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CONTENTS.

	PAGE
Accidents in 1900	254
" 1901	538
Alpine Club, Address of the, to the King, and His Majesty's Gracious Reply	959
Alpine Club, The Future of the. <i>By Sir Martin Conway and Douglas W. Freshfield</i>	295
Altitudes, High, The Influence of, in Mountaineering. <i>By Malcolm L. Hepburn, M.D., F.R.C.S.</i>	368
Andes, The Southern: an Orographical Sketch. <i>By Sir Martin Conway</i>	81
Ball's 'Alpine Guide,' The New Edition of. <i>By A. V. Valentine Richards</i>	404
Baltistan, Two Pioneer Ascents in. <i>By Mrs. Bullock- Workman</i>	3
Bernese Oberland, August 1901, In the. <i>By H. Somerset Bullock</i>	507
Bouquetins, The Dents des. <i>By A. G. Topham and H. V. Reade</i>	110
Cian, Punta di. <i>By the Editor</i>	517
Colorado River, The Grand Cañon of the. <i>By Tempest Anderson</i>	360
Columbia, British, Mountain Travel and Climbs in. <i>By Hugh E. M. Stutfield</i>	491
D'Hérens, The Dent, from Breuil to Prarayé. (With Notes on the Valtournanche-Valpelline Ridge.) <i>By Claude Wilson</i>	184
Dreieckjoch, The. <i>By the Editor</i>	321
Exhibition, Alpine Club Equipment. <i>By G. P. Baker</i>	36
" " " " " " " " " " " " " <i>By G. P. Baker</i>	196
Exhibition, Alpine Club Photographic, of 1900	212
" " " " " " " " " " " " " The Winter Picture	468
" Himalayan Photographs	327
" Himalayan Photographs	215
Fünffingerstöcke, The. <i>By A. V. Valentine-Richards</i>	116
Fusio and Veglia, Between. <i>By A. Cust</i>	204
Graians, Excursions in the. <i>By Alfred Holmes</i>	313
Grindelwald Dru, The. <i>By G. Hasler</i>	466
Haramouk, The Ascent of. <i>By Ernest F. Neave, M.D.</i>	122

	PAGE
Himalayas, Mountaineering in the. <i>By Major the Hon. C. G. Bruce</i>	305
In Memoriam :	
Cockin, John Garforth	253
Hawkins, Charles Halford. <i>By F. Morshead</i>	526
Marcet, Dr. William. <i>By Sir Alfred Wills</i>	130
Mathews, William. <i>By T. G. Bonney</i>	521
Purtscheller, Ludwig. <i>By E. T. Compton</i>	133
Ruskin, John	127
Still, S. F. <i>By G. H. Hodgson</i>	35
Thompson, Rev. C. H. <i>By L. W. V. Goodenough</i>	86
Jaujac, La Coupe de. <i>By Tempest Anderson</i>	504
Kanchinjanga, Round. <i>By Douglas W. Freshfield</i>	161
" The Tour of. <i>By Douglas W. Freshfield</i>	1
Kenya, The Ascent of Mount. <i>By H. J. Mackinder</i>	102
Koser Gunge, of the Shigar Valley, First Ascent of Mount. <i>By Mrs. Bullock-Workman</i>	11
Lepontines, With Ladies in the. <i>By George Broke</i>	449
Matterhorn, The Exploration of the Furggen Ridge of the. <i>By Guido Rey</i>	17
New Expeditions in 1899	45
" " 1900	262, 328, 410
" " 1901	536
Pyrenean Centre, A. <i>By Henri Brulle</i>	246
Pyrenees, The High. <i>By Harold Spender</i>	87
Sport, Mountain. <i>By Hugh E. M. Stutfield</i>	237
Stein, A Week at. <i>By W. T. Kirkpatrick</i>	29
Sulitelma. <i>By Victor H. Gatty</i>	443
Telephotography. <i>By Charles E. Shea</i>	393
Titlis, At the Back of the, and other Places. <i>By W. C. Compton</i> . I.	20
" " II.	196
 ALPINE NOTES :—	
Alpine Climbers at the Front in South Africa	217
" Club Library 54, 139, 219, 282, 338, 405, 471	471
" " " Catalogue 49, 138, 216, 279, 330, 412.	477, 547
" " Obituary 49, 330, 412, 547	547
" " Presentations to 49, 138, 279, 477	477
" Congress, International	51, 138
" Flora, Preservation of the	330
'Alpine Guide,' Ball's	45
" " The 48, 138, 216, 279, 330, 412, 477, 546	546
Alpine Honours at the Paris Exhibition	330
'Alpine Journal' Corrections :	
In No. 146	50, 51
In No. 147	148
In No. 150	341
In No. 153	558

ALPINE NOTES - <i>continued.</i>	PAGE
Alps, Eastern, Accidents in the	333
Ararat, Ascent of	336
Arves, S. Aiguille d'	548
Bel Alp, The Shorter Expeditions from	52
Campo Tencia	282
Canadian Rockies, Mr. Whympers Expedition to	413
Caucasus Club	390
Chorten Nima Pass, in Sikhim	413
Ciardonnet, La	390
Cristallina	282
Croda Grande, An Adventure on	217
Dent Blanche, N.E.-E. Ridges	53
Doves Blanches, Col and Pointe des	49
Eagle's Nest, The	52
Ecrins, The Accident on the	281
Eiger Hörnli	414
Emilius, Mont	548
English Lakes, Appeal to Lovers of	477
Finsteraarhorn	142
Formosa, Mountaineering in	217
Fornei Cima	547
Géant, Aiguille du, from N. to S.W.	336
Gennargentu, Club Hut on	217
Grivola by the N. Face	330
" " S. Ridge and E. Face	548
Guide, A Very Old	51
" Death of a St. Niklaus	414
Hedin, Dr. Sven	547
Hohstock	280
Horungtinder, Notes on the Skagastölstinder	281
Hüfi Glacier, Maderanerthal	49
Huxley, Professor, and Professor Tyndall	332
Ice Axe, Professor Bonney's	147
Khan-Tengri Mountains of Central Asia	279
Kirchalphorn	547
Langkofel Hütte	479
Lochmattler, Rudolph, The Accident to	217
Meije	548
Mönch from Wengern Alp	50
Names, On the Giving of, to Newly Discovered Places	413
Nantillons Icefall	147
North Cape, from the N.	54
Ortler Group, New Hut in the	549
Paradis, Grand, Accident on	51
Patternkofel by the W. Face	53
Photography in the Western Italian Alps	216
Rainier, Mount, The Accident on	144
Rothhorn, Blümlis Alp	335

ALPINE NOTES— <i>continued.</i>	PAGE
Rouges, Aiguilles, d'Arolla	50
St. Bernard, Hospice of the Great	217
St. Elias, Mount	142
Segantini's Mountain Landscapes	279
Simplon Tunnel	549-50
Skagastöltinder	281
Skjursnoestind	148
Spechtenhauser, Josef	558
Sudlenzspitze, The, by the S.W. Face	386
Sulitelma	479
Tambo, Pizzo	547
Torell, Professor Otto	412
Tyndall, Professor, and Professor Huxley	392
Valpellina, In	198
Vanoise, Col de la	548
Vereschaguin's Mountain Landscapes	279
Vierge, La	547
Weisshorn, Accident on the	216
Weissmies	385
Wetterhorn, Accident on the	550
Zinne, Westliche, by E. Face	58
 REVIEWS AND NOTICES:—	
<i>Abba, G. C., Le Alpi Nostri</i>	230
<i>Alpine Majestäten und ihr Gefolge</i>	423
<i>Angeloni, J. M., Le Nevi</i>	351
<i>Baillie-Grohman, W. A., Fifteen Years' Sport and Life in the Hunting Grounds of Western America and British Columbia</i>	419
<i>Baschin, Otto, Bibliotheca Geographica</i>	153
<i>Benesch, F., Bergfahrten in den Grödner Dolomiten</i>	63
<i>Berlepsch, H. A., Die Alpen in Natur- und Lebens- bildern</i>	423
<i>Bignami-Sormani, E., and Scolari, C., Dizionario Alpino- Italiano</i>	350
<i>Boeck, Dr. Kurt, Indische Gletscherfahrten, Reisen und Erlebnisse im Himalaya</i>	286
<i>Castelli, G., Guida-itinerario alle Prealpi Bergamesche</i>	231
<i>Chapman, Abel, Wild Norway; with Chapters on Spits- bergen, &c.</i>	231
<i>Clark, W. A., F.R.H.S., Alpine Plants</i>	291
<i>Cobbold, Ralph P., Innermost Asia, Travel and Sport in the Pamirs</i>	231
<i>Conway, Sir Martin, The Bolivian Andes: a Record of Climbing and Exploration in the Cordillera Real in the Years 1898 and 1900</i>	550
<i>D'Almeida, P. Camena, Les Pyrénées. Développement de la Connaissance Géographique de la Chaîne</i>	230
<i>Dauilla, Emile, Le Tour du Mont-Blanc</i>	292

REVIEWS AND NOTICES— <i>continued.</i>	PAGE
<i>Marr, John E.</i> , The Scientific Study of Scenery	424
<i>Mazama: a Record of Mountaineering in the Pacific North-West</i>	424
<i>Members of the Stock Exchange</i> , The House on Sport	487
<i>Meyer, Hans</i> , Der Kilimandjaro: Reisen und Studien	414
<i>Norman-Neruda, May</i> , The Climbs of Norman-Neruda	65
<i>Nuova Antologia</i>	424
<i>Percy, Earl</i> , Highlands of Asiatic Turkey	556
<i>Pfeiffer, G.</i> , Une Ascension au Mont-Blanc	422
" " A la Montagne	425
<i>Rabot, C.</i> , Les Variations des Glaciers dans les Régions Arctiques et Boréales	352
<i>Rein, J. J.</i> , Beiträge zur Kenntniss des Spanischen Sierra Nevada	153
<i>Richter, E.</i> , Rédigé par, Les Variations Périodiques des Glaciers	351
<i>Richter, E.</i> , Geomorphologische Untersuchungen in den Hochalpen	425
<i>Rossell, Virgile</i> , Nivoline: Poème Alpestre	231
<i>Sapojnikof, V. V.</i> , The River Katun and its Sources	556
<i>Sieger, Dr. R.</i> , Die Alpen	486
<i>Strasser, G.</i> , A, B, C für Schweizer Bergführer	350
<i>Stratz, Rudolph</i> , Montblanc Roman and Der weisse Tod	351
<i>Terschak, Emil</i> , Die Photographie im Hochgebirg	230
<i>Trutat, E.</i> , La Photographie en Montagne	230
<i>Vallot, Joseph et Henri</i> , Chemin de Fer des Houches au Sommet du Mont-Blanc	287
<i>Whymper, Edward</i> , Chamonix and the Range of Mont Blanc	152, 422
<i>Whymper, Edward</i> , Zermatt and the Matterhorn	152, 422
<i>Wilcox, Walter Dwight</i> , The Rockies of Canada	417
<i>Wiley, W. H. and S. K.</i> , The Yosemite, Alaska, and the Yellowstone	485
<i>Workman, Fanny Bullock, and Hunter, W.</i> , In the Ice World of Himalaya: Among the Peaks and Passes of Ladakh, Nubra, Suru, and Baltistan	290
<i>Wrubel, F.</i> , Ein Winter in der Gletscherwelt	350
<i>Wundt, Theodor</i> , Das Matterhorn und seine Geschichte	483
" " Die Jungfrau und das Berner Oberland	483
<i>Wundt, Theodor und Maud</i> , Engadin-Ortler-Dolomiten	483
<i>Yeld, George</i> , Scrambles in the Eastern Graians, 1878-1897	227
<i>Yorkshire Ramblers' Club Journal, The</i>	152
<i>Zeitschrift des Deutschen und Oesterreichischen Alpenvereins</i> , vol. xxx.	148
<i>Zeitschrift des Deutschen und Oesterreichischen Alpenvereins</i> , vol. xxxi.	479
<i>Zurbriggen, Matthias</i> , From the Alps to the Andes	150

	PAGE
CORRESPONDENCE	292-427
PROCEEDINGS OF THE CLUB . 77, 153, 232, 352, 431, 489, 556	
ERRATA	50, 148, 341, 558
INDEX	559

ILLUSTRATIONS :—

Alpine Equipment, Illustrations of	37, 39, 42, 43, 44
Aconcagua from Horcones Valley	<i>To face</i> 61
" " the Smugglers' Pass	81
Balaitous Precipice, On the	100
Bessanese, The, from the East	314
Bhot Khol La	312
Bouquetins, Dent des, West Face	110
" " from the S.E.	118
Buck (Chamois), A Good, in his Winter Coat	241
Bucks, Chamois, Fighting during the Rut	<i>To face</i> 243
Bullock-Workman, Mt., On	10
Bush River Valley, The, and Bush Peak, Canadian Rockies	<i>To face</i> 479
Butte, A, with Volcanic Dyke	364
Cañon, Grand, The Great Unconformity	362
Charbonel, The Pointe de, from the Bessanese	321
Cian, Punta di, from the Théodule Pass	518
Columbe, Pizzo, Eastern Arête	454
Crater Lake, Oregon	366
Cristallo, The Monte, Tirol	398
D'Hérens, Dent, and Jumeaux Ridge	185
" " from the Col d'Hérens	185
Dreieckjoch, The	324
Donald, Mount Sir	502
Dru, Grindelwald, The. The Lower Gendarme	467
Eiger, The Summit of the Little, with the Final Snowslope	513
Fates, The White	8
Fourcanade, The, from the North	94
Fünffingerspitze from the South	67
Fünffingerstöcke from Sustenjoch	23
" " Seeboden (Stein)	116
" " Reissend Nollen	118
" " ' No. 4 ' from ' No. 2 '	118
Gaube, Le Couloir de	251
Gwächtenhorn and Stein Glacier	30
Haramouk from the East	123
" Station Peak from Ridge Camp	124
" from the North	125
" The Descent to the Gap between the Middle and East Peak	126
" Kashmir	<i>To face</i> 126

ILLUSTRATIONS—*continued.*

	PAGE
Heiligenblut, Carinthia, View of Crucifix in Church-yard at	<i>To face</i> 393
The same—taken with Telephoto lense	" 393
Himalayas, A Minor Ridge in the Nanga Parbat	" 307
Hydrangeas, Wild	" 165
Jannu from near Kambachen	" 177
Jaujac, La Coupe de	" 507
" Valley of, Columnar Basalt	" 505
Kabru from Yoksun	" 161
Kanchinjinga and Jannu from the Jonsong La	" 173
Kenya Peak and the Teleki Valley	" 102
" " Tyndall Glacier	" 109
" Mount, Alpine Vegetation in the Höhnel Valley	" 105
Lago, The Croda da, Tirol	<i>To face</i> 395
Lepchas	" 162
Levanna, The Eastern, Levannetta, and Central Levanna from Ceresole	" 316
Matterhorn, Furggen Ridge of the	" 18
Pinède, Le Pic de	<i>To face</i> 249
Ptarmigan	" 245
Puget Sound, On	" 367
Schienhorn and Cherbadung Groups from Ofenhorn	<i>To face</i> 445
Schloss Taufers, Ahrnthal, Tirol	" 402
Shosone Falls, Snake River	" 364
Siegfriedhorn, The	" 6
Siniolchum	" 170
Sulitelma, North, from Stortoppen	" 444
Teesta, Ravine of the, Below Lachen	" 166
Tupungato from the East	" 63
Yoksun, The Bridge Below	" 180
Zemu Glacier, Lower Camp on the	" 169

MAPS:—

Group of the Fünffingerstöcke (Stein); Swiss Government Map, and Mr. Valentine Richards's Sketch Map	<i>To face</i> 120
Kanchinjinga Group: Map of Mr. D. W. Freshfield's Route	" 184
Sulitelma from the Swedish Government, Kjellstrom's, and Westman's Maps, by V. H. Gatty	" 443

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THE TOUR OF KANCHINJINGA.

By DOUGLAS W. FRESHFIELD.

THIS excursion, which had never been previously accomplished by Europeans, was successfully carried out last autumn by Mr. Douglas Freshfield and Mr. E. J. Garwood, and the Signori V. and E. Sella, who were invited by Mr. Freshfield to join his party as guests. D. Maquignaz, of Val Tournanche, and a photographic assistant of Signor V. Sella's were taken out from Europe. In India the services of Mr. Dover, superintendent of roads, Sikkim, and of Rinsin Nimgyal, a Bhootanese surveyor, the only educated man who had made the tour of the mountain, were put at Mr. Freshfield's disposal by the local officials, to whom, and particularly to Mr. Earle, deputy commissioner at Darjeeling, and Captain Le Mesurier, political resident in Sikkim, the party are under the greatest obligations. But for the energetic support and assistance of Captain Le Mesurier, who himself went up to Lachen and stayed there ten days, to keep open communications and prevent the coolies from bolting, the tour could hardly have been carried through successfully, while Mr. Earle sent up fresh provisions under a police escort to Jongri to meet the travellers on their return.

Mr. Freshfield sends us the following brief sketch of his route :—

' Leaving Darjeeling on September 5 we rode in four days to Gantok, the capital of Sikkim, where the resident has a charming country house and garden, where we were most hospitably entertained. Thence another four days' ride brought us to Lachen, on the road to the Donkia pass, where our horses were left. The ascent up the almost pathless gorge of the Zemu to the head of the glacier which flows from

the N.E. base of Kanchinjinga took five days with laden coolies, after our pioneers had cut a track through the rhododendron jungle. An unladen messenger can cover the distance in half the time. Here, at a camp at 16,000 ft., the famous storm that did so much harm at Darjeeling overtook us. It snowed quietly for nearly forty hours, leaving a mantle more than three feet deep over everything above 14,000 ft., and necessarily put a stop to any attempt at high ascents.

After two days spent in mapping and photographing we started N., crossing two passes of over 17,000 ft.—the Jongsong La and Thé La—to Llhonak, a very lofty pasture valley which drains to the Turte, but is Tibetan in its physical features and wholly uninhabited. From its head I, with Signor E. Sella, visited the Chorten Niyima Pass (19,000 ft.), leading into Tibet, before we began the long but, under ordinary conditions, easy climb to the Jongsong La (21,500 ft.), which is the only known pass over the ridge that runs N. from Kanchinjinga, separating Sikkim from Nepal. We found that the descent on the W. lies over a great glacier which, after running first S., turns under Kanchinjinga due W., and flows into one of the heads of the Khangba-chen valley, receiving at its lower end a great tributary from Jannu. From the stream of the Llhonak valley to the point where the ice was left in Nepal we spent five days, our two highest camps being about 20,000 ft.

Here we touched Sir Joseph Hooker's track in his explorations in 1848. Owing to the difficulty of penetrating Nepal no traveller had visited this side of Kanchinjinga in the interval. We were fairly well received at Gunza, the first inhabited spot reached after leaving Lachen, a flourishing and most picturesque village, where we met no Nepalese officials capable of giving real trouble. From our next pass we had a superb view over Nepal to the peak designated on English maps as Mount Everest and its neighbours. We regained Sikkim by the Kangla pass, and spent 5 days (October 10–15) at or near Jongri, a high (19,000 ft.) yak pasture on a spur of Kabru. Thence we climbed a Riffelhorn, the height of Mont Blanc, called Kabur, and visited the Guicha La, the pass S.W. of Kanchinjinga, thus practically completing the high-level tour of the group. The "19,000-ft. gap," which would lead from it to the Zemu glacier, looks exceedingly steep and difficult on the S. side.

After the storm the weather was continuously fine, and the photographer had a good time, as the mountains were

generally clear. After our arrival at Jongri it turned very cold, and even in the valleys at 12,000 ft. all the lesser streams were frozen, and the boulders in the main torrent hung with icicles all day.

‘ We returned to Darjeeling *via* Pemionchie on October 25, after a seven weeks’ tour. I will only add here that the scenery of the Sikkim Himalaya far surpassed my wildest anticipations. The scale of mountains, which rise over 27,000 ft. in less than forty miles, is necessarily prodigious, and their variety is extraordinary. The tropical luxuriance of the lower forests is succeeded by abrupt gorges clothed in superb pine, larch, and rhododendron woods. Above these are open pastures of Alpine flowers, and slopes bright with autumn tints and the varied greens of the rhododendrons. And above all soar the great peaks. Bold in form, with fluted sides and ridges built up into snowy crests and cornices, they despise the buttresses that other mountains lean upon. In the Kangbechen valley there are two or three nameless Weisshorns which rise in one icy cliff of at least 10,000 ft. from the valley to their summit; and on one side only is the slope of Kanchinjinga gentle enough to allow névé and hanging glaciers to drape it continuously from base to summit.’

TWO PIONEER ASCENSIONS IN BALTISTAN.

By MRS. BULLOCK-WORKMAN, F.R.S.G.S.

OUR trip into Baltistan was one of those journeys upon which one enters not absolutely equipped for high climbing, or expecting to do very much, but which result in as fair an amount being accomplished as can be expected in one short season. We had passed the summer of 1898 marching in Ladakh, Nubra, and Suru, where seventeen or more passes, from 14,000 to 18,000 ft., were traversed and several third-rate mountains climbed; but we bitterly felt the need of a good guide on occasions when we wished to explore an unknown corner or attack a peak of more than average importance.

For the season of 1899, owing to the prompt and kind assistance of the Hon. Secretary of the Alpine Club, this necessity was provided for.

We left Srinagar for Skardu on July 1, the party consisting of W. H. Workman, M.D. the writer of this paper, and Mattia Zurbriggen.

The usual reasons for not crossing the Dessai Plains, the

shortest and only endurable route to Skardu, were advanced in Srinagar. 'It was too early in the season, we should find from 2 ft. to 3 ft. of snow, the baggage-ponies would fail to get through,' &c. Determined to try it, however, we went to Bandipur, below Fragal, where we learned that the route was open and that we might expect about 18 in. of snow in the plains. The sequel to these gloomy forecasts disclosed a boggy, shifting soil in places for two days on the Dessai, but not a patch of snow.

From Skardu we went to Shigar, where doubts were expressed as to the possibility of loaded coolies being able to cross the Skoro La to Askole thus early in the season. As a word of warning to Alpinists and sportsmen bound for Braldu, I will say the only practical road after July 1 is the three days' march up the Askor nullah over the pass to Askole. The lower path will take loaded men under a good leader five days, and is a series of dreary ups and downs the monotony of which is broken by frequent river-crossings over rope bridges, not always in the best state of repair. I mention this as the natives of the village at Askor nullah call it three marches, and habitually take six days to make it. Having exploited the intricacies of the famous rope bridge connecting Askole with the civilised world, we landed our kit at this village fourteen days after leaving Srinagar.

Three days here sufficed to gather our force of fifty coolies under the *lumbardar* Kinchin—a shivering, cringing rascal whom Zurbriggen had never seen, although he is the possessor of a *chit* of recommendation from Sir Martin Conway. The Conway certificate has very probably been served up by different *lumbardars* for inspection to the stray sportsmen who have chanced to reach Askole in the last eight years.

It is not my intention here to describe our highly interesting trip of eighteen days up the Biafo Glacier to the top of the Hispar Pass and back to Askole. Ours is, I believe, the first expedition to it since Sir Martin Conway's descent of the glacier in 1891. Zurbriggen reports the changes since then in the lower part as very great. It is much more broken up, and the first three marches through the seracs differed essentially from the line of march formerly adopted, and proved a difficult and irksome task for even lightly loaded coolies. Further on the essential differences were chiefly those of weather. We had snowstorms in no mean numbers, and were delayed several days at both Boggy and Ogre camps; but two or three gloriously clear days met with after leaving the latter bivouac enabled us to secure many views of peaks and

side glacial valleys, not previously photographed. This was also the case on Snow Lake, the boundary peaks of which were all visible. It was also possible to photograph the Hispar peaks from the pass, where we had one cloudless day, followed by one of howling storm, when the elements held high carnival on the upper Biafo.

Our pioneer work of the summer was done after our return to Askole, in the Skoro La range, and later in the Shigar valley.

We left Askole, with thirty coolies, on August 3, for an exploring trip in a circle of snow peaks adjoining the Skoro La on the E. The first day the nullah leading to the Skoro pass was ascended to the limit of wood, where a camp was made at 14,400 ft. As the different peaks came in sight on our way up, we selected a beautiful silvery horn directly to the E. of the pass for ascension, and determined to push for it the following day; accordingly, with extra wood coolies well laden, we set out across the base of the Skoro La glacier, and followed up a line of high lateral moraine for several hours. As the route became steeper and rougher, and the environment every hour more glacial, the coolies began to beg to return. Of course we refused, and finally threatened them with our sticks. We had had such scenes almost daily on the Biafo glacier for two weeks, and they were to continue to the end of our journey. Climbing a mountain in the Himalayas is not always the most difficult part of the work. My mountain work has not been easy this season, yet I have met with no hard stretch which has not proved a simple task compared with the frequent struggles undergone to induce coolies to go to where our camps for mountaineering had to be pitched. The coolies on this trip, as on the Biafo, were under the leadership of the *lumbardar* Kinchin, who on no occasion or emergency showed himself useful. Having made clear to the men that we had come there to go on, not to turn back, we continued over moraine to the beginning of a large glacier to the left of the peak we wished to climb. This we hoped to cross that day, making an ice camp ourselves, and trusting to the shelter of some overhanging rocks we saw on the other side for the coolies. As we headed for the ice, the coolies began to clamour and remonstrate, finally refusing to continue, and throwing down their loads. In vain we told them they should have rock shelter on the further side. Seeing they could not be persuaded this time, we decided to encamp where we were on the edge of the glacier.

There on a moraine ledge, just barely safe from the falling boulders from a huge rock peak opposite, we made them build up terraces for our tents. We expected to remain two nights at most on this airy perch at 16,200 ft., but before our two peaks were accomplished five or six nights were passed at Avalanche camp—it becoming, indeed, a sort of rendezvous for *dâk* men with mails, provisions, and wood. The situation of Avalanche Camp was unique, and in every sense of the word what the German language would call a ‘Hochgebirge’ one, which expression admirably conveys the overpowering presence of snow peaks, the silent sweep of glaciers, and the thunder of stone avalanches all in a word. Our ledge of tents was as a tiny footstool to the great white fall of séracs that streamed in glittering masses from two great snow kings to the edge of the hemmed-in moraine. About the glaciers towered a peerless circle of six snowy peaks, resembling on a grander scale the Zermatt favourites seen from the Gorner Grat. Downward from camp only moraines, the lower Skoro La glacier, and barren mountain flanks were seen.

At five the next morning, accompanied by two of the more valiant coolies as porters, we started across the glacier leading to the base of the desired peak. We took a more direct and difficult route than would have been chosen had the coolies consented to go the afternoon before. Some guides would certainly have been puzzled and doubtless have lost a few hours in picking a path through the intricate mass of séracs that confronted us. Not so Zurbriggen; he led us in and out and over them as if a path had existed, and was not for the first time being made. Mountain instinct seemed to lead him the quickest way through the great ice blocks that often cut off the view of what lay beyond, and, before we thought it possible, in less than three hours we had passed the séracs, and were ready for a light breakfast on a sloping snow plateau. Passing the plateau we ascended some rather steep snowy slopes of the main peak. Above these we had our way to pick over rock slabs for an hour or more, when the final snow arêtes began. These led past a lower rock to the chief long narrow summit, which is a fairly firm snow cornice. Our porters, who had been complaining of their heads and begging to return during the last thousand feet, unloaded and went to sleep at once.

We were five and a half hours from camp to the summit, which, taking the average registered by two aneroids, one a Watkin patent scaled to 24,000, the other a Carey scaled to



Mrs. Bullock-Workman, photo.

THE SIEGFRIEDHORN

Swan Electric Engraving Co.

26,000 ft., measured 18,600 ft. The view was very fine, particularly toward the north and east, where Masherbrum was clearly seen raising its great white ramparts heavenward, and beyond ridge upon ridge of the unnamed wonderful heights of Karakoram and Hunza, Nanga Parbat, as usual partly veiled in cloud, were but imperfectly seen. Toward the south the monsoon influence was distinctly observable in the murky atmosphere and heavy rolling clouds, while toward Askole and the Biafo the sky was nearly cloudless. We made the porters build a strong cairn on the rock summit, about 30 ft. below the snow summit, in which we left cards bearing names of climbers and a record of the ascent. We named the mountain the Siegfried-Horn. It is a most interesting peak to climb, and for its height the easiest I have made in the Himalayas. We had a good deal of soft snow going down, particularly on reaching some stretches of névé, and had to look out sharply for unseen crevasses.

We had to remain two days at Avalanche Camp after this ascent waiting for weather and for Zurbriggen to find out about a difficult passage he wished to get our coolies over, *en route* for a higher camp. We intended to climb a fine white cone, the fifth remove from our first, and one of a trio of peaks which we called the White Fates. A glacier tremendously crevassed and broken into a thousand huge séracs fell very abruptly about half an hour's climb above our camp, like a petrified waterfall. Col. Godwin Austin speaks of a glacier seen from the Skoro La which appears to be this one. To quote his words, 'this glacier, though not of the largest size, is a very perfect specimen, running up to an elevation of 19 or 20,000 ft., toward the high peak Trans-Indus 13, or Mungo Gusor.' Although the glacier referred to seems from position and appearance to be this one, the height to which it rises is surely over-estimated, 17,500 ft. being nearer the actual figure. It does also descend from near a remarkably fine abrupt snow peak of about 21,000 feet, which, however, is not placed on the survey map in a position relative to that of peak Mungo Gusor.

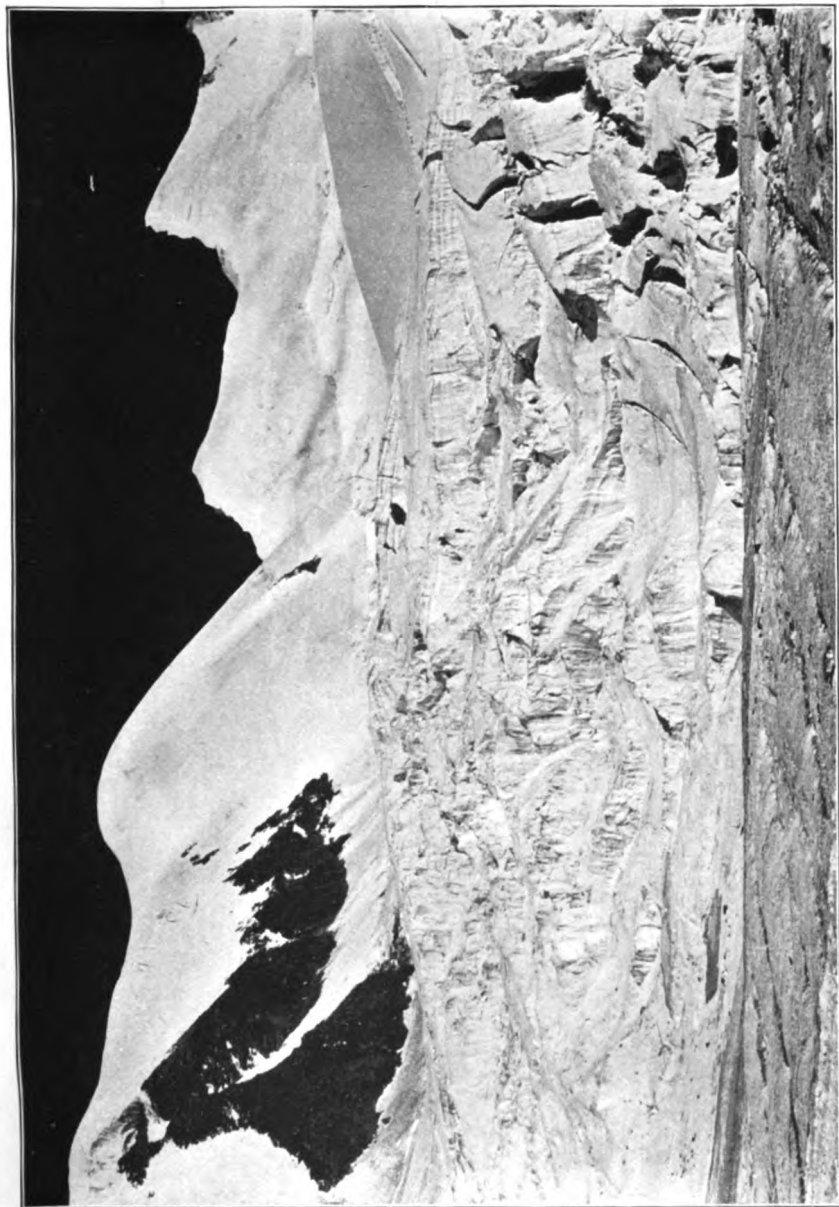
To go ourselves over this would be bad enough, but there was no chance of bringing coolies through. To get around it on the right meant a long *détour* of glacier walking, also undesirable with coolies. On the left an exceedingly steep talus of loose stones from the high rock peak must be ascended, and then a sharp rock shoulder, open to falling stones from above, traversed. These were the only routes upon which to start for the desired peak, and Zurbriggen went to see if a passage

could be expected. We had decided from the summit of our first mountain that if we could get over these difficulties it would be possible to encamp on a bit of moraine-covered glacier under the peak.

He returned with the news that with a few lightly loaded coolies we could get over the place. So the order was given to have a certain number of the younger men ready for the day following. After we had crossed a few moraine hummocks and got well to work on the steep talus—which certainly was one of the most disagreeable places of its kind I have contended with—the coolies began to call out to us to stop. This not affecting us, they threw down their loads and followed us as quickly as the shifting soil allowed, begging and chattering. It was not to be wondered at that they did not like their task. The route of march was not at an angle of 45° or 50° —that would have been play—but is best described as straight up and down; and for every two steps forward we slipped backward in stones and rubble at least one.

We had, however, to be firm here, for if they were coaxed over the talus we felt sure we could get them over the very nasty looking shoulder above. As examples, Zurbriggen and I plodded on ahead, while the sahib and bearer explained to the coolies that all difficulties were speedily to be ended; but explanations only made them more garrulous and no loads were resumed. As a last resort the sahib began to bombard them vigorously with stones, which lay plentifully at hand. After several of these had found their mark, and many more whizzed over their heads, the coolies came to the conclusion that the business had become serious, and, as they were still within easy range, they had best resume their loads, which they accordingly did, and the train slowly continued its upward march. Their fears were again aroused when we came to the rock part, where we were on an abrupt rock edge, and for fifteen minutes in the utmost danger from falling rocks; but we simply rebuked them sharply, and they went on. We had both seen and heard the rocks tearing over this place at all hours on the previous days and nights, and knew that it would be luck if all escaped them at this time. But we did, even to the slow moving coolies. After that the exceptional difficulties of the day were over. At base of the mountain we reached the spot on the glacier which had been selected from the Siegfried-Horn.

This was the best high camp we found on our journey. It was on ice, of course, but level, and when covered with stones



Mrs. Bullock-Orkman, photo.

THE WHITE FATES; HIMALAYAS.

Swan Electric Engraving Co.

from the moraine by the men made a flat comfortable surface for the altitude, 17,400 ft. We made an early start for the peak, accompanied by two hobnail-booted coolies as porters. They were becoming fairly expert in placing their feet in the large steps cut by Zurbriggen, but they had to be constantly watched and admonished as to keeping the proper length of rope, and caused us continual anxiety. It certainly was far from pleasant, on a sharp ice-slope overhanging a basin 1,000 ft. below, to hear Zurbriggen constantly calling to the coolies to move with care, and to let out their rope, adding each time that if one mis-step were to be made we should all perish. These admonitions, made partly in English and partly in German and Hindustani, failed to impress our attendants, who in a most critical place sat down to take snow out of their boots. As we were on the shady side of the range the cold was rather severe for about three hours, when the sun reached us. There was no rock work, only successive steep snow slopes, until the last arête, which rose at a height of about 400 ft. at an angle of 60° or thereabouts. We were $4\frac{1}{2}$ hrs. from glacier camp to the summit, and had good appetites for our breakfast on the top, 19,450 ft., and except for some headache and loss of breath on sudden exertion, suffered in no way from the altitude. Although quite useless to future climbers, we left our cards inscribed with record and name given to peak, Mount Bullock-Workman, in a jar in the snow.

We had not expected to find the view so uninterruptedly beautiful and extensive as it proved. To the N.E. Mount Godwin-Austin was seen grandly and without a cloud, as were Gusherbrum and the more distant Golden Throne. All the great castellated rock peaks and snowy giants of the Biafo and Hispar regions lined themselves against a pure cerulean background for our farewell inspection, and the peerless Nanga Parbat, of cloud renown, filled the whole southern horizon with golden beauty, her towery summit rising to meet the deep blue of a perfect sky.

The top of our mountain consisted of a long crest of driven snow, so narrow that two persons could not more than comfortably stand abreast on it, the only access to which was at the N. end, by which we approached. On the W. the slopes ran sharply down to the glacier, while behind and on the E., by leaning over the edge, we could look down perpendicularly several thousand feet upon another important glacier, which swept far away to the E., winding its way among high peaks, which sent large feeders down to the parent stream. This

glacier ended in a valley nearly opposite the Biafo. From Mount Bullock-Workman the glacier may be seen in its entire course. If I am not mistaken we are the first to see nearly the whole of it. Its lower part is indicated on a survey map, but not the upper half, where it makes a sudden bend, running its long white course to the eastward until lost to view behind the escarpments of wild intervening peaks. This great ice river, with its attendant peaks, was most alluring, and filled us with a strong desire to make a reconnaissance of its untrodden mazes. The ascent of this peak



ON THE TOP OF MOUNT BULLOCK-WORKMAN.

gave us another and a different point from which to study and photograph the glacial beauties of the hitherto unexplored Skoro La range. I neglected to mention above that on the Siegfried-Horn and Mount Bullock-Workman we had a temperature of 54° and 56° F. respectively between the hours of 10 and 11.30 A.M. My pulse at 17,200 ft. on the Siegfried-Horn was 90, at summit, 18,600 ft., 105. On the second peak we were so absorbed with aneroids and cameras that we omitted to take note of bodily conditions.



KOSER GUNGE.

THE FIRST ASCENT OF MOUNT KOSER GUNGE OF THE SHIGAR VALLEY.

BY MRS. BULLOCK-WORKMAN, F.R.S.G.S.

FACING the village of Shigar to the N. is a grand snowy mountain of 21,000 ft. Properly speaking, it is a great *massif* of domes and jagged ridges; the real summit, lying backward, is but faintly seen from the valley. A lower peak of the same range arrests the eye from Shigar, where it is the dominant motive in the landscape. None of the inhabitants appear to know the name of the group, given on the Survey of India map as Koser Gunge.

Returning to this valley after our climbs in the Skoro La range, we decided to try for a first ascent of this peak. Kashomel, one march from Shigar, is obviously the starting-point for the lower summit; but this was not our goal. It would have been a fairly easy matter, as Zurbriggen said, to start on a straight course and grapple with that; but the other peak, lying behind in unbroken snow-fields, was the one to be investigated, so we went on a half-march to Yuno. From here 5,000 ft. of steep grass and earth slopes, followed by nearly 6,000 ft. of sharpest rock wall, end in a jagged arête, above which a small part of a snowy height is seen. The Shigar peak, separated from this by a rocky shoulder and a glacier, is also visible and much to the front. The mountains run so high and the Shigar valley is so narrow that it is quite impossible to make a satisfactory near inspection of any peak without deliberately attacking it. Zurbriggen crossed the river on a *zak*, and spent some hours studying the group from the other side. He made up his mind which was the real peak, but could not see well enough to determine how long it would take to reach it from the rocky edge 11,000 ft. above us. The route was clearly from Yuno up the meadow slopes, and then wherever a foothold could be found over the rocky wall to the arête.

During the three days' wait for coolies to be gathered from the villages, we studied with Zurbriggen this stony fastness, with a view to our high camps. A grass ledge at what we judged to be about 15,000 ft. was chosen for a first encampment. Through the glass, water could be seen in a couloir, and wood was not far below. The second camp only one with the explorer's instinct and knowledge could have selected from the valley. This Zurbriggen did, and far up beyond rock precipices, on what looked like a shelving stony talus,

he said we should find a sort of plateau. This was, we judged, at a height of about 18,000 ft. Leaving our valley tents below, we started one rather uncertain morning on the search for the hidden peak. Owing to the nature of the trip the *lumbardar* had been told to gather coolies from the youngest and strongest men of the valley. Unfortunately, when the applicants for loads appeared, Shigar centenarians were found well to the front. There was, however, no time to lose in changing, it being after August 15, so the ancients were allowed to shoulder their burdens and proceed, which they did with exceeding slowness. Beyond some grumbling, the old men did a fair day's work, and landed our boxes after 7 hrs. good climbing on the grass knoll previously selected.

Towards evening the clouds moved off, and a bright moonlight sky argued well for an early start to the rocky land above. We had a wonderful view of the great Nagyr Peak, Raki Pashi. To the N. by N.W., in a gap of the Shigar range, it rose like a tall silvered tent, a moonlit Walhalla, built for the god-spirits of matchless Himalaya. At sunrise the heavens were radiant, but shortly after misty clouds floated in, covering the great dome or lower peak, and also completely cutting off a view of the route we had to take. Between 8 and 9, when we hoped for improvement, rain and wind set in, and all hope of striking tents that day was abandoned. By evening things looked more promising; the great rock battlements unfurled themselves, to our dismay completely frosted with fresh snow. The night was fine, the following day again uncertain, with more light snow above, which on the snow-fields higher up meant, of course, a deeper accumulation. Two days thus passed bringing little hope. Coolies went to Yuno for extra *rasal*, and we climbed up and down the grass slopes for exercise and recreation.

On the third morning our Watkin patent took a leap upward, and Zurbruggen, in a moment of elation, although the weather was far from promising, decided to scale the as yet untrodden rock route and see for himself what the next camp was likely to offer for a halting-place. Off he went with ice-axe and no mackintosh. About 2 hrs. after his departure a *bourrasque* of wind nearly unpinned the tents, and servants were kept busy tightening ropes and bringing stones. This was followed by a sharp hailstorm, and down went the Watkin aneroid. With all made snug and ready for sudden action we ate a rather mournful lunch, served by

the shivering bearer. As the hail bounded off the tent-top and the wind gusts made the poles creak, pictures of Zurbriggen sitting behind a rock or in a cold couloir at 18,000 ft. passed before our eyes. That he must be cursing our best and favourite aneroid could not for a moment be doubted. A few long reverberant strains of thunder were followed by a short downpour, and silence reigned again at camp. Towards 5 o'clock Zurbriggen returned. His descriptions of the weather were not conducive to hopes of an early ascension. He said that without gloves or heavy coat he had never faced such cold, or been so near to being frozen, and even affirmed that on his reconnaissance trips to Pioneer Peak and others the cold had been mild in comparison.

The fourth morning broke cloudless, and, contrary to the rule, was still fine towards 8 o'clock. The sun burned warm upon the whole range, rapidly melting the snow. Tents were struck as soon as it seemed safe to start, and the coolies called. They came slowly and stood about limply, eyeing their loads. They were several times ordered to shoulder them, but only a few made a pretence of so doing. The centenarians, who were to remain behind with the heavier baggage, were voluble, and appeared to prevent the younger men from taking up their packs. The servants urged, but still they demurred. Talking and explaining, with threats of non-payment, proved unavailing. They would not move, and finally, taking away their cords and loudly giving vent to their feelings, one and all made off down the mountain side. It was determined that, rather than give up, Zurbriggen, the private coolie, and under tent servants should carry up a small tent and blankets to the next camp, returning for us that night.

Just as preparations for this were being made, the Yuno *lumbardar*, with some food coolies, appeared on the scene. From him we learned that the recreants were sitting on a lower spur not far away. We had offered them already a good *bakshish* if they would go, but now a larger one was suggested. After further parleying and promise of a reward far beyond their possible deserts, it was arranged that thirteen of the young men should go, and so at last we left for camp number two.

It was a stiff climb, and difficult to get the coolies, lightly loaded though they were, over some of the sharp shelves and rock towers. By 4 o'clock we were on the very spot selected from the valley 11,000 ft. below. It was not a place for a long stay, but we were glad even of this wind-swept sloping

plateau on which to build small tent-holds, for above there was no shelter, only the bare wall followed by a long ragged rock shoulder which led to the great arête bounding the unseen snows of the main peak. Water was found in a couloir, thus obviating the necessity of melting snow. Our bivouac was 17,900 ft., approximately at the height Zurbruggen had decided in the valley that it would be. Considering the height and the surface of loose stones, the minimum temperature was not excessively cold, being 12° of frost. The morning came fairly clear and rather windy. As a whole, the weather looked propitious, although the barometer was not very high, and it was agreed we should start. Our porters, this time, were Kashmiris; one, a tent servant, had been recommended by a British officer as being able to withstand rarefied air well. He had been duly supplied with extra clothing and ammunition boots, but, up to date, had upon all occasions when his special services were required been ill from over-eating. The other was my private coolie, whose services I had always scorned above 17,000 ft. when Baltis were to be had. As he professed his ability to go, and the choice lay between him and the half-clothed Shigar men, it was decided to take him along. They both walked well in the mountains; it was simply a question of their holding out against cold and altitude.

The first 1,200 ft. above camp consisted of some almost perpendicular rockwork on the wall, followed by the escalade of the ascending arête leading to the horizontal one, which rose as a pointed crest between us and the chief peaks. It was rough rock scrambling, now crawling along a narrow ledge with great abysses beneath, here through a slippery chimney, and back to the ridge, where great overhanging boulders next demanded attention. It was not quick work at that altitude, and these rock gymnastics took full 2½ hours, when, after surmounting the narrow jutting horizontal arête, we found ourselves in a broad snow basin.

We had hoped we might see something of the summit from here, but such hopes were fallacious, only a long slope leading to another ridge was visible from the basin. We stopped for a short breakfast. It was already very cold at 19,000 ft.; the sun shone fitfully and great clouds were rolling towards the peaks of the opposite side. The weather was not really bad at this point, although suspicious and suggestive of a difficult, cold ascent of the snowy parts. The wind blew hard in our faces from the first touching of snow, and the traces of the recent daily storms were apparent in the soft snow, 4 in.

deep, we encountered on the first slope. On reaching the first ridge there was no summit in view, only a shoulder to traverse and another much sharper slope. The snow grew deeper as we ascended, being there well over the tops of mountain boots, but the foundation was thus far good—not of ice. This slope led to a tremendous arête rising at an angle of some 60° , and turned so as to put us more directly in the teeth of the wind. The cold was growing intense—not so much because of the 10° of frost as because of the chilly, strong wind—which, combined with the rarefied air, made progress very slow. Clouds were covering most of the more distant peaks, and the outlook was for storm, but no one spoke of retreat; we had worked too hard to do that, unless absolutely driven to it. And still there was no peak.

At 12 noon we had reached 20,000 ft., and every step was in snow to our knees. Beneath this snow was now solid ice. Every step had to be trodden out by Zurbriggen, and the waiting for this in the increasing wind and snow storm—for it was snowing—was more than bitter. The lifting of one's feet from one knee-deep step to the other was accomplished with panting caused by wind and altitude, and seemed a *tour de force* each time. We could not stop for food; even the chocolate and stray kola biscuits some of us had in our pockets were hardly procurable with half-frozen fingers.

I called to Zurbriggen that I must change my gloves, as I could no longer feel my ice-axe. The loudest call was but just heard by him at the end of 30 ft. of rope. In place of my fur-lined gloves he tied on some rubber mittens that in time restored the circulation. We came to a knife-like edge from which the gale beat a blinding snow-dust into our faces, and there we saw just emerging from mist the final peak—a tall snow cone with a rounded blue ice cornice. It was still a long way. We had to descend into and cross a small snow lake, then ascend a sharp slant before reaching a snow plateau at the base of the peak. It seemed an interminable, nay, impossible distance in that howling storm; but who would now be prudent and return, except possibly the porters, who were not consulted. We crossed the tiny lake and attacked the slant, which from its steepness had to be climbed in zig-zags, a not agreeable process with the icy foundation still a feature of the climb. We had been going backward from the rock face, and crossing great snow areas by no means represented in the actual height, from 19,000 ft. to 21,000 ft. As I afterwards remarked, Koser Gunge is not simply a peak to

be climbed, but a great mountain scheme of endless ridges, slopes, and domes.

On this dangerous incline, where the wind was whirling snow-dust over our heads and threatening to tear off every strap or scarf not bound like iron, the endurance of a Kashmiri found its end, and the sickened second porter sat down, turning his back on the roped cavalcade. I felt a tug of the rope, and, looking up, saw Zurbriggen, with icicles hanging from his beard, waving his hands and vociferating loudly. He came down a bit, and I called, 'In mercy's name don't stop here!' 'Stop here!' he cried. 'Never! It would be death! The coolie must go on or be left.' And then came his usual 'Donnerwetter!' with the peculiar lengthening of the first syllable, which is his characteristic ejaculation at all times of emergency. He shouted the order, 'Go, or leave the rope!' which was repeated by the other two to the coolie. For a minute or two nothing was done, and we told the other servant to take what he could from the coolie and unrope him. He shivered and pointed to his legs, and we saw that he was too dazed and weak to carry more than his load of cameras. It seemed hours, and was actually some minutes, before the coolie was released, and we saw him crawl downward, shambling into the deep steps, and taking our extra coats and food in just the wrong direction. Numb almost beyond power to move after the halt, we continued on, conquering foot by foot through the relentless storm the height so long wooed and so hard to win.

We reached our goal about 3 o'clock. The aneroids registered, one 100 ft. under, the other 150 ft. over 21,000 ft. The glass read 17° of frost. On the blue ice cornice of Koser Gunge all the four winds of heaven seemed to be holding an Indian *tamasha*. It was no place for us, weak and frozen to the last enduring point, to stop to reflect, or try to leave notes, which would have been swept off as soon as deposited. All the pleasant things we did on our other peaks, such as breakfasting and particularly photographing, had to be left undone. There was not even a pipe for Zurbriggen. The view we had to a certain point on the ascent, but the grandeur of it from the white king top must be left to later climbers to describe. The white dome so enticing from Shigar village we looked down upon from the real summit by about 500 ft., as nearly as could be determined through the shifting clouds. Our work was of the hardest, and our visit that of the birds, but none shall say that the first ascent of Koser Gunge, noblest of Shigar peaks, is not ours by well-earned right.

It was a matter of regret to us that we had not a hypsometer, and that the third aneroid met with an accident at the beginning of the trip. The other two, however, showed themselves at no time particularly erratic. The Cary would register about the same as the Watkin patent at 14,000 ft. After 17,000 ft. the former began to lose on the latter, and registered 100 to 200 ft. higher, according to the altitude attained. At Skardu, four days after the ascent of Koser Gunge, the Watkin patent indicated 30 ft. less than Casella's standard mercurial barometer. This was observed to be the case in other stations where comparison was made, the aneroid invariably indicating a less altitude than the mercurial.

The descent over the steep ridges and slopes to the boundary arête was not rapid nor easy in the still raging sleet-storm. After the hours of upward climb there were two or three of downward pull before we came to a place where a short meal could be taken. This was on a snow plateau, where we found the coolie trying to keep warm behind his load. Even here there was no rock or sérac to protect us while we sat for a few minutes with ulsters wrapped over our heads. We were 18 hours out and back to camp, a good two or three more than we should have been in fine weather. The effect of rarefied air was, as usual, distinctly noticeable upon the two of us when moving above 18,000 ft., but we undoubtedly suffered much more than we otherwise should have done because of the severe exertion required to overcome the resistance of the high wind and snow. Mountain sickness we did not experience, and I am quite sure that, apart from the natural difficulties of the mountain, the summit could be comfortably reached on a quiet warm day. It is, however, a peak which Zurbriggen says, under certain conditions, could not be climbed at all. If, for instance, the long slopes, ridges, and peak were frozen and icy, so that each step had to be carefully cut, time would fail for even the most expert guide to reach the top in a day. So, perhaps, after all Koser Gunge in a storm is better than Koser Gunge not at all.

THE EXPLORATION OF THE FURGGEN RIDGE OF THE MATTERHORN.

By GUIDO REY.

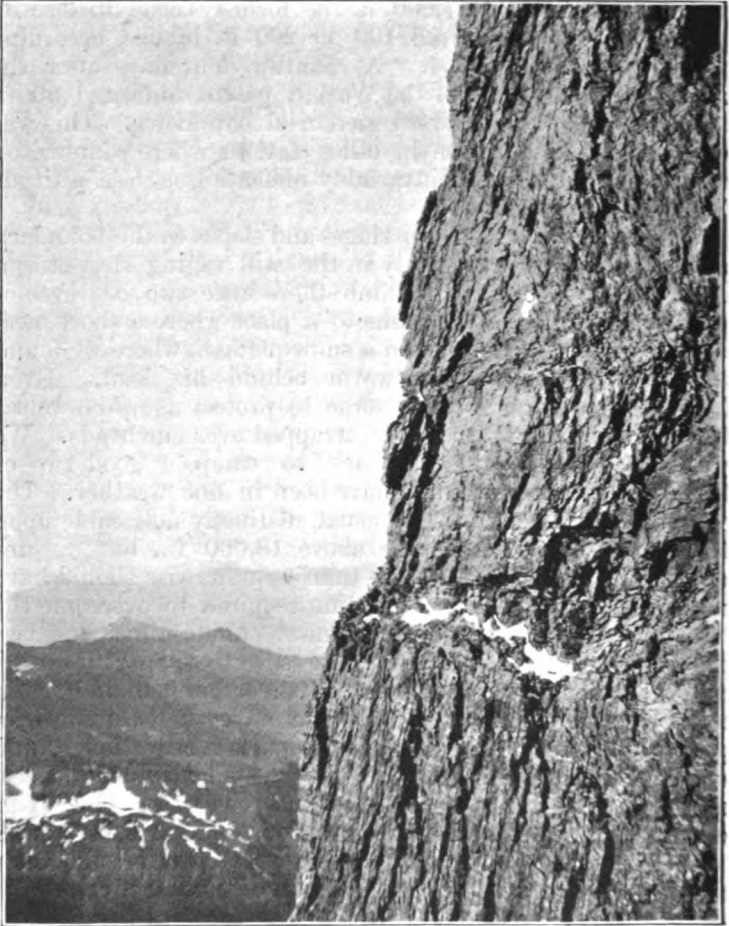
ON August 24, 1899, I started at 12.40 A.M. from Breuil, with Antoine Maquignaz as guide and Aimé Maquignaz as

VOL. XX.—NO. CXLVII.

C

18 *The Exploration of the Furggen Ridge of the Matterhorn.*

porter, and arrived at the Breuiljoch at 4 o'clock. After a little rest we attacked the ridge which descends from the Matterhorn direct to the Breuiljoch, and is called the Furggen ridge. The very commencement of the ridge presents some



THE FURGGEN RIDGE OF THE MATTERHORN.

difficulty, and could not be passed if the rocks were covered with ice. We, however, found them in very good condition. This pass is rather on the south (Italian) side of the ridge, and when we crossed it we found ourselves upon the

actual ridge, and continuing on this ascended as quickly as we could, as we were much exposed to stones falling from the upper rocks of the Matterhorn. (In 1890 I had experienced on the very spot a 'cannonade' which lasted some hours and forced me to return.) At 10 o'clock we reached without difficulty or danger the highest buttress of the ridge well seen from Zermatt and from Breuil. This point may be called the *Epaule de Furggen*.

I may add that Mummery in 1880 reached this point, and from here began the traverse which led him to the Hörnli ridge.

From this point began the real difficulty of the ascent. I knew that it would be impossible to ascend without the aid of a long rope placed higher up, about half-way from the summit of the Matterhorn, as the rocks, which are very smooth, above the 'Epaule' become nearly perpendicular, and in some places overhang.

Therefore I had sent a party of men, led by David Maquignaz, to the top of the Matterhorn by the usual route, while we were resting on the 'Epaule.' This party descended from the summit down the Furggen ridge for about 85 to 90 mètres, till they found it impossible to continue the descent. There they fixed a long rope, letting it down to the place where we stood, which was 8 or 10 mètres below the Epaule.

Making free use of this rope, I and my men ascended some 80 to 85 mètres. During this ascent we found only three or four places where we could place our feet firmly and take a short rest. This portion of the ascent took us two hours. We thus arrived at a little platform where there was a small patch of snow. From there we could see at a little distance (about 12 to 15 mètres) the heads of David Maquignaz's party.

But though the actual distance was not great, it was an overhanging wall of rock which separated us. We proceeded a few steps to the foot of this wall. Antoine tried to pull himself up by the rope (I refer to the rope fixed by David). This proved to be impossible, for the rope swung far from the rock under the weight of his body. We asked David to send down a knotted rope. He at once prepared this and sent it down. We made another attempt, but without success, as it was impossible to fix the rope at the foot of the wall, and the oscillation rendered our efforts to climb it useless. Had David brought a rope ladder we should in all probability have been able to ascend that rock face, and thus easily to have reached the summit.

We were, therefore, obliged to turn back. It was 5 o'clock in the afternoon. David and his men left their places, went to the summit, and descended to the Hörnli. Antoine and Aimé and myself conquered the difficult bit of 80 mètres, fixing, however, our own ropes, and descending by them. We climbed down the Furggen ridge all through the night—of course very slowly—arriving at Giomein at 9 A.M. on the morning of the 25th. I reckon that the point reached by us in this attempt is about 105 mètres below the summit.

Two days later I again left Giomein, and having slept in the Italian hut ascended to the summit.

At 9 A.M. on the 28th my guides and I began to descend from the summit by the Furggen ridge as far as the place reached by David's party on the previous occasion. From this point we managed to descend a few mètres further. We were then stopped by the well known overhanging wall. We here fixed a rope ladder, and by its means I descended the wall to the point that we had reached in the attempt of the 24th, and even went a few yards lower. I then reascended by the same ladder.

Thus I had touched every point of the Furggen ridge, and the exploration of the same was complete. Having reascended to the summit without difficulty, we hastened down by the Hörnli ridge, and, crossing the Furggen Pass, reached Giomein the same evening. When we left the summit of the Matterhorn it was about 2 P.M. The weather was very bad, and snow and hail were falling.

On this second excursion I had with me both David and Antoine Maquignaz.

My explorations demonstrated that the Matterhorn can be ascended by the Furggen ridge by using ropes and ladders fixed from above. I wish, however, to state that the ascent of the last bit is a very difficult one, even with the aid of ropes, and that the lower part of the ascent nearly always presents great danger from falling stones.

AT THE BACK OF THE TITLIS, AND OTHER PLACES.

By W. C. COMPTON.

IT is said, if I remember rightly, of one of the earliest mountaineers whose climbs have been recorded, that before attacking his first great peak he had led his flock to

'the back side of the desert' which lay at the foot of the district he was later to explore. The present paper deals with explorations at the 'back side' of several well-known points, but the districts themselves may almost be described as 'desert' for any attention they have received from the general body of those who seek their pastimes in the Alps. It is to the back of the Titlis, the back of the Sustenhorn, the back of the Grimsel, the back of the Furka, and the back of the Gotthard that the readers of this article will be taken.

And first let us ascend the Gadmenthal (at the back of the Titlis) from Meiringen, or the Meienthal (at the back of the Sustenhorn) from Wasen—both easily accessible and well-known spots—until we reach, at the foot of the last 1,300 ft. of the Susten Pass, on its W. or Bernese side, the little chalet-inn emblazoned with the legend 'Hôtel de Stein.'

Here a week or fortnight may very well be spent at the beginning of a season. The inn is rustic and its accommodation simple; but any notions we may have picked up before arrival that the simplicity may extend to discomfort or deficiency of supplies are soon dispelled, and the spot deserves, for its indoor comforts and the attentions of our youthful hostess (not to mention the very modest reckoning presented on the eve of our departure), as well as for the excellent training afforded by its interesting excursions, to be much more patronised than it has been as a climbing centre.

I spoke of a week or fortnight at the beginning of a season. The reason for this will be evident when it is seen that the excursions are most of them short; and, indeed, the most attractive expeditions may be made without starting in the dark or even getting up much earlier than one desires when rest and change are more the object than the maximum of physical endurance; whilst the climate at an elevation of some 6,000 ft. (1,860 m.) possesses, owing to the close proximity of vast fields of ice, qualities that are ordinarily to be met with at an altitude 2,000 ft. higher.

If I have now succeeded in enlisting the reader's interest in the spot commonly called Stein, let me proceed to describe some of the rambles it offers. And in doing so I would disclaim any great originality. Most of the expeditions we made last August had been recorded in the book at the inn, and may be found scattered over the pages of this Journal and that of the S.A.C., to which references will be made. In one or two cases we struck out on lines of which the first

record appears to be our own ; * and in the case of another group—the Fünffingerstöcke—I hope my friend Valentine-Richards will contribute a monograph, touching on topography and certain matters of controversy, to the next number of the Journal. In the present paper the controversial details, in which we believe we have proved the map to be in need of revision, will only be alluded to so far as may be necessary in order to make the narrative intelligible.

On August 14, after an idle week in the Maderanerthal, being reinforced by the arrival of Abraham Müller, sen., from Kandersteg, we made a start for the group of Fünffingerstöcke to our N., having been interested in what we could see from the Meienthal on our approach from Wasen the Saturday before, and what we had read in the book at the inn—a fund of interesting literature which some weather-bound enthusiast might some day collect into such a volume as the well-known one of Mr. Larden at Arolla.

We did not get off phenomenally early, and had a delightfully open mind about what we should do. Our object was a reconnaissance in force. Without difficulty or haste we ascended the hillside to the W. of the Oberthalbach to its source in the glacier bearing the same name. Here the rope is put on, and we thread our way between crevasses towards the Ober Heuberg and the E. side of the eastern branch of the glacier. We are soon in an amphitheatre of aiguilles, the Ober Heuberg to our right, the point marked 2,831 (Siegfried map) on our left, and the ice-fall before us, rising steeply to the higher points forming the group of Fünffingerstöcke which divides the Oberthal from the Wenden Glacier. Three hours of easy going bring us to a snow col in the extreme N.E. corner of our amphitheatre. This is evidently the col described by Mr. Coolidge in the book as reached by him in 1889 † and 1892. From this point we look down upon the Wenden Glacier. The Titlis, with its forbidding black wall, rises close before us—so close it seems that we are for a moment puzzled what point to think it. To our right as we face N. is a very sharp tooth about the position marked as 2,922, and to our left a triple peak which we can only suppose to be 3,002, though our col is to the E. and not (as on the map) to the W. of it. N.E. of '2,922' is a higher crag (3,036), which we had seen when looking up the Meienthal—the monarch of the group, unless it ought rightly to be regarded as a separate estate, and called, as we learn

* *Alpine Journal*, vol. xix. p. 599.

† *Ibid.* vol. xv. p. 72.

Wasenhorn
Titlis
Grassen.

2018

No. 1

No. 2

No. 3

No. 4

2800

2740

Reissend Nollen



Gufersstock.

Sustenloch.

Ueberberg.

A. P. Valentine-Richards, photo.

Swiss Electric Engineering Co.

FÜNFINGELPSTÖCKE FROM SUSTENLOCH.

from Dr. Dübi, the able editor of the S.A.C. Jahrbuch, it was called by a local guide, the Wendenhorn.* For the purpose of this paper it seems convenient to take the four highest peaks running from E. to W., and name them in that order, as Nos. 1, 2, 3, 4, No. 4 being the furthest to the W. and much lower than the rest, though marked on the map as 2,993 m. This point, I venture to suggest, has given the name to the group. It stands at the junction of three ridges, heading that which runs N. and S. between the E. and W. branches of the Oberthal Glacier, and is visible from the valley near Stein, whence its five or six jagged teeth are conspicuous. I therefore hazard the conjecture, inviting criticism, that it is the original Fünffingerstock. But this is a detail that might better be left for the monograph to deal with.

After a pause for lunch on some rocks close to the col above mentioned, we decided that No. 2 (2,922) would make a short and interesting climb by its N. ridge, ending in a good view-point, and, possibly, might settle something about previous work done by Mr. Coolidge and Messrs. Legh Powell and Hutchison, all of whom have left records written in the book of the Chronicles of Stein. A pleasant little climb of 15 min. (or less if the easiest way be selected), with little incident beyond a somewhat difficult stride round a small gendarme near the top, brought us to the summit of our first peak. Here was found the proof we looked for, that it had been visited by Mr. Coolidge in 1892. Of the others named above there was no evidence, though we knew from the book that they had climbed three of the peaks of the group. It would be a nice little amusement for us while at Stein to try if we could come upon their tracks; and should we be able to locate three other points bearing their record (in 1884) we should be able to present Mr. Coolidge with this little peak, No. 2, to which he did not appear to have laid any claims of proprietorship.†

Our stay of 40 min. on the top of the pinnacle allowed of photographs being taken of Nos. 1, 2 and 3, and a careful survey, including an estimate of the relative heights. It

* We are indebted to the courtesy of Mr. Coolidge for the privilege of seeing an unpublished 'Vortrag' read by Dr. Dübi in 1871.

† We have a letter of Mr. Coolidge's, dated December 21, 1899, in which he acknowledges the peak as a 'most acceptable and appropriate' Christmas present.

shall suffice for the present to say that though we were on 2,922 there could be no possible doubt that No. 4 (2,993) was far below us. This stimulated our desire to investigate the topography more carefully, and to improve our acquaintance with some of the other points of the group, both for the sake of the map and in the hope of tracing the ascents of Messrs. Powell and Hutchison. In particular we examined the possible approaches to No. 1, of which we were certain ascents had been made by the above named in 1884, and by Messrs. Kirkpatrick and Hope not many days ago. With this object we descended No. 2 to where our impedimenta had been left, and proceeded to skirt the S.E. corner of the Wenden Glacier, passing two little cols by which a steep descent could be made to the Klein Süstlifirn and the S.W. face of No. 1. Mr. Kirkpatrick's record, however, stated that they had climbed the N. face. So we proceeded in a north-easterly direction, with the cliffs of the N. face on our right, until the glacier began to descend rather sharply to the right, forming a col further on, by which the N. branch of the Klein Süstlifirn can be reached (though not so indicated on the map). Thus far there seemed no possibility of a way up, so we turned back fancying (though, as it afterwards appeared, quite wrongly*) that there must be some inaccuracy about the orientation, and Mr. Kirkpatrick must have climbed by a couloir we had distinctly traced on the S.W. face, which we believed to have been the route taken by Messrs. Powell and Hutchison.† Leaving this for another day—as it appeared rather formidable for a second peak in a first day's ramble—we turned back to the col by which we had crossed from the Oberthal, and climbed the first point of the ridge to the W. (3,002). From here we could see that the remainder of that ridge—two further summits—would take some time to negotiate (as was found by Messrs. Powell and Hutchison, *loc. cit.*), so we contented ourselves with our reconnaissance and returned to our base.

Three days later we returned to the attack of No. 1, starting from Stein at 10.5. It had been wet earlier, and three ominous rainbows prepared us for the ducking of which we were not to be disappointed. However, it now looked bright,

* See p. 81 of this number. We did not then know that Mr. K.'s route had been prospected from the Titlis, and with careful regard for the compass.

† *Alpine Journal*, vol. xii. p. 266. This is confirmed by a letter from Mr. Powell, since the above was written.

and something must be done. No plea of 'having a quiet day' or the 'hopelessness of doing anything in such weather' would go down with the more energetic (and, it must be admitted, younger) member of the party, and so what could be suggested better than the Fünffingerstöcke? For short climbs, training climbs, exciting climbs, impossible climbs, was there ever such a gymnasium provided within two hours of a most comfortable base? The Riffelhorn may enter into competition as a playground for similar occasions; but here we have not one peak, but fifty, some with five fingers apiece. From this it may be calculated by an elementary process known to mathematicians that there must be less risk of encountering broken bottles on the Fünffingerstöcke than on that excellent but often sadly misused tavern to which I have referred.

Be that as it may, we seemed to enjoy the favour of Jupiter Pluvius, for all around were heavy clouds, except to the N. So to the N. we set out, and on reaching the glacier as before, made straight across to a gap marked out by a gendarme of the shape of a Turk's head in a fez, to the N. of the Ober Heuberg. This we will call the Heubergjoch.* It leads to the Sustenlochfirn exactly where the name Ober Heuberg is marked on the map. Crossing this (1½ hr. from start) we proceeded, in a direction E.N.E., to the col connecting the Gufernstock with the point 2,918, named by Mr. Baker-Gabb the 'Sustenlochspitz.'† This col we reached in 20 min. from the last, and made a halt of 20 min. to prospect. We were on a rock ridge with a fairly steep descent to the Klein Süstlifirn before us. At the foot of this wall we could see an icefall we should have to surmount if we were to reach the S.W. face of No. 1. We began to feel doubtful whether our desire to avoid the climb up the Oberthal glacier to our old col, and the descent by that route to our destination, had not led us into a good deal more than we bargained for. However, though we had some little difficulty in cutting our way through the crevasses, we were under the face of No. 1 in 1½ hr. from the last col. It was now 2 o'clock. Hunger had been for some time past drawing attention to the time, but it was not till shortly before we reached the rocks that we found a place at all convenient for a halt. Now came the tug of

* Since the above was in print I have been reminded that this name was already suggested by Mr. Baker-Gabb in the book at Stein.

† *Alpine Journal*, vol. xix. p. 258.

war. Couloirs descend at various angles from the summit, one of which we had observed from No. 2 as the most promising. It is the one which cuts the S.W. face from top to bottom, starting from the notch on the N.W. side of the highest point, and ending in a snow couloir of the usual kind. This couloir brought us in a few steps to the bottom of the rocks. A chimney blocked by an overhanging mass of stone was on our left, leading straight into the main couloir. To the right an approach appeared possible, if after surmounting the first bit of rock we could either make a stride round an awkward corner or get over the buttress higher up. Of this difficulty we had found no mention in the 'Journal,' and concluded that when the couloir had been previously attacked there must have been more snow.* We selected the stride, and found that by making the best use of the available hand-holds it was just possible to reach a fresh footing round the corner, the traverse suggesting the well-known illustration by Mr. Willink, 'Kommen Sie nur.' Many words might be employed to describe in detail our progress up the couloir, with a digression into a chimney to the right—a 'frontal attack' which took Abraham's fancy, but was finally abandoned in favour of a flanking movement to the left. Keep to the left up the main couloir—not the big slanting one that leads far to the left of the central peak—and the highest point may be reached in some 45 min. from the snow. The last part above the notch is quite easy, but the rock as a whole needs care, as it is not absolutely sound. In fact, the material of which these 'back of everywhere' hills are constructed is not by any means the most satisfactory that can be found in the Alps. The Fünffingerstöcke, however, are, on the whole, amongst the best samples, and do not leave much ground for complaint.

The moment we found ourselves on the top the morning rainbows began to take effect. A sharp burst of hail, which almost immediately changed to rain, relieved us of any incipient notions we might have formed of resting on the top. We found the records that had been registered in the book at the inn, and adding our own to the collection—scarcely legible because of the pelting rain in which it was written—set off at once in the hope of getting down the couloir without undue assistance from streams and stones. So loose were the latter

* Mr. Powell explains that his party ascended by 'a very steep and narrow chimney' into 'a second and if anything more difficult chimney' above it, after which easy rocks led up to the summit.

with the aid of the rain that one small one, dislodged by one of the party, and falling on to the top of a fair-sized block, sent that 'shameless stone' bounding down the route we were to follow, with suggestions of the labours of Sisyphus, or, worse still, of experiences that have since been realised by our fellow-countrymen in the presence of the famous 'Long Tom.'

We reached the glacier in 1 hr. 20 min., having taken double the time necessary because of the rain, from which we tried to find shelter more than once. Resisting the attractions of a return to Stein by the Klein Süstlifirn, we ascended the col leading to the Wenden Glacier, keeping No. 1 on our right, and so home by the Oberthal Glacier, through mists which made it difficult to tell our whereabouts, until with great judgment Abraham struck the col N. of 2,831, which is mentioned by Messrs. Powell and Hutchison, and forms the most direct route to the Oberthalbach and Stein. This col is marked by a striking obelisk-like gendarme, to the N. of which a narrow gap leads over loose rock from one arm of the glacier to the other. Our whole descent from the col between Nos. 2 and 3 only took 65 min. We were too saturated with the rain to care to spin it out, and were glad to get our clothes dried—alas! with only too much success, as the midnight labours of the Fräulein next night could testify—and to avail ourselves of the welcome always extended to belated travellers. We had been out for over 9 hours. On a fine day the expedition could have been made with perfect comfort between sunrise and lunch.

Two days later (Aug. 19) we were again out, after another rainy morning, bound for No. 4 of our group (2,993). Starting at 11.30, we climbed the slope to the W. of the Rück (2,250), past the waterfall of the Wissenbach, and by the Unterthal to the W. branch of the Oberthal Glacier. This approach we thought pleasanter than that by the Oberthalbach, though we lost time by taking to the glacier instead of keeping more to the right and making straight for the col beside the obelisk by which we descended from No. 1. Here we again found ourselves in the clouds; but once more Abraham showed his skill both in shooting the little obelisk col, and later also that between 3,002 and 2,993. This we reached in $2\frac{1}{2}$ hrs. from Stein, in spite of our loss of nearly $\frac{1}{4}$ hr. Our object to-day was to discover the record, if possible, of Messrs. Legh Powell and Hutchison, whom we suspected to have ascended Nos. 3 and 4. Their record, indeed, claimed points 2,993 and 3,002, though with some hesitation

owing to the inaccuracy noted by them in 1884 in the map.*

Making our way up the E. arête (of No. 4) for a short distance good rock, we found ourselves forced on to the N. face by a traverse on rocks now far from sound. Every here and there we cleared our way by sending a cannonade of stones down to the Urat Glacier, which seemed to lie almost vertically at our feet. At one point we came to a ledge resembling that on the lower peak of the Rothhorn, but without the good handhold. Soon we reached the foot of the last bit of rock. Below us was a hole or 'Fenster' chimney, which we had to step across to attack a vertical rock face some 20 ft. high, requiring also a long reach to the first handhold. Quite a pretty little climb up this brought us to the ridge, and a few yards along it to the E. was the highest point, with an unmistakable cairn. No bottle or tin was to be found, but on removing every stone carefully we found under the lowest of all a card sodden like a piece of blotting-paper, and bearing no legible traces but the letters engraved '—egh P—.' Here was proof that Mr. Legh Powell had left his card there fifteen years and three days previously, the date being proved by what shall presently be told. The card was solemnly re-interred, accompanied by a record stating what we had found, and the cairn carefully restored. On the S. face the rocks looked easy at first, and almost tempted us to try the descent; but we had some doubt about the possibility of making our way down to the glacier, having a suspicion of a sheer precipice lower down, and our axes and bags were on the rocks at the foot of the E. arête, from which the glacier at our feet is separated by the formidable ridge running S. to the point 2,891. So we retraced our steps, and in 40 min. recovered our impedimenta, saving time in the descent by being under no obligation to prospect or to try the soundness of the rock.

From the foot of No. 4 we made our way over the glacier eastwards to the snow couloir dividing the highest from the central summit of No. 3 (3,002), from which an easy way led up the loose rocks (in 5 min.) to the top. Here we found a bottle with the record of Messrs. Legh Powell and Hutchison, bearing the date August 18, 1884, and the statement that they had climbed the peak opposite—the next to the W.—on August 16. Thus our investigations were completely successful. Observations with a clinometer further

* *Alpine Journal*, vol. xii. p. 266 sq.

showed that No. 4 (2,993) was about 100 ft. lower, and No. 2 (2,922) about the same height as the point we were on (3,002). But this again belongs to the monograph.

* * Climbs at the 'back side' of the other 'deserts' are reserved for the next number.

A WEEK AT STEIN.

BY W. T. KIRKPATRICK.

WELL may it be called Stein, for in truth a wilderness of stones surrounds the little chalet dignified by the name of 'Hotel Stein.' Far removed from road or railway, with no telegraph, no post-office, and no other habitation near, it offers great attractions to the lover of the mountains. Situated 6,000 ft. above the sea, it may be approached either from Wasen, on the St. Gothard line, or from Meiringen, and the prospect which it commands is that of a fine snow-field. The Stein Glacier may be reached in ten minutes' walk from the inn, and above it rise the Sustenhorn, the Gwachtenhorn, the Thierberg, and the Stein-Limmi; while behind the inn are the Oberthal Glacier, the Fünffingerstöcke, and the great walls of the Titlis and Wendenstock, both appearing inaccessible from this side.

It is delightful to find in the Alps at the present day an unspoilt specimen of the primitive mountain inn, where the ordinary tourist does not come, and where the board and lodging, though simple, are sufficient for all one's wants.

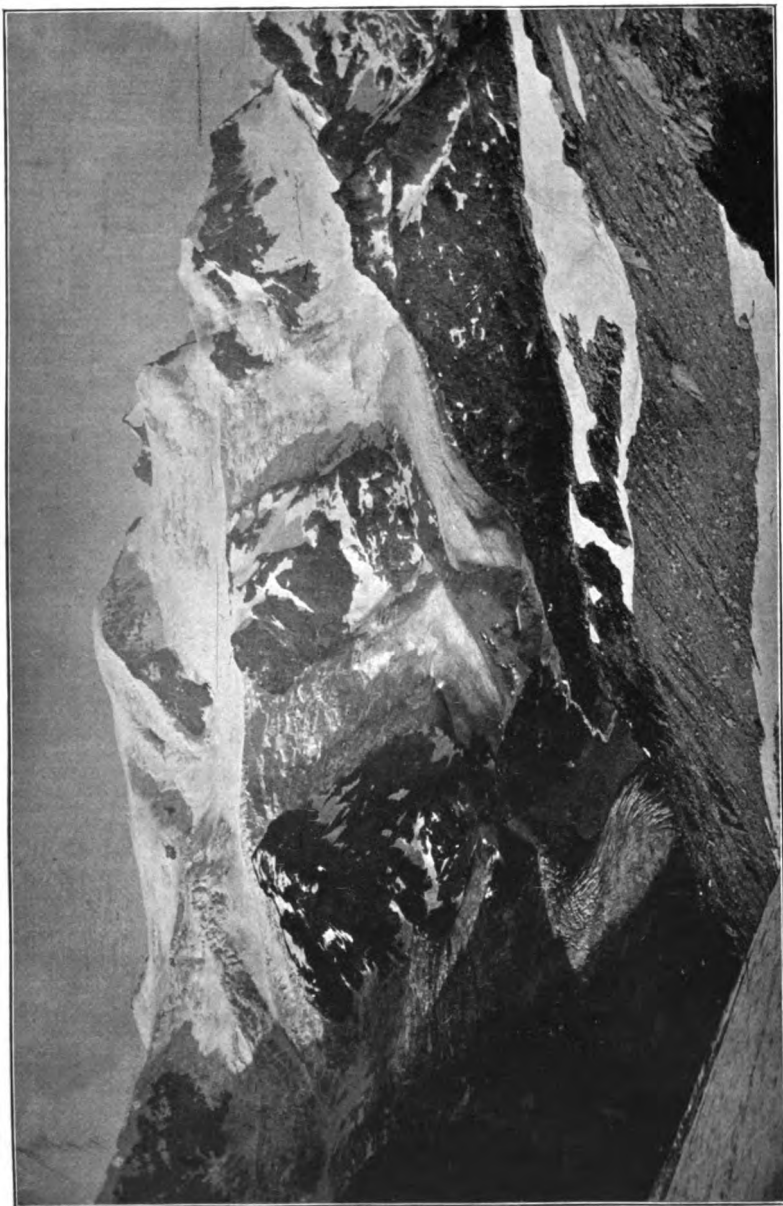
It is refreshing also to those who practise guideless climbing to find no guides lying in wait every time you emerge from the front door, smiling on you for the first portion of your sojourn, but looking askance when they find you are a profitless party. The upper portion of the house, which is devoted to guests, consists of some half-dozen bedrooms, and one living room, which serves as dining, sitting, and smoking room. The windows at the back look out on a slope of rocks and stones, and there is usually a pig or two lying in the foreground.

In fact, it is very much like living in a farmyard, for when you saunter outside the door, you find yourself surrounded by goats, sheep, and cattle. The goats and sheep press eagerly on you, if they suspect you of having a morsel of salt for them; but if they venture within the low paling that surrounds the inn, a great St. Bernard dog warns them off with dignified admonition.

As hostess, Fräulein Tännler is all that is charming, and ministers in the most friendly way to your creature comforts. And in descanting on the merits of the place, let not the magnificent bootjacks that adorn the bedrooms escape notice, a most welcome addition to the furniture of the climber's inn, but one seldom met with in the Alps, even in the most pretentious hostelries.

Stein is an excellent place for the guideless climber to begin his ascents of the year. Though there are no fashionable peaks with 100-franc tariffs for the guides, there is very nice snow and rock climbing to be had, while the mountains are of moderate height and the expeditions not too long. The day after our arrival, August 1, 1899, R. P. Hope and I started at the comfortable hour of 7.45, intending to do some peak or other, but not having decided which to make for. 'Bernard,' the dog, accompanied us for a considerable distance up the Stein Glacier, and paused for some time at the first crevasse, before stepping over it, while he went round others, but finally left us, apparently distrustful of a guideless party. Two days later he climbed the Sustenhorn with a party of Germans and two guides, and we were told that this was not by any means his first ascent. We went up the east side of the Bockberg, and lunched at a nice place near the top, where there was good water, and a good back stone, for one of the party at least, to lean against.

We now considered our plans, and, giving up the idea of climbing the Sustenhorn by the ordinary route, as we saw a more interesting one direct from the Stein Glacier, we made for the Gwächtenhorn, which we intended to ascend by the west ridge. But the late hour disposed us to shirk the long snow tramp of two miles which this would have involved, and we turned our attention to the north-east ridge which came down directly towards us. The ridge ends precipitously, and on its south side the glacier appeared to be cut off by crevasses, and dangerous from séracs, and we therefore went along on the north side of the ridge, intending to get on to the rocks as soon as they appeared safe from falling stones. We selected a place where a few steps in a steep ice slope above the bergschrund brought us to the rocks, and went up a steep slope of débris and rock to the arête, which was easily followed to the top. We started to descend by the west arête, but, plunging into soft snow at every step, we turned back and came down the snow slopes on the east side, making a détour to our right to avoid ice slopes and crevasses. We returned by the Thierbergli, which would have been our direct route



Philip Hops, photo.

GWÄCHTENHORN AND STEIN GLACIER
From the North

• *Suam Electric Engineering Co.*

for the ascent, and glissaded six or seven hundred feet, reaching our hotel in two hours from the top.*

The next was an 'off' day, spent in lying about with the comfortable sense that one has had enough exercise to last for forty-eight hours, while a healthy appetite and general feeling of satisfaction with things in general add to one's pleasure. We also indulged in a bathe under the curious artificial waterfall at the back of the hotel, which is made by the stream being turned out of its course and brought over a large rock. The following morning the same party, with the addition of H. H. Jennings, started at seven o'clock for the Fünffingerstöcke, a decidedly interesting expedition. Turning up the grass slopes on the way to the Susten Pass, we ascended the east branch of the Oberthal Glacier, with the snow quite hard and crisp beneath our feet, and went up some steepish snow slopes leading to the col, from which we got a fine view of the Titlis, its imposing walls standing up straight in front of us. Descending the slope on the other side of the col, we worked round to our right in order to attack the highest of the Fünffingerstöcke (3,036 m.) from the north, by a couloir which Hope had prospected from the Titlis, and, having turned the corner, kept along the trough between the snow and a vertical wall of rock. We then crossed an ice slope covered with snow, which was in bad condition, and needed very careful going; and, getting on to the rocks beyond it, found a good breakfast place under an overhanging cliff which made us safe from falling stones. Jennings, not feeling quite up to the mark, elected to stay here, while Hope and I went on, across a short but steep ice slope, requiring big steps to be cut; then up between snow and rocks, and across the big snow couloir, by the rocks on the far side of which we ascended to the summit, the loose stones which we dislodged causing a perfect cannonade all the way and informing Jennings of our movements. At the top we found ourselves surrounded with curious rock ridges, peaks, and pinnacles, and had a fine view. The cairn contained a bottle with Mr. Powell's name and the date 1884.†

Descending to the gap on the ridge, we went down the north face, crossing the couloir lower down than before, rejoined our former route, and picked up our friend. Having reached

* The ascent of the Gwächtenhorn by the N.E. ridge seems to be a new route.

† Point 3,036 does not appear to have been ascended from the N. side before, though we were quite unaware of this at the time.

the col again, he felt equal to tackling the point to the east of the pass, which only took half an hour there and back, while the writer lazily looked on, and heard sensational reports of a ledge a foot wide with no holds, easy enough in going up, but not so nice to come down. We found the Siegfried map apparently wrong in this locality, as it puts point 3,002 on the east side of the col, whereas the point on the west is the higher of the two and must be 3,002. An easy descent took us back to Stein in three-quarters of an hour from the col.

I have seen in one of the climbing books some sarcastic remarks as to the alarm watch, which it is suggested goes off like a cock pheasant when least expected; but I can only say that I have found it most useful, and on the morning of August 5 it saved the situation. Getting up at 3 A.M. we found the cook faithless, and neither fire, nor light, nor other sign of life in the Hotel. Foraging in the kitchen we discovered some bread, butter, and a large jug of milk, which, though rather cold comfort at that early hour, was decidedly better than nothing. Whether the other occupants of the inn had to breakfast off *café noir*, history does not relate. We all three started at 4.15 for the Sustenhorn, hoping to ascend it by the N.W. face, which, so far as we knew, had not been done before, but which, from careful examination with a pair of Zeiss glasses, appeared quite practicable. It was a fine clear morning as we made our way up the moraine to the Bockberg, from which we descended to the Stein Glacier, and crossed it diagonally to the foot of the most southerly of two couloirs, keeping to our right to avoid an impossible bergschrund. We got on to the rocks by this couloir, and passed into the big couloir to the north, which we ascended on its left side, keeping to the rocks, till we came to the first broad band of snow, which we traversed to the right, and then mounted by snow and rock, diagonally to our right, till we gained the ridge. We were in the shade up to this point, but later in the day there might be some danger from falling stones. It will be observed that our route for a considerable distance was the same as that taken a fortnight later by the Rev. W. C. Compton and Mr. Valentine Richards in their ascent of the Hinter-Sustenhorn.* We made our way along the ridge over rock and shale, and up the final slopes to the top, which we reached in 4½ hrs. actual going from the inn. Having refreshed our bodies with a hearty meal, and our

* *Alpine Journal*, No. 146, p. 599, 'New Expeditions in 1899.'

minds by gazing on the giants of the Oberland, we came down by the usual route, where we found tracks made the day before by a party of men and the St. Bernard dog. Our return was uneventful save that the middleman on the rope, disregarding the maxim of 'Follow your leader,' suddenly popped into a crevasse, and disappeared completely, as if through a trap-door. The rope was fairly taut, so he did not go far, but there was no answer to our calls for a few moments. Then an ice-axe appeared waving in the air, followed by a head, and our friend struggled out somewhat short of breath. Our only regret was that we had not photographed him as he appeared with his head just clear, but he positively refused to resume the position even in the interests of art.

On making inquiries after our return to the hotel, we were told that there had been two previous ascents of the Sustenhorn by this route several years ago, one by Johann Luchs and his brother, and one by the same guide and an Englishman. I have since learnt that this was the route taken by G. Studer on the first ascent in 1841.*

On August 7 we started at 3 p.m., with a porter carrying about forty pounds of food, while we also carried fair loads ourselves, intending to spend four nights in the Trift hut. After crossing the Stein-Limmi, our porter, declaring that he knew a short cut which would save a descent to the Trift Glacier, led us, against our better judgment, to the top of the ridge on our left, and we found ourselves above a steep wall of rock impossible for a heavily laden man to descend. After prospecting in various directions we had to go down again on the side we had come up, and soon found the right route round the shoulder of the ridge, though a very awkward and dangerous corner was nearly too much for the porter. On reaching the descent to the Thierberg glacier, he said he was now sure of his way, and brought us to the top of a steep slope of wet rocks, but as it was now almost dark two of us roped together to prospect the descent. Lighting the lantern we climbed down one at a time in what seemed to be the bed of a stream, the leader holding the lantern in his teeth and the last man following as best he could in the dark. After descending 200 ft. the rocks became steeper, and the stones we threw down gave indication of a drop at the end, so we decided to retreat. At this point the last man was horrified to see the light below him fall, but happily it was only the candle, which, after a wet scramble

* G. Studer's *Topographische Mittheilungen* (1844), pp. 79-85.
VOL. XX.—NO. CXLVII. D

up in the dark, was replaced from our store. We then selected a large rock, which afforded a certain amount of shelter, as our resting place; and, hanging up the lantern, ate our supper, put on our slippers and extra clothing, and 'turned in.' The rock overhung sufficiently to give more or less shelter to two of us, although it involved lying in a very strained position and on uncomfortably sharp stones, while the third man kept shifting his position in a vain attempt to make himself safe from wind and a fine rain, which fell intermittently. When light came we shook ourselves and made a brew of hot cocoa with a small home-made aluminium stove, which was exceedingly welcome, especially to the porter, whose teeth were chattering so that we gave him the first brew. It was decidedly trying having to face the camera at about 6 A.M. after a night under a rock, but the artist of the party was inexorable. Starting at 7 we got to the hut by 8.30, and dismissed our man without regret, this being the only occasion during our tour on which we engaged the services of guide or porter.

It came on to rain that afternoon, and rained persistently all night and all next day. We found the hut dirty, damp, and very cold, and endeavoured to keep up our spirits and our circulation with a variety entertainment, consisting of clog dances and every fragment of a song, chorus, or recitation that we were able to recall. We were rewarded next day by fine weather, and going up to the Trift-Limmi traversed the four summits of the Thieralplistock, from which we got a magnificent view of the Oberland.

Leaving the hut next morning a good deal cleaner than we found it, we went up the snow slopes behind it to the highest point of the Thierberg (3,446 m.) intending to traverse the ridge towards the north, and descend to Stein. The arête of the first peak we should have had to traverse looked very steep, and we should further have been exposed to a bitter wind, so we changed our plans and decided to make for the Goeschener Alp. The descent looked easy enough, but the rocks were rotten and partly covered with snow, so we got as soon as possible into a branch of the big couloir which descends from the top of the ridge, and hoped for easy going. The snow, however, was very hard, and after kicking our way down for some distance, we again took to the rocks on the left of the couloir, till they ended in a little cliff, to turn which we were forced into the couloir, tumbling into, and then scrambling out of, a large avalanche trough which barred the way. Regaining the rocks we soon reached the first bergschrund, which we climbed into and out of, and zigzagging through the others

reached the open glacier.* Two hours' weary tramp brought us to the Goeschener Alp, where we spent the night. But this reminds me that I have gone beyond the limit of a week and the district of Stein.

CATALOGUE OF BOOKS IN THE LIBRARY OF THE ALPINE CLUB.

THIS catalogue will be welcomed by all Alpine Club men, and will probably be found useful by non-members also. The last catalogue was published in 1888, under the care of Sir F. Pollock, since which time the number of works in the library has more than doubled, and its scope perhaps somewhat widened. The catalogue is of the same size as the 'Alpine Journal,' and the printing does credit to Messrs. Constable, of the Edinburgh University Press. It should perhaps be mentioned that maps, except so far as they may be annexed to books, or, in a few cases, collected in book form, are not within the scope of this catalogue. These have been catalogued separately in manuscript. Though absolute immunity from error can hardly be expected in dealing with so great a number of names, every care has been taken by Mr. Cockburn, the Honorary Librarian, to whose energy, as members know, the library owes so much, and he has been helped in his task largely by Mr. A. J. Mackintosh, the Assistant Secretary of the Club. The catalogue aims at being complete down to November 1, 1899. The price is 3s., bound in cloth ; postage 3d.

IN MEMORIAM.

S. F. STILL.

THE Club has experienced a great loss by the recent death—with almost dramatic suddenness—of Stafford F. Still, formerly one of its Vice-Presidents, and a well-known member of the committee. He commenced climbing in 1865, and up to 1876 did much good work in various districts of the Alps, including ascents by new routes of the Grand Paradis from Cogne in 1873, and the Monte della Disgrazia from Chiareggio in 1875, accompanied in both expeditions by the late F. Pratt Barlow, whose accounts of them will be found in the 'Alpine Journal,' vol. vii. p. 1 and vol. viii. p. 20; but to the last he missed but few seasons in Switzerland, and took the keenest interest in everything connected with the Club and the mountains. A born mountaineer, excelling especially on ice, he would, had he climbed without guides, have been an acknowledged leader in that branch of the mountain craft.

* This descent appears to be a new route.

To an attractive presence he added a frankness of manner which was peculiarly his own, and which secured for him a large circle of friends. He is gone, but will live in the memory of all who knew him as a delightful companion, a staunch friend, and fine example of a manly Englishman.

G. H. H.

REV. C. H. THOMPSON.

WE record with deep regret the death of the Rev. Charles Howard Thompson, at the early age of 33, after a severe attack of rheumatic fever. Educated at Radley, Christ Church, and Wells Theological College, he was ordained in 1889, and after two years at St. Margaret's, Lee, went to his life's work at St. Clement's, Bournemouth. Here for a short eight years he gave the fulness of his powers to the work of this large parish. How that work was appreciated was shown at his funeral. One who knew it best writes: 'His sunny nature endeared him to us all, and his brightness was especially attractive to children, in whom he took so much interest, whilst his active manliness and athletic powers strengthened his influence with the elder boys and young men.'

Here we would speak of him as a friend and brother-climber. He had, both before he became a member of the Club in 1896 and since that time, yearly spent his short holiday among the mountains. He had climbed in all the chief districts of Switzerland, as well as in the Graians, Mont Blanc range, and Tyrol. He was always a charming and unselfish companion, making the best of difficulties, and attracting all by his gentle consideration. It was characteristic of him that his considerable talent in music was known only to his more intimate friends. One of his guides writes with simple dignity: '*Seinen Tod bedauere ich sehr, denn er war so freundlich und gut gegen alle Menschen; aber nicht nur das; aber auch Gott hat er gefallen, darum hat Er ihn zu sich gerufen.*'

L. G.

THE ALPINE CLUB EQUIPMENT EXHIBITION.

THE Committee may congratulate itself upon the success of its venture in holding an equipment exhibition. Several of its present and late members have had such a scheme in their minds for years past, but the difficulty which presented itself lay, not so much in the task of collecting the exhibits, as in rendering the whole collection generally interesting to climbers and their friends. It is gratifying to know that the attendances have been well maintained throughout the whole period during which the exhibition was open, and fully equalled the attendance at former winter picture shows. The varied collections of old and new kits lent by members and the foreign and English trade, grouped in classes, have given members and their friends an opportunity of judging the merits of many articles, and have brought to the front the best the Alpine world can offer to the climber. Although it cannot be said that the exhibition was comprehensively international, it at least contained

examples of the kits recommended by representative Swiss, Austrian, Italian, Norwegian, and English outfitters. If, from this point of view, good has arisen, the exhibition has served its purpose; but, apart from this success, the comparison between the articles in use by our founders in the 'prehistoric' days, and those now easily obtainable, illustrate in a striking way the development of the mountaineer's kit—a matter in itself worthy of demonstration.

With the assistance of Sir Martin Conway and Dr. Norman Collie, each of the groups was carefully inspected, and the following review may be taken as embodying the opinions and recommendations of this self-constituted committee of three. Taking the articles in the order in which they were exhibited and catalogued, we find that amongst

COOKING UTENSILS, the 'Ideal' aluminium (Knecht & Cie.), and the portable aluminium boiler and lamp (Hill & Son) are both useful little utensils for use with spirits of wine for a single person. The portable boiling cuisine exhibited by Ellis Carr, Sketch No. 1, is most compact. It is made of tin, the utensils fitting in a boiler measuring 9 by 4 in., and weighing 1 $\frac{3}{4}$ lb. There is no reason why this apparatus should not be supplied in aluminium. Of larger cooking kits, the Jackson-Harmsworth set of portable utensils (Louis Leakey Aluminium Com-



pany, Limited), whilst they appear very compact and well designed, have been found in use to get much knocked about. The best

canteen for mountain explorers is a combination of the Primus petroleum stove (which might be specially made in a compact form) with a set of aluminium pots, pans, plates, goblets, forks, and spoons.

ROPES.—The Club rope (Beale & Cloves) retains its reputation as first in this class, and as regards the silk rope (Knecht & Cie.) it certainly possesses the advantage of being very light, but gives one the idea that the strands would very readily fray. We have no experience of silk ropes in actual use.

THE BOTANISING OUTFIT, with accessories as recommended by the Curator of Kew, seems too elaborate and heavy for a mere mountaineering expedition. At high levels the plants found, are likely to be very few in number, and small in size, besides being easy to dry. The smaller outfit of similar design, as exhibited by Sir Martin Conway, will suffice for high-level mountain explorers.

RUCKSACKS.—Whilst a marked improvement is noticeable in the development of the rucksack from such as was used in 1868 (F. F. Tuckett), it is our opinion that more may yet be done to perfect this most useful of bags. The dark green canvas sack (Wittings, of Innsbruck), lined with a thin waterproof and fitted with a cap, weighing in all 2 lb. 5 oz., is to be recommended, and so is another London pattern, of green waterproof canvas, with two pockets (Hennig & Co.), weighing 1 lb. 6 oz.

GAITERS AND PUTTEES.—It is now generally admitted that the puttee is the best form of protection for the leg. It is, in the first place, more portable than a gaiter, a pair weighing 1 lb., as against a pair of wool gaiters weighing 3 lb. The puttee made in kashmir is of a coarse wool, indifferently scoured, and consequently possessing water-repelling properties. It is advisable to mark each puttee with a distinguishing initial, say 'L' for the left leg and 'R' for the right leg, and always to use them in this order when winding them round the ankle,* starting from the same place and in the same manner. In this way the puttee shapes to the leg, and is not liable to drop.

FOODS.—A very representative collection was got together—enough to meet the wants of varied tastes. Maggi's, Brand's, and Bovril meat extracts are favourite forms for the traveller, whilst Nelson's 'Hipi' is a new essence of mutton said to possess all the nutritious properties of a first-class essence. 'Ovo' is also new to the climber, and is a preparation of desiccated eggs, strongly recommended by Mr. G. Scriven.† Another new feature is dried and compressed vegetables (the British Preserving Company). All vegetables in this form not only require several hours' soaking in water, but much boiling, before they are reduced into a palatable condition; and unless the explorer is in a country where firewood is plentiful, it would only be on rather rare

* M. C. dissents, and thinks frequent changes of adjustment advisable as tending to make puttees last longer. It is a great relief to the legs to take off the puttees and put them on anew every four or five hours.

† Tried by W. M. C., and found good.

occasions, that the opportunity would offer itself of his being able to enjoy this most important form of food. The provisions as supplied (Edouard Bader, of Munich) to climbers under the system of Dr. Pott, and found in some of the Club huts of the Austrian Alpine Society, deserve especial mention. Not only are they moderate in price, but excellent in quality. The Reisfleisch Gulyas, Würstl mit Kraut, and sausage and peas are to be recommended as very savoury and palatable dishes.

LANTERNS.—Although the English trade exhibitors were represented by several kinds, none equalled the well-known Italian ‘Excelsior.’ Dr. G. Heiner’s system of methylated spirit and grease in cake form is new to English climbers, and we have no experience on which to base a recommendation of it.

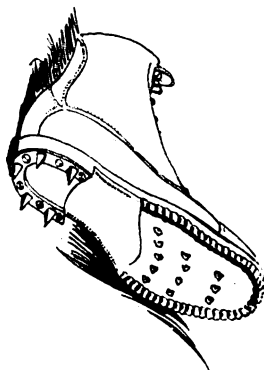
FLASKS AND WINE GOURDS were on show in large variety. Mr. Tuckett exhibited a very ingenious waterproof air cushion, fitted with shoulder straps, of 5 litres capacity, invented no doubt many years ago. An improved form of considerably less weight as now used is that of Knecht & Cie.

GOGGLES.—Innovations in these were a kind made of celluloid instead of metal frame, and also some of unusually large size to fit over an ordinary pair of spectacles, both exhibited by Knecht & Cie.

BOOTS.—It is generally admitted that the following may be taken as the principles to be borne in mind in the manufacture of a climber’s boot. The leather should be of a coarse-grained cowhide or ‘crup.’ The golosh should have a side lining, an outer lining, and also a heel-stiffener, and should not be joined at the



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back. The uppers of a Swiss boot are, as a rule, in one piece, and no doubt they are stronger for being so, but this has a tendency to make the boot clumsy round the ankle. We see no reason why the uppers should not be in two pieces, joined at the back, and covered with a strip of leather to protect the joining; the

upper portion of the strip may be continued as the tab. The first layers of leather for the sole and heel should be sewn, and pegged under the instep with three rows of pegs to the first layer of leather. The sole should have a wide projecting welt. Large toe caps must, of course, be provided, so also, extra layers for the heel. The only boots exhibited on these lines were those made by Fridolin Andenmatten, of Zermatt.

On the nailing of a boot, opinions are very varied. Sketch No. 2, exhibit by C. Pilkington, represents a boot nailed with Mummery screws round the rims, and Swiss nails in the centre, which may be recommended for rock-climbing, though for more serious work on ice the recent introduction of a horse-shoe heel with five spikes (Gio. Cappa e figlio and Jas. S. Carter) (Sketch No. 8) is an innovation, and will no doubt be found very useful. The spikes might well be made to unscrew. Messrs. Joshua Finlay, of Manchester, Jas. S. Carter, and Dowie & Marshall each exhibited boots to be recommended, whilst Jas. S. Carter has acquired a plan of nailing which specially appealed to us. The brown boots (Gio. Cappa e figlio) as made for the members of the Mt. St. Elias Expedition, and lined with fur or wool, are no doubt of considerable merit.

SLEEPING BAGS were represented by a very varied and interesting collection. Mr. Tuckett exhibited the bag as used by him in 1862 (modified from the 'Galton'; see 'Vocation Tourists'). This form of bag is still in use, and known as a Tuckett bag, by S. W. Silver & Co. and Jaeger, Limited. Its weight (9 lb.) is against it. An improvement of this form is one by Jaeger, Limited, made of camel's-hair fleece, and its weight is 7 lb. For cold climates and very high altitudes, the Norwegian reindeer skin bag (J. W. Brunn), weighing 10 lb., is to be recommended. The ideal sleeping bag is, without doubt, an eiderdown one covered with a fine worsted fabric (Heal & Son) known as 'zanella.' It should be extra long, to allow of plenty of play for the shoulders: it weighs 3 lb. Mr. Edward Whymper's calico bag, as used by him on his travels amongst the great Andes of the Equator, commends itself for countries where the traveller is sure of obtaining straw or hay.

TENTS.—As to these, little can be added to our present knowledge. The special feature of Sir Martin Conway's base camp tent appeared to be that the doors were at both ends, and that the whole was covered with a fly—very useful arrangements in a hot country. For the 'Mummery' tent, Messrs. S. W. Silver & Co. exhibited an ingenious contrivance of an extended wood cap to fit over the spike of an ordinary ice-axe when in use as a pole for the support of the tent.

The very complete collection of a mountain explorer's kit as exhibited by Sir Martin Conway proved of great interest. Each article appears to have been added to the equipment, only after much mature consideration; and furthermore we observe that this country has not been used as the sole source of supply, for we find the camp bed to have been made in India, its special feature being,

that the side poles of wood are in two lengths, a stout canvas forming the seat, being laced to the side poles by thongs of well-seasoned leather. His sleeping bag of reindeer skin, and also his sledge, were of Norwegian manufacture, whilst the boots were Swiss (by Fridolin Andenmatten, of Zermatt).

In CLOTHING Messrs. Jaeger, Limited, have shown much enterprise with their all-wool clothing, which is now recognised to be no longer a fad. They lay themselves open to cater for our wants in specialities of clothing, using the natural homespuns of the Tyrol, Hebrides, and Donegal, and adding a camel's-hair Loden of their own suggestion. F. Turczynski, of Vienna, also showed Tyrolese Loden cloths in various forms. The long fleecy surface of this fabric acts as a repellent of rain, and in the form of poncho, weighing as it does so very little, this garment will doubtless find favour with Alpine travellers.

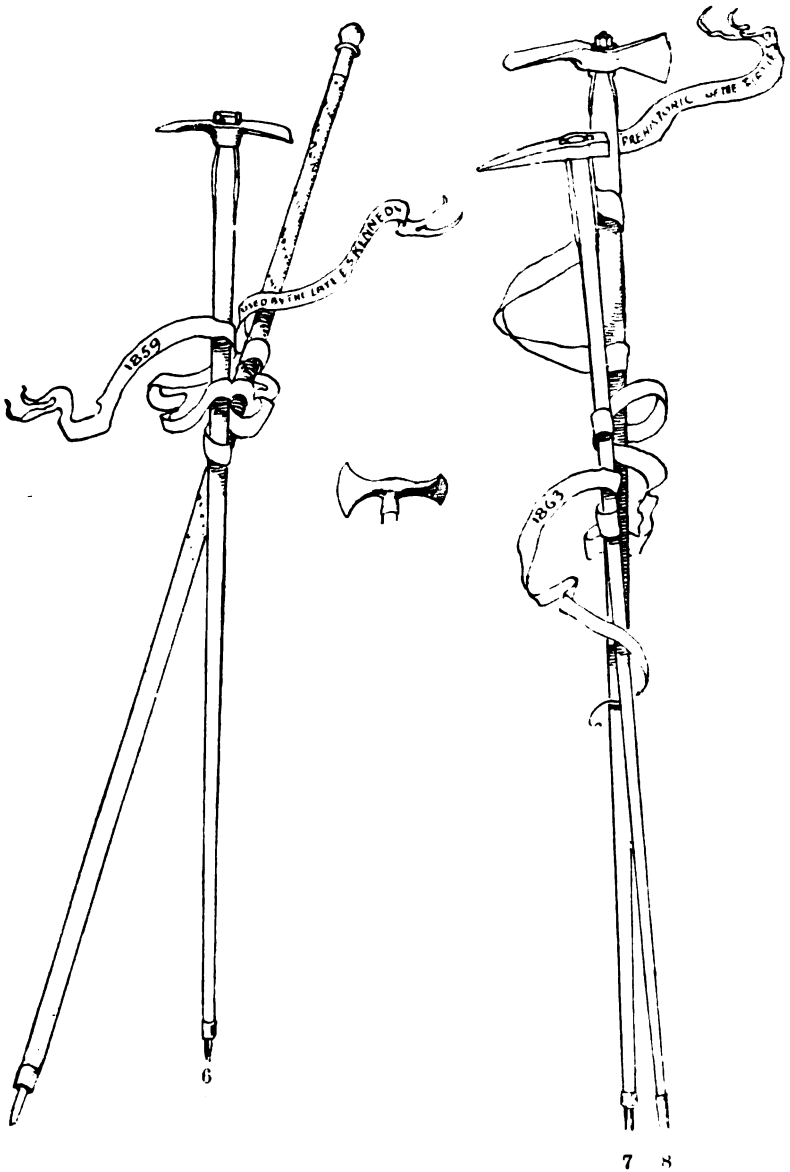
ICE-AXES.—These were grouped in three classes. Firstly, those belonging to our ex-Presidents; secondly, those of historical interest; and, lastly, the modern axes as offered by English, Swiss, and Austrian makers. Never before has so interesting a collection of old axes been got together. The accompanying sketches illustrate the evolution of the alpenstock as used in the 'prehistoric' days, down to the formidable weapon as now made by Fritz Jorg, Blendt and Andenmatten. Sketch 4 represents a good example of an alpenstock belonging to the late E. S. Kennedy, with a combined small axe (Sketch 5) to replace the knob of the alpenstock. Sketches 6, 7, 8 are examples of the first stage in the ice-axe as used by English climbers; in the alpenstock axes exhibited by F. F. Tuckett and Claude Wilson, it will be seen that they are a little shorter than the original alpenstock. The usefulness of the alpenstock gave rise to many varied opinions, for we find (in the 'Alpine Journal,' vol. i. p. 258) Mr. Leslie Stephen advocating a form of instrument without a spike, with a square head to which is fitted an axe 6 in. long and $1\frac{1}{2}$ in. broad. We regret such an axe was not included in the exhibition, though Messrs. Hill & Son and Hennig & Co. exhibited such a pattern amongst the modern axes (see p. 86 of the catalogue).

It would appear that this recommendation of Mr. Stephen did not find favour, whereupon the Committee of the Club invited members to send specimens of axes to the clubrooms. A large number appear to have been collected, and the recommendations of the committee are embodied in a report to be found in the 'Alpine Journal,' vol. i. p. 326.

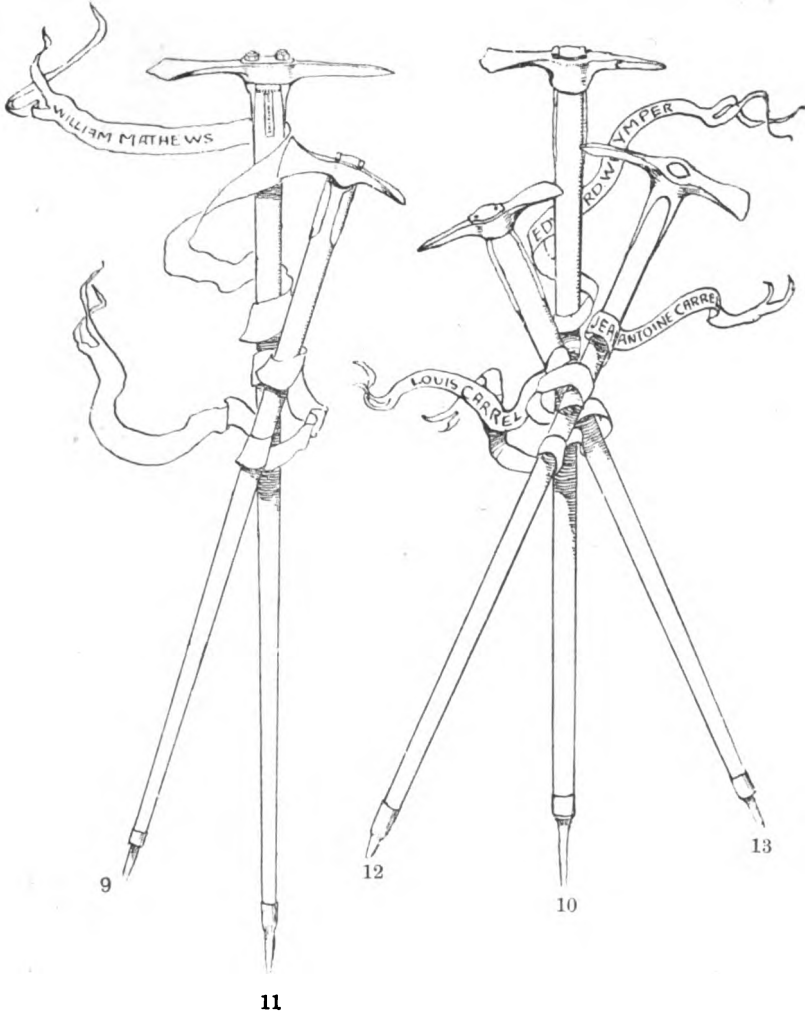
Professor Bonney's axe, Sketch 9, made by Leaver, is an example of the axe recommended by the Committee. Its 'balance is defective, the head too light, and the handle too long and heavy.'

Edward Whymper's axe, Sketch 10, made in 1864 and weighing 4 lb. 4 oz., marks the next stage in the evolution and progress of the axe. The staff, it will be observed, was much reduced in length, and although it is a very heavy instrument, it represents a

distinct improvement. A removable form of axe-head, as recommended by T. S. Kennedy and exhibited by W. Mathews, Sketch 11,

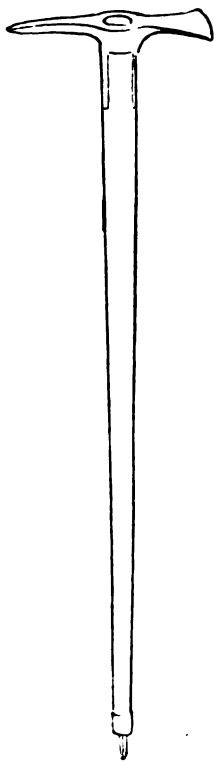


did not find favour with our earlier members. To us it appears clumsy, not as rigid as a fixed head, and much too heavy. Coming down to a later period, 1879-1880, the axes of the Carrels, Sketches 12 and 13, may be taken as good examples of Italian manufacture, whilst later still Chas. Pilkington's axe, Sketch 14, brings us to a

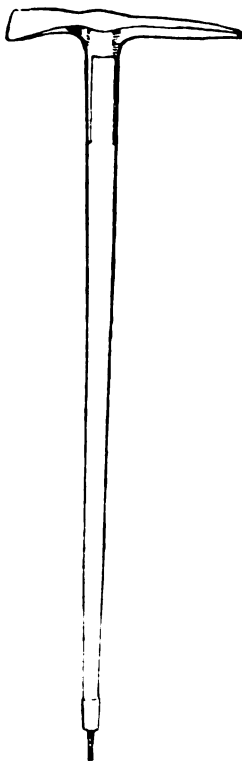


period when the amateur without guides, after years of qualification and experience, fashioned an axe after his own liking. It has seen much service, as evidenced in the spike, which is considerably worn down.

The axe (Sketch 15) designed by W. R. Rickmers, and made by Andenmatten, may be taken as the latest development of an ice-axe. It is a formidable if not a dangerous weapon. The pick extends $7\frac{3}{4}$ in., and the adze blade $4\frac{3}{4}$ in. from the centre of the shaft, giving the total length of iron about $12\frac{1}{2}$ in. Of modern axes exhibited by the trade, those of the Swiss makers do not



14



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possess the high finish of the English, though they appeal to us as being the more useful for serious Alpine work. G. P. BAKER.

[It should be stated here that the main part of the work of getting together this very interesting exhibition was undertaken by Mr. G. P. Baker, who has added to the obligations under which the Club lies to him by writing the above excellent account of the exhibits. This account, it should be added, has been read and approved by Sir W. M. Conway and Dr. Norman Collie. We are sure that we do but echo the feeling of all members of the Club in offering to Mr. Baker our hearty congratulations on the complete success of his endeavours, ably assisted as they were by the other members of the Sub-Committee.—ED.]

NEW EXPEDITIONS IN 1899 (*continued*).*Mont Blanc District.*

AIGUILLE D'ARGENTIÈRE.—On August 12, 1899, Mr. E. L. Stewart, with Johann and Ferdinand Summermatter of Randa, made an ascent of the Aiguille d'Argentière from Lognan. Following the Col du Tour Noir route up the Argentière and Améthystes glaciers until they came into sight of the rock ridge at the head of the latter, they then turned to their left, and climbed the rocks on the right of a deep gully in the ridge running in a S.W. direction, from the S. summit of the mountain. Gaining the crest of this ridge they followed it, turning difficulties mostly on the S.E. side, to within a short distance of the summit, and descended on the N.W. side to the snow saddle between it and the highest point. Having completed the ascent they traversed the S.W. slope of the summit ridge to the cairn on the N.W. rock point and returned by the usual route over the Chardonnnet glacier. Time from Lognan to the top, including a halt of 20 min., 8½ hrs.

Bernese Oberland.

FUSSHÖRNER.—The last peak but one from the S.—ill-defined from Bel Alp, but from E., W. and N. a conspicuous entity. Dr. Tempest Anderson's photo, 'A. J.' vol. xix. p. 316, gives an excellent picture of the peak, and of the route followed. On July 8, Messrs. G. W. Young and A. M. Mackay, with Clemenz Ruppen, leaving Bel Alp at 6 A.M., reached the foot of the great couloir—so evident from the hotel—which descends on the S. of the peak, at 8.10. The glazed rocks in the centre, and subsequently the steep ice of the couloir itself, were followed to a point some 50 ft. below the col, where the unpromising appearance of the S. arête advised a traverse across snow-covered slabs on to the S.W. face (less straightforward, possibly, later in the season). A broken subsidiary ridge, descending obliquely S.W. from the summit, gave access to the broad 'rake' at the foot of the formidable final wall. At its eastern end an ill-defined crack made an interesting finish on to the ridge, just N. of the precarious summit-tower. This was singly and cautiously surmounted at 9.45 (8¾ hrs.). The summit was left at 11, and Bel Alp reached at 1.50.

FUSSHÖRNER (THE SOUTH PEAK) (S. 8,106 m.).—This is the lowest, but by no means the least, of the Fusshörner. Three noticeable depressions furrow its western face, of which the southernmost alone, separating the peak from a still lower subsidiary point, offers a possible ascent. On July 10, the same party, leaving the hotel at 8 A.M., reached the foot of this couloir at 10, but rejecting it after brief examination, traversed round to the S. of the ridge until almost on to the sharp-cut eastern face. From here, by some pleasant scrambling up the sky-line, the subsidiary point was reached at 11.20. Descending thence into the top of the

couloir before examined, steps were cut down some two hundred feet to the mouth of an easy, slanting chimney ascending diagonally across the western face. This was followed over a shoulder into the second couloir, and, keeping the same diagonal, another shoulder rapidly crossed, and the third depression entered. By this the actual arête was rejoined, and the table-summit reached at 12.80 (4½ hrs.), and Bel Alp regained in 8¾ hrs. by practically the same route.

LONZAHÖRNER (8,544 m. and 8,598 m. S.).—The ridge of rocky peaks, which separates the Lötschenthal Breithorn from the Beichgrat. Presenting a precipitous face to the Lötschenthal, on the E. two long ridges curve down N.E. towards the Beich-firn, enclosing a small steep glacier. On July 28, Messrs. Young and Mackay left the Ober-Aletsch hut at 8.10 A.M., and passing the foot of the southern of the two ridges at 4.80, ascended over smooth slabs, below the séracs, on to the sharp northern arête. This, abrupt but firm, gave excellent scrambling, and the first peak was reached at 7.20 (4¼ hrs.). From here, after 40 minutes' halt, a traverse along a peculiarly shattered ridge, blocked by several insecure pinnacles, led to the twin highest points at 9.5 (6¼ hrs.). An attempt was then made to descend into the deep gap, which cuts off the last (S.W.) peak, ascended previously by some Swiss climbers. Soon, however, a series of thin, vertical plates, whose perpendicular edges offered the only means of advance, induced a retreat. On the descent the southern of the two great ridges was followed. Broken at first, the slabs became steadily more difficult, and some two hours were spent on the last few hundred feet of descent to the small glacier (2.80 P.M.). The continuance of the ridge, here a mere rim to the ice, was kept to until the point (S. 2,991 m.) where rocks and ice plunge together towards the Beich-firn. It then became necessary to force a path across the séracs back to the foot of the northern ridge, from which the firn was reached at 4.85, and Bel Alp at 6.40.

Titlis District.

THE GWÄCHTENHORN OR STEINBERG (8,428 m.) BY N.E. ARÊTE. *August 1, 1899.*—Messrs. R. P. Hope and W. T. Kirkpatrick, without guides, started from Stein Inn and ascended to the upper level of the Stein Glacier by the Bockberg (the Thierbergli would have been the direct route, but they had not decided before starting which peak to climb). They then made for the N. face of the arête, crossing the bergschrund at the point where the rocks immediately above it give place to a snow slope. Reached the arête by rock and snow slopes, and having struck it about 800 ft. below the summit, followed it to the top. They came down by snow slopes on the E. towards the Susten Limmi, and back by the Thierbergli to Stein.

THE HIGHEST OF THE FÜNFFINGERSTÖCKE (8,036 m.) FROM THE N. *August 8, 1899.*—The same party, starting from Stein,

went up the E. branch of the Oberthal Glacier to the col, and descending a short way kept round to their right under the N.W. corner of the peak. They then traversed ice and snow slopes to a couloir which faces about N.N.E., and ascended by it and the rocks on its E. side to the top. The rocks were very rotten.

DESCENT OF THIERBERG (8,446 m.) BY E. FACE TO KEHLEN GLACIER. *August 11, 1899.*—The same party, with the addition of H. H. Jennings, having ascended the peak from the Trift hut, came down for some way by the rocks on the E. face. They then got into a branch of the large couloir which starts from a gap S. of the peak, and completed the descent by it and the rocks on its left side. The bergschrund was crossed at the point where it meets the rock, but the rocks were only possible in one place, and some years it might be necessary to go right into the large couloir and down the avalanche trough. The branch couloir and the lower part of the main one can be seen from the Goeschener Alp.

NORWAY.

Justedalsbrae.

NIGAARDBRAE AND TUNSBERGDALSBRAE.—These two magnificent glaciers were combined in one expedition by Mr. C. W. Patchell and Johannes Vidgal on August 6. Owing to the exceptional snowfall this year the Norwegian glaciers were everywhere easier than usual. The whole expedition from Sperle, in Justedal, to Tvaerdalsaeter, where the night was spent, occupied 18 hrs., exclusive of halts.

RÖIKEDALