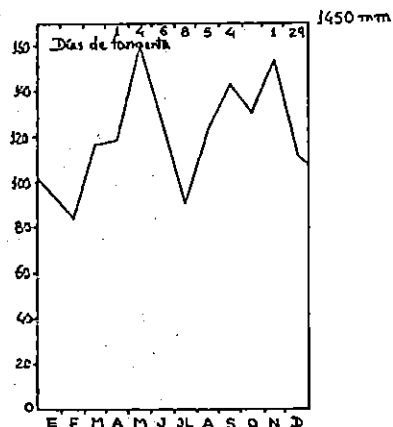
### N JACA "ORDOLES"



TEMP °C PANTICOSA (Balneario)  
T: 1940-1970  
7,2°C P: 1931-1969 1561,5 mm



PRESA DE PINETA (1942-1971)



Aug. 8, Saturday BALNEARIO DE PANTICOSA - BACHIMAÑA - IBONES AZULES  
(1650-2216-2350 m)

Departure from the Hotel, at 8 h.30m.

On foot (take mountain boots and rainproof wear, as well as a canteen)

The bath station of Panticosa is very ancient and are very well placed, on a closed cirque excavated on granitic rocks and surrounded by different levels of high mountain glacial lakes.

We will take the Bachimaña path, following the stream and across the subalpine forest (*Pinus uncinata*) scattered by screes, cold springs, megaphorbic communities and so on.

Just behind the bath houses we will find small bogs with the rare *Drosera rotundifolia*, *Molinia coerulea*, *Carex davalliana*, *C. panicea*, *C. flacca*, *C. gr. lepidocarpa*, *Tofieldia calyculata*, *Primula farinosa*, *Selaginella selaginoides*, *Parnassia palustris*, mosses and other interesting species like *Crepis palludosa* or *Saxifraga aizoides*.

On similar communities *Carex frigida* and *C. paniculata* are frequent together with *Veronica ponsae*, *Saxifraga stellaris*, *Bartsia alpina*...

The granitic crevices show *Saxifraga nervosa*, *Primula hirsuta*, *Murbeckiella pinnatifida*, *Asplenium septentrionale*, *Sedum anglicum* ssp. *pyrenaicum*, *Sempervivum arachnoideum* and locally, *Saxifraga cotyledon*.

Among the splendid ferns we note *Phegopteris connectilis*, *Dryopteris oreades*, *D. expansa*, *Athyrium filix-femina*, *A. distentifolium*, *Cryptogramma crista*, *Asplenium adiantum-nigrum* and *Equisetum variegatum*.

Some interesting *Hieracia* as *Hieracium pallidiflorum*, *H. pallidum*, *H. hysperium*, *H. mougeotii* ... can be found.

Megaphorbic communities contain *Adenostyles pyrenaica*, *Chaerophyllum hirsutum*, *Veratrum album*, *Alchemilla xanthochlora*, *Aconitum napellus*, *A. vulparia*, *Geranium sylvaticum*, *Rumex alpinus*, *R. amplexicaulis*, *Rubus idaeus*, *Alchemilla glabra*, *Scrophularia alpestris*, *Senecio doronicum* and so on.

The sub-alpine shrub is fragmentary along this way, and between *Rhododendron* and *Vaccinium* there is *Festuca eskia*, *Trifolium alpinum*, *Homogyne alpina*, *Calluna vulgaris*, *Meum athamanticum*, *Hypericum burseri* and others.

The cliffs under the Bachimaña dam, at about 2200 m, are sunny and exhibit a rare cushion plant, *Androsace vandellii*.

Around the lake, the march becomes easier and the snow is still remaining in reduced patches. So, many chionophilous species are present,

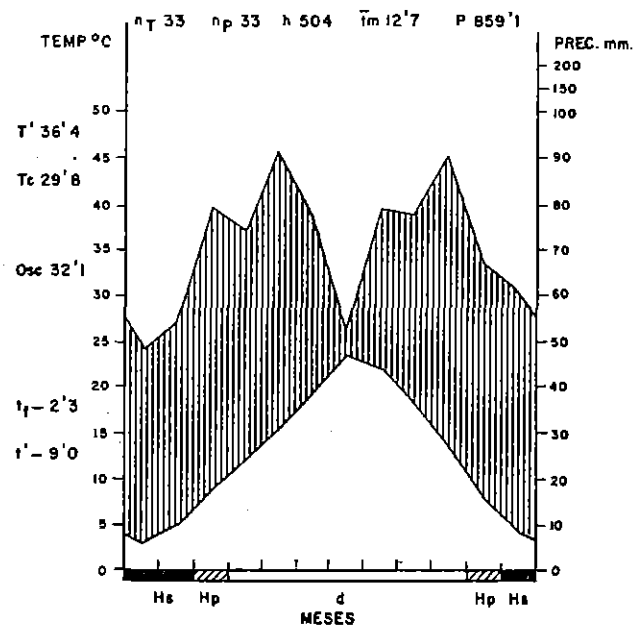
e.g.:

<i>Luzula alpino-pilosa</i>	<i>Doronicum grandiflorum</i>
<i>Gentiana alpina</i>	<i>Salix herbacea</i>
<i>Sibbaldia procumbens</i>	<i>Ranunculus alpestris</i>
<i>Gnaphalium supinum</i>	<i>Potentilla brauniana</i>
<i>Cardamine alpina</i>	<i>Alopecurus gerardii</i>
<i>Leucanthemopsis alpina</i>	<i>Geum montanum</i>
<i>Carex pyrenaica</i>	<i>Ranunculus pyrenaicus</i>
<i>Leontodon pyrenaicus</i>	<i>Oxyria digyna</i>
<i>Veronica alpina</i>	<i>Carduus carlinoides</i>
<i>Sedum alpestre</i>	<i>Festuca glacialis</i>
<i>Silene acaulis</i>	<i>Gentiana nivalis</i>
<i>Epilobium anagallidifolium</i>	<i>Carex atrata</i>
<i>Saxifraga praetermissa</i>	<i>Euphrasia minima</i>
	<i>Cerastium cerastioides</i>

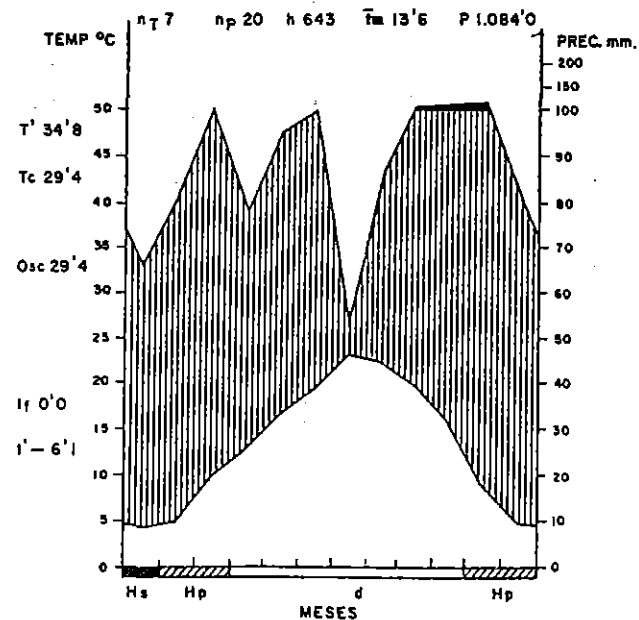
On the rocks (drier places) we will find *Carex curvula*, *Agrostis rupestris*, *Oreochloa disticha*, *Thymus nervosus*, *Erigeron uniflorus*, *Pedicularis pyrenaica*, *Hieracium piliferum*, *Carex rupestris*, *Festuca borderei*, *Poa laxa*, *P. alpina*, *Cardamine resedifolia*, *Sempervivum montanum*, *Linaria alpina*, *Galium caespitosum*, *Minuartia verna*, *Cerastium alpinum*. Little bogs are characterized by *Scirpus caespitosus*, *Pinguicula grandiflora*, *Carex nigra*, *Juncus filiformis*, *Luzula multiflora*, *Primula integrifolia*, *Eriophorum latifolium*, *E. schuetzeri* and so on.

