

a thousand miles northwards to Alaska, and Heaven knows how many thousands to the south. Bush Valley with its mountains, and the grand Selkirk peak we had seen from it, were quite clear, but a long thin line of cloud cut off the summits of Mount Forbes, Bryce, and other giants of the central chain, only the silver spire of Columbia piercing the vapour, and standing forth in solitary magnificence.

Some care was necessary in negotiating the steep slopes of now rapidly melting snow at the beginning of the descent, but, these passed, we made our way down without difficulty, and reached Glacier at two o'clock. I sat down to an excellent lunch, feeling very fit and hungry, and thinking that rock and snow climbing is, after all, a much easier and pleasanter pastime than battling with logs, devil-club creepers, and mosquitoes on the timber-choked slopes of the Bush River mountains. It was, however, not without a pang of regret that I reflected that this was to be my last expedition—for the present, at any rate—in this beautiful land, which is associated in my mind with so many delightful memories—hardships and discomforts, no doubt, not a few—yet these worse probably in the recital than the actual experience; pleasant hours that passed all too rapidly, as we spun our yarns round the big camp fire in the evening; incidents and adventures by flood and forest and mountain-side; and many scenes of mingled charm and sublimity. May some kind fate direct my footsteps thither again!

THE COUPE DE JAUVAC.

BY TEMPEST ANDERSON.

THE mountainous district on the right bank of the Rhone below Lyons comprised in the ancient Province of the Vivarais, and now in the Department of the Ardèche, presents many attractions to the lover of Nature. The mountains, it is true, are not of great magnitude, but their forms are as varied and their outlines as bold as those of many better known Alpine districts. The massif is much cut up into deep and often inaccessible valleys by the River Ardèche and its tributaries, and except the watering-place of Vals, which is a thoroughly modern place, the villages in them have retained many of their mediæval characteristics, including quite a specialty for bad inns, and, on this account mainly, ordinary tourists are almost unknown. There are, however, a few comfortable and passably clean resorts, notably Neyrac les

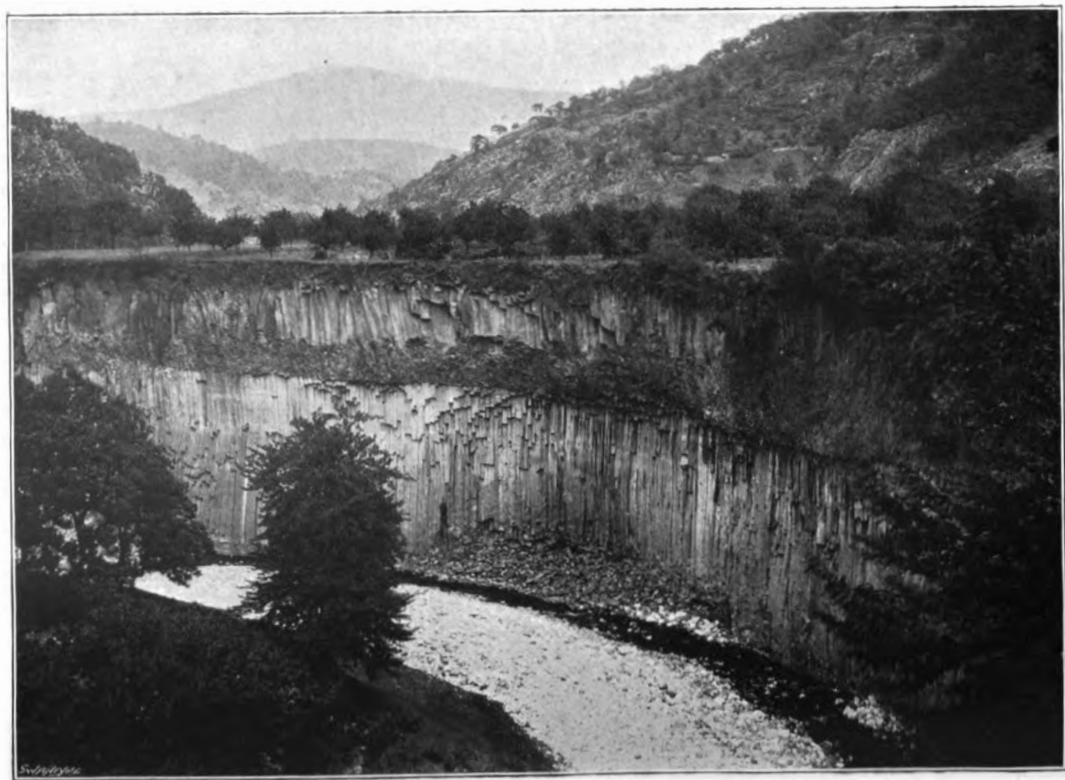


Photo by Tempest Anderson, M.D.]

[Swan Electric Engraving Co.]

COLUMNAR BASALT, VALLEY OF JAUIAC.

Bains, from which it is possible to explore the district, and now therefore is the time to enjoy its beauties, before they are spoiled by the coming incursions of the personally conducted.

A large proportion of the rocks consists of granite and other primary formations, which weather into bold and even fantastic crags, while the volcanic rocks which abound throughout are old enough to have been well dissected by the streams, so as to show their structure, yet new enough to retain much of their original outline and to obtrude themselves and their origin on the most casual observer, instead of requiring to be looked for, as in some other better known localities. Moreover, they weather into a singularly fertile soil, and the valleys, owing to their southern latitude, and the low elevation of their floors, enjoy a warm and genial climate. Hence the flora is rich and varied, and the district as attractive to the botanist as to the geologist and photographer.

Early in September 1901, Yeld and I, having had a very enjoyable time on * and about the Col du Géant, found the weather broken, and moved off to this district, which I previously knew to be very attractive. It would require an abler pen than mine to do justice to the slowness and discomfort of the cross-country trains, but eventually we arrived at Le Puy and drove across the mountains in two days by Lac d'Issarlès and Montpezat, and thence next day to Jaujac and Neyrac les Bains.

Jaujac is situated on the Alignon, a tributary of the Ardèche, and the great flow of basalt lava which has proceeded from the Coupe de Jaujac, the crater near it, has flooded the whole of the valley as far as the junction, and (perhaps reinforced by a stream from another crater, that of Souliols) has extended down the main valley as far as Pont de Balme, where we first made its acquaintance. It is evident that originally the whole width of the valleys was filled by the fiery flood, which cooled and solidified there, but the rivers have since re-excavated for themselves new channels, partly through the basalt, and partly through the adjacent granite which formed the old bank of the valley. Thus for nearly the whole distance from the Pont de Balme to Jaujac, about five miles, the right bank of the rivers, first the Ardèche and then the Alignon, is formed of a grand mural precipice of basalt

* We should like to express here our hearty thanks to the Turin Section of the Italian Alpine Club for the hospitality we enjoyed at the Rifugio Torino.

varying from 120 to 150 ft. in height. There are a few patches of basalt on the other bank, but they are inconspicuous. In places the bottom of the lava flow is exposed, and it is then seen to be rough and cindery where it lies on the rock or on the layer of gravel which was obviously the bed of the old river. The surface is mostly weathered into very fertile soil, which is partly fields of arable land and partly covered with most luxuriant and beautiful woods of chestnuts and here and there with vineyards and orchards. Its surface is flat and almost level. The junction of the basalt with the granite, where it abuts against the side of the valley, is obscured by talus slopes. The great feature of course is the precipice, and this is made up of two layers, which at first sight might appear to be the product of distinct flows of lava, but on further examination this is seen not to be the case—both layers are columnar. In the top layer the columns are confused and irregular, and average a few inches in diameter, while the columns of the lower layer are beautifully regular, generally 1 to 2 ft. in diameter, and in many places extend unbroken up the whole thickness of the layer. Closer examination shows that the rock forming both layers is continuous. This arrangement, which is usual in such cases, is due to the two sets of columns having started respectively from cracks formed on the upper and lower surfaces of the flow after it had consolidated, and while it was contracting by cooling. The cooling from the upper portion which was exposed to the air proceeded more rapidly, hence the more irregular contraction; that from the lower part was much slower, as the rock on which it lay was a poor conductor of heat, hence its more regular character. The views disclosed by the windings of the valley (see plate) are not merely scientifically interesting, but extremely picturesque.

Having spent a morning in exploring the valley we were glad to find at Jaujac a nice little inn, the lower portions of which at any rate were clean. We had no opportunity of deciding whether the upper parts were inhabited by as numerous and hungry a population as some others we had previously occupied. However, we had an excellent lunch on a terrace behind the inn, under a trellis of shady vines laden with grapes just ripe, and a charming view over the river—just such a place as one is apt to talk about but so seldom finds in reality.

After lunch the Coupe de Jaujac, the crater from which this lava had issued, well repaid a visit. It is breached to the north side where the lava has flowed out, but is otherwise very



Photo by Tempest Anderson, M.D.]

LA COUPE DE JAUJAC, FROM THE N.W.

[Sloan Electric Engraving Co.]

perfect. It is formed of scoriæ and clothed with a luxuriant chestnut grove, the crest in places having a crown of pines. A spring which issues just at the entrance of the breach is strongly charged with carbonic-acid gas. The underlying rocks belong to the coal measures, a small portion of which has been preserved in a depression in the granite. This might appear to give some countenance to the now exploded idea that volcanic action was the result of underground combustion of coal, but if any proof to the contrary were needed it would be furnished by the fact that the ejecta have been found to contain included fragments of granite which must have come from a deeper source. We afterwards crossed the Alignon from the bridge, over which there is a most interesting view of the lava current undermined by the river, and ascended to some height a very curious winding stone-paved street or pathway. The people whom we encountered were very courteous; one old lady in particular took the trouble to explain to us where the best view of the Coupe de Jaujac was to be found. It was from this spot that the accompanying illustration was taken. The evening found us in comfortable quarters at Neyrac les Bains.

AUGUST 1901 IN THE BERNESE OBERLAND.

BY H. SOMERSET BULLOCK.

ONE of the old guard of Alpine pioneers, whose words are more honoured than their authors are allowed to know, has said that the special charm of walking, compared with cycling, lies in the fact that the tramp may enjoy the stolen pleasure of trespassing, while the cyclist, even the scorcher, must stick to the public way. Some such fearful joy tempts the guideless climber to trespass on untrodden routes—the preserves of the skilled professional. I have a cherished recollection of last season when the Gspaltenhorn challenged us to a guideless combat; of our seven hours' walk to the Gämchi Balm, of an afternoon haunted by cloud ghosts trailing their sheeted forms over the rocks; of an hour seized for hasty reconnaissance while our guide acted as cook in the hut and prayed that we should fail to detect the route to be followed next morning; of our compact with him that night that, should we be defeated, he should lead the next assault; of our triumphant return in a snowstorm; and of our consolation climb the same day up the Büttlassen, which