

PYRENEES 2001

(Personal Diary of Richard Lester)

Nine participants in the expedition 2001

AP = Prof. Dr. Antonio Palanca Soler, Laboratorio de Anatomia Animal. Universidad de Vigo.

RL = Dr. Richard Lester, University of Birmingham Botanic Gardens, UK.

CT = Prof. Dr. Catalin Tanase, Dept. Botany, Fac. Biology, Universidad "Al.I.Cuza" Iasi, Romania. (microfungi of native plants, 45 spp., especially Uredinales and Erisyphales.

DZ = Dragos Zaharescu, Universidad "Al.I.Cuza" Iasi, Romania. (marine biology, sharks, extreme environments)

AV = Andreea Vasiloiu, Universidad "Al.I.Cuza" Iasi, Romania. (Coleoptera)

JF = Javier Fernández Fañanas, Universidad de Zaragoza.

BD = Bruce Dudley, University of Auckland, New Zealand. (marine fish larvae)

JG = Jesús Giraldez Moreira, Universidad de Vigo.

NP = Nicolás Palanca Castán, Universidad de Vigo.

Allocation of expedition duties:

Organisation of Expedition (AP)

Map reading & route finding (AP, JF)

Measuring dimensions of lakes / pools (JF, NP)

Measuring water temperature, oxygen, pH etc. (DZ, AP)

Filtering water for bacteriological samples (BD)

Collecting aquatic invertebrates (AV)

Melting snow samples to collect aerial insects etc. (JG)

Counting frogs, tadpoles & other amphibians (NP)

Taking DNA samples from frogs & tadpoles (NP)

Surveying plants in & around lakes / pools (RL, CT)

Photography, still, digital (AP)

Photography, video (DZ)

Collaborators, 2001:Dr. Miguel Vences y Kilffit, Museum National d'Histoire Naturelle,
Laboratoire des Amphibiens et Reptiles, Paris.

David Rodriguez Vieites, Laboratorio de Anatomia Animal. Universidad de Vigo.

Julio Palanca Castán Universidad de Valencia.

Maria José Ferrus Leiva, Universidad de Valencia.

Jorge Millos, CACTI, Universidad de Vigo:

(2002: JM = Dr. José Martín Gallardo, Universidad de Extremadura.)

SEE ALSO:-**Report** by Fdo. Prof. Dr. Antonio PALANCA Soler, 135 pp. 1 December 2002.

Characterization de los Lagos de la Zona Central del Parque Nacional de los Pirineos Franceses.

CD: Los lagos de la zona central del Parque Nacional de los pirineos franceses. Informe 15-XII-2001.
Depositado en al Parc National des Pyrénées, Tarbes.**Photographs:** 227 taken by RL, copies of most given to AP & CT.**Personal Diary of Richard Lester****Saturday 7 July:** Birmingham- --> Formigal

9:00 left home; Celia took me to the airport. 10:30 plane, but delayed until 1:00. Arrived in Barcelona (airport too big). Met Antonio Palanca+ luggage+ 2 Rumanians (Catalin Tanase & Andreea Vasiloiu). ~5:00 by car (AP) from Barcelona via Lleida, Zaragoza (industrial, & dry country on poor gypsum soils), Huesca, then into the calcareous pre-Pyrenees, through a tunnel. Mountains now; stopped for toilet and meal: Very good: sausage, egg, chips and salad. Finally reached Formigal, near the French border.

Midi Apartamentos. (Tel. 974 490 116) ~10:00. Nice flat for me (sloping ceiling); phoned Celia. Walked through Formigal centre. Bed and slept well.

Sunday 8 July: Formigal

Up 9:00! Coffee and toast; photos of splendid views from bedroom window. Walked to the church (closed) and meditated on God's wonderful world, and savoured every plant & animal & moment. Back to Apts. Midi. Walked around the limits of Formigal.

Met others, and Antonio Palanca briefly.

~12:00- 1:00 lovely walk all together up above Formigal. Catalin T. really knows his plants!

1:30 lunch with AP all together- good plate of fish, etc.

pm. AP explained the Formigal Impact Study; he wants RNL and CT to survey a prospective wildlife park area in this town (versus hotels etc.). Studied maps of Pyrenees itinerary. (Met M. Luceño, Carex expert from Sevilla).

pm. Began to look over this IMPACT area, led by Dragos & RNL & Catalin, (& Bruce D. & Andreea V.). It is a very interesting area with many unusual plants.

Dinner with Catalin; sorted things, and then to bed.

Monday 9 July: -Formigal-

Heavy rain and thunderstorms in the night.

8:00 Breakfast with Catalin; then with Bruce, Andreea and Dragos went to the field to survey vegetation for proposing park/ reserve/ ecotourism for visitors to Formigal.

Rain! by 10:30 we had walked all over the transect and were soaking wet, so we took collected plants back to Apts. Midi., and then RL and CT spent almost a whole day identifying and listing them.

(RL made a brief excursion to buy postcards and stamps, and to walk down to the river, through an area of new buildings. Sent cards to Celia, Clare and John.) Dried out our boots all day with paper! Dinner. Another team member came (Jesús, a 1st year student from Vigo), but AP phoned to say he was delayed but would come tomorrow. RL and CT identified grasses, etc. Packed. Bed.

Tuesday 10 July: Formigal

Up 9:30. Breakfast of coffee and croissant with Catalin Tanase, then RNL+ CT+ Dragos Z surveyed the area of natural vegetation intended for a new hotel complex, in order to determine which area to recommend to the mayor as a nature reserve/ park/ tourist attraction (Ecotourism).

Walked up the stream on the boundary between the old development and proposed new one, to the top. Many interesting species. We imagined a path up the stream valley, with information boards etc., and then a route back across drier flowery banks, for ecotourists. It is important that any new development must not upset the drainage system, and at all costs must conserve the marsh above, in the adjacent field. Looked over other areas carefully, and the barranco at the extreme limits of the proposed new development. (NB: Androsace, Juniperus virginiana!!) Must outlaw Cotoneaster, Pyracanthos etc. with red berries

2:00 back to Apts. for lunch. Antonio P. & son, Nicolas, were there.

Lunch in Sallent (Mayor not available because of a pop music festival).

Sallent de Gallego is a lovely old village; had a good meal, until 4:00. pm.

Drove back, past Formigal to see the French border (at Col de Portalet), (Gentiana lutea on route) and back to Apts.

pm. Surveyed along the river (RL, CT & DZ), including marsh plants, clover on south facing slopes, then climbed very steep North facing slope across the river, & found Saxifraga longifolia!

Finally crossed back (by town sewage effluent!) and back home.

Dinner, then identified *Carex* etc. with M. Luceno from Sevilla, & eventually to bed ca 12:00!

Wednesday 11 July: Formigal --> Barroude

5:00 up and final packing and ready, and all 8 into the coach by 6:00 am. All packed into 22-seater minibus with old driver. Still dark as we passed through Sallent and down the closed-in Tena valley with ancient villages. (Route was Formigal- Sallent de Gallego- Biescas- Broto- Boltana- Ainsa- Bielsa- Piau- Engaly, i.e. South and then across East, and then North.) Travelled through montane forest with much *Pinus silvestris* mixed with oaks and others deciduous trees. Rocks sedimentary, some strata peaceful, others extremely stressed. Around dawn, encountered a pack of horses led by a man, on the road. Cattle being led to pastures elsewhere. At Ainsa, stopped for coffee, only.