Picnic could be taken between Bachimaña and Ibón Azul inferior and people should be grouped at about 5 h.p.m. at the Bachimaña dam in order to intend descendig to the Balneario at about 7 h.p.m.

### N PANTANO DE MEDIANO (near Ainsa)

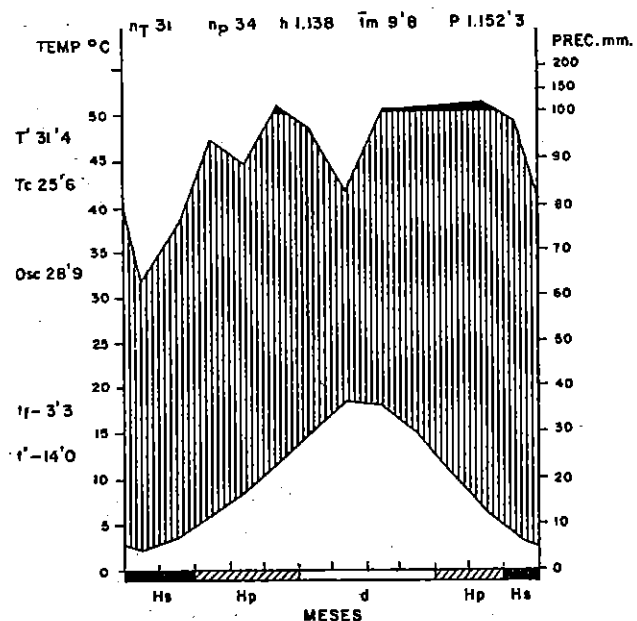


### N BOLTANA

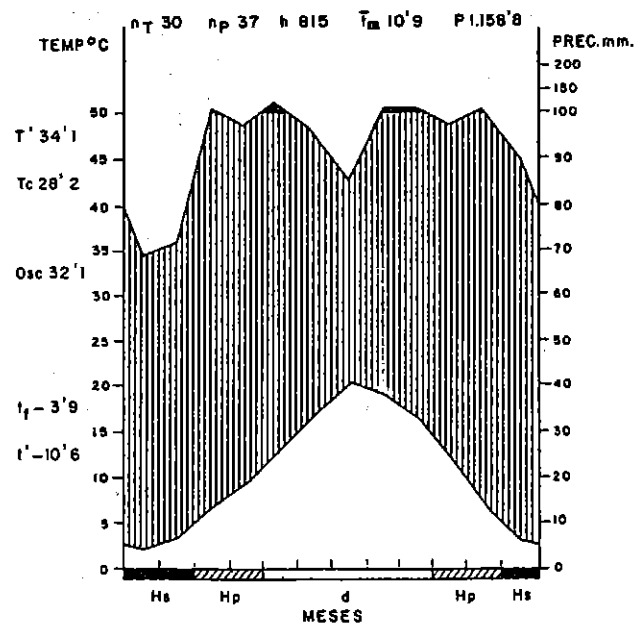




## N BENASQUE "C A.C."



## N SEIRA "BARNA"



Aug. 9. Sunday BALNEARIO DE PANTICOSA - Barranco de Arás (BIESCAS)-  
JACA - BARCELONA.  
Departure from the Hotel, at 9 o'clock

Coming down from the Balneario to Panticosa village, the very narrow and dangerous road traverse some calcareous rocks and scree, where can be seen from the bus Nepeta nepetella, Lathyrus sylvestris, Silene saxifraga, Ramonda myconi, Chaenorhinum organifolium and, locally, Anthirrhinum sempervirens.

From Panticosa we are in front of the Sierra Tendeñera and Peña Telera, a formidable limestone barrier which closes the Tena valley by the south and divides the Gállego basin in two bioclimatic areas: the atlantic or mountain inside and the sub-mediterranean outside.

Effectively, as the oceanic rains gain the french-spanish border and the clouds penetre through the Portalet (almost 15 km to the NW, 1800 m) some beech woods are conserved on the north slopes. Precisely, one of these localities preserves the most beautiful orchid of Europe, Cypripedium calceolus, (in bloom at the beginning of juin).

On the other side of the dam, on the foot of the surprising Peña de Hoz, we will observe a good sample of the mixed forest, composed by many trees: Fagus sylvatica, Abies alba, Corylus avellana, Fraxinus excelsior, Tilia platyphyllos, Acer opalus, A.platanoides (west pyrenean limit), A.campestris, Prunus avium, Sorbus aria, Pinus sylvestris, Quercus gr.faginea, Taxus baccata, Ulmus, Betula pendula and so on.

Very productive and well-entertained meadows and potato's fields were established on better soils, generally coincident with morainic sediments. Finally, the hanging black trees of higher cliffs are Pinus uncinata, in contrast with the white rocks.

Near Santa Elena Monastery, on the stony south slopes covered by the semi-deciduous oak, the populations of Buxus sempervirens suffered the extremely dryness of autumn 1985 and many of them died.

Now here are the Ribera de Biescas, large bassin with many torrential gravels we will study. One of these gravelous cone was artificially fixed by a nice scaled-channel.

First Stop.- BARRANCO DE ARAS, 860 m. U.T.M.: YN 1921

Half an hour.

This is a classic place on a botanic point of view, as the International Plant Geography Excursion visited it on 1953 and also the Int. As. of Phytosociology on 1960.

A particular spiny shrub community dominates river gravels of Gállego. It contains Hippophae rhamnoides, Berberis vulgaris ssp. seroi, Rosa agrestis, R. micrantha and R. gr. canina, Amelanchier ovalis, Lonicera etrusca, Buxus sempervirens, Ligustrum vulgare, Genista scorpius, Satureja montana, Thymus vulgaris, Teucrium polium, Andryala ragusina, Ononis natrix, Helychrison stoechas, Trinia glauca, Dichanthium ischaemon, Scabiosa maritima, Reseda lutea, Clematis vitalba, Carex liparocarpos, Carex hallerana ...

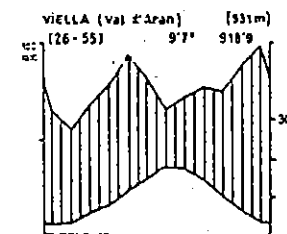
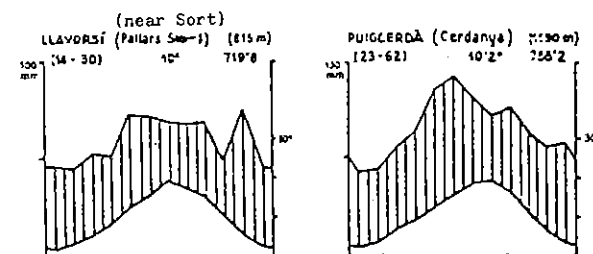
This stony soils became very hot in summer and apart from the pioneer species mentioned, we found earlier a high number of therophytes like Minuartia fastigiata (M. rubra), M. hybrida, Cerastium gracile, C. pumilum, Arenaria serpyllifolia, Hornungia petraea, Arabis stricta, Saxifraga tridactylites, Euphorbia exigua, Polygala exilis, Teucrium botrys, Veronica praecox, Ajuga chamaepitys, Chaenorhinum minus, Odontites longiflora, O. serotina, Hieracium pilosella ssp. minuticeps ...

\* \* \* \*

Leaving Biescas, we will follow the Gállego by Escuer, Arguisal and Senegüé, and we can regard the frontal morain of this valley, popular communities (Populus nigra, Frangula alnus) and on the road drains, Phalaris arundinacea (tetraploid race, Ph. hispanica Coincy).

