

that everything which is possible to chromo-lithography has been done for them, and that they by far are the most satisfactory reproductions of Alpine pictures which we have ever seen. Something no doubt is lost in the process of translating by mechanical means the expression of the painter's mind, even as something is lost in trying to express upon canvas the inexpressible glories of nature; but enough is left to convey to those who cannot see the original scenes a very adequate idea of their beauty, and to stimulate the mountaineer's memory to clothe the picture on which he is gazing in all the gorgeous hues of nature's colouring.

MISCELLANEA.

GRINDELWALD IN WINTER.—*To the Editor of the Alpine Journal.*—Dear Sir,—A winter expedition to the Alps is sufficiently novel to induce me to trouble you with a brief account of ten very pleasant days which Mr. H. Walker and I passed at Grindelwald last December.

We arrived there on the evening of the 16th, in very unpromising weather. About three weeks before, there had been an extraordinarily heavy fall of snow, which had been three feet deep in the village itself; but this had been succeeded by rain, which had reduced the depth to about one foot. During the day of our arrival, and the subsequent night, more snow fell; but by the next evening the weather had cleared entirely, a hard frost set in, and during the whole of our stay we had a succession of cloudless days followed by moonlight nights of unspeakable splendour. With a view to chamois hunting we had come provided with guns, but it was necessary to allow the fresh snow to become consolidated before venturing on the mountains, and in the interval we amused ourselves in the pursuit of foxes and hares, following their traces in the snow. Game was not plentiful, but the search for it kept us on our legs from dawn to dusk, and led us about the valley in all directions. We saw the mountains from every possible point of view, and were kept in a chronic state of delight at the exquisite scenes upon which we came at every step in our rambles through the pine woods densely laden with snow.

By the 20th chamois hunting was considered safe, and, game having been reported on the Mettenberg, we slept that night at the Eismeer chalet. To reach this was a rather difficult and dangerous piece of work; the path, which as every one knows is carried along the brink of a precipice, being converted into a steep slope of snow or ice, requiring much step-cutting and the use of the rope. The hut was more or less full of snow, and, after an uncomfortable night, we started at 2 A.M., and by 6.40 had reached a point on the side of the Mettenberg, called the 'halb mond,' at a height of about 9,500 feet. Below this point chamois had been seen the day before, and our porters had

been left below to drive them up towards us. A mistake had however been made in starting at so early an hour, as the cold before and immediately after sunrise was so severe that we were compelled, while waiting on our perch, to keep in motion, and the chamois, hearing us, passed by on the other side out of shot, and went to the very top of the Mettenberg. Thither Almer and another man followed them, and managed to get three shots, none of which were successful. We remained on the 'halb mond' till 1.50 P.M., or more than seven hours—for the first three hours in cold more intense than I ever felt, but afterwards, when the sun reached us, in our shirt sleeves in the greatest comfort. The view from our position of the basin of the Grindelwald Glacier, the lake of Thun, and the flat country beyond as far as Bern, was very fine, and the expedition, though a failure from a hunting point of view, was in every other respect most enjoyable.

That evening we were joined by Melchior Anderegg, and on the 23rd, with him, Almer, and Peter Bohren, we started to cross the Finsteraar Joch and Strahleck passes. We left Grindelwald at 3 P.M., and at 1.15 A.M. on the 24th were on the Finsteraar Joch. The moon was at the full, but we were in shadow until we got on to the level glacier at the foot of the upper ice-fall; still, we had no difficulty in finding our way up the steep rocks on the Zäsenberg side of the glacier by which the central ice-fall is turned. The snow on the upper glacier was in fair condition—not worse than it might often be found in summer. In consequence of the perfect stillness of the air, the cold, although really severe, did not inconvenience us. We found a tolerably easy passage on the right side of the upper icefall, which, in such brilliant moonlight, was a wonderful sight. Descending the Finsteraar Glacier, and keeping well under the Finsteraarhorn, we reached, at 3.20, the entrance of the long glacier valley leading to the Strahleck. The passage of this occupied till 5.40, and was the most trying part of the expedition, as we all began to feel the want of sleep. We climbed the snow wall and gained the col at 6.40. The snow on the lower part of the wall was deep and soft, but quite safe, binding well under the foot; higher up we found ice, and the same was the case on the Grindelwald side, as far as the top of the first rocks. The view was clear, and the sunrise, which we witnessed from the rocks, one of the finest I ever saw. We reached Grindelwald again at 1 P.M., having been absent twenty-two hours, including halts to the extent of less than an hour and a half.

On the 26th we ascended the Faulhorn and slept there, having taken the landlord up with us to open the house. Although on the way up the snow was deep, on the summit there was very little except where it had been sheltered from the wind and sun, under the lee of the inn. During the night, in spite of a violent wind, the thermometer never sank below 26° Fahr. This must have been an exceptional circumstance, but in the daytime we always found the temperature on the hill-sides much higher than down in the valley. There the frost was invariably severe all day, the sun only penetrating its depths for a very short time, while higher up, on the north side of the valley, the sun shone for many hours, and the heat was often quite oppressive. De-

scending to Grindelwald on the morning of the 27th, we reached Bern the same evening, and two days later were back in England.