Up to tunnel of Bielsa and through it, and into another world, with grassy hills and mist and flocks of sheep. Drove to the turning to Piau-Engaly and off-loaded from the coach, at Chlle. des Templiers (1,337 m), and started walking, first along the road & then up a track to a car park, then good walking tracks. Eventually passed out of the montane forest into alpine vegetation; many interesting plants, *Aquilegia*, *Geranium sylvaticum*, etc. It was so misty that we could hardly see into gorge and torrent far below to the right. Out into flatter pastures and a stream and then a slow climb up into the mountains. Occasionally the clouds cleared to give glimpses of the magnificent peaks to come, with snow fields, etc. A steep climb over rocky tracks: it was a bit of a killer and we had to rest for half an hour and eat ca 2:00. After that, a steep climb over rocks (Catalin suffered very bad cramp) and up to a snow field with *Gentiana verna*, etc. Eventually CT, AP and Nico caught us up and we progressed. Views clear and magnificent now, but often crossing snow patches. (We thought we saw red snow-algae, but then realised it was red paint sprayed on the snow to mark the path.)

And so we came at last to the Refugio de Barroude (2,377 m), a trim tent-like hut set on a hill above a magnificent lake and surrounded by mountains. (NB, This trek up to Barroude was virtually the equivalent of walking from Caernarvon Castle, at sea level in Wales, to the top of Snowdon - 3560 ft = 1085m - the highest mountain in England and Wales). We refreshed ourselves, & then surveyed the lake. RL and CT looked for aquatic and littoral flora, but found very few sufficiently advanced to allow identification, but on the dryer rocks there were many beautiful and interesting species of *Androsace*, *Saxifraga*, etc. (see list). Washed and had dinner (at last some food!) Wonderful! Soup of all sorts of things, then paté, tomato and gherkin and bread; then gammon and lentils, and then apple purée sauce and a biscuit. There was more food than anyone could want, which was wonderful when we were so hungry. Found space for sleeping bag in the dormitory above & and slept well.

RL went to toilet at ca. 2 am., when the stars were brilliant, and again at dawn, when the donkeys were huddled in the door-way, but RL got by.

Thursday 12 July: Barroude Refuge <==> Lacs & Port de Barroude

7.00 a.m. all up. (Long queue for single toilet & wash basin - so I was glad that I had washed last night). Breakfast of bread, butter, jam & large bowl of coffee.

a.m. surveyed pools & lakes nos. 3-10 (?). Marginal plants hard to identify, because not fully grown, but CT found *Nigritella nigra* & *Leontopodium alpinum*! RL gathered some *Saxifraga* seeds, & photographed *Primula integrifolia* etc. A peaceful and profitable morning. Back to the refuge for a brief lunch. p.m. walked up to the Spanish border. Steep climb over rocky hillocks surrounded by snowfields. Refuge & lake constantly diminishing below us. Port de Barroude (2,534 m). Took photo of all the groups (except Bruce). Lovely *Viola* sp. (pansy), *Potentilla alchemilloides*, *Linaria alpina*, etc. Over on the Spanish side was a steep valley, with no snow nor cloud. Views to Possets and Pic d'Aneto (brought back memories to RL of the field trip in 1962?).

On the way back down we considered surveying other lakes, but mist was coming up, so we decided that it would be too dangerous to do so.

At the Refuge, an excellent evening meal again, of soup, sausages, etc. The refuge was very full, so sleeping accommodation was allocated, each party to its own area.

RL to toilet in the night, - OK. Slept well and long.

Friday 13 July: Barroude to Le Maillet.

Rapidly up, breakfast ca. 8.00 a.m. (DZ had problems with pH meter)

9.00 am precisely, all left; back down the valley we had come up to begin with, (*Antirrhinum* on the way) and then branched to the left. Good route and path to begin with, and steep but pleasant climb up to Hourquette de Chermentas, 2439 m alt. Rested & took photos & looked back; then onwards again, but soon faced the TERRIBLE scree slope up to Hourquette de Héas. The path was totally lost amongst the scree, so we wondered if we were lost. Decided to press on and scrambled up as best we could, and no-one fell, though some flinched. Finally we climbed onto solid rock near to the top, but it was rather precipitous; then we came to the actual pass of Hourquette de Héas (2,612 m), where we rested. We then started a descent of about 1,000 m., on good paths. (We met a scout/guide troop coming up on their way to Barroude. I hope that they managed to pass that scree without too much trouble.) *Rhododendron ferrugineum* patch.

At 2.00 pm we had lunch by a small empty refuge (?? Cabane des Aguilous, 2,293 m, ??). Walked on down, and down, and down. RL was extremely tired, but Bruce was just behind to help if necessary. Finally, we reached the Chapelle de Héas. RL was forswunk! (exhausted by extreme effort.) RL treated himself to a lemonade at the cafe: the best drink I had ever tasted! We were saved from further exhaustion, by a guard of the French National Park of the Pyrenees, who took us the final 4 km uphill to Le Maillet (at 1,809 m). RL gave drinks all round to celebrate our safe arrival (cost £21 = 30 euros). Good dinner. AP & RL shared a hotel room: everyone else slept in the dormitory.

Saturday 14th July: Le Maillet <==> Cirque de Troumouse.

Le Maillet is a good small hotel, set in a magnificent wide grassy valley with a torrential river.

(R washed some clothes.) Breakfast.

Walked steadily up the road to the car park for the Cirque de Troumouse (2,137 m), and beyond. During the day we sampled many lakes of amazing diversity; some were covered with *Carex*, another with *Sparganium* (or *Alisma?*), others were devoid of any vegetation. Big differences in the abundance of frogs in the different pools. One pool was full of *Artemis* (brine shrimps).

Karst areas with 'sink holes', and elsewhere enormous springs gushing out into rivers. Snowy crags above. It was a very successful day, but we finished early because rain was forecast, so we went down again very quickly. At dinner time there was very much rain and hail!!! RL enjoyed the hotel comforts again. (Bruce realised that he had left his passport back at Barroude! RL gave Bruce his spare food rations that he did not need.)

Sunday 15 July: Le Maillet --> Les Granges de Holle <==> Col de Tentes.

We should have been taken by car to Lac des Gloriettes, and then we would have walked via Hourquette d'Alans to Espuguettes, but we had to change our plans because of the bad weather and especially the fall of new snow at high altitude, over old snow, which would have been very dangerous to walk on. Therefore, instead, the Parc National guards took us directly to Les Granges de Holle (1,500 m), near Gavarnie. Fortunately there was enough room for us to stay there. We left our main rucksacks, and took our day sacks. The guards then drove us up to above Les Granges de Holle, to Col de Tentes, and we walked on from the car park, into the mist and even snow. It was VERY cold! We surveyed several lakes, despite the bad weather. On the way down took photos of RL & *Carduus carlinoides*. Lower down there were magnificent views of the mountains, all the way from Les Granges de Holle up to the tops of the mountains (Brèche de Roland) and the route we would have taken from Espuguettes. Gorge with *Saxifraga longifolia* in magnificent flower, but inaccessible. Back to Les Granges de Holle fairly early, so RL & Catalin & Dragos made a Sunday afternoon pilgrimage up to the shrine of La Vierge de les Nieges, and afterwards a daring tramp up to a magnificent waterfall, and searched for Ramonda, but found none.

Back to Les Granges de Holle for an excellent meal in a homely setting, before bed.

Monday 16 July: Les Granges de Holle <==> Lacs du Monferrat

After breakfast, the 2 guards of the Parc Nacional took us up to the reservoir (?? La Cabaña del Parc en Oulettes d'Ossoue ??). We walked up from there, high up into the mountains, over much splintered rock, and over some snow patches, to several lakes (Lacs du Monferrat, 2,440 m), one with a large iceberg floating in it. (When I pushed it, momentum kept it going steadily for some distance.)

There was frog spawn in this cold water, but still at the spherical stage. (Later I wondered whether this had been laid and then frozen the previous year?)

At lovely lake 34, on a rather inaccessible island, Catalin discovered 5 plants of *Nigritella nigra* in flower and also good *Pinguicula grandiflora*, *Gentiana acaulis*, etc. We were on the roof of the world, with magnificent views and lots of interesting pools. Made our way down to the reservoir, and whilst waiting collected *Bulbocodium vernum* (?) seeds. The friendly guards collected us, & popped into Gavarnie - what a tourist trap! - and near a hostel (?Charmiere?) towards the Cirque de Gavarnie, we were shown excellent *Ramonda myconi*.

Good dinner at Les Granges de Holle (very friendly and sociable hostel, cosy dining room - stone and old beams; bedrooms with bunks; 4 showers, 2 washing troughs, and 4 squat WC). -Bruce gave whisky to Antonio (pp. passport recovery - photo.). Julio, Antonio's son, came by car with some necessities. Afterwards, in Gavarnie, where R phoned Clare.

Many scouts and guides camping nearby. I finished drying my clothes outside.

Tuesday 17 July: Les Granges de Holle --> Stom

After breakfast and packed, the two guards gave us a lift to the same reservoir as yesterday, then we climbed up a narrow, steep valley (Oulettes d'Ossoue?), often over snow patches. Catalin found beautiful *Saxifraga longifolia* on a precipitous cliff and risked his life to photograph it, but lost his camera into the torrent below. He and Dragos searched for it, but in vain: 34 valuable photos lost as well as the camera. Further up, excellent views across to Monte Perdido, la Breche de Roland, and Tallon.

Climbed up to a hostel - Refuge de Baysellance - under repair for 2 years. Lovely *Gentiana verna* in a rock crevice. Rested. Approaching Vignemale and its glaciers, trudged up across the snow field to the pass (Col de Labas). Rested. Fantastic views.

Crossed into the valley leading to Stom, crossing ice fields near the glacier; then down, down, down, over granite blocks and zig-zag paths (passed 2 students from London). Sent on an advance party to say we were coming, but we all got to Stom Lake and the Refuge de Stom (1.804 m) in time for dinner: soup, beef bourgignon, cheese etc., vervaine tea. RL washed clothes, which dried outside the next day, mostly. This Refuge had a "teahouse" atmosphere, and a lovely outlook onto the lake.

Wednesday 18 July: Stom <==> Lac Couy (& ?? Lac de Malh Arrouy, 2,586 m).

9:00 Breakfast (R hung washing out to dry.)

Climbed back up the valley we had descended yesterday, but then turned left to Lac Couy etc. (Andreea has slept badly, so she and Nicolas returned to base). Steep climb and very misty/ cloudy, all the way from the base to the top, so we could hardly see where we were going, except for the paths which were marked. Finally we reached the top-most lakes. (Whilst walking RL recited 'The Shooting of Dan McGrew' poem to himself.) Sometimes the cloud cleared revealing magnificent views of the lakes and mountains. Sampled many lakes, with Catalin. & RL doing the vegetation as usual, but we could not get to Lac Glacé (or Lac des Gentianes).

Back down together as a group so far, but being left behind, AP and RL lost the others and took another route (along the Spanish border!), Gave d'Éstom Soubilan, a very steep and difficult path, but with abundant and interesting mountain flowers, and then down to the bottom of the river valley, and back to the lake and Refuge, which were still wrapped in mist.

Dinner of chicken casserole and macaroni, and cheese and apple sauce.

Catalin and RL used the Refuge's copy of *La Grande Flore Illustré de Pyrénées* to identify sedges and rushes, fairly easily.

Bed. (Refuge du Lac d'Éstom, half board, 165 Francs =17 Pounds).

Thursday 19 July: Stom --> Oulettes de Gaube

Up 7 o'clock and wrote up my diary for the past few days, and washed and re-packed. 9:00 am breakfast, 10 am off on our way. Steep climb back up the valley to Col de Arraillé (2,583 m). Scotch mist, but warm enough in shirt sleeves. Found a Fire Salamander on the path. Climbed up gently. Crossed snow field before the Col, which we had passed 2 days ago, and another snowfield down the other side. (RL slipped, but only 1 m.) Descended steeply down the valley to 2 lakes and caught up

with the others and surveyed these lakes. Slight snow was falling, so we descended fairly quickly down to the Refuge des Oulètes de Gaube (2,151 m) - in a wide valley with ribands of rivers flowing down from the snow field or glacier.

The hut was very crowded: it had 69 (or 75?) beds in triple bunks, and only one squat-loo and only one wash basin and one shower! There were lockers for rucksacks. Had a bite of lunch, but in the afternoon it was still raining so we stayed in and wrote diaries etc., with a fine view of the meandering river, the snow and the mountains through the window.

RL chatted with Bruce a lot. Weather still bad, but forecast better for tomorrow.

Friday, 20 July: Oulètes de Gaube --> Wallon

Managed to get to the toilet before everyone else, but only by lying awake for about 2 hours worrying about it. Got up and even managed a face splash. Very crowded in the ablutions area. Breakfast good enough, but rather disorganised - rusks, bread, jam, coffee/chocolate with corn flakes in it, etc.

Surveyed the 'lake' (= Oulètes) - part of the river. Weather getting better. Beautiful new snow on the mountains. About 10:00 am we started off, but it was a very steep climb and we went too fast, at first up over very rough boulders etc, and then climbing up a massive and steep snow field up to the ridge. It was very tough going! Over the col (?? Col de Moulets, 2,591 m) and then down the other side, where there was less snow but it was still bad and there was lots of loose boulders & scree. RL found it tough going. Reached another ridge (?? Col d'Arratille, 2,528 m) and after that we studied some good pools / lakes as we descended. Found a big lake, then walked down a valley for a very long way, over smooth granite surfaces, and increasing pines in scattered woodland. Finally reached Wallon Refuge (1865 m) about 6.30 pm. Exhausted! Quick wash and a good meal of potato soup, carrot salad, roast pork and macaroni, and then chocolate blancmange. Bed early, 2-bunk room with AP (for silence of others 'no ronchar' - no snoring). Wallon Refuge was very well run, 110 beds; several toilets, washbasins with curtains (but cold water only).

Saturday 21 July: Wallon --> Respomuso

RL had slept very well, with no worries about toilets, etc. (but AP did not sleep so well).

Breakfast very good and varied with home made cakes, prunes, rusks, nicely presented, coffee, etc. Good weather all day - sky completely blue - risked not wearing my thick shirt, but only my special Lowe Alpine polyester climbing vest, and I felt much better. Also Jesús carried my 2 flora books so I had a lighter load. Furthermore, we started walking at a gentler pace, so we did not get exhausted at the beginning of the day.

Steadily up the valley towards the Spanish border, sampling many beautiful lakes on the way.

