

## AMONG MOROCCAN MOUNTAINS

By JAMES C. ARCHIBALD

For want of a better name we had called ourselves an expedition. There were three of us. Janette Stephen came as photographer but found herself engaged in shopping, cooking and washing clothes; Barrie Gilliatt was to drive us about and attend to the arrangements most people forget but he found himself similarly occupied, as well as having to pitch tents and locate water supplies. This, of course, left me with nothing to do—nothing, that is, but to find the plants.

Less than twenty-four hours after leaving Edinburgh we were pitching our tents twenty miles east of Tangier on barren, rolling wastes scattered with clumps of *Chamaerops humilis*. We were too tired to notice the hardness of the ground and the next morning saw our little car climbing into the hills of the Rif. In a couple of days I hoped to find out the possibilities of the range as a collecting-area for some future spring but even in early July it was far from being unattractive.

We glimpsed derelict Spanish public wash-houses, like Jesuit monasteries, in remote places along the road; little white-washed farms perched on the hillsides and fields of violet *Echiums* lay below. Then, a night spent in a charcoal-burners' clearing amid dark, woolly-leaved oaks, with pink and yellow *Helianthemums*, *Centaureas*, blue-metal *Eryngiums* nearby and great *Urginea* bulbs

among the mossy rocks, before driving east to Tleta-Ketama, as pleasant a village as Spanish colonialism ever produced. We filled up with petrol at the sumptuously modern and quite incongruous hotel, feeling very conscious of our dusty boots on the thick-piled carpets, and turned south to drive straight across the Rif by what will be one of Morocco's great roads one day. Now it is but a rough, mountain track, the gangs pushing north behind the bulldozers. We had met our first "piste" and were glad to wash its dust away with a bath in a cool mountain stream.

Like foxgloves in a Highland wood, *Digitalis purpurea* var. *mauretanica* grew where the dark conifers met the road, but the open areas were clothed by a more typically Mediterranean *maquis* of *Cistus*, evergreen oak and creamy-flowered *Daphne gnidium*. At over 4,500 ft. I came on an interesting brick-pink *Echium* (near *E. grandiflorum*), and the delightful annual *Campanula dichotoma* spattered a bank of loose damp shale with violet. The ragged outline of 8,000 ft. Djebel Tidiguin, rising mauve-blue above a dark skirt of cedars and the lower, sap-green fields, was tempting but I could not delay. The Rif had offered me an aperitif. I liked the taste.

We were not long in rushing down to shabby Taounate with ancient Taza as our objective, and the massif of the Djebel Tazzeke beyond. The most northern mountain of the Middle Atlas Range, Tazzeke is surrounded by a mass of limestones and shales, riddled with caves and pot holes. We stayed for four nights on different sites and I was able to cover much of the area, although at such altitudes (between 4,000 and 6,500 ft.) it was very dried up in July. On a high, north-facing cliff of weathered limestone, with gnarled junipers on its lower steps, *Silene mollissima* formed clumps of grey leaves and sent up cream clusters. From the crevices above, *Dianthus caryophyllus* showered out fringed, rose-pink flowers, only the size of a florin on the eighteen-inch stems, but airy and graceful. I found, in dark fissures, the narrow bells of tiny, thready *Campanula lusitanica* in the most intense violet imaginable. The great, brown cushions of an extraordinary *Saxifraga* sp.—quite desiccated but for a little, green apical bud on each stem—softened the contours of the harsh rock along with *Sedum album* and yellow *S. nicaeense*.

A few hundred feet higher, we camped near Bab Bou Idir and I set off to work on the hills above. Blue and silver *Catananche coerulea* hung loosely on the banks and *Convolvulus cantabrica* ssp. *mazicum*, pink-clad tangles with grey-green leaves, had appropriate attendants in the huge, brown-grey *Convolvulus* Hawk Moths, hovering, humming-bird like, about. In a ditch, the fine-leaved running

stems of *Lythrum hyssopifolium* lay, their brilliant reddish-violet flowers lurid against the sticky, wet *terra rossa*. I strode across level, turfy pastures, where women watched their herds, and saw little *Campanula filicaulis* var. *pseudoradicosa* sending prostrate stems radiating from a central rosette, and pushing its pale to deep mauve bells up unexpectedly among the grass and limestone-lumps. Then I was struggling through the thick, sticky *maquis* until I left the scrub for the rough, rocky slopes. The dried remnants of a *Muscari* caught my eye and I moved a square yard of hillside to unearth a few bulbs, whilst an evilly pallid scorpion scurried about militantly. Massive *Urginea* bulbs came up more easily. These slopes had been snow-covered five or six months ago. Nothing seemed to grow on the cruelly cracked confusion of rocks but I looked and found numerous shrubby clumps, whiter than the rock itself. A superbly silver form of *Teucrium polium* made compact, six-inch mounds of woolly-leaved stems topped by unobtrusive clusters of tiny, cream, brown-speckled flowers. Only a diminutive *Sedum*, whose identity provides a puzzle, accompanied it on that southerly slope and filled cracks with grey leaves and mushroom-pink stars.

The hump of Djebel Tazzeke itself, with its shaggy tonsure of cedars, was not rewarding at that time of year. The dismal acres of *Cistus laurifolius* var. *atlanticus* must have been spectacularly sheeted with large, white and gold "roses" a month or so before, but nothing brightened the summer scene except a frothing fountain of rosy milk, which proved to be a worthy form of *Rubus ulmifolius* straggling over the seven-foot stems of a rose, whose own glory was long past. At the margins of the oak forest, where we camped, the burnt-up aspect had much to reveal to anyone willing to give it more than a cursory glance. Familiar *Campanula rapunculoides* was goat-chewed thereabouts but its mauve-blue attire was little altered though lizards rustled noisily under the surrounding quilt of dead leaves. The old leaves of an *Asphodelus* sp. lay among lavender scrub but no seedheads could be seen. Dry empty capsules, however, revealed the hiding-place of an *Ornithogalum*, just as they had pointed out where a colony of hard, little *Romulea* corms lay high on Tazzeke, but a single dry wisp of leaf was the most rewarding clue and dozens of neat *Narcissus* bulbs were laid bare in the dry clay of a shale crevice. What country it must have been when the snow was melting and the land was green!

With little time for conjecture we had to be on our way, tortuously descending to the spectacular Gorge of the Oued Zireg and then turning west at Sidi Abdallah to travel the main road through Fès and Meknès to Rabat. We stayed for a few days at Rabat and then it was south to Marrakech and the High Atlas.

At Amizmiz in the foothills the good road ended. After trying several tracks without success, we came to a village where the women paused and grinned. Janette's enquiries only received further grins until a girl ran off to return with a smiling young man in European dress, a book tucked beneath his arm. He spoke French and I told him what we wanted. "There are some people in the hills, looking at rocks and making maps. It's you? No! Erdouz? Azegour? Excellent! A man has just left for there. He will take you." The man was brought back and we set off again with the very serious, fine-featured Berber sitting in the front seat and a jumble of Janette, myself and a great pile of baggage in the back. The tortured engine screamed in bottom gear, hauling us up almost three thousand feet to the 6,000-ft. Tizi Ghourane in two miles. I was able to glimpse ragged mats of rich mauve-purple *Thymus serpyllum* ssp. *atlanticus*, turning the hillsides into a Moorish tapestry, before we descended slowly to Azegour at 5,300 feet, where a few Europeans live to manage the molybdenum deposits. The Berber, who lived in the village of Imi-n-Tala, some miles across the hills, was given three dirhams for being taken out of his way and went off happily, while we splashed across the stony river-bed and drove the car in beneath a huge walnut-tree. A leering, Mephistophelean personage appeared with a yapping mongrel at his heels and introduced himself, "Je suis le gardien!" Early next morning the car was surrounded by boys and men, and later we drank mint-tea with some of them. You cannot go far among the Moors without meeting the national drink, a weak infusion of tea and fresh mint, intensely sweet and piping hot. It is nauseatingly "overdone" in the more obvious city cafés, but properly made it can be extraordinarily refreshing. We went up to the "canteen," cool and dim and all polished wood like the little inns you meet in the Alps, and had a beer with the German owner. We asked him about the condition of the road to Djebel Erdouz. Barrie was reluctant to take the car, as the deep, lorry-wheel ruts made driving our narrower wheel-based car difficult. He suggested that we use the lorry which went up to the mine there each day to collect the ore, and leave the car at the "canteen." I admired the fine moufflon head on the wall, as I was anxious to see the flocks of wild Barbary Sheep, with spiralling horns and shaggy black beards, which roam the remote mountains in dwindling numbers. He said that he had shot the ram twenty-five years before, when a very hard winter had driven them down to the village, but that we had a good chance of seeing them on Erdouz.

In the afternoon I clambered down the river-gorge north of the village. Graceful masses of *Catananche coerulea* var. *tenuis* and a

variety of *Dianthus caryophyllus* draped from the rocks in blue and pink. Hanging, glaucous mats of the same anonymous *Sedum* sp. as I had met at Tazzeka were there. A small, prostrate *Hypericum* sp., bordering on *H. pubescens* (*H. tomentosum* ssp. *pubescens*), had golden flowers in dry, shady crevices and a variety of fragile, anaemic *Jasione humilis* was producing its light-blue clusters in sunnier places. In the hottest clay, grey-pink flowers hung from the naked stems of an *Allium* of the *A. paniculatum* persuasion, and little nameless bulbs and *Romulea* corms were squashed flat into the thinnest fissures. The most interesting find was *Salvia taraxacifolia*, which grew in the sandy gravel of semi-shady crevices. Its compact clumps of notched, grey-green leaves, white on the reverse, had six to nine-inch spikes of blush-pink flowers. It was all but over, though seed was ripe. Elsewhere it occurs in reddish and blue forms, and it looked as if it would need the poorest possible treatment in cultivation to preserve its attractive dwarf habit.

We had only been waiting ten minutes when the lorry arrived, clanging and grunting, over the hill. We waved it down. A few words of explanation and we were sitting on top of a load of loose pit-props, holding on tenaciously as we were pitched and bumped up the rough track at 10 m.p.h. We came to rest some distance below the mountain at a cluster of concrete buildings, where a cable transporter deposited its buckets, bringing the ore, grinding and jangling, down from the mine.

As usual we were at a loss to find any site that even pretended to be level but finally made camp beneath a stout walnut tree on the turfy margin of a bubbling stream. The ground was wet and we rolled downhill in our sleep but it was a fine place. In the evenings the Berber women came to cut the rushes and their little daughters ran away to hide when they saw us. For company each night we had an elegant stallion who champed the lush grass noisily.

Janette and I followed the stream up from the tents. Among long grasses under walnuts, we found the seed-heads of *Aquilegia vulgaris* var. *ballii*, an endemic which has airy flights of little, white doves with green-tinged wings. The great spikes of a *Dactylorchis* in seed, no doubt rose-purple *O. munbyana*, spired up to three feet and a fat *Orobanche* poked ink-blue fingers from clumps of thistles. We met *Campanula filicaulis*, lax and straggling there but with mauve flowers like jewels among the tall grass. On rough, basalt cliffs, *Erodium atlanticum* snuggled its grey rosettes into the shady cracks and blushed in shades of pink. Above, a perversion of *Ribes grossularia* laid contorted stems and tiny, reddish gooseberries along the rocks.

The flowers of the streamside, however, were very much limited to their restricted habitat. At around 8,500 feet the true alpine vegetation (or, at least, its Moroccan equivalent) starts to develop. It is the product of an unimaginably extreme climate: a heavy covering of snow and severe cold in winter but almost complete drought when growth is active in summer. The time to see this remarkable flora at its best is between late May and early July, depending on the altitude, but those who wish to collect seed cannot have that privilege. The basis of the vegetation is an exclusive coterie of six spiny shrublets: *Ptilotrichum spinosum* (syn. *Alyssum spinosum*), *Erinacea anthyllis* (syn. *E. pungens*), *Cytisus purgans* ssp. *balansae*, *Astragalus ibrahimianus*, *Arenaria pungens* and *Bupleurum spinosum* (syn. *Velaea mairei*). Each one is on its own a fine plant but when viewed daily by the thousand they fill the plant-hunter's soul with pain. While representing four families, they are all built on the same plan and the extraordinary thing is that, instead of growing into an evenly mixed ground-cover, they always space themselves out at regular intervals. This has allowed a more diverse flora to develop in these spaces. In fact, though prickly hummocks dominate the landscape, they are but six out of almost three hundred species recorded by the diligent French workers from this upper region (9,000-13,500 ft.). The spiny xerophytes are but the oatmeal for the porridge while the small, herbaceous perennials provide the salt.