I hope that the success of our expedition will induce others to follow our example. I am sure that no one who may be favoured with reasonably good weather will return disappointed. A full moon is desirable, and indeed, in consequence of the shortness of the days, essential, supposing any high expeditions are contemplated. As regards the prudence of attempting such, our experience goes to show that snow and glacier excursions, under favourable circumstances, may be made with less actual difficulty, and little more risk from avalanches, than in summer. Our three men agreed that we might have crossed the Mönch Joch, Eiger Joch, or Agassiz Joch, without difficulty, and even proposed, when we were on the Finsteraar Joch, that, instead of making for the Strahleck, we should turn off to the last-named pass, and return to Grindelwald by the Mönch Joch; and we should have done so had we not feared that our non-appearance at Grindelwald quite at the expected time would excite alarm. On the other hand, all rock mountains, even such as are easy in summer, become quite impracticable in winter, from the prevalence of ice.

Grindelwald has many advantages for an expedition of this sort, of which not the least is the presence at the 'Adler' of such excellent people as Herr Bohren and his wife. Their kindness and attention to us were incessant, and I am only discharging a duty in taking advantage of your pages to express our obligations to them.

Yours faithfully,

A. W. MOORE.

ST. ROBERT'S HYPSOLOGISTA.—*To the Editor of the Alpine Journal.*
—Dear Sir,—The Comte de St. Robert of Turin, well known as a distinguished savant and zealous mountaineer, has invented an ingenious instrument for determining the difference in the height of two stations from a pair of barometer observations, without the necessity of using the Tables, or of making any arithmetical calculations whatever. The instrument, which is called by the inventor *St. Robert's Hypsologista*, is a graduated wooden scale, with two graduated slides, and from its convenient size (8 inches long by $1\frac{3}{4}$ inches wide), it can easily be carried in the pocket. I have been favoured by M. de St. Robert with a model and detailed description, and I hope to make arrangements for its manufacture with Mr. J. Hicks, of No. 8, Hatton Garden. As some of the members of the Club may wish to avail themselves of this instrument during the approaching season, I have ventured to trouble you with this short notice. I am, dear sir, your faithful servant,
WM. MATHEWS, JUNR.

ENGLISH CHURCHES IN SWITZERLAND.—As many of our readers may be glad to know in what places within the Alpine region they will find English service on Sundays during the coming summer, we give the following list in alphabetical order. Some of the places are served by the Society for the Propagation of the Gospel in Foreign parts (S.P.G.),

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some by the Colonial and Continental Church Society (C.C.S.), and some are in private hands (Priv.).

Äggischhorn	Arranged by M. Wellig.	July 1	to end of season
*Aix les Bains	C.C.S. Hotel de Ville.	May 26	„ Oct. 20
Basle	C.C.S. St. Martin's Church.	June 2	„ Sept. 29
Baveno	S.P.G. Pedretti's Hotel.	May 5	„ Oct. 17
Bel Alp	S.P.G.	June 1	„ Aug. 25
Bellaggio	C.C.S. Hotel de Grande Bretagne.	May 5	„ Sept. 29
Berne	C.C.S. Hospital Chapel.	Permanent	
Bex	C.C.S. Swiss Church.	May 12	„ Oct. 13
Cadenabbia	S.P.G. Hotel Bellevue.	May 5	„ Oct. 27
Chamouni	C.C.S. English Church.	June 16	„ Sept. 29
Champéry	C.C.S. Hotel de la Dent du Midi.	July 7	„ end of season
Château d'Oex	C.C.S. Swiss Church.	June 2	„ end of season
Comballaz	C.C.S.	July 7	„ end of season
Courmayeur	C.C.S. Protestant Church.	Uncertain	
Diablerets	C.C.S.	July 7	„ end of season
Engelberg	S.P.G. Hotel Titlis.	June 16	„ Sept. 22
Geneva	Priv. English Church.	Permanent	
Glion	C.C.S.	June 2	„ end of season
*Grindelwald	C.C.S. Adler Hotel.	July 7	„ Sept. 29
Hospenthal	S.P.G. Hotel Meyer.	June 30	„ Sept. 22
Innsbruck	C.C.S. Hotel d'Autriche.	July 7	„ Sept. 29
Interlaken	C.C.S. English Church.	June 2	„ Oct. 13
Ischl	S.P.G. Hotel Bauer.	June 1	„ Sept. 15
Kandersteg	C.C.S. Hotel de l'Ours.	Uncertain	
Lausanne	Priv. English Church.	Permanent	
Lucerne	C.C.S. Protestant Church.		
Lugano	S.P.G. Hotel du Parc.	April 28	„ Oct. 27
Luino	C.C.S.	Uncertain	
Martigny	S.P.G. Hotel Clerc.	July 1	„ Sept. 29
Meyringen	Priv.	Permanent	
Milan	C.C.S. English Church.		
Montreux	Priv.		
Neuchâtel	C.C.S.	June 16	„ Oct. 12
Pontresina	S.P.G. Gredig's Hotel.	July 1	„ Sept. 29
Ragatz	C.C.S. Hof Ragatz.	July 7	„ end of season
*Rigi Kaltbad	C.C.S.	July 7	„ Sept. 29
Rigi Scheideck	S.P.G.	June 16	„ Sept. 29
*St. Moritz	S.P.G.	July 1	„ Sept. 29
Salzburg	C.C.S. Hotel de l'Europe.	July 7	„ Sept. 29
Seelisberg	S.P.G.	June 1	„ Sept. 15
Stresa	C.C.S. Hotel des Iles Borromées.	May 5	„ Oct. 27
Thun	C.C.S. English Church.	June 2	„ Sept. 29
Turin	C.C.S. English Church.	Permanent	
Vevey	Priv. English Church.		
Villeneuve	S.P.G. Hotel Byron.		
*Zermatt	C.C.S. Alternately at the two hotels.	June 16	„ Sept. 29
Zurich	C.C.S. St. Ann's Church.	Permanent	

ATTEMPTED ASCENT OF ORIZABA.—A correspondent of the New Orleans *Picayune* gives an account of an attempt made early in the present year to scale the peak of Orizaba. We do not even profess fully to understand the narrative, but we give the valuable por-

* At these places the building of English churches is in immediate contemplation, and the necessary subscriptions have been partly raised.

tions entire, for the edification of the mountaineering world. The correspondent describes the incidents of the first day's ascent, and continues:—'At sunset we reached the stone chapel and tower, 13,000 feet above the level of the sea. One after the other our company filed into the gateway for the night. Of its origin there is no history—of its age generations long since dumb knew nought. But a shepherd would not cross its threshold at night time, nor seek shelter from a storm, if a coronet were offered him. The frost that night was sharp and heavy; the bare hard earth was white, and the morning light revealed the neighbouring streams iced over as it slept almost on the narrow level above the abysses. From this point there was no horse-path. Here ended all signs of human or animal travel. Horses were picketed within the walled yard of the ruined chapel; artists packed their apparatus, the engineers their instruments, and, with a plenteous supply of brandy in each man's pocket, the guides were directed to commence the ascent. Then followed promiscuously Americans, Englishmen, Mexicans—one after the other, singing, whistling, jesting as they went. Not long did these noisy demonstrations last, for the breath came hard, and the hands, and feet, and senses were required for the hazardous journey. As we advanced ledges were precipitous and barely passable; rocks of round sandstone came rolling and sliding downward by us, drifts of snow from the topmost ridges glided swiftly from their places as the sun rose in the heavens; and huge flat ice blocks at times came whirling by us like cannon-balls. When on a rise of 14,000 feet the party separated, some taking the high snow ridges, others the gorges or gullies. There is a mean difference in height between the two—often 800 feet. The gullies run up to the summit, with occasional breaks, parallel with the ridges; and the surface composed of rubbish—a collection of centuries—a spongy, black earth, through which we sank to the knees, and where no snow or ice lay, but through which, at noon-day, ran the drippings that trickled from the high snow cliffs. The leaping fountains winding through the gorges increased as they descended, and, uniting sometimes below, swept in a thundering torrent down the mountain side. These streams had worn beds a hundred feet deeper yet than the general level of the gullies. The formation of rocks and earth differed in no wise from that farther down. Here and there lay huge piles of grey limestone and sandstone, and specks of quartz, promiscuously intermingled, angled, some flat and edged, others with regular layers of lime and sandstone; rents, fearfully deep, in the mountain side disclosed curiously-disposed strata of the upper and lower and intermediate sections of geologic formation. Great gaping mouths in the rocky sides sent out sulphuric fumes; and in one mammoth opening lay heaps of sulphur, and farther back pillars of purplish stone (the result of drippings) thirty feet high. These are no evidences of recent eruption (perhaps none for 200 years), but the fact that the summit is bare and black, and that occasional whirls of smoke are emitted from the crater, indicates the smouldering condition only of the volcano at present. The ascent was continued in an almost direct line towards the top. Up to within 2,000 feet of the summit level the whole company were

