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THE SIERRA NEVADA. By CHARLES PACKE, Esq.

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LIVING among the Pyrenees, one gets, somehow or other, to look upon all the ranges of the adjacent peninsula as an appanage of those mountains; and it was with a feeling something akin to disappointment that I learnt my friend Mr. Ormsby had anticipated a project I had entertained for the last three years, and not only visited, but to a certain extent explored, the Sierra Nevada in the autumn of last year.

I should have been of course glad to have had the company of such an experienced mountaineer, but in lieu of that I had the benefit of his experiences in a paper read before the Alpine Club, of which he was kind enough to send me out the proof-sheets, with other suggestions; some of which I carried out, but to others turned a deaf ear, more especially to one in which he sought to dissuade me from taking my two dogs.

I had never expected that the scenery of the Sierra Nevada was at all equal to the grander parts of the Alps and the Pyrenees; but Mr. Ormsby's description, especially of the Corral de la Veleta, is so glowing, that I began to think that I must have formed an erroneous notion, for I know that habitual travellers in the Alps are slow to find out beauties in other mountains.

Besides, scenery was not my principal object. For many years I have been occupied with the study and collection of the Alpine flora of the Pyrenees, and I wished to observe, as far as I could, what modifications were effected in the flora at similar stations, 5½ degrees farther south. Of course this

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observation could not be so complete as I should have liked in one visit, and it was matter of difficulty; but as some of the points of the Sierra are above the snow-line even in that latitude, it appeared to me that the month of July would not be too late for the flora of the higher region. I had not then seen the admirable work of Boissier, so that my researches were quite independent; and if some of my readers are bored with too much enumeration of the plants, I can only regret that my dogs do not possess the art of writing, as they would have produced a more spirited and entertaining description of our excursion, omitting all botany, which is a science they detest.

Gavarnie was fixed upon as our starting-point, partly because it is one of the most beautiful entrances into Spain, and partly because I had decided to take with me Henri Passet of that place, for I by no means agree with those who think that an accurate local knowledge is the *first* or even a principal essential in a guide. What you do require is a willing, active, and bold man, with a good general experience of mountains. All these qualifications Henri eminently possessed, and in addition could speak Spanish fluently—a most useful acquirement.

Our party at starting consisted of my friend Mr. Byles, Henri Passet, and myself, with the two dogs, Ossouë and Azor; the bipeds each carrying a knapsack, and the quadrupeds also taking their share of the luggage, in a species of double sack or *alforja*, which they carried, in turn relieving one another. The dog-sack with its contents weighed 12 lbs., and in it were stowed a number of supernumerary articles, among the most useful of which was a tin canister holding a pound of tea, and among the most useless, a revolver pistol.

It was a glorious morning on the 8th of June when we started; and as we mounted the Port de Gavarnie, the cirque looked so resplendent and beautiful that it seemed, as it were, resolved to leave an impression that no views in the Sierra Nevada might efface. On the Port de Gavarnie, though only 7,481 ft., there was still a considerable quantity of snow on either side, which allowed us some glissades in descending; and the dogs thoroughly enjoyed the snow, as if conscious it was their last for many days. An easy march brought us to Torla, where the well-known mansion of the Marchesa Vio received us. On the morrow we crossed westward over the Col de Sarrable (about 5,300 ft.) to the valley of the Gallego river, which we struck below Viescas. Thence passing by Puente de Faulo and over the Sierra de Mon Repos, whence we had the last view of the Pyrenees, on the afternoon

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of the fourth day we reached Huesca, a very dull town, though with some good houses, and 8,000 inhabitants.

From Huesca to Saragossa, Saragossa to Madrid, and Madrid to Menjebar, the nearest station to Granada, the journey, in all 750 kilometres, is by rail; a manner of travelling not the most agreeable, but the country is so monotonous—vineyards about Saragossa, and then the long continuous cornfields of the two Castilles—that one is glad to pass over it as quick as possible.