I spent much time wandering on the arid slopes above the camp, meeting these peculiar xerophytic alpine which characterize the High Atlas. *Ptilotrichum spinosum*, *Erinacea anthyllis* and *Bupleurum spinosum* crouched like myriad dormant hedgehogs all over the parched slopes. The first had matured its seeds, the second had just started to set them (rather meagrely) and the last was in flower. The *Bupleurum* was indeed an eccentric Umbellifer, hiding its clusters of minute, greenish-yellow flowers among long, green needles. As well as being the least exciting of the sextet, it does not extend to such altitudes as the others and is not to be seen much above 11,000 ft. Over and above the "hedgehogs," the taller *Ormenis scariosa* occurred in a considerable quantity, providing most welcome patches of colour in the barren scene. Particularly in dried-up water-courses, it made great, semi-shrubby clumps of eighteen-inch stems, bearing grey, dissected leaves and multitudes of small, rich-yellow daisies. *Euphorbia nicaeensis*, a good, foot-high spurge with blue-grey leaves on pinkish stems and flat clusters of golden green bracts, frequented the driest clays.

Among these taller plants, a good number of little perennials lived. Most of them were diminutive Composites, which had obvi-

ously flowered and dispersed their seeds in a very short space of time. Of those that remained recognizable, *Cicerbita tenerrima* was a tiny fragility with grey foliage and pale-blue chicory-flowers, *Hieracium pseudopilosella* had neat little dandelions over pygmy clumps of dark, pointed leaves, white-felted beneath, and the bigger, woolly *Inula montana* produced more opulent, frayed suns of deep-gold. Pushing through the spiny humps themselves was *Delphinium balansae* subvar. *pallidiflorum*, its off-white flowers marked with brown or slate-blue and more like a *Linaria* than a *Delphinium* with its sparse, thin grey leaves on nine-inch stems. Where a taller growth of grasses evidenced a slightly damper hollow, pink *Dianthus caryophyllus* and a creamy form of *Scabiosa atropurpurea* mingled in a weak but pleasant attempt to emulate an alpine hay-field. That delectable poppy, *Papaver rupifragum* ssp. *atlanticum*, grew among short grass-tufts or rocks but unless you visited the close clumps of roughly hairy leaves early there would be no orange-silk flowers quivering on the slender stems, for the petals dropped at the first touch of the hot sun. Fortunately they are less ephemeral in the cooler British climate and a succession of them dances for months on end. Nearby, on dry, stony banks, I met the prize of the expedition; *Pterocephalus depressus* (see p. 320) had already caught my attention down at Azegour, where I had been at a loss to hazard a name for it. There, it had finished flowering, but over three thousand feet above, in one of its highest stations, the large scabiouses were mingling with the fluffy, silver-pink seed-heads. The flowers sat flat on mats of tightly crinkled, grey-green leaves and were of an impossibly subtle shade—almost a dusky, mushroom-pink, the colour hinted at on a Ring-dove's breast.

One afternoon we all walked the couple of miles down to the village of Medinet, as I had the inclination to collect *Ornithogalum orthophyllum*, which should have grown thereabout. It was refreshing to stroll among the shady walnut-groves, where streams and springs gushed, but this well-watered paradise was quite without a single interesting plant in July. Although I was rather piqued at failing to locate the bulb by searching for the seed-capsules among the grass, we were amply recompensed by meeting Berber women and children, who walked up to work in the field at the head of the valley in the cool of the evenings. It is only among the remote mountains that you can still meet the pure-blooded Berbers, the original inhabitants of Morocco. Ethnologically isolated in these less hospitable regions by the slow infiltration of Arab stock into the lowlands, they remain a totally different people from the Moors. Lithe, pale-skinned and handsome, they are a charming race with their own language, an almost aristocratic dignity and impeccable

manners. Janette's presence put the women at ease, but the teenage girls ran off, giggling. Incidentally, I found the *Ornithogalum* on our return, a few yards from the camp.

We set off very early to climb 11,740 ft. high Erdouz and had a three-mile walk up to the lead and zinc mine before reaching the mountain. Periodic sorties up the slopes on either side of the track were fairly fruitful, though they were really made with a view to discovering the high-altitude forms of *Fritillaria oranensis*, of which E. K. Balls had found traces in 1936. But Balls was there over a month earlier and by July any dried remains must have been long trampled into dust by goats and blown away by the wind. Where *Erodium atlanticum* and *Dianthus* sprouted from cliffs, a dwarf form of *Erysimum bocconeii* pushed out lemon-gold wallflowers at the bases of accessible boulders. *Leucanthemum depressum* was in seed among rocks, retaining the dry, ray florets to show that their white had turned to red. Its grey, dissected leaves followed us up to 10,000 feet. Soon, occasional thickets of *Berberis hispanica* appeared, the bloomy, navy-blue berries just maturing, and above our path dark clumps of *Daphne laureola* var. *latifolia* wore polished, ebony beads. Scarlet-orange pheasant's eyes decorated what remained of *Adonis aestivalis*, which had proved popular with the goats, and a straggling *Veronica* spangled the spiny hummocks alongside with blue. As we neared the mine at 8,850 feet, *Semprevivum atlanticum*, in the reddish-leaved 'Ball's form', grew on a rocky, west-facing slope.