Several couples were sitting and enjoying the lakes. Bruce and Jesús went swimming, although the water was icy cold. I risked drinking fresh water from melting snow patches, using Catalin's mug, - that water was delicious. Drinking more water may have helped me to feel better. We advanced slowly, lake after lake, but we could not survey all of them. High up, near large snow fields near to the Spanish border, Bruce went down to a mostly frozen lake and filled a large bottle with slush and then Javier added "orangeade"- the resultant cold drink was fantastically delicious. Rested, before final our assault across very large snowfields up to the Col de Cambales, on the French-Spanish border. It was tough going and some folks slipped a little, but not badly, and no one was hurt.

RL grabbed snowballs of fresh snow (having cleared the dirty top layer first) to assuage his thirst: it was wonderful. Up to the actual Col de Cambales (2,706 m) on the frontier of France/ Spain. Took photos back towards France and forwards into Spain.

Descended on a very poor path, which was often just scree, on the Spanish side: it would be very difficult to climb up it. Trekked across more snow patches, with some slipping and difficulties (but also luscious snowballs to suck). Eventually reached a good path and wonderful water to drink flowing from under the last snow patch. Steep descent over rough grass to the promised valley (Campo Plano de Respomuso), with cows (with bells) gently grazing. Idyllic, but still a way to go, down rough valley paths and over a dam (planned and half built under Franco, then abandoned) for a new reservoir, past youth camps, until we finally reached the Spanish Alpine Club hut at Respomuso. What a magnificent place! Large San Miguel shandy, given by AP. Antonio, Nicolas and Javier had a brief meal before leaving at 8:00 pm to drop 800m to meet up with Julio and go to Jaca. We all went

to the "AULA", a large room in the basement of the Alpine Club hut which is used by the University of Vigo and others, especially for the Pyrenees Frog Research project. Chatted in English with David (Ph.D student in Vigo) and German post-doc (Bonn?) working on DNA analysis, etc. All working very hard & enthusiastically. They are studying local populations of frogs in depth, so it was good to see how our broader survey interacted with their work. (Frogs can take 5 years to grow to mid-size, under the cold, short summers at this altitude !!!).

8:00 p.m. Meal- excellent- all on a tray - lentil soup, meat balls in gravy, bread, tinned peaches. Chatted downstairs again. Shortage of accommodation in the dormitories, so most of our team slept in the laboratory, but RL in a dormitory (and also the 3 Romanians in 2 places). Slept well until 6:00 am, when almost everyone else got up to go off climbing for the day, then I slept on till about 7:30.

Sunday 22 July: Respomuso --> Formigal

Up and washed briefly and breakfast at 8:00 am - quite good, plastic tray with coffee, toast, etc. Repacked to leave sleeping bag etc. at Respomuso.

About 9:15 am started walking to Formigal: RL, CT & DZ, and Andrea, Bruce & Jesús. Delightful walk down the valley, with abundant flowers, and sometimes through cool beechwood, or deep ravines below, or with streams cascading over us. What a wonderful Sunday morning walk - but rather tough going over rough rocks - glad I had brought my sticks with me. Very many beautiful butterflies. Buxus forest!! Many hikers coming up the valley for a Sunday outing, from the car park below: all very friendly; many French, as well as Spanish. After almost 3 hours we reached the car park, - and, - and, - a font of cold water!! Delicious! Onward, now by road and becoming rather hot, towards Sallent and Formigal. Hitched a lift for a mile or so, and thus RL, CT & DZ overtook the others, and then we walked fast and with determination up the old road from Sallent to Formigal. It was really tough going under the midday sun, and sometimes we really wondered whether we would make it! DZ kept telling RL "Don't die yet!". Finally we reached Formigal and staggered into the Apartamentos Midi at 1:30 pm and asked for a glass of beer - and we were given one each, free, on the house. Fantastic!

Fortunately Room 603 for RL & CT was ready early, so we each enjoyed a good shower - the first for several days; RL was VERY dirty. Next CT, then DZ, and then the others had showers when they arrived.

RL and CT had lunch (RL had 2 magnificent slices of melon + a glass of lemonade) - We expected Dr. Catherine R.-R. from Pau, but she was not here yet. Bruce washed all of our clothes in a machine (lots for RL). (CT did his washing by hand.) RL wrote his diary.

CT and RL identified Carex and other plants on a bench outside Apt. Midi - tiresome work! (RL also bought postcards and chatted with the English owner of the ski shop. (Bruce will have to buy new boots because his have split.)

At 8:00 pm Antonio arrived and we met up with Dr. Catherine Reynault-Roges (Lab. Ecol. Mol., Univ. de Pau et des Pays de l'Adour) and her husband. Dinner at hotel with AP and CT and these 2. Discussed possible collaboration EC/ Canada exchange project on polluted (PCB) lakes, etc.

Bed and slept very well.

Monday 23 July: Formigal to Respomuso.

Up and breakfast at Apts. Midi. Lots of students here now. Very difficult to establish what was happening. Packed up quickly and left luggage at Apts. Students walked with their luggage to Sallent. Jorge Millos <jmillos@uvigo.es> drove CT & RL by car.

Town Hall of Sallent, formal lecture by Dr. Catherine Regnault-Roger on potential of mediterranean herbs as anti-insecticidal chemical producers. Bread loaves given out, 2 to each person, to carry to Respomuso, where they had none left. 12:00 noon by car with Jorge, back to Formigal.

R wrote postcards, whilst awaited further instructions, (Bruce had a hamburger) but no instructions came, so proceeded to the car park at La Salla. All the others had gone up already, but we met Julio (AP's son) and his fiancée Maria José. Jorge Millos carried RL's pack very kindly (but even without this pack, RL could hardly keep up with him). Proceeded to Respomuso in ca 2 h 45 min! Beer!

Pleasant ascent (without a pack). Found strawberries & some bilberries. RL chatted with Jorgé along the way in English and explained the plants.

7:00 pm orientation of students in Aula (see notes).

8:00 pm dinner. 20 Vigo folk slept in a room beyond the self-cook kitchen. AP and RL in room 6, up high. Slept well.

Tuesday 24 July: Respomuso

Up and breakfast at 9:00 am.

Lecture by Dr. Miguel Vences (Spanish-German) on frogs etc. in the Pyrenees: very good.

11:00 am excursion with CT and RL; started with nitrophilous vegetation around Refuge, then ambled on to pools and alpine meadows. 1st. CT in French, 2nd. RL in English, 3rd. Questions in Spanish (if any). This worked well; explained hemiparasites, insectivorous plants, families, etc. and the students appreciated it.

1:30 pm Lunch back at Respomuso, (ample lentil soup, meat balls etc.) + wine and champagne to celebrate Antonio Palanca's 53rd birthday. Took it easy until 3:30 pm. CT gave a good talk on main macrofungi/ basidiomycetes (but RL sleepy because he had eaten & drunk too much)

5:00-7:30 pm. Excursion all together up the valley to Campo Plano, past the dam from Franco's time, built and then abandoned. On the Campo Plano we searched for Sphagnum bog, but very little left now, too dry/ drained and too eutrophic. CT and RL demonstrated various botanical features to the students; again first in French and then in English.

Back for a good dinner at 8:00 pm, then bed.

Wednesday 25 July: Respomuso

After breakfast, AP gave a good lecture on extreme environments, especially the contrast Respomuso vs. Monegros, and he explained our studies of lakes, and PCA to show main factors.

AP took students across the far valley and up to the large snow patch. They had a good day and saw much. CT and RL stayed back to identify all remaining specimens of Carex etc. Tedious!