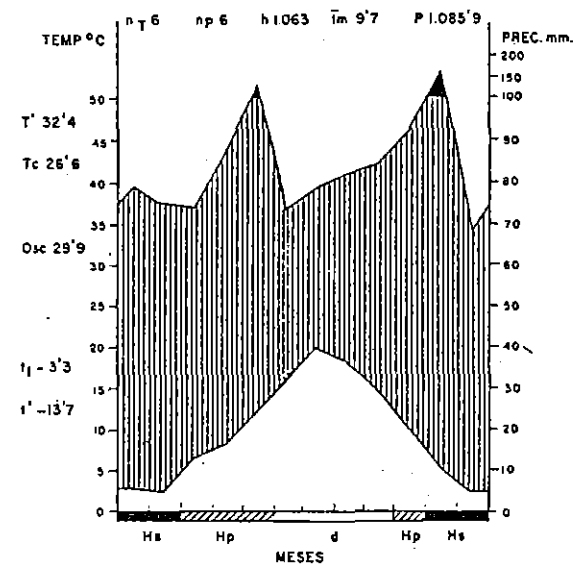
Going to the west once more, and passing over the Aurin river -- with a typical nival regime-- now almost dry, we arrive to the Val Ancha (grey-blue eocenic marls everywhere) and by its eroded plane and watershed Gállego-Aragón, we will descend to Jaca, our last point to visit before coming back to Barcelona.

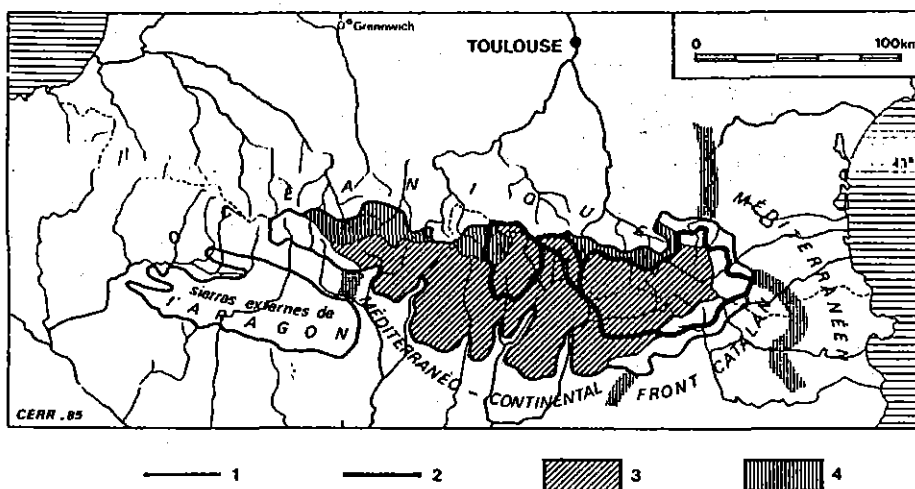
Second Stop.- JACA. From 11 h. a.m. to 12 h. visit to the Instituto Pirenaico de Ecología and to its Herbarium; demonstration of dried plants. Technical assistance with drying and dispatching collected specimens. Free time. Farewell luncheon at 2 h.p.m. Departure to Barcelona at 4 h.p.m.. Arrival: 9 h.p.m.