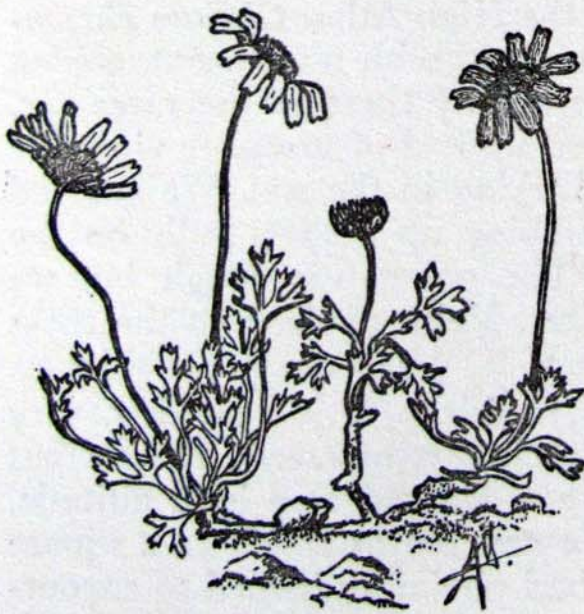
We circled away from the mine, following the course of the stream. Its bed was full of a luxuriant thistle, which will always be for me the most typical endemic of the High Atlas. *Cirsium chrysanthum*, coarse, six-foot high and covered with translucent, golden spines, made distinct approaches to beauty there in the rarer var. *ornatum*, its leaves platinum-coloured instead of green. A viper lay coiled in the middle of our path, basking in the sun. We stepped over it carefully and were soon climbing up a steep gully on the north-west side of the mountain. The going was rough but we gained almost a thousand feet quickly. Veins of silver in the rocks showed where *Stachys saxicola* (see p. 325) ran along the thinnest crevices and nestled at the feet of boulders. It is a modest, very polymorphic plant with unobtrusive clusters of cream flowers but how lovely it was when seen tight and starved at a high altitude. Congested mats of *Prunus prostrata* covered as much as a square yard on large, sloping slabs. Goats had obviously helped to encourage the prostrate habit, as well as accounting for the dearth of red-black cherries. As so often happened, I could only gather what the goats had left, which was never much.



The only thoroughly "goat-proof" plants were the "hedgehogs" but, above 9,000 feet they thinned out, with *Astragalus ibrahimianus* (or something near it), as the dominant species. Its looser tufts had grey, pinnate leaves and pale, lemon-yellow clusters. *Ptilotrichum spinosum* (see p. 319) was still with us, stabilising the schist screes and with enough flowers left to show that all the forms were of some shade of pink. Indeed, several were of a remarkably deep carmine-pink and it was from such distinct ones that I optimistically collected seed. A most extraordinary *Rosa* sp. also grew in the loose scree, its prickly stems suckering up among the stones.

After our meagre lunch, there was a shower of rain but, although we made a ceremony of dressing up in raincoats for the occasion, it was over as soon as we were prepared. It was good to feel our faces wet again after three parching weeks. Shortly, black, northern cliffs towered above and away to our left rose the ridge, which was probably the home of *Matthiola perennis* var. *anremerica* (syn. *M. scapifera*, see opposite). E. K. Balls found it, but too early to collect seed. It is an extremely rare plant in the central High Atlas and possibly the most beautiful of the small band of really-high-growing alpiners. It was difficult to decide whether to make the long, rough detour to the col, on the chance of my theory being correct, or to spend the afternoon collecting on the more immediate cliffs. Even on that remote mountain-side, time was my enemy. I chose the latter course.

The cliffs were already almost dry after the rain and my boots gripped the rock comfortingly. Moreover, I was now working in places where the goats could not have preceded me. *Leucanthemum atlanticum* chose to grow on both the drier and damper ledges, its big, white daisies glorious over the dark green leaves, but it was only in the driest crevices that I found the loose cushions of a *Draba*, almost certainly golden *D. hispanica*. It dispensed its seeds generously, as did a sticky *Saxifraga* sp. of the *Dactyloides* section. The last only frequented cracks in the naked rock right at the tops of the sheer crags. Demure *Silene heterodonta* seemed reluctant to open its



*Leucanthemum  
atlanticum.*

white, slate-backed flowers and another pink *Silene* showed a similar modesty. In one place, water trickled over the surface of the rock and ferns formed a filmy, green curtain. The most cheering find, however, was *Allium paniculatum* ssp. *breviscapum*. Endemic to the High Atlas, it is a high-altitude development whose origins I had been able to trace five-thousand feet up from the dingy, grey-pink *Alliums* at Azegour, watching the stems shortening and the colour deepening until at about 10,500 feet, in nooks among tufts of wiry grass, this little bulb hung carmine-pink droplets, striped with ruby, on scapes as short as two inches.

Janette and Barrie were waving and calling faintly that it was time to join them. As we met, I saw the filigree leaves of *Erodium cheilanthifolium* ssp. *antariense*, the colour of weathered bronze, in fissures on a huge rock. It was surely the loveliest and most saxatile development of a very variable species but it had been thoroughly "goated" and only the ends of the flower-stems remained. I was dragged away to make an oblique descent to join the track near the mine but not before I had collected seed from a strange, minute, leather-leaved *Viola* sp., which elected to dwell only in tiny, shady "caves" on the larger boulders.

It was 7 p.m. when we reached the "canteen" to collect our gear; we were tired and we had not eaten. Back at camp, I checked the specimens from the day's collecting and transferred them to the presses, while Barry attended to the bedding and liquidated as many as possible of the horse-flies, mosquitoes and other insects, which sought haven in the tents during the day. Janette was not long in producing one of her most original culinary creations, having worked another permutation on a disconcertingly small number of available ingredients. It had the necessary result that night, and our appetites were satisfied. The others having retired promptly, I sat with my back to a walnut tree, lit my pipe and wrote up my field notes in the dim light of a hurricane lamp. We had not found the *Fritillaria*, nor the *Matthiola*, and we had not seen the moufflon, but it had been a good day.

Our journey down was not uneventful, as we found the lorry full of a liquid, grey morass, which was the result of a day's work at the mine. There was only room for two beside the driver and, as it was always "my expedition" when there was something unpleasant to do, I climbed up on to two iron bars across the back of the lorry. With me somehow balancing there above the sludge, we were off to cries of "Gardez la tête—les noyers!" As the lorry lurched down the first steep incline, the slopping mud rose towards me and I visualised myself being engulfed by it. Later I was forced to cling on the running-board by the low branches of the walnuts and,

eventually, I was squeezed into the cabin, where I exchanged cigarettes with the good-natured driver all the way to Azegour. We collected the car, met our old friends and said goodbye before heading north to Marrakech, where an extensive washing both of our clothes and ourselves took place on the municipal camping-site. With everything in order and the herbarium-presses rattling merrily on the roof, our car sped across the scorched plain and up into the mountains once more.

As we pulled into Imelil at 5,700 ft., a crowd of men rushed the car, shouting "Guide! Guide!" "Mulet! Mulet!" Djebel Toubkal, 13,682 feet high, is the highest mountain in North Africa and tourism had laid its corrupting finger on the hearts of the people. How different they were from the Berbers of Medinet! We feigned disinterest until the clamour had subsided, then picked a man with a shy smile (which we later regarded as shifty). As he was now "our guide," he let us pitch our tents on one of his fields and brought down a pot of mint-tea, over which we made the arrangements. He was more than disappointed when we explained that we only required his services for one day but it was useless to tell him that ours was an expedition "run on a shoe-string," where it was out of the question to pay for him and a mule to sit and do nothing for five days, while I collected. The discussion continued: "No, we don't want the key for the Neltner Hut—we have tents!" "Yes, we would like your wife to bake some bread for us." How much did my climbing boots cost? I reduced the price by two-thirds, converted it into dirhams and lied to him (lest he thought we were millionaires). He was still impressed. "Till six o'clock tomorrow morning then, *au revoir*."

Much to our surprise, he arrived early. The mule was loaded and some uneasy glances were exchanged at the weight of our baggage—especially when a heavy plant-press went on. The animal's legs did seem to bend a little but perhaps that was natural.

As I had decided to do no collecting on the way up, we made good speed. Descending into the Cirque d'Arround, we had our first sight of Djebel Toubkal, gently rounded and hazy blue, only three miles away but well over a mile above us. We clattered across the stony bottom of the cirque and started up the valley of the Oued Reraia, fording the river below the shrine of Sidi Chamharouche, then climbing more stiffly on the tortuous path until we came into a great, U-shaped valley with the steep slopes of Toubkal on our left and the jagged peaks of Ouanoukrim before us. The air was now thinner and for a time my lungs wrestled painfully, but they eventually found their "second breath." At last we reached the sloping area of turf, where we were to camp for three nights. The

altitude was just below 10,500 ft., a bitter wind was blowing and the first snow-patches lay a few hundred yards down the valley. Pullovers and anoraks were quickly extracted from the baggage and a blanket was provided for our guide, who seemed to feel the cold much more than we did. Janette soon had a hot meal ready and, much the better for it, we bade the Berber goodbye and watched him ride away.

We had an uneasy, restless night. Beneath us, the sodden ground felt like a block of ice. The transition from temperatures, which had been an ovenlike 120°F. in the car the previous morning, was violent but the altitude was showing no ill-effects on us. Although we had put every possible scrap of clothing on, we still lay shivering uncontrollably, half-awake, until the sun crept over the great ridge of Toubkal to touch the valley with warmth. Then it was suddenly hot—unbearably hot and stuffy in the tent. Pulling our boots on stiffly, we wriggled out into the fresh mountain air.

I spent a wonderful day seeking the plants of our more immediate surroundings: the lower slopes of Ouanoukrim and Toubkal and the little alpine-meadow itself. Janette accompanied me some of the time and, while she remained at camp, Barrie walked south to the watershed of the Tizi N'Ouaghane.

Small, wet meadows are by no means a typical feature of the High Atlas. They are extremely localized and possess a limited, characteristic flora of obviously northern origins. The snows of Ouanoukrim provided this one with a constant supply of melt-water, percolating through it and dissecting it with trickling rivulets. It was an accumulation area with a very high water-table and a flushed soil—finely peaty and acid. Just as one would find in a high-level, alluvial pasture in Britain, the meadow-grasses, *Poa* and *Festuca*, predominated, and clumps of *Luzula spicata* were dotted about. Along the margins of the streamlets, buttercups were gloriously golden (though the experts quibble, virtually none other than *Ranunculus bulbosus*) and a creeping speedwell (*Veronica repens*. var. *cyanea*) had bright-blue flowers along its rooting stems. Tiny *Viola dehnhardtii* var. *atlantica*



Berber boy at Erdouz

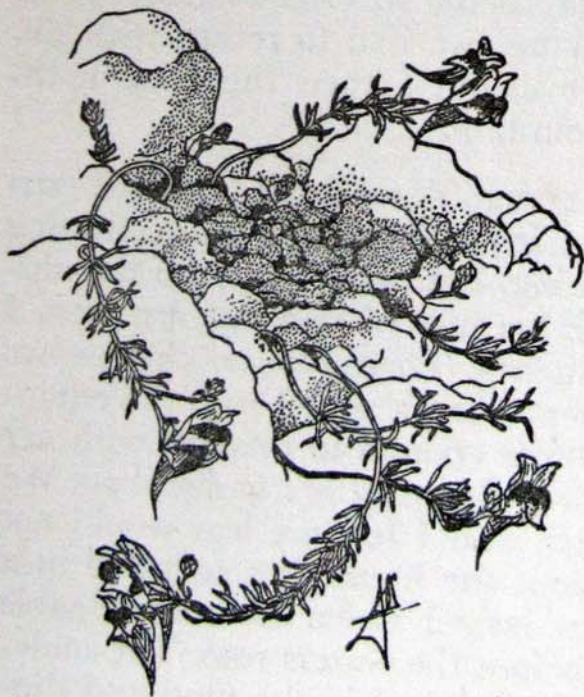
*radicosa*, deep brilliant violet and tighter growing than the low altitude ones, was almost the best plant there, but *Carduncellus pinnatus* var. *acaulis* won on grounds of originality. It had a rosette, about four inches across, of a few deeply cut leaves, radiating like the spokes of a wheel with a big stemless thistle of clear blue for the hub. Janette found a single pure white one but unfortunately it had no seed sufficiently matured.

Crossing the rushing headwaters of the Oued Reraia, and slashing through a mass of *Cirsium chrysacanthum*, we came out on Toubkal's lowest screes, bounded by *Ptilotrichum spinosum* and *Arenaria pungens*. There, modest *Erigeron mairei* (see p. 335) could be found, cowering near the shrublets and stones with rose-purple daisies close on its grey-green leaves.

In moist places along the western cliffs, blue *Myosotis* nestled at the bases and an *Arabis* hung out loose clusters of white flowers, usually flushed with mauve. It had the loveliest soft, round leaves of smooth, grey-green and I thought it was *A. erubescens*, but it seems to match a specimen of Ball's collecting at Edinburgh, labelled *A. conringioides*. Both of them occur in the area but only the latter ascends to the highest reaches (above 12,400 ft.). *Leucanthemum atlanticum* var. *gelidum* was breathtakingly spectacular, holding huge, incandescent-white daisies on three-inch stems above the close, shiny-green leaves which filled shady crevices. As they aged, the ray-florets turned to brilliant scarlet and burnt on around the golden disc in even greater splendour. A cushion *Draba* was in seed. At that height, it could only have been *D. oreadam*, white-

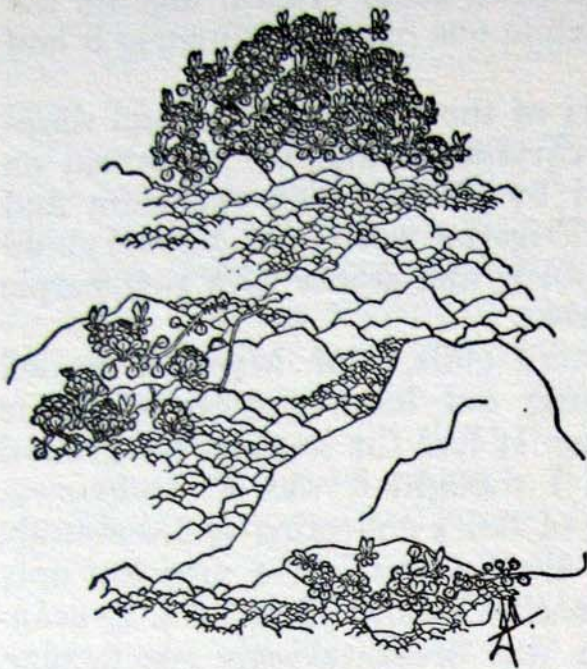
flowered and aptly named. We soon turned to the screes, which are the predominant feature of the mountain—steep fans of ragged porphyry lumps, loose and treacherous, spreading out and covering the mountain-sides.

There, grew two singular plants, showing specialised adaptations to their habitat. I collected a *Linaria* as *L. tristis* ssp. *lurida*, but Edinburgh has unfeelingly labelled it. *L. tristis* (*sensu lato*), giving no indication of its distinct and extraordinary qualities. Its recumbent stems, clad in grey-green leaves, lay on the rough stones,



*Linaria tristis form*

under which a mass of white, spaghetti-like stems wandered back to the root. The flowers were quite fascinating in dusky apricot and slate-grey with maroon-velvet lips and neatly striped spurs. *Viola dyris* was more remarkable, and very rare, I found but one specimen,



*Viola dyris*

I saw *Saxifraga demnatensis*, billowing great white flowers from its bright-green clumps, among the wispy, alpine grass, *Avena montana* in the crevices. It was a superlative "mossy," which has been considered to be a variety of *S. pedemontana*. We gazed across our valley to the snow-streaked peaks of 13,400 ft. Ouanoukrim. Then, delayed by the weather and the plants, we had to return with six-hundred feet of Toubkal still above us but I knew there was nothing more of garden value on the mountain.

We had decided to carry our baggage down from Toubkal ourselves, breaking our journey at the Cirque d'Arround and collecting on the way. I felt seedy that morning, but put it down to the altitude. We delayed until after lunch because of rain but, by then, I thought I had a bad attack of influenza. There was no choice—we had almost no food left, we had to go. Barrie and I split the equipment between us, as Janette had quite enough to manage with her cameras and some of the small, heavy things in her gadget-bag. We still had over forty-five pounds each and I felt my legs would not carry me. We still had to go. I spent the hours that followed in a nightmare half-world. A hailstorm lashed down in unimaginable fury. We had to cross the Reraia before the waters rose. The mule-path was now a rushing stream. We slithered in the mud and slipped on the stones. Still the hail whipped us unmercifully. I could

see Janette and Barrie away ahead of me, apparently waiting, but they would never let me catch up. I cursed their callous disregard for my plight. My head was bursting and my throat was flayed. The world was grey and shadowy. But, we reached the cirque. I then realized that my friends had had the presence of mind to let me struggle alone with only the compulsions of my mind to drive me.



*Saxifraga demnatensis*

mule-droppings. The two plants I had fixed in my mind as utterly desirable, evaded me. They grew not far above the cirque on a rough hillside, where, on our return, we found the path completely washed away and muddy torrents slashing gullies. One was an exquisite form of *Catananche coerulea* with crimson centres to the mauve flowers and the other was *Convolvulus sabatius* var. *atlanticus*, which had close, green mats and trumpets expanded into royal-blue shillings lying flat upon them.

There had been little rain in the cirque and we camped near the "refuge," where E. K. Balls and Dr. Seligman\* had stayed twenty-five years before. Now, it was all but derelict and the windows were smashed. A cheerful little Berber from Aremd, the village in the cirque, brought us flat loaves of warm bread, fresh-baked on charcoal, and a dish of soft, new butter, over which wild honey had been poured. He lit a candle, for it was now dark, and with this

\* We are much indebted to Dr. Seligman for some of the photographs which illustrate this article.—EDITOR.

delicious supper inside us, warmer air around us and new company beside us, the journey down was only a bad dream.

I awoke the next morning with an agonising throat, and the glands in my neck swollen and stiff. I did not realise that I had glandular fever. I set off shakily, while Barrie went down to Imelil for enough food and gas to keep us supplied for another day. The cirque has seen many a plant-collector. It was one of the few areas of the High Atlas which Hooker and Ball reached in 1871; it was not until 1921 that the French botanists, Jahandiez and Maire, came, followed by E. K. Balls. We had the privilege of being the most impecunious and least illustrious of them all. I wanted to collect *Globularia liouvillei*, which the French first found there, but failed. Up on the east-facing cliffs I did collect *Sempervivum atlanticum*, this time in "Hooker's form" with apple-green rosettes. In the rocks above and on bare, dry slopes, *Daphne gnidium* had orange berries on its grey-leaved, three-foot shrubs, as well as the clusters of little cream flowers. Pale blue *Jasione humilis* lived on the stony bottom of the cirque and *Anagallis monellii* ssp. *collina* crept among the rocks and dwarf herbage with huge pimpermels of soft orange-scarlet. I tried to reach the classic station of *Narcissus watieri*, but my legs would not take me up the rough path. I found myself with a disconcerting number of seeds, labelled with question-marks and scanty field notes, all rather deliriously collected. I saw much of the little daisy, *Bellis coerulescens* (opposite) which, as its name says, is only "becoming blue" and never manages it in mauve-whites and blue-whites, and the very lovely pure azure *Delphinium balansae* subvar. *coeruleum*, only to be found in the High Atlas, had set no seed. I miscalculated my return route and regained the path by sliding down a water-smoothed slope on my bottom. Luckily no one saw my undignified descent but I came on a tall *Urginea*, already shooting leafless, lilac-pink rockets up.

It was all I could do to reach the car at Imelil but, when we returned to Marrakech, I convinced myself that I was fully recovered. So I probably was, with the fruit and yoghurt lunches and evening meals in a Moorish cafe off the bustling Djemaa el Fna, where we filled our stomachs most adequately for a shilling each, while ancient Arabs volubly sucked peppery mutton soup through white beards. Then we crossed the Atlas the easy way by the first-class road over the Tizi-n-Tichka at 7,440 ft. We spent two nights in the "refuge" there, where the caretaker's wife brought us mint-tea in the evenings and we slept on the stone floor with crickets chirping quietly. I can tell little of the plants of the arid hills around, as nothing was in flower in August, but a good number of seeds and bulbs showed that this easily accessible region is rich and very well-worth an earlier visit.



From the Tizi-n-Tichka we took the road down to Ouarzazate and then drove a hundred and seventy miles east, along the desert track on the south side of the High Atlas, to Ksar-es-Souk, before turning north to the seedy hill-town of Midelt in the foothills of the Djebel Ayachi massif. Ayachi, 12,250 ft. high, is the most easterly giant of the High Atlas and was the last to be botanically explored. It was not until 1935 that Louis Emberger collected on this barren, arid mass of limestone, where he found the vegetation to be poor. I had taken the chance that I would not be too late for seed but I was—simply because I found myself restricted to altitudes between 7,000 and 9,000 ft. Maps and information about the area are vague. The result was that we landed ourselves near the Cirque de Jaffar, at 8,000 ft., far from a village which would hire mules.

A meagre handful of specimens and seeds were the reward for treks over the hills. The long ridge of the foothills of the Ayachi-Masker massif stretched east and west. Armies of "hedgehogs" were encamped all over it—*Bupleurum spinosum*, *Cytisus purgans* ssp. *balansae*, *Erinacea anthyllis*—and every so often a tortured sentinel of *Juniperus thurifera* stood, showing that we were where the tree-line ceased. Through these foothills a fantastic limestone-gorge had been cut. I could find it on no map, and, in fact, almost fell into it before I realised it was there. On its towering sides, draped with ivy and *Ruscus aculeatus*, nothing was in flower except some pallid *Alliums* of the *A. paniculatum* group and a mauve-pink scabious close to *Scabiosa parelii*. Following up the dry bed of the stream I came out in the Cirque de Jaffar, where most of my collecting was done.

It was a great, steep-sided bowl with cedars on its western slopes. Many of the trees lay like split match-sticks, where wind or avalanches had destroyed them, or their black bones stood, lightning-scorched. Six miles away Ayachi rose between the hills, pale blue, naked and infuriating. Around the cirque there was little in flower to console me. *Campanula filicaulis* was there in a rather attractive pinkish-lilac form and, down on the turfy bottom, it was pleasant to meet the green mats of *Ononis cenisia*, dotted with pink and white. I found *Ajuga chamaepitys*, fine, dark, hairy leaves clothing its prostrate stems, which carried several brilliant canary-yellow flowers at their ends, and, on a limestone cliff, shaded by evergreen oaks, *Globularia nainii* had woody mats of dark, leathery leaves, over which numerous little round heads of pale sulphur were borne on three-inch stems.

It was now time to leave the High Atlas Mountains and journey north to the Middle Atlas. Throughout the hot, dusty weeks and the rough, tiring days among the barren mountains, "the Middle

Atlas" had become the password to paradise: a green and gentle land, covered with shady cedar forests, where streams sang and cool, languid lakes lay beneath a sun which was not too warm; where good roads ran into the nearby hill towns of Azrou and Ifrane, so that a variety of fresh food—an unimaginable luxury—was always within reach.

The ancient volcanic plateau of the Djebel Hebri, undulating 6,000 ft. above the sea with the round humps of Hebri itself and the extinct crater of Mischliffen rising above it, is well-developed as a ski-ing centre. Naturally, it is the most accessible mountain area of Morocco and, equally naturally, almost all the plants we call Moroccan "alpines" have come from there. *Ranunculus calandrinoides*, *Asphodelus acaulis*, *Carduncellus rhaponticoides* and so on, are really anything but alpines and most come from the immediate vicinity of Ifrane at just over 5,000 ft. It was the Darjeeling of Morocco, where the families of the French administration in Fès once came to spend their summers, and so it is French—all French. The really extraordinary thing is that not only is the town French but so is the surrounding vegetation.

I might almost have been back in the woods around Thorenc in the Alpes-Maritimes, as I walked about our camp at 6,000 ft. beneath the tall cedars. Pale blue and mauve *Catananche coerulea* lined the dry ditches and *Verbascum granatense* shot up high, woolly spires of soft lemon-yellow. In a gravelly patch grew violet *Calamintha alpina* ssp. *granatensis* and a prostrate form of *Malope malacoides*, one of the loveliest plants I have seen, with huge, satin-textured, silver-pink hollyhocks on short, recumbent stems. Where the dry grass was longer there were the pinkish-white pompons of *Armeria plantaginea* on tall, wiry stems and the blue scabiouses of *Knautia arvensis*, with slender, silken-pink *Malva tournefortiana* in the shade; where the grass was short and turfy, I found my old friend, *Campanula filicaulis* var. *pseudoradicosa*, looking a little pallid in its mauves, and a much-esteemed new friend, a variable *Dianthus* sp. It lay low and compact with big flowers from pink to brightest cherry-red in colour, and looked not at all unlike *D. neglectus* in the Maritimes. In spite of my impassioned protests, the botanists have determined it to be *D. caryophyllus* var. *arrostii*. *D. caryophyllus* never frequents such a habitat and could not possibly look like that! I hang my head and succinctly refer to it as "*D. arrostii*."

Down the steep sides of the great caldera of Mischliffen, *pistes* had been cut through the cedars for the ski-ing. There, in a good year, there is excellent snow from December until April, but in summer *Cephalaria leuantha* towered up to five feet with a profu-

sion of sulphur scabiouises above its cut, dark-green foliage. About its feet shone the ragged, yellow suns of the endemic *Inula maletii* and *Ononis natrix* straggled, gilded and prickly. Higher up there was an acre of *Thalictrum minus* ssp. *pubescens* on the open slope but most exciting was *Paeonia coriacea*, dotted about among the volcanic debris or at the margin of the cedars. Its capsules were just splitting to show black pearls set on a carmine bed. The shady cedars sheltered little of interest but there were the leaves of an orchid on the deep leaf-soil—surely none other than *Cephalanthera rubra*? Right up on the southern lip of the crater, at 6,500 ft., there was a wondrous cliff of weathered limestone, bursting with plants. Among the saxifrages, sedums and felted clumps of *Arabis alpina* ssp. *caucasica* (syn. *A. albida*), I found the bulbs of *Endymion hispanicus* var. *algeriensis*, *Ornithogalums* and *Muscari* growing in crevices full of loose leafmould.

To the north of the Djebel Hebri there was a level moor sprinkled with volcanic scoriae. There, in April, *Ranunculus calandrinoides* should be easily found but I saw no trace of it in August. *Euphorbia nicaeensis* and *Astragalus ibrahiminianus* var. *mesatlanticus* were flowering then and I was much attracted to the low-growing North African *Genista quadriflora*, very compact and distinct with golden flowers covering its dark-green hummocks. There are many bulbs in this area and, even in summer, we were able to pick *Romulea* seeds off the ground, where they had fallen. The *Crocuses* there are interesting and the corms, which I collected, produced big, pale lavender flowers with yellow throats in October. Bowles mentions that they have been considered to be either *C. clusii* or *C. serotinus*. *C. clusii* they were not, but they resembled *C. salzmannii* except that the leaves were short at the time of flowering. The title of *C. serotinus* var. *salzmannii* would seem appropriate for the moment as I had not the time to check them completely.

Six miles along the Ifrane road from Mischliffen we camped on the Tizi-n-Tretten as I wanted to see *Carduncellus rhapsodicoides* there. The grassy bottom of the bowl-shaped depression below the col was obviously the place to look and, five minutes after leaving the car, I found the unmistakable, dark-green rosettes lying on the turf, like plantains in an English lawn. Of course, all the seed had long since dispersed. I think this is the only locality from which the *forma albiflorus*, with white sessile thistles instead of the normal mauve-blue, has been recorded. As it is simplicity itself to propagate this from root-cuttings, a single one of the long tap-roots is all that is needed to see the white form firmly in cultivation. The contours of the land made it obvious that the area would be under water

when the snow melted, and the soil was a deep, heavy loam, in which innumerable anonymous bulbs and *Crocus* and *Romulea* corms grew. On the dry slopes above I recognized *Draba lutescens*, which I had seen before on the Tichka (also without seed). It has a very attractive, tight, green cushion, which seems to dry-up altogether in the hot summers, and in early spring covers itself with little flowers of too greenish a yellow to be really exciting. The most real memory of the col, however, is of none of these but of earwigs—hundreds of earwigs—which crept into our tents and clothes during the night!

The next day we drove down to Ifrane and the others left me a few miles outside the town, while they went in to shop. There was but one plant flowering in the burnt-up country and, as one would expect, he was a very strange and splendid person. From the hard-baked clay, dried stems rose up to carry a luminous royal-blue thistle above an involucre, in which all the bracts had become long, cruelly vicious, mauve daggers. This armoured artichoke, *Cynara hystris*, was the last specimen I was to collect and I cannot think of a more appropriate one. It is an endemic, of course.

I wandered across to an area of mixed woodland and there, in a wide clearing, weathered slabs of limestone were all but covered-over with tinder-dry vegetation. By this time I had acquired the properties of a truffle-hound as far as bulbs were concerned; I knew this was it—bulb-country! I dashed forward with a fast-beating heart. Yes! There was an old *Crocus* capsule. As I picked out the signs, so the bulbs responded: *Crocus* and *Romulea*; *Muscari* and *Narcissus*; and not a few nameless ones. There were some parched leaves that were "different"—*Asphodelus acaulis*! Up came a few octopus-roots from the rich, red mixture of *terra rossa* and leaf mould filling the pockets. The mid-day heat was terrific and my eyes burnt with it. Powdery clay-dust rose in heavy clouds, combining curiously with the sweat which streamed over me. I swore with shuddering deliberation as I ripped my thumb-nail half off. It was then that my friends, or at least what the two rough months had left of them, came for me. They pushed what remained of me into the car and drove it away. I sat there filthy and exhausted, immune to the innumerable, little, nagging pains, and yet I can remember that I was happy about it all—vaguely, almost sadly, happy.