Break for lunch with David and others. Finally finished, then CT and RL explored rocky slopes above the Refuge. On granite very few plants of interest, but found a layer of metamorphosed limestone (?) with more plants of interest especially Saxifraga aizoides, S. moschata?, S. oppositifolia, Rhamnus pumilus etc. and many Sempervivum plants.

Back to the Refuge and all the students came back enthusiastically. General well being. Washed socks. Dinner. Bed.

Thursday 26 July: Respomuso

After breakfast, the students and the rest of us addressed by an officer with responsibility for this area, i.e. Valle de Tena, from the mountains on the border of France, through Respomuso, and even to Sallent and Formigal. He explained the conflicting interests of urbanization and conservation of nature (see notes. 2 h talk).

Break, then David Veites described his Madagascar research on frogs, done with Miguel Vences and others. Many very rare and interesting endemic species, limited areas (see notes 2 h).

RL (& CT) gave an account of our plant surveys around pools and lakes.

Lunch - very full. Students left for Formigal. Farewell to them and to Jorgé and the others.

Walked to limestone cliffs and found a few saxifrages etc.

Prepared for tomorrow: re-packed, showered etc. Chatted with 2 chaps from Wolverhampton - the wife of the younger man was at Handsworth KEVGS, where Celia Lester teaches.

Dinner + wine. Read guide to this area.

(Man missing, now found dead - 7 dead and 17 severe accidents in this area already this year!)

Chatted with Catalin & David about a possible project on bogs in Romania & Spain.

Friday 27 July: Respomuso to l'Arribet

Breakfast, etc. and farewells to David and others, and then off, up the valley, over the Campo Plano and then a fairly steep climb up to the pass and snow. (?? Port de la Peyre St. Martin, 2,295 m) This time we took another valley due north into France. Very deep and spectacular and quiet, with a remarkably good path. (Passed and repassed a family: negro man and white woman and two small children who were doing very well.) Sampled several lakes/ pools down in the valley, but the valley

was very deep and the pools difficult of access. Eventually we descended down to only about 1500 m, and it seemed strange to be back amongst montane plants and warmth, and soon I longed to get back up high again. Over a stony route, found lots of lovely bilberries, and an enormous *Digitalis purpurea* plant. Lovely lowland valley with enormous waterfall (?? La Claou, 1,600 m), then climbing again and longing for good water and found it in a wood, a rapid cold river, and more bilberries. Then more slog - extremely steep at the last and AP and RL and others fagged out (i.e. extremely tired) before we got to the refuge L'Arribet (2,060 m) and a welcome beer. Well run place. Chatted with 2 English chaps from Exeter and discussed problems of the route tomorrow. Excellent meal, with local cheese.

Saturday 28 July: Arribet --> Arrémoulit

Good breakfast with bowl of chocolate, prunes, jam etc. (RL had loaned his toilet roll for general use.) 3-4 lakes and pools on the spot, then climbed steeply above and soon came to snow fields, which we crossed cautiously remembering the man who had died, and we also sampled several more lakes on the way. Cut through a corner of Spain, again with more snow fields, and a pass (?? Col de la Lie, 2,469 m) which involved quite tough rock climbing to get down, and then "jumped" up onto a snowfield. Finally another pass (Col du Palas) and back into France, and worked our way down (sampling lakes on the way down) to the beautifully situated but somewhat primitive Refuge Arrémoulit (2,200 m) a cosy place built in 1925. RL gave drinks all round. Good meal with vegetable soup; excellent salad; macaroni and braised steak; and crème caramel with red wine. Washed..

RL chatted with a French group about our work. WC not too bad (in the day light), sluice down with a hose pipe, then sewage seemed to go straight out under a large snow patch in the stream gully. The wash basin outside was just a stone trough with cold water piped from a mountain lake

Sunday 29 July: Arrémoulit --> Ayous

Up, breakfast and packed, and took group photographs against the Lake Arrémoulit and snow-clad mountains. Surveyed lakes by and then below the refuge, then climbed up the valley and across snow patches to many more lakes/ pools (Lacs d'Arrémoulit). RL needed toilet, so went back to the Refuge, and then photographed many plants. RL met 4 old Germans, arriving after 2 days trek from Wallon. Surveyed some more pools: RL gave Kendal Mint Cake to all the team.

Started down the valley, just below the Refuge, were many small shallow pools on granite.

Finally bashed (i.e. walked very fast) down hill on a steep zig-zag path (found much yellow *Viola biflora*) then straight down to the reservoir/ Lac d'Artouste (1,997 m) and the terminus for 'Le Petit Train d'Artouste'. Beers all round.

Rather sadly we have now finished our work in the high mountains and snow fields.

The train took us (in 2 groups) creeping along the edge of a deep gorge/ valley, with excellent views of the scenery below, and the lovely flowers alongside the railway track.

Finally we passed through a narrow tunnel to the terminus. Then we descended by cabin ski-lift way down to the valley below at only about 1500 m, with beech and *Abies* etc.

Met by a French National Park of the Pyrenees guard, who packed 6 of us + baggage (+ driver) into his small van, and drove us ca 7 km to meet up with AP, CT & DZ who had preceded us on the train. We then walked further for 1.5 hours to the Refuge, at first through moist and humid but interesting beech forest (where bears still live). It was very hot and humid, but not too many insects.

On the way we met 2 National Park staff: the man was a water birds expert.

Eventually we climbed up above the forest, and onto upland pastures with refreshing breezes, thankfully. We struggled onwards with determination. Eventually we came to a large lake where some keen folk from our Expedition were already sampling, but AP & RL struggled on, up past a waterfall and on and on and on. Eventually we saw the refuge in the distance - a welcome and magnificent sight.

Reached the hut of Refuge d'Ayous (1982 m) about 8.00 pm. Thorough wash, then a very welcome meal of soup, rice salad, lamb & haricots, cheese, fruit salad, and RL bought 2 l of wine for 48 Francs (£4.80). Allocated beds in an outer room, and settled down contentedly for the night, though slightly sad to have left the life in the High Pyrenees so far behind now.

Monday 30 July: Ayous --> Pombie

After breakfast, we surveyed 2 large lakes below the Refuge (Lac Roumassot & Lac Gentau), that we could not do last night. One had masses of Sparganium, some with flowers. This is a lovely peaceful spot, and the flats below the Refuge would be wonderful for camping, with the hut itself above, with a backdrop of mountains. Collected our "mochilas"(rucksacks) and started on in earnest, working our way up from one lake / pool to the next. Met up with an ornithologist from Pau, studying dippers and other birds.

Soon we started a steep descent to the valley below: a long haul and we desperately wanted cold water to drink, but we could only splash our faces in the impure river at the bottom. (Javier, Andreea and Bruce stopped off at a bar for a drink of water, but the rest of us plugged on.) We had to ascend to the col, which was much tougher going than we had expected. With AP and others we struggled up a steep grassy hill then through some pines, and then past *Gentiana lutea* & *Iris xiphioides* and then it was a bit cooler and we rested. After a rest we climbed again, past where wild boar had rooted amongst the gentians. Time and again we thought we were near the top, only to find another hill beyond. We were desperate for water now (I had a little in ultimate reserve) but then we came to a stream issuing from a fenced protected area supplying the houses below, and probably the bar. We drank long and deep and Javier mixed his fabulous orange drink as well!