in motion, but scattered at great distances from each other. At this time some failed and fell. Blood began to pass from nose and ears, and faces were swollen so that old friends knew each other only by the dress. A few continued the journey a thousand feet higher, lay down, slept on the snow or black dust, gasped for breath and awoke. Some dropped every few minutes—it was impossible to keep awake all the time—but started up again as soon, catching the breath. The painful, oppressive atmosphere weighed heavily upon the loaded artists, and they with one accord, and without parley, turned and retraced their steps towards the spot where fell early the unambitious and weak lunged. Those on the ridges sent whirling under their feet rocks and patches of black earth, and ice clefts that seemed to hang in air above the affrighted explorers in the gullies beneath. Land and snow sections were continually started under the feet of those above; and snow-drifts often fell, burying us at times in the rubbish. No sign of tree, or shrub, or grassblade, or hardy flower—all silence, and snow, and black desolation; rifted rocks, weird, unseemly piles of frozen earth and ice, upward; mist and cloud below; the sun and sky deep blue overhead; beneath, the cloud-field and the abyss. Artists were out of sight under the clouds descending, engineers and others lay down or staggered at points on the way, incapable of willing or acting, and calling upon those in front to return. Falling rocks became more frequent; boulders undermined by the thaw of ice came spinning after each other at fabulous rates of speed. Shafts of ice 30 ft. long, loosened by the falling boulders and snow slides, slipped from their mooring, fell upon the sandstone cliff below, ground into fragments, and bounding onward between sun and cloud, sparkled like diamonds as they fell. The wind was sharp and cold, but not high. Once, and once only, it chopped round and swept the mass of cloud away eastward, and then distant landmarks and cities and plains were visible. Popocatepetl and all the Mexican volcanoes were distinguishable, and with a good telescope we looked out over the Chiquite Mountains into the placid waters of the gulf. In a few minutes the wind shifted, and cloud and mist trooped back again and hung with a sort of affectionate embrace around the mountain top and sides. Sound at this height was very distinct, although it appeared distant when actually near. Amid the silence that reigned, the snapping ice shafts and snow slides, and falling rocks, and even the little waterfall, fell painfully upon the ear. The crashing noises one experiences in caverns when a stone strikes the floor, or a rill plays upon the rock, resemble very nearly the sensation; and when a boulder broke upon the lower ledge, the sound quivered with a vibratory motion for a long time before it died away. The sense of isolation is acute, existence is a dream, the senses half benumbed, memory in a mist, and thought lost in a maze of uncertainty. Were it not, indeed, for the continuous struggle to retain vitality, the sensation of losing breath, and the constant loss of blood, one might easily be induced to dream on in a seeming sleep on a sunny snow ledge or cinder gorge. We were now nearly 16,000 ft. above sea level. Distinctly, as if at our elbow, the sound of the guide's feet striking the solid drift, 1,000 ft. away, fell upon the ear. Evidently the Indian

pilots, who did not count upon our advancing so far, became alarmed, and indicated a wish to return. But General S—— urged them forward, taking himself a narrow, conical ledge, pushed towards the summit. Notwithstanding the pretentious knowledge of these natives, it is very much doubted whether any living being advanced farther towards the summit than our party did. Some time during the war with Mexico, twenty or more years ago, an army officer—a South Carolinian, I believe—made the attempt to reach the top, but he fell, paralyzed, after reaching the height of 15,000 ft. above the gulf. His comrades proceeded no further, but planted on the spot, firmly in the rocks, a stout staff, and on it unfurled the stars and stripes. The flag-staff remains yet in its place, but not a thread of the red, white, and blue is left—all given to the winds and storm, the hail, sleet, blasts, and the gale. Two-thirds of our party were out of sight, down the slope; three alone, beside the affrighted guides, held their way. Blood oozed from ears, nostrils, and mouth, and veins stood out on the forehead like great black lines. Our footing became more and more uncertain, the ascent more abrupt, the stones constantly turning and crumbling away, and betimes huge masses of earth, and boulders, and scoria, loosened by the melting snow, came thundering and hissing from above, fairly flying past our heads on to the next projecting ledge, and great snow drifts, broken and crumbled by the colliding rocks, avalanched down upon our heads a perfect storm of snow, and icicles, and black earth, and lava dust. One of the guides, smitten by a passing drift, rolled, half dead, 300 feet down the slope, and was buried for awhile in the snow and earth. Colonel C——, a West-Pointer, was thoroughly exhausted, and made as incoherent speeches as a toper in his last struggles to maintain consciousness. His broken sentences, low and indiscreet, were indicative of scenes on the Chickahominy, mustering squadrons in cold weather. Down the mountain side, almost under the clouds, lay our English friends, completely demoralized, and seemingly discussing on a lava bank sundry bottles of Cognac, unconscious of the dangers threatening their fellow voyagers in their perilous journey on the treacherous cliffs above. The miniature cascades disappeared; even the drippings disappeared from the rocks; for we had passed the line of thaw. Snow was beaten down hard and compact, and glistened like ice as the sun fell upon it. But an abundance of loose rocks lay on the surface, poised for motion at the slightest touch. The guide started more than one as he picked his way some distance in front. We heard by the footfalls that the courageous S—— was pushing on. He was within 500 ft. of the top, turning into a shallow gully to avoid the falling boulders, when a sliding, tumbling noise was heard, then a heavy, dull click, then a fall, and in a moment a heavy boulder came whizzing by on its downward course; some one called out, "S—— has fallen!" The rock struck him on the shoulder, breaking it, and hurled him 100 ft. down the steep gully. The guide reached him soon after, and we bore him slowly down the steep slope, abandoning for the time our enterprise. Arrived at the tower, we found our horses picketed as we left them in the morning. We passed another night within the roofless chapel;

and, with all the quaint stories and goblin fables associated with it, slept soundly till morn; and down again with our wounded comrade into the soft, warm winds and pine groves, we picked our way, and yet farther on to the balmy air of the lowlands, where cool streams from the hills and peak danced merrily through maguey fields, and in the orange shade through broad pampas to the Rio Blanco.'

ASCENT OF MOUNT HOOD, OREGON.—We reprint from the Proceedings of the Royal Geographical Society, the following extracts from a paper by the Rev. H. K. Hines, narrating his ascent of that mountain, which it will be seen he believes to be higher than any other in Europe or North America. It must be observed, however, not only that Mt. St. Elias, at the corner of what was Russian America, is very possibly as high—neither mountain having been properly measured—but also that Mt. Elbrouz in the Caucasus is about a thousand feet higher than Mr. Hines' estimate of Mt. Hood.

'The Cascade range of mountains is a northward continuation of the "Sierra Nevada" of California, and traverses the state of Oregon and the territory of Washington from south to north, at a distance of 100 miles from the Pacific Ocean. This range springs up to an average altitude of 8,000 or 10,000 feet, while, at intervals of many miles, more aspiring summits, from 5,000 to 8,000 feet higher, rise above the evergreen roofing of the lower mountains. The highest of these is Mount Hood. It stands about fifty miles south of where the Columbia has ploughed its way through the Cascade Mountains, and in the centre of that range from east to west.

'In September of 1864, in company with three gentlemen of Vancouver, I first attempted to reach the summit of Mount Hood. On reaching an altitude about 800 feet below the summit, a dense cloud came sweeping against the north side of the mountain, and, drifting rapidly over it, instantly enveloped us in its folds. The air changed suddenly to a fierce cold. The driving snow filled the air so entirely that a cliff of rocks 300 feet high, standing not more than fifty feet from us, was invisible. To go up or to go down, was, for the time, alike impossible. One of my companions was chilled nearly to insensibility, but we struggled against the tempest for hours, unwilling to be defeated in our purpose to reach the summit.

'On the morning of the 24th of July, 1866, in company with three gentlemen of the city of Portland, Oregon, I set out full of determination to stand upon the summit, if energy and endurance could accomplish the feat. Our rendezvous was at the house of a Canadian, who, fourteen years before, had erected a cabin at the place where the emigrant road leaves the mountains and enters the valley of the Willamette. From this place the track enters the mountains along the gorge through which flows a dashing river about 300 feet in width, which rises beneath the glaciers of Mount Hood. Up this stream we travelled for thirty miles, when, leaving the gorge, the way makes a détour to the south to gain the summit ridge. Here is the celebrated "Laurel Hill." For three or four miles the ascent is continuous, and in many places very steep.

'Reaching the top of Laurel Hill we were on the general summit of the range: a comparative level of perhaps ten miles in width, whose general character is that of a swamp or marsh. On this plateau is a dense and grand growth of fir, cedar (*Thuja gigantea*, Nutt.), pine and kindred evergreens, with an almost impenetrable undergrowth of laurel (*Rhododendron maximum*, Hook.). Straggling rays of sunlight only here and there find way through the dense foliage to the damp ground. Passing over this level we crossed several bold clear streams, coursing down from the direction of Mount Hood, and then, turning to the left, we took an old Indian trail leading in the direction of the mountain. After a ride of an hour and a half up a continuous and steep ascent, we came to an opening of scattered trees which sweeps around the south side of the mountain. It was about five o'clock when we emerged from the forest and stood confronting the wonderful body of rock and snow which springs up from the elevation.

'We selected a place for our camp on a beautiful grassy ridge between one of the main affluents of the Deschutes River and one of the Clackamas, and which nearly constitutes the dividing ridge of the mountain. Having erected here a hut of boughs and gathered fuel for a large fire during the night, we spread our blankets on the ground and slept well until the morning. We picketed our horses in this place. At seven o'clock on Thursday we were ready for the ascent. For the first mile and a half the ascent was very gradual and easy, over a bed of volcanic rock, decayed and intermixed with ashes. Huge rocks stood here and there, and occasionally a stunted juniper found precarious foothold; some beautiful variegated mosses were also seen clinging to little knolls of sand. We soon reached the foot of a broad snow-field, which sweeps around the south side of the mountain, several miles in length, and extending upward to the immediate summit. The first part of this ascent is comparatively easy, being smooth, and only in places so steep as to render the footsteps uncertain. Near the upper edge of this field of snow the deep gorges, from which flow affluents of the streams Deschutes on the right and Sandy River on the left, approach each other and seem to cut down into the very foundation of the mountain. The waters were rushing from beneath the glaciers, which, at their upper extremity, were rent and broken into fissures and caverns of unknown depth.