Below Val de Peñas the geological formation changes from tertiary superior to Silurian, and the aspect of the country improves. A little farther, at Puerta de los Perros, just before reaching S. Helena, the granite crops out, forming the watershed of the Sierra Morena. These mountains are low, about 6,050 ft. at their highest point, but the gorges are exceedingly picturesque. Each little streamlet is overhung with the bright red flowers of the oleander, and a thick tangle of cistus and other flowering shrubs cover the hillsides. Through these it is very difficult walking, and the gum that exudes from many of the plants does not improve the clothes.

There are no trees of any size, and on the highest peak I could not observe any truly Alpine plants; but it was late in the year, as I did not stop for the Sierra Morena till on the way back at the end of July. Anyone wishing to study the botany of that range ought to be there not later than the beginning of May. Though we did not see any, we were told that wolves were very numerous in those mountains, and certainly from such an extent of thick cover it would be difficult to extirpate them.

From the railway station of Menjebar to Granada (121 kilometres), 74 miles, there is an excellent diligence road, very different from anything you can see in the North of Spain. Stones are laid down at every kilometre, with smaller ones at every hundred metres; and at every 5 kilometres there is a cantonier station, or 'Casa de los Peones.' These and the 'Guardas civiles,' an improved and very much more polite edition of the French gendarme, are constantly to be met with upon the road, so that any adventure with brigands is quite out of the question, and can scarcely enter the imagination of the most romantic traveller. Once among the mountains, you meet no one except a few scattered shepherds, and occasionally one of the *acequieros*, men whose business it is to look after, and keep running, the *acequias*, or aqueducts, which irrigate the lower fields and gardens, and without which all cultivation would cease in that arid country.

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Mr. Byles had gone round by Cordova, but Henri and I, with the two dogs, made the journey from Menjebar on foot, as I wished to see a little of the botany of the outlying sierras N. of Granada, and to observe the geological formation of the rocks. These, like those immediately south of the Pyrenees, are all of the Triassic system, mostly new red sandstone and marl, interspersed with calcareous rocks in the more abrupt parts.

In the first day's walk to Jaen (27 kilometres), I was much struck with the great diversity of the flora to that at the foot of the Pyrenees. It was really hard to recognise any old friends. Among the new ones huge thistles, red and yellow, and lofty blue boragineous plants (*Echium Pomponium*), were among the most conspicuous. Growing on an old bridge I saw for the first time the wild caper, *Capparis spinosa* (the hyssop of the Holy Land), and the very pretty yellow linum, *Linum Hispanicum*, was common everywhere. At Jaen we slept in the hotel, and the next two nights out in fields by the roadside. Our plan was to enter some roadside posada before nightfall, and after restoring nature with a large mess of soup, consisting of oil, water, and bread, further enriched with eggs when we could get them, to turn out and walk till we felt disposed to rest. I am bound to say that I found this food wholesome, and even palatable when washed down with the strong wine of the country. The wine was white, red, or sometimes a mixture of the two; and we used to pay 6 ochavos (not quite twopence) for a haro; but the haro was here much smaller than that of Aragon. There it is more than a litre, but here it has dwindled to less than an English pint. Our midday meal was exactly the same, but in the morning I always contrived to make a brew of tea. For anyone content with this fare there is no need to carry provisions, as there are plenty of these wayside posadas. The wine is not so good as to need no bush, but there is always one suspended over the door, which remains open not only to man, beast, reptile, and insect, but to the birds of the air; and the interior of the house was generally swarming with swallows, which had their nests, apparently unmolested, among the rafters. I suppose from that climate they never migrate.

Four kilometres beyond Campillo, and 53 from Granada, the road attains its highest point; and from here the Sierra Nevada first comes into view, a heavy mass of mountain, with considerable patches of snow; and the Picacho de la Veleta, apparently the loftiest point, bearing SSE. 500 metres farther a stone marks the passage from the province of Jaen into that of

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Granada, but the road winds a good deal about the hills, and you do not see the city of Granada till just before entering it.

Of the Sierra Nevada, as seen from Granada, the lithograph frontispiece in the last volume of the Alpine Journal gives a tolerably exact representation. Viewed from this distance, 19½ miles in a direct line, the ridge looks less rugged and abrupt than it really is, and the summits of the Caballo, the Machos, and even the Veleta, are rather eminences in the main ridge than separate mountains, and compare disadvantageously with the serrated forms of the Pyrenees. The Picacho de Mulhahaçen and the Alcazaba are fine mountains, and more isolated; but the first is almost and the latter entirely out of view from Granada, being hid by the high ridge running N. from the Veleta, the Peñon de San Francisco. Neither Henri Passet nor I saw anything in the aspect of the Sierra to necessitate taking a local guide; indeed on these mountains it is much easier to find the way than to find a guide; so the second morning after our arrival at Granada we set out for the Picacho de la Veleta, from which there is the best reconnaissance of the whole chain. There is a path nearly all the way, used by the *neveros*, who daily during the summer heats bring the snow down on mules to the town of Granada. I understand that an octroi of 20 reals (5 francs) is paid to the town upon every load. The nearest snow-beds are on the flanks of the ridge N. of the Machos peak; but at the end of summer the supplies of snow have to be fetched from the Corral, which is considerably farther. It is never my habit to walk fast; and on this occasion there were plants to be collected and arranged, notes to be made, &c., so that the time we occupied must not be taken as that necessary for the ascent, which I should put at about seven hours of good actual walking.

On June 21st, we started at 5 A.M., and after crossing the river Xenil, took a direction first E. and then ESE. across some *quebradas*, a ravine of new red sandstone forming the last spurs of the Dornajo ridge. Here the wheat-fields were just cut. Among the wild flowers the most noticeable were the *Senecio leucophyllos*, *Marrubium sericeum*, *Trachelium cæruleum*, the *Phlomis lychnitis* and *Phlomis purpurea*, and a very handsome *Centaurea*, *Catananche cærulea*, which I had before seen on the southern flanks of the Pyrenees. After about two hours of continual but gradual ascent, we passed from the red sandstone on to calcareous ridges, and the last-mentioned plants were replaced by the *Cistus ladaniferus*, *Lavandula lanata*, *Lavandula latifolia*, *Salvia Hispanorum*, and *Asperula paniculata*. All these lower ridges are almost destitute of water, but just at the

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foot of the Dornajo, 15 minutes below the Col, there is a spring. From this spot there is a view of the old hermitage of San Geronimo, with the village of Guejar beyond on the far side of the Xenil valley. Here is a rich treasure for the botanist, a beautiful feathery boragineous plant, *Echium albicans*, *Convolvulus nitidus*, *Teucrium polium*, and *Teucrium aureum*. On attaining the ridge just E. of the Dornajo, the Picacho de la Veleta comes into view. To reach it from here by the most direct road requires about four hours. The path is carried almost on a level round the head of the gorge, and then mounts gradually by the Peñon de San Francisco, traversing beds of snow and schistose rocks as far as the Col of the Veleta, whence it requires some 40 minutes of very easy ascent to the summit.

Not wishing to run the chance of being caught by night among the snow, and in a region destitute of wood, we continued to skirt the N. flank of the Dornajo, and so descended in the upper part of the Barranco de San Juan. Here we fixed our night quarters under a rock NW. of the Corral at a height of about 7,200 ft. above the sea. On all this part of the mountain there was no lack of fuel. The common juniper and also the *J. sabina* were growing in great profusion, and we soon collected a stock of them which maintained a bright little fire throughout the night. We had no wraps, and were perfectly exposed overhead; but with the aid of our fire we slept very well. In the morning I first attempted to descend into the Corral, but found the rocks too precipitous, and was obliged to content myself by remounting to the Peñon de San Francisco, and so along the upper rocks to the Picacho de la Veleta. At about 8,860 ft. the *Senecio Tournefortii* was very abundant; also the holly fern (*Polystichum lonchitis*). Both these plants in the Pyrenees are found about 2,600 ft. lower, and at 9,186 ft. we came to the first snow.

On gaining the ridge bounding the corral on the W. we found ourselves about 2,000 ft. below the summit of the Veleta, which is seen in the SSE. Here the rocks are all mica-schist passing into gneiss; upon them we found some very good plants, quite new to the botany of the Alps and the Pyrenees. Among the most noticeable were a very beautiful small rose-coloured senecio with glossy leaves, in form resembling the *Homogyne alpina*. This I afterwards ascertained to be the *Senecio Boissieri*. A very beautiful yellow-rayed Anthemis, the *Pyrethum radicans*, the *Alyssum spicatum*, a little thorny shrub with pink blossoms, *Erodium trichomanifolium*, and the *Ptilotrichum purpureum*.

While occupied upon these, my dogs broke away in chase

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after some animal, probably a fox, and disappeared for three quarters of an hour. It was a period of great anxiety, as the young dog Azor was as usual charged with the saddle-bags, containing part of our provisions, as well as a paint-box and pistol; and it was almost a miracle that when he did return, after his very rough scamper, though the bags were somewhat the worse, the contents were all safe.

Shortly afterwards we came upon two izards, which were not at all startled, and stood quite close tranquilly looking at us for so long a time, within pistol-shot, that I regretted my weapon was in the bottom of the dog's sack. My dogs were frantic at the sight of animals which they had so often chased in the Pyrenees; and though we held them in with all our might, the izards at last took fright at them and made off. They were not only the tamest, but also the leanest, that I had ever seen—a condition not to be wondered at from the scanty pasturage of these mountains.

We once again saw an izard under the Machos, but we saw nothing of the wild goats (*Capra ægagra*) of which Boissier speaks, and which Mr. Ormsby saw in the Sierra de Gredos. Approaching the summit of the Veleta over gneiss rocks, interspersed with snow-beds, the silvery tufts of a beautiful little mountain artemisia, the *A. Nevadensis*, are seen in great profusion. This plant, very akin to the *A. spicata*, and *A. Mutellina*, the chief ingredient of the Chartreuse liqueur, is even more aromatic. It is much prized by the natives under the name of *Manzanilla real*; and the inhabitants of Granada and Lanjaron drink large quantities under the form of tisane. For delicate stomachs of a less sober temperament it is used to flavour Manzanilla sherry.

The view from the Picacho de la Veleta is certainly very extensive, but after Mr. Ormsby's description, I must own to having been disappointed. The mountains are too uniform and barren. One misses the snow, the forests, and the serrated ridges of the Pyrenees. The sky, too, on looking overhead, seemed to maintain its usual pale-blue tint. Neither on this, or on any other of our ascents, did I once observe that deep black indigo which almost always prevails in the Alps and Pyrenees at heights exceeding 10,000 ft.

From the summit of the Veleta, Granada and the Alhambra are well in view, though distant 19½ miles in a direct line. Over the sea there was a certain amount of haze, and the coast-line was hardly distinguishable. The most striking feature in the panorama is, without doubt, the Picacho de Mulhahaçen, the cairn of which is 2° S. of E. from the

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Picacho, and distant as the crow flies 5 kilometres. A little to the left of this, looking over the Corral, the Picacho de Alcazaba, the third highest of the range, is also in view; and beyond, in the NE., a ruddy glow, even though at midday, seemed to rest upon the mountains of the Sierra Bermeja, or Vermilion Sierra, beneath which winds, though out of view, the verdant river—Rio Verde, so celebrated in Spanish song.

The N. side of the Veleta falls away in an absolutely vertical precipice of 1,900 ft. to the Corral de la Veleta. To descend on this side is impossible. On the E. side, facing Mulhahaçen, there is also a precipice difficult and dangerous, but not absolutely impossible. In fact, my guide, Henri Passet, offered to make his way down, but I did not care to follow him. Anyone wishing to pass from the Veleta to Mulhahaçen should first retrograde towards the col, and then descend a little, skirting the S. side of the ridge that connects the two summits. From the Veleta we might have returned to Granada that evening, but we preferred to camp out below the Dornajo, and so reached Granada early the next morning.

Our second expedition was to explore the Corral, in which I was accompanied by Mr. Byles as well as Passet. After sleeping near its northern extremity, at a height of 6,050 ft. where the dwarf little Alpine oak (*Quercus Tozza*) afforded a good supply of fuel, we proceeded up the gorge, following for the first two hours the path that leads to an iron mine. During this part of the journey my dogs had several engagements with the native dogs, but the victory was never doubtful, notwithstanding the iron-spiked collars with which the latter were defended. The showy flowers of the foxglove and aconite, which were the dominant plants in the lower region, soon disappeared, and were replaced by prickly tufts of the *Arenaria pungens*, the *Plantago nivalis*, and a few spring gentians. The rocks here, as indeed in all the higher parts of the chain, consist of mica-schist, or rather gneiss (for the rock is laminated, and contains felspar), and we picked up some fine specimens of spicular iron, with traces of copper.

At 7,874 ft. we reached the first snowpatch, and at 9,380 ft. we came to the bottom of the glacier, which owes its reputation certainly not to its size, but to its being the only one on the Sierra Nevada, and the most southerly in Europe. It is, however, in every respect a glacier, showing, where the snow is cleared, blue ice, with little longitudinal crevasses some inches in diameter, and miniature moulins; and at the northern base there was formed a very considerable moraine. On this moraine I gathered the *Linaria glacialis*, the *L. origanifolia*, and the

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Ranunculus glacialis, being the only place where I observed it on these mountains. The upper part of the glacier is steeply inclined, and at the close of summer might require the use of an axe; but the snow was in capital order, and we soon passed from the ice on to the steep shaly rocks, and thence on to the ridge, about 1,000 ft. E. of the Picacho de la Veleta, at a height of 10,958 ft., and consequently 482 ft. below the peak.

From here the Picacho de Mulhahaçen is in view due W. It is a rough up-and-down scramble of 2½ hours to reach the summit, keeping on the south side of the ridge which connects it with the Veleta. About an hour below the Picacho de Mulhahaçen we passed on our right a small circular lake, the Lago de Caldera, whose height Boissier gives at 10,108 ft. This, notwithstanding its exposition due S. and the burning sun, was still on June 29 half frozen. Just beyond this, before mounting the final cone of Mulhahaçen, we had a peep over the ridge upon the four little lakes, which are cradled in the third gorge, on the NW. flank of Mulhahaçen. The largest of these, though of no great size, is known as Laguna Larga. We could not understand how such an insignificant mountain tarn could merit the name, and afterwards made an expedition to the Col of Vacares in the east of the range, expressly to discover this big lake, but could find no other.

I will not pretend to decide between the rival claims of the Veleta and Mulhahaçen as points of view; but I think with Mr. Ormsby that Mulhahaçen is decidedly the grander mountain. However, any member of the Club visiting these parts is quite sure to make the ascent of both, and decide for himself. He will be fortunate indeed if he is able to discover the coast of Africa from either. I suppose it is not physically impossible, but Mr. Ormsby at last gave it up as a bad job; and for ourselves we were not even tempted to strain our eyes and imagination, as in the course of our different ascents it was only twice that we were able to make out the ships upon the sea.

On both those mountains there are phænogamous plants growing actually to the very summit. I do not know how high flowering plants may reach in the Alps; but in the Pyrenees there are only lichens above 10,850 ft., and above 10,200 ft. flowering plants are very rare.

The following plants, that I gathered on Mulhahaçen within a radius of 165 ft. from the summit, were the *Papaver alpinum*, of a deep orange colour, rather less red than that of the Pyrenees, but the same plant; *Artemisia Nevadensis*;

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Viola Nevadensis; *Galium Pyrenaicum*; *Saxifraga Grœnlandica*, var. mista; *Erigeron alpinum*; *Armeria australis*; *Pyrethrum radicans*; and *Arenaria tetraquetra*. A little lower down three crucifers—the *Ptilotrichum purpureum*; *Lepidium stylatum*; and *Biscutella saxatilis*.

The plants of the Veleta were very nearly the same, with the exception of the *Papaver alpinum*, which in the Sierra Nevada only grows on the W. flank of Mulhahaçen.

The rocks of both mountains are the same—gneiss intermingled with mica-schist.

On the Veleta, the highest-growing flowers that I observed were the *Saxifraga Grœnlandica* and the *Artemisia*, both of these within a yard of the stone cairn; but the saxifrage with an eastern, and the artemisia with a southern aspect, which would make a vast difference in the annual temperature.

From the Picacho de Mulhahaçen we descended to Capilleria —5 hours. We reached it late at night, but were agreeably astonished at the accommodation of the posada. Mr. Ormsby describes it as a most miserable ramshackle auberge. Ramshackle it indeed is, but I suspect this year, in his travels in the Sierra de Gredos, he often had to put up with worse accommodation. It is true we had to sleep upon the floor; but our usual mess of oil-soup was enriched with eggs, to follow which we had excellent boiled ham, and fair wine.

From Capilleria to Lanjaron takes about 4 hours. With the latter place I was not very pleased. There is a comfortable little hotel, the Fonda Granadina, with a most obliging landlady, and excellent fare. The town consists of one long street of ill-built houses, the very worst paved in Europe. Above and below are thick tangled terraces of orange-trees, pomegranates, figs, and prickly pears, with here and there a chamæleon running among their branches; but in the middle hours of the day it is too hot to stir out. My friend Byles saw at the Paris Exhibition a picture of magnificent many-storied houses, designated the Baths of Lanjaron; but that is an imposition. There are only two baths in a little cottage a kilometre west of the town; and water-drinking seems to be depended on as the principal means of cure.

Lanjaron is practically almost, if not quite, as far as Granada from the three highest peaks of the chain; but it is an excellent victualling depôt on the south side, and has the advantage of possessing as its inhabitant Juan Estevez, who certainly may now be considered the most competent, if indeed he is not the only, *local* guide for the Sierra Nevada. From Mr. Ormsby—who by the way seems to have established a considerable repu-

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tation all through that country as Don Juan—and of whom he had a most grateful recollection, he learnt a good deal, and more from us during the nine days he was with us. He is an excellent walker, carries a fair weight, and is very willing. The only approach to grumbling that escaped him was on the occasion of our passing the night on the top of the Picacho de la Veleta, which I am bound to say we all felt rather severely. Of course we had not a spark of fire; Juan had his *manteau*, I and Byles each had a dog, but were without other wraps, and we felt the cold so much that I could hardly understand in the morning how the minimum thermometer placed on a rock should mark no lower than +4° centigrade; but I suppose it was the contrast to the day temperature that made us so sensitive. Having reached Granada on the 18th of June, we left it on the 18th of July. In the course of this month we ascended the Veleta three times, including one night on the top, Mulhahaçen twice, and the inferior peaks of Alcazaba, the Machos, and the Caballo, once. We also camped out seven nights in different parts, and on both sides of the range.

I have given a short personal narrative of our first two ascents, as both being made without any local guide, or indeed any indication of the route, they go to show, if nothing else, how little difficulty these mountains would present to any members of this Society.

I will conclude with a few remarks on the general features of the range:—1st. As to the heights. I find the heights taken by Boissier, the most painstaking and trustworthy, and also the most recent observer, were calculated only with a single barometer; that is, he had no opportunity of comparing his observations at the upper station with a simultaneous observation at the lower. I cannot, therefore, agree with Mr. Ormsby, that the heights of the Sierra Nevada have been as carefully measured as any mountains in the world.

I carried with me boiling-point thermometers, and Mr. Byles an aneroid; and my measurements from various stations give the heights pretty nearly the same as those given in Mr. Ormsby's paper, but a trifle lower; and after my computations, the figures deduced from the mean of the several observers are not quite so near the truth as those given by Boissier alone:—The Picacho de Mulhahaçen, 3,567 metres = 11,703 ft. . . The Picacho de la Veleta, 3,487 metres = 11,441 ft. . . The 3rd peak is undoubtedly Alcazaba, north-east of the Mulhahaçen, from which it is two kilometres distant, in a direct line. . . Clemente gives the height, I think, rather in excess, 3,461 metres (11,356 ft.).

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The 4th and 5th peaks are west of the Veleta; the Machos, nearest to the Col, which I computed at 10,788 ft.; and the Caballo, the westernmost, which looked at from the Veleta seems nearly as high, but is certainly 358 ft. lower than the Machos. Its height is 10,430 ft. In the centre of the chain there are three principal cols: that of the Veleta, just west of the Picacho, which Boissier puts at 3,399 metres (10,826 ft.); that of Vacares, at the extreme east of the chain; and a third col midway between Mulhahaçen and the Veleta, which seems to have been opened on account of the mine in the Barranco del Infierno. The path ascending from this, the central barranco, gains the ridge a little west of the frozen lake of Caldera, and thence is continued across the south spur of Mulhahaçen to Trevelez.

The most striking part of the chain is the centre portion on the north side between Alcazaba and the Veleta. Though in truth one vast cirque, it is split by two central ridges into three narrow gorges (*barrancos*), opening out rather broader in the upper part, but always distinct: the easternmost being the Corral de la Veleta, the next the Barranco del Infierno. They all have their issue at the head of the Xenil valley, where the house of the mine-inspector, Señor Juan Westermayer, affords fair accommodation, most hospitably extended to anyone coming from Granada to explore these parts. This house is situate seven hours from Granada, just after the bend south into the Corral, above the left bank of the stream, at a height of 5,181 ft. Below the miner's house there is a noble view of the Corral, girt in by the three principal peaks. It reminded me very much of the Cirque de Trumouse, as seen from Héas; but in that there is more snow and glacier.

In ascending the Picacho de Mulhahaçen from Granada, this miner's house would be a very convenient halting-place for any party not caring to camp out. The second day there is time to explore the Corral, ascend Mulhahaçen, and descend to Trevelez, which is less than four hours from the summit. Trevelez is at the foot of the south-east buttress of Mulhahaçen, at a height of 5,333 ft., being the highest village in the Alpujarras, and though larger than Capilleria, it affords much worse inn accommodation.

We found absolutely nothing in the posada, and it was only on paying the money beforehand, and sending out purveyors into the village, that at length with great trouble we obtained bread, wine, oil, and a few eggs. Both at Trevelez and at Capilleria, the snow lies deep for several months in the year, and from all appearances the fall is quite as heavy on

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the south as on the north side of the Sierra. At places like Trevelez one has the dignity of sleeping under a roof, but that is all. I do not think that you even get as much repose, and certainly miss the enjoyable sensations of sleeping on the mountain side 'sous les étoiles.'

To camp out, however, with any enjoyment, a fire is absolutely necessary; and one of the great drawbacks of the Sierra Nevada is a scarcity of wood of any kind. Three little prickly plants, *Alyssum spicatum*, *Astragalus aristatus*, and *Arenaria pungens*, are the only growth approaching an under-shrub at any height on the south side of the range. Queer stuff to handle for fuel, and still more queer for a bed; but at 8,858 ft. we were obliged to be content with these. On the north side it is different: in most places there is an abundant growth of juniper, both the common and the savin, the last growing rather the lowest; and at one spot especially, just north of the Machos, we passed a most delicious night at 9,301 ft., having a roaring fire of juniper and a luxuriant bed of thyme.

Owing to many discomforts, and especially to the burning sun and wretched accommodation, I do not think that the Sierra Nevada would ever compete with the Alps and Pyrenees, even if nearer home; but this range has one great advantage over all other European mountains. During the months of June and July, and probably also August, that important element of mountaineering, the weather, need never be considered. It is quite sure to be fine both by night and by day. During the seven weeks we were in Spain we only once experienced rain, and that a short shower.

The great drawback is undoubtedly the extreme heat. When the sun rises, he comes up as a real enemy. He is quite sure to take the skin off your face and hands, so it is no use to struggle against him; but take with you a good dog, and you need fear no other enemy.

What one man can do another can, at all events in the way of endurance. It is all a question of habit and imagination. For the future, when I meet my friends (as I sometimes do) complaining of having been roasted in the Pyrenees, I shall recommend to them a course of training in the Sierra Nevada. For myself, I can only say, that on my return to Panticosa I was seized with a shivering fit, which lasted me all through the month of August, and more than that, for by thinking on that 'fantastic summer's heat' I have kept myself warm this dreary December.

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