We struggled on up, and caught up with Catalin and Dragos and Bruce, who had overtaken us, by a lovely lake with some other folks there. The water was 20°C, so even RL stripped down to his underpants and swam to the middle and back: this was his first swim in a Pyrenean lake, and so refreshing and invigorating. Fell into chatting with an American, Michael, from Philadelphia but now working in London. The others had gone on ahead, so RL with Bruce and Michael struggled up the final ascent to the col, most of the way over horrible great angular boulders: you could easily slip between them and break a leg, but my trekking poles kept my balance. Rested on the way, and eventually we did reach the top of the col (Col de Peyreget, 2,208 m, below the Pic du Midi d'Ossau, 2,884 m), but RL was utterly exhausted by then. Took some photographs. Going down the other side was easier, with our destination, the Refuge de Pombie (2,031 m), now in view, against a spectacular back-drop of high, snow-smattered mountains. We feared we would be too late for dinner - but eventually we struggled into the hut at 7:45. Then Catalin eased my 'mochila' off my weary shoulders, and AP sat me down and thrust a glass of wine into my one hand and plenty of cold water for the other. Thank God we got there! AP and others also admitted that they had hardly made it to the top of that col!

8:00 Dinner; good soup, carefully flavoured; excellent salad of tomato, etc, then splendid cuts of good young beef, followed by desert. It is said that the guardian of the Refuge is a stickler for punctuality, but he provided us with an excellent meal, washed down with 3 litres of wine and plenty of water, and we all were very grateful to him and his staff.

That night Dragos set up his telescope! (?Questar) and we gazed at the Moon and Mars in the cold night sky, and so to bed after an exhausting, but very worthwhile day.

Tuesday 31 July: Pombie to Formigal

Up and breakfast at 8:00 am and packed up. Then struggled uphill, not quite to the col, and sampled 2 lakes we had passed last night. The top lake had gigantic tadpoles: apparently *Bufo* not *Rana*. Afterwards, an easy downhill walk to the lake by the Refuge de Pombie, which we surveyed. (Climbers were active on the exposed rock face above us.)

Took up our "mochilas" again and we all left the High Pyrenees and started the final big drop down to near the French-Spanish border. Another slog, - but not so hard for us as for these ascending on this hot morning. Passed large flocks of sheep (and shepherds with dogs - some were Welsh border collies), and herds of cattle in the lower lands, where the grass was covered with cow muck. Reached the road and waited. Antonio Palanca soon came in his car and ferried us to the border at Col de Portalet (1,778 m) where we drank two beers, whilst AP ferried the others, then we were driven down to Formigal at the Apts. Midi, and then we had the luxury of a warm shower, hair wash, shave etc. (Javier- farewell today; Jesús- tomorrow). Room 406 for 6 of us: CT, DZ, RL, Bruce, Jesús and Andreea. Began to relax after this wonderful, but rather exhausting expedition. My weight was reduced to only 72.2 kg, a loss of 8 kg!

Wednesday 1 August: Formigal

Up at 8:00 am for breakfast (coffee and croissant) with Catalin.

Worked all morning at Apts. Midi, making determinations of all Carex and other undetermined specimens. This was tiresome and rather boring work, but we finished it by lunch time.

Javier turned up, unexpectedly, with complete sets of photocopies of the data sheets for all 140 lakes.

Lunch with Catalin (RL melon & watermelon).

pm. Catalin worked for over 5 hours, inputting data from his record notes into a laptop computer which had been left by Antonio (but only WP - Word Perfect). RL free to write 15 postcards and washed clothes - vest + socks were HORRIBLE! and stank of cow muck when soaked in water! Eventually got the most important items washed clean and hung out on the balcony to dry. RL then went for a walk above Apts. Midi, through an area of new houses. What a pity that most people here want to make imitation Madrid /London gardens, and neglect and even destroy the wonderful local wild flowers! Education is needed! Finished writing cards. Thunderstorm. Dinner with CT and DZ (& mentioned RL's prostrate cancer problem to them, which had been diagnosed just 2 days before I travelled to Spain). Bed.

Thursday 2 August: Formigal

Up and breakfast with CT. CT continued to work hard, entering all our data into the computer in Word Perfect - he finally finished at about 6:00 pm = 13 h work altogether!

RL read papers on ecology of the Pyrenees, outside. About 11:00 am AP came, and then AP, RL and DZ went by car to look at the IMPACT study sites, in particular to search for Sphagnum bogs, which are so rare in Europe, but important now that there are some EC protection regulations. Found very little, at the most 2-3 m². Took samples of other mosses for Royce Longton to identify. RL collected a saxifrage. The top end of Formigal is proposed as a new hotel area. Looked at a bog with lots of Chara fragilis, but not any Sphagnum. RL listed all species of interest.

Lunch with AP, CT, RL. pm RL checked the translation of a paper by AP.

AP chatted much with each of us in turn, then took his computer with the file produced by CT on it.

RL shopped a little (book markers ~£2; + cards)

9:00 Dinner with CT (and Bruce). Packed up for tomorrow.

Friday 3 August: Formigal to San Juan de Flumen

Up, breakfast and finishing packing. About 9:30, 2 cars arrived.

1. Julio, Antonio's older son, loaded up Bruce and Andreea and took them via Jaca & Huesca to do various things, and eventually on to San Juan de Flumen.

2. Antonio, loaded up CT, DZ and RL, and all our many accoutrements. Made sure our apartment was clear, then thanked the Apts. Midi staff, and departed. Farewell to Formigal and the Pyrenees we love!

Drove down the valley, and down and down. By the time we came to the best view back to the Pyrenees, they were totally obscured by haze, but I took a photo in any case, with CT and DZ and the now xerophytic vegetation of dried up spiny shrubs etc - yet also Arctostaphylos in full (red) fruit!

Via Sabiñanigo and Huesca, and then cross-country into the Monegros area. Excellent lunch of macaroni in tomato sauce with bits of chorizo, good green salad, then big sausage & fried potatoes, with a good red wine, in a homely ('rustic') but very good restaurant in Sariñena.

Onwards, and soon reached San Juan de Flumen. S.H de Fl. is a well built and ordered village, created in 1969 when under Franco a community was "transmigrated" from several Pyrenees villages before some were flooded to produce a reservoir, or other villages were too isolated to be viable.

Basic facilities are good, i.e. roads, houses, church, shops, sports etc.

Stayed in a rented house set up 1 year ago for the "Fundación Laboratorio de Anatomía Animal" del Universidad de Vigo, at 26, Calle de San Juan. Kitchen & laboratory; several bedrooms with metal bunks and foam mattresses. Could take 10-15 persons. Outhouse could be developed.

Settled in, and then CT, DZ & RL went for a long walk NW. Much irrigated maize fields, with water channelled from the Pyrenees. Other areas very dry with halophytes, e.g. Obione/ Halimione.

Eventually Julio arrived with Bruce and Andreea, and dropped them, and picked us up for about 1 km. Then we walked again. Along the roadsides were many interesting plants, e.g. Scolymus, and very many butterflies and dragonflies etc. On fennel found a caterpillar of a Swallowtail butterfly! It was a lovely stroll together, and we returned to S.H. de Fl. just as the western sun lit up the church tower. RL treated all to 2 beers/ etc. at the bar; the storks all returned to their nests, and clacked their beaks in greeting, and the mosquitoes started to bite, so we returned to our home, and rest.

Saturday 4 August: San Juan de Flumen, etc.

In the morning, AP took CT and RL and Bruce and Andreea (+ luggage of CT and Bruce) for a tour of the very dry country of the Monegros area, some of which is an enclave of Mediterranean vegetation with *Pinus halapensis*, *Quercus coccifera*, *Pistachio lentiscus*, *Lavendula*, etc, etc.

Another part is more like N. Africa with tarantulas, scorpions etc. Amazingly, some of these areas are cultivated for wheat (*Triticum durum* I think), with retaining walls/ banks/ hedges built frequently across the valleys, so that any rain storms are held up, so that the water can soak in. Some of the walls look Roman! Crops may only be grown 1 in 4 years!

Our route was:????

After lunch in a "rustic" restaurant in ???, we went to Zaragoza and located the train station down town. Catalin's train to Madrid was booked without difficulty, and likewise for Monday morning for RL and Andreea to Barcelona. However, Bruce had enormous problems. All trains from Zaragoza to Vigo were fully booked up for several days, and there were no alternative routes. Tried one bus company and another. Eventually booked a bus from Zaragoza about midnight tonight to La Coruña arriving about midday tomorrow. Bruce was not happy. (We left him back at railway station with his massive luggage). He got that bus and went to La Coruña, but meanwhile he had not contacted Perico, who had left La Coruña and phoned us at midday the next day from Vigo, to ask us where Bruce was! Bruce also suggested coming back to Zaragoza, to meet up again with Andreea, etc!

Back to San Juan de Flumen and Andreea decided to go to Zaragoza tonight, so packed up her and her baggage and went to Sariñena. The station was deserted, and apparently there was no local train until tomorrow night! The Barcelona train stormed through at ~7:20 without stopping. Meanwhile RL had asked some locals, who promised a train at 8:20. Went for beers in Sariñena. RL looked for a photocopy shop, but all were closed by now. The hotel could scan and print tomorrow. Back to the bar for a beer for RL. ~8:05 AP took Andreea to the station again, and she successfully caught the 8:20 train. All 4 (AP, DZ, RL, and Uxia) then went to a good restaurant in Sariñena. Excellent meal with v.g. wine and excellent company. We could begin to relax at last. RL had a wonderful T-bone steak, from Benasque (which RL had visited in 1961, when 24). 11:00 All very happy, and a bit merry, and so back to base, and slept very well.

Sunday 5 August: San Juan de Flumen

RL up at 8:00, (but others more tired and slept on). Wonderful shower and hair wash. Cold coffee with Uxia.

AP and DZ tried very hard to get the computer to accept the disc with all of Catalin's data in the A drive, but could not do so even after taking the computer to pieces. RL walked to the open but empty church. RL washed boots clean, that had served him so well.

RL & AP to hotel in Sariñena: manager/ owner very kindly let us use his computer to copy from the disk the file prepared by Catalin onto a new disk (for RL to take home); then opened and printed this file. RL had a beer then transferred all corrections onto the new print out.

AP brought DZ and Uxia to lunch at this Sariñena hotel. Very good meal - salad, sausages, melon, and coffee and red wine with fizzy water. Glad the computer file was safe now.

Back. AP siesta. RL diary and walk N of S.J. de Flumen: bee-eaters, herons, and storks in bottom lands. Ca. 1 h in the sun, on an old road. A lovely stroll for a Sunday afternoon; met no one except birds and plants.

Worked on plants records. Transferred all corrections onto the new printout for RL. Noted all problem cases of taxonomic identification etc. and subsequently discussed with AP and decided which species to maintain /discard/ merge. (See notes at back).

Considered possible problems of formatting all the data for analysis by SPSS, and discussed these in detail with AP. Final matrix must be absence / presence data, arranged in a table (e.g. EXCEL), with rows (lakes) x columns (species), defined by position, but explained by indexes. AP suggested adding qualifying notes to this table, but RL prefers to have made all final decisions already, and then explain these by clear notes (separately).

RL will need to work through these files at home, as indicated, preparing various intermediate files. Must send copies of appropriate ones to CT, and then to AP. <send test files as Email attachments, first> For lakes not examined, put ')' for all taxa. All this was agreed with AP (and done in Birmingham).

 Formigal vegetation survey; worked through with AP and DZ, so they have all the information they need. On lists (Flowers; grasses, etc), RL highlighted all species found, and marked more heavily all those of major interest to tourists, for beauty, novelty, botanical explanation etc.

Discussed possibilities of encouraging new houses to make \pm natural (rather than artificial) gardens, with beautiful local plants rather than exotics, and how to gather wild-flower seeds for them to use in their gardens - and pools/ marshes, and trees.

 RL packed \pm , then went with AP to the bar for beers and lemonade, and met the 'alcalde' (mayor) and chatted with him. San Juan de Flumen has 395 inhabitants, 35 children in a school with 3 teachers; about 70 maize farmers, with about 2-3 ha each; also rice, vegetables, stock, etc. ~11:00 Bed.

Monday 6 August: San Juan de Flumen to Birmingham

(Slept badly, because door creaking as moved by the wind. Alarm did not wake me at 6:15, but at 6:45 I heard AP around, so got up rapidly.) Should have left at 7:00 "al puncto", actually left at 7:06.

Drove to Sariñena & station fairly rapidly, but in good time for train at 7:49.

Fond farewells to Antonio and Dragos, and good wishes for the future and hope to see again in UK.

Andreea already on train (from Zaragoza) and so we chatted until the train pulled out of the station. Train excellent! - air conditioned, (film), music with good selection: headphones free. Very comfortable, and so we glided eastwards to Barcelona stopping occasionally at some stations on the way. Safely via Taragona to Barcelona: farewell to Andreea, then bus to the airport. Shopping: La Oreja de Van Gogh CD, sausages, etc. ~2:30- 3:30 (2 h) good flight British Airways to Birmingham BHX (phoned Celia), to B'ham New St. station, (phoned again); Celia and Clare collected me.

Home! After a wonderful, if exhausting, month in Spain, with 3 weeks trekking in the Pyrenees.

Some memories of the Pyrenees 2001

- rugged dark peaks and plain white snow fields
- icebergs floating on pools, thawing into strange shapes
- boulder fields; interminable; risking every step.
- clear air and absolutely clear blue skies, and us up above the clouds in the valley below
- blazing sun; sweat soaked bodies
- "throats burned dry and souls that cry for water!" mouths parched and tongue stuck to palate so could hardly speak
- lakes and yet more lakes around every corner and hill and hailed with delight and anticipation
- lake bottoms black with "humus", apparently barren, yet forms of black tadpoles
- steep snowfields, crossing gingerly step-by-step in Javier's footsteps, and thankful for "palos"
- bed at dusk (ca. 9:30) and up at dawn (6:30)
- like a contortionist, bedding down in the dark under a low ceiling
- cold water and face cloth for minimal body wash
- unwashed and unshaven and increasingly dirty for a week or more, and finally the luxury of a warm shower and clean clothes

- the severe mid-day trudge from Resposuso via Sallent up to Formigal - and then a cold beer!! (likewise the lemonade before La Maillet, and the beer shandy from AP when we first reached Resposuso)
- keen alpinists at the Refuges, away at the crack of dawn with their ropes, crampons, ice axes, etc.
- Spanish man missing from Resposuso: later found dead at bottom of snow field, alone!
- ignoring precipices, and pretending they were not there
- rock climbing vs. "palos" on difficult stretches
- just managing to not slip down scree fields
- clarity of mountain air above the clouds
- the lovely Pyrenees: realisation of my mortality heightened my awareness of this beautiful world, and sometimes I felt that every pixel of the universe was shining with an almost unbearable brightness.
- crossing borders without let or hindrance
- "palos" (trekking sticks) invaluable uphill and down dale
- desperate, long trudges at the end of the day until finally the Refuge was in view
- several times both RL and AP felt they could hardly walk another step - yet we did
- the Resposuso to Formigal trek, in the terrible heat, and Dragos's plea "Don't die yet!"
- the magnificent cold beers given to us by the receptionist at Apts. Midi, when we staggered in
- flowers, neat, beautiful, abundant, - Primulas, Ranunculus pyrenaicus and Soldanella from snow patches; Rhododendron, gorgeous Iris, etc., etc.
- finding wild *Antennaria dioica*, *Erinus alpinus*, *Geranium cinereum*, *Gypsophila repens*, *Mecanopsis cambrica*, *Sempervivum arachnoideum*, etc., which grow in my garden in Birmingham
- Catalin's joy at finding new species of flowers (or microfungi) especially *Nigritella* and *Leontopodium*.
- plugging away at *Carex* identifications using the (poor) keys in Spanish: "how many stigmas?"!!!
- rushing torrents of water
- refreshing water slaking our utter thirst, from clear mountain streams, or from handfuls of snow grabbed from the snow fields we crossed
- Javier's magic big flask; from Bruce's iced water and slush producing a marvellous orangeade
- Bruce's boots and many others problems
- Bruce (and Jesús etc) swimming, even in icy cold lakes
- evening meals at the Refuges, lots of food, then bed
- good meals, good wine, and good company, with Antonio and the others, in Refuges and Restaurants
- confusion of French and Spanish in conversations, and difficulties of choosing correct language (and words) for right people: eg. Catalin: French / Dragos: Spanish
- Dragos: a bright lad capable in so many fields - trained dental technician; electronics mending, martial arts (sword), mountain climbing and deep sea diving, fluent in Romanian and Spanish, also some French, English, German, telescope to study the stars; video filming and camera; always jovial, always helpful; wearing red/ green clothes, leaping into life! .
- fellow travellers at the refuges - mostly Spanish and French, some Dutch; the Viking from Denmark taking his holiday away from his usual 3 month treks to the Himalayas; 4 old Germans; a few British - almost a lost breed - 2 green students in the mountains; chap with straw hat; 2 down to earth Liverpuddlians; 2 Londoners, 2 Wolverhampton chaps (1 wife from KEVGS), some walking from the Atlantic to the Mediterranean.
- squat toilets; danger of slipping in or at least losing your wallet etc!
- 1 toilet + 1 basin for 70+ people!
- Sallent de Gallego, a beautiful old (ancient) town
- Formigal: fresh and new (and brash) and many new buildings
- the High Pyrenees (and their plants and animals) unchanged and eternal!
- marmots calling everywhere, unseen, then occasionally scuttling out of view
- eagles and vultures and hawks soaring high above
- San Juan de Flumen: hot and dry and slightly desolate
- 8 kg lighter and belt 5 notches tighter!
- feeling much fitter by the end, as if 10 years younger!

OTHER NOTES (written en route) :-

- The High Pyrenees are still very wild and hardly affected by human activities, thank God, and probably never will be, apart from a few easily accessible tourist traps such as Gavarnie.

Grazing by cattle and sheep has some effect, but relatively little apart from preventing regeneration of trees. The weather dominates everything! In winter it must be fierce, either engulfed in snow or exposed to the elements. In summer, when the braver trekkers face the relatively slight hazards of climbing 1,000 m, or hot sun, or chance storms, they enjoy this wild country, but have very little effect on it. More effect have the marmots, of which only 8 were purposely introduced from the Alps 50 years ago, but now there are thousands if not millions. They mine holes everywhere, yet these seem to have little effect on the ecosystem. They eat many plants, but apparently have only caused the extinction of one species (of *Saponaria*). I hope that the High Pyrenees can maintain themselves, but perhaps this can only be where they are well protected by the National Parks. We will see when we leave this beautiful park.

- The magnificent / enormous forces of the rocks are obvious everywhere, e.g. when tramping across unyielding granite blocks, or seeing the twisted and distorted strata elsewhere.

- In general the vegetation of the Pyrenees is similar to the Alps or even Iceland or northern Britain. Indeed most British species also live here. Yet there are also so many indigenous species in the Pyrenees, not found elsewhere. Some of these are rare endemics of limited distribution, but many (e.g. *Carduus carlinoides*, *Ranunculus pyrenaicus*, *Primula integrifolia*, etc) are extremely abundant and widespread in the Pyrenees, indicating that they are both very vigorous, and also have a fairly wide ecological tolerance. It is surprising that these species have not spread to the Alps etc. Why not? Could it be a factor of photoperiod?

- In the lakes we are studying, there are often remarkable differences between adjacent pools of similar size and depth. (Some drain during summer in normal years, but 2001 had abnormal amounts of snow.) Some pools seem to be favoured by animals which drink there but also drop dung and thus produce more eutrophic conditions - sometimes we saw masses of tadpoles eating this dung. In oligotrophic pools, perhaps nutrients gathered by the adult frogs feeding on land insects are then deposited in pools as spawn, providing a basis for a food chain, and then cannibalism eventually produces a few successful frogs?

RNL text:- The High Pyrenees in high summer offer a fantastic wealth of beautiful flowers and majestic landscapes, but also many physical challenges. In July 2001, Richard Lester was invited to serve as a botanist to an international biological expedition organised by Prof. Antonio Palanca, of the University of Vigo, Spain. The main scientific objective was to survey about 80 / 140 (?) lakes and pools at altitudes of 2,000-2,500 m (6,000-7,500 ft), right up to the snow line. Amazingly most of these contained frogs, tadpoles, or at least frog spawn. DNA samples from these populations are being analysed to find out how isolated they are, following the end of the last ice age about 12,000 (?) years ago. Water samples from every lake or pool were taken for detailed analyses of nutrients as well as microbes, and of course pH, temperature, conductivity etc. were measured on the spot. Aquatic animals were collected and identified

Richard Lester worked together with Catalin Tanase of the University of Iasi, Romania, to record all the plants in or near each body of water.

Altogether 9 of us made up this expedition, from several different countries:- Spain 4, Romania 3, New Zealand 1, England 1. Communication was usually in Spanish, with some French and occasionally English. Our ages ranged from 14 to 64, but most of the others were fit young students. For 11 days we trekked across the mountains, often climbing 1,000 m (3,000 ft) in one day, with a full pack. The mountain huts (refuges) we stayed at were rather basic, with just dormitories with foam mattresses for our sleeping bags. Toilet facilities were very limited, (e.g. 1 toilet & 1 wash basin with only cold water for 70 people) but the evening meals were wonderful, especially after trekking all day, with only a coffee and some bread & jam for breakfast, and a biscuit for lunch: copious vegetable soup and other simple fare was just what we needed, together with gallons of good cold water to drink. [Add about the Respomuso break & the last 5 days.]

The flowers were wonderful, both in finding so many exciting species we had never seen before, and also in their abundance, with so many that it was impossible to avoid walking on them: masses of brilliant blue gentians, pink primulas and *Silene acaulis*, violet *Soldanella*, white *Ranunculus pyrenaicus*, bright purple *Saxifraga oppositifolia*, and so on.

Occasionally in inaccessible chasms we found the fantastic large white inflorescences of *Saxifraga longifolia*. There were many other saxifrages of all kinds, but all too often we lacked the time to stop and examine them.

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