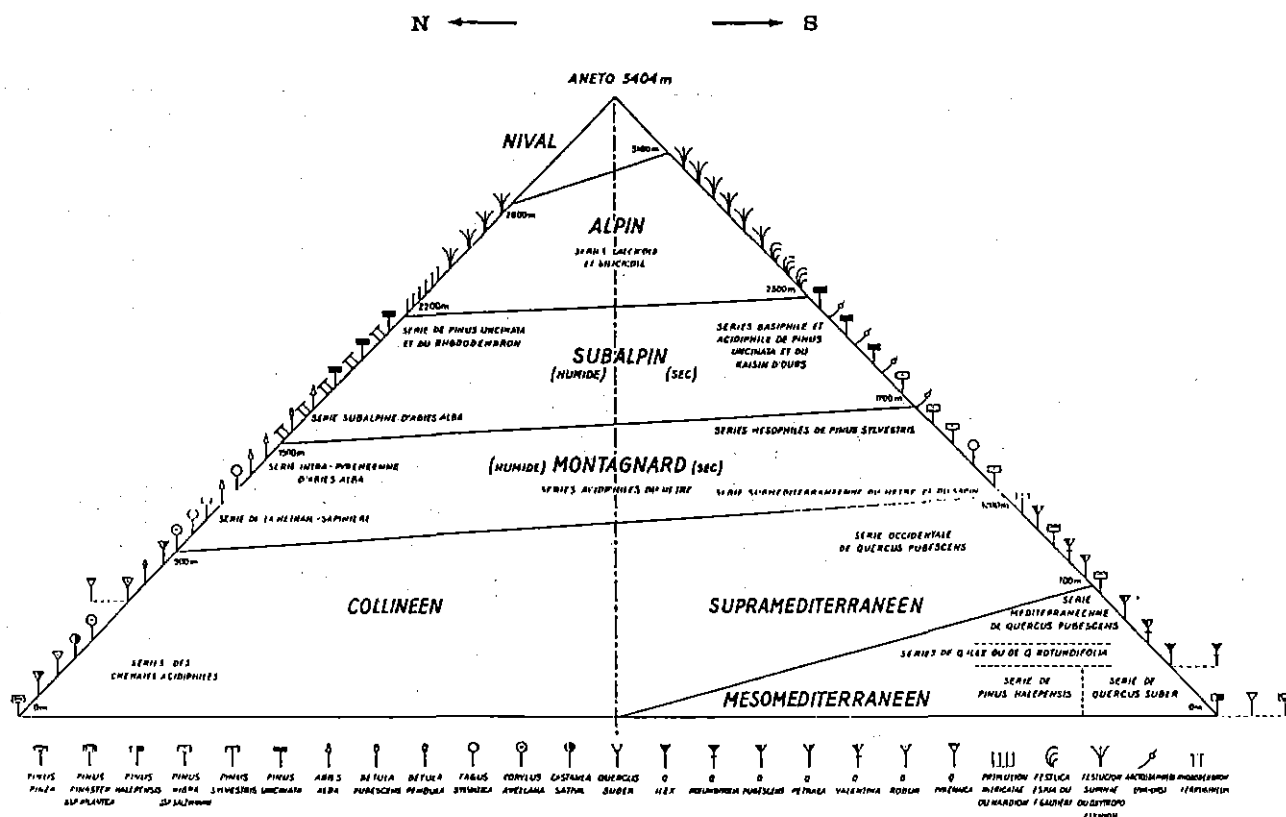
Near University Laboratory (Túnel de Viella)

N BONO



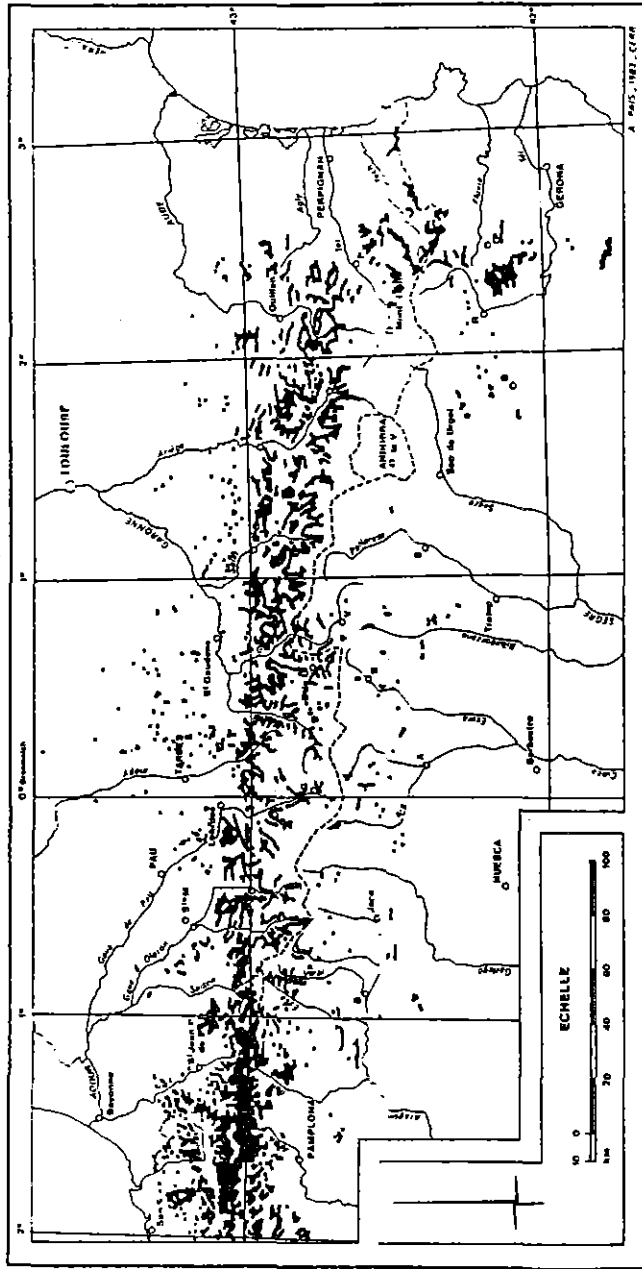


Continentalité et caractère interne, 1 : zone périphérique (indice de GAMS 40 à 50); 2 : noyaux intra-pyrénéens (indice de GAMS > 50); 3 : climats continentaux périméditerranéens; 4 : climats océaniques d'abri. (from IZARD 1984)

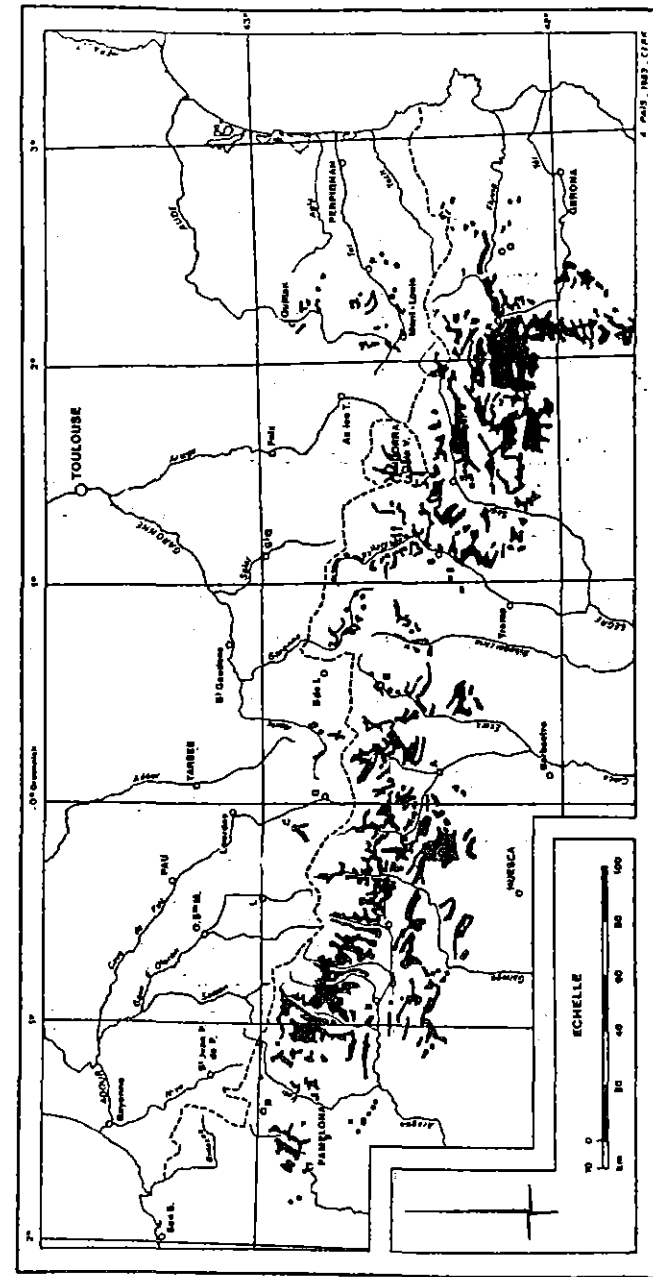


ETAGEMENT DE LA VEGETATION DE LA CHAÎNE PYRENEENNE

(from GRUBER, 1983)

*Fagus sylvatica*

Répartition pyrénéenne et sous-pyrénéenne du Hêtre. (From DUPIAS, 1985)

*Pin sylvestre* (From DUPIAS, 1985)

Répartition du Pin sylvestre (spontané) dans les Pyrénées.