'The present summit of the mountain is evidently what was long since the northern rim of an immense crater, which could not have been less than three miles in diameter. The southern wall of the crater has fallen completely away, and the crater itself become filled with rock and ashes overlaid with the accumulated snows of ages, through the rents and chasms of which now escape smoke, steam, and gases from the pent-up fires below. The fires are yet so near that many of the rocks which project upward are so hot that the naked hand cannot be held upon them. Just at the south-west foot of the circular wall, now constituting the summit, and at a distance of near 2,000 feet from its extreme height, is the main opening of the crater. From this a column of steam and smoke is continually issuing, at times rising and floating away on the wind, at other times rolling heavily down the

mountain. Into this crater we descended, as far as it was possible to go without ropes or a ladder. The descent was stopped by a perpendicular precipice of ice sixty or seventy feet high, resting below on a bed of broken rock and ashes so hot as immediately to convert the water, which dripped continually from the icy roof 100 feet above, into steam. The air was hot and stifling.

‘At this point the real peril of the ascent begins. It leads out and up the inner wall of what was once the crater, and near 1,000 feet of it is extremely steep. The whole distance is an ice-field, the upper limit of a great glacier which is crushing and grinding its slow journey down the mountain far to the right. About 700 feet from the summit a crevasse, varying from five to fifty feet in width, and of unknown depth, cuts clear across the glacier from wall to wall. There is no evading it. The summit cannot be reached without crossing it. Steadily and deliberately poising myself on my staff, I sprang over the chasm at the most favourable place I could select, landing safely on the declivity two or three feet above it, and then with the staff assisted the others to cross. The last movement of fifteen feet had considerably changed the prospect of the ascent. True, the crevasse was passed, but we were thrown directly below a wall of ice and rocks 500 feet high, down which masses, detached by the heat of the sun, were plunging with fearful velocity. To avoid them it was necessary to skirt the crevasse on the upper side for a distance, and then turn diagonally up the remaining steep. It was only 700 feet high, but it was two hours’ sinewy tug to climb it. The hot sun blazed against the wall of ice within two feet of our faces, and the perspiration streamed from our brows, but on nearing the summit the weariness seemed to vanish, and with a feeling of triumph we bounded upon the pinnacle of the highest mountain in North America.

‘The summit was reached at about the centre of the circular wall which constitutes the extreme altitude, and it was so sharp that it was impossible to stand erect upon it. Its northern face is an escarpment several thousand feet high. I could only lie down on the southern slope, and, holding firmly to the rocks, look down the awful depth. A few rods to the west was a point forty or fifty feet higher, to the summit of which we crawled, and then discovered that forty or fifty rods to the east was a point still higher, the highest of the mountain. We crawled back along the sharp escarpment, and in a few minutes stood erect on the highest pinnacle. This was found to be 17,640 feet high, the thermometer standing at 180°, about forty feet below the summit, when the water boiled—giving thirty-two degrees of depression. This estimate makes Mount Hood higher than any summit of Europe or North America.

‘The view from the summit was magnificent. From south to north the whole line of the Cascade Range is at once under the eye, from Diamond Peak to Ranier, a distance of not less than 400 miles. Within that distance are Mounts St. Helen’s, Baker, Jefferson, and the Three Sisters; making, with Mount Hood, eight snowy peaks. Eastward the Blue Mountains are in view, and lying between us and them are the broad plains watered by the Deschutes, John Day’s, and Uma-

tilla rivers. On the west the piny crests of the coast-range cut clear against the sky, with the Willamette Valley sleeping in quiet beauty lying at their feet. The broad silver belt of the Columbia winds through the evergreen valley towards the ocean. Within these limits is every variety of mountain and valley, lake and prairie, bold beetling precipices and graceful rounded summits blending and melting away into each other.

MOUNTAINEERING IN THE TYROL.—*To the Editor of the Alpine Journal*.—Dear Sir,—Having obtained a tolerably complete knowledge of Tyrol during four consecutive visits to different parts of that country in 1863-4-5-6, and being inclined to think that the exquisite beauty of its scenery, and the very moderate cost of travel, will lead to its being visited every year by an increasing number of our countrymen, I venture to offer, for the information of my brother-mountaineers, a sketch of an 8 weeks' tour which I believe will be found to embrace the chief objects of interest throughout the principal mountain groups. I assume that the Tyrol is entered at Landeck in the upper Inn Thal, which may be reached viâ the Vorarlberg either from Zurich or Constance, in about 3 days from London; whilst in returning from Bormio a great variety of interesting routes offer themselves to the traveller's choice. I will only add that it will give me great pleasure to furnish privately further particulars as to maps, guides, &c., or any other information in my power. Yours very truly,

F. F. TUCKETT.

1. Thursday. From Landeck by the Finstermünz Pass to (a) Reschen and the highest available quarters in the Langtaufferer Thal, or (b) Mals and the chalets at the head of the Matscher Thal.

2. To Vent (or Fend) in the Oetzthal by (a) the Langtaufferer Joch, or (b) the Matscher (Hintereis) Joch, ascending, in the first case, the Langtaufferer Spitz, and, in the second, the Weisskugel en route.

3. Ascend the Wildspitz.

*4. At Vent, and stroll down to Sölden in the afternoon.

5. By the Winacher Thal and Pfaffen Ferner to the summit of the Schneide or Zuckerhütl, and then by the Pfaffen Joch and Sulzenau Glacier to Graba and Neustift in the Stubay Thal, whence Schönberg and perhaps Innsbruck may be reached the same night.

6. To, and at, Innsbruck.

7. At Innsbruck, and by rail to Jenbach, and *voiture* to Zell in the Ziller Thal.

8. Drive to Mayrhofen, and thence proceed up the Zemm and Zamser Thals to the chalets at the entrance of the Hörpinger Thal.

9. Ascend the Hoch Mösele Spitz, and proceed by the Mösele Ferner and Mühlwalder Thal to Taufers; thence drive up the Ahren Thal to Steinhaus, or further if time will permit.

10. By the Vord, or Hint Thörl, to Pregraten in the Virgen Thal.

*11. At Pregraten, and thence by the Dorfer Thal to the Johannis Hütte near the foot of the Dorfer Kees.

12. Ascend the Gross Venediger, and descend by the Untersulzbach Kees and Thal to Neukirchen in the Pinzgau; thence drive to Mittersill.

13. Drive to Zell-am-See and Saalfelden (*a*) or Frohnwies (*b*).
14. Cross (*a*) the Steinernes Meer to Königssee and Berchtesgaden, or (*b*) proceed to the same place by the Hirschbühel Pass and Ramsau.
15. At Berchtesgaden.
16. Ascend the Jenner Spitz; cross the Torrener Joch to Golling; and thence drive to Salzburg *viâ* Hallein.
17. Drive to Ischl *viâ* St. Gilgen and the Wolfgang See, or quit the carriage at St. Gilgen and ascend the Schaffberg to sleep, proceeding to Ischl the next morning.
- *18. At Ischl.
19. Descend the Traun by boat to Ebensee, and then take the steamer to Gmunden on the Traun See, returning in the same way to Ebensee and driving back to Ischl, whence Aussee may be reached by voiture the same evening *viâ* Laufen.
20. Visit Alt Aussee and its lake and the Grundl See, and then proceed to Hallstadt *viâ* Ober Traun and the Hallstädter See.
21. Visit the Rudolphsturm, and returning to the village, proceed to the Wiesen Alp (Almhütte) to sleep.
22. Ascend the Dachstein and descend (*a*) by the Hoch Gjaidstein Joch and Schladminger Kees to Ramsau and Schladming in the Enns Thal, or (*b*) to Hinter Gosau.
23. Drive (*a*) to Radstadt, St. Johann (im Pongau), and Lend; or (*b*) over Pass Gschütt to Abtenau and Golling, and thence to Werfen, St. Johann, and Lend, if time permits.
24. To Wildbad Gastein per voiture in either case.
- *25. At Wildbad Gastein.
26. Cross the Stanzer Scharte to Bucheben in the Rauriser Thal, and then the Schütterriedl to St. Wolfgang and Ferleiten in the Fusch Thal.
27. Cross (*a*) the Pfandl Scharte, or (*b*) the Bockkar Scharte, to Heiligenblut in the Möll Thal, in the latter case ascending the Breit Kopf. The first is the easier, but the second is by far the finer, route.
28. At Heiligenblut, and to the Leiter Hütte to sleep.
29. Ascend the Gross Glockner, descend to Kals, and proceeding to Huben, drive thence to Lienz.
30. Drive to Sillian and Inichen and over the Ampezzo Pass to Cortina and S. Vito.
31. Ascend the Antelao *viâ* the Forcella Piccola, and returning to the Pass descend by the Val Otten to Calalzo and Pieve di Cadore or Tai.
- *32. At Cadore or Tai, and in the afternoon to Forno di Zoldo in Val di Zoldo.
33. Cross Col Dai (ascending Monte Civita en route?) to Alleghe and Caprile.
34. Visit the gorge of Sottoguda in Val Pettorina, and then, crossing due S. to Forno di Canale by a pass between Monte Pezza and Monte Alto, proceed up the valley to Gares.
35. Ascend the Palle di S. Martino by the Valle delle Comelle, and returning to Gares, cross the Gesurette Pass to the Valle di S. Lucano and Agordo.

36. To Caprile up the Cordevole Valley viâ Cencenighe and the Lago d'Alleghe, and thence on to Pieve by the Livinallongo Thal.

37. Cross viâ the summit of the Monte Prelungei (Zissa Berg?) to Corfara in the Gader Thal, and from thence proceed up the valley to the Grödner Jöchl, and, skirting the head of the Grödner Thal, traverse the Sella Pass to Campidello in Val Fassa (Fleimser Thal). Ascend the valley to Alba or Penia, or even some higher sleeping quarters if time permits.

38. Ascend the Marmolata and return to Campidello.

*39. At Campidello.

40. Viâ the Duron Pass and over the summit of the Schlern to Bad Ratzes. Thence viâ Völs to Steg in the Eisack Thal, and to Botzen per voiture.

41. At Botzen, and per rail to Trent and Roveredo, and thence to Riva at the head of the Lago di Garda per voiture.

42. Drive up the Val di Sarca to Alle Sarche, and thence walk to Molveno.

43. Cross by the Bocca di Brenta, or over the summit of the Brenta Alta and by the W. side of the Bocca, to Pinzolo in Val Rendena.

44. At Pinzolo and to the Bedole Malga in Val di Genova.

45. Ascend the Adamello and return (a) to the Bedole chalet or (b) to Pinzolo.

*46. At (a) the Bedole Alp or (b) Pinzolo; in the latter case proceeding in the evening to the Nardis Alp to sleep.

47. Proceed (a) to the summit of the Cercen Pass, thence ascend the Presanella, and returning to the col drop down on the N. side to Vermiglio, Fosine, and the Bagni di Pejo, in Val di Sole. Or (b) ascend the Presanella from the Nardis Alp by the Glacier of the same name, and descending by the opposite arête upon the Cercen Pass, proceed thence as already suggested (a).

48. By Val del Monte and the Glacier at the head of Val Piana (or Val Umbrina?) to the ridge running S.W. from the Pizzo della Mare, ascend the latter, and returning to the col, traverse the névé of the Gavia Glacier to the summit of the Pizzo Tresero, whence Sta. Caterina may be reached very directly viâ the Tresero Alp.

49. At Sta. Caterina.

50. At Sta. Caterina; ascend Monte Confinale.

51. Cross the Passo di Forno to the highest châteaux in the Val della Mare, perhaps ascending the Vios, or Viozzi, Spitz en route.

52. By the Glacier of La Mare to the saddle between the two highest summits of the Monte Cevedale, or Fürkeli (the Zufall Spitz of the maps of Lombardy and Tyrol), ascend the latter, and dropping down in a N. direction upon the Cevedale Pass, and skirting the head of the Langenferner (which descends into the Martell Thal) to the Janiger Scharte, traverse the latter to Gampenhöfe and St. Gertrud in the Sulden Thal viâ the Sulden Glacier.

*53. At St. Gertrud.

54. Ascend the Orteler Spitz and descend by the Trafoi route to Trafoi.

55. At Trafoi; drive to Gomagoi in the afternoon and stroll up the Sulden Thal to St. Gertrud and Gampenhöfe.

56. Cross the Pass between the Orteler Spitz and Klein Zebbru, ascend the latter, and then proceeding to the Orteler Joch traverse the Unterer Trafoiferner to the Heiligen Drei Brunnen and Trafoi (viâ the 'Bergl'?).

57. Cross the Stelvio to Bormio per voiture or on foot, and if desired Tirano may easily be reached the same night, and London in four or five days, either viâ Chiavenna and the Splügen or by the Bernina, St. Moritz, and the Julier, to Chur and Zürich.

BLUE LIGHT IN SNOW.—Most mountaineers have observed more or less frequently in the Alps blue light flashing from the feet as they are lifted out of fresh snow, or seeming to fill the footsteps with a transparent liquid. I have never, however, seen this phenomenon in England, or heard of its being seen, until the great snowstorm of March 19th, 1867, which deposited nearly a foot of snow over several of the southern counties. Late on that afternoon I went out with a companion, while the snow was still falling, and a thick fog covered everything; and for nearly an hour we observed the blue light in our footsteps. It was greener than I have ever seen it before, and very transient, flashing out as we lifted our feet and disappearing almost immediately; nor was pure blue light visible in the holes we made in the snow, except to a slight extent. I presume that the snow was not fine enough to exhibit its natural blue colour very fully, while the condition of the atmosphere, with the light diffused through a thick white fog, was favourable to the appearance of the flashes of light from the snow we threw off from our feet.

H. B. GEORGE.

* * *It is requested that short notes of new ascents and remarkable expeditions, intended for publication in our usual 'Summary of new Expeditions' during the present summer, may be sent to the Editor of the 'Alpine Journal,' care of Messrs. Longmans & Co., 39 Paternoster Row, E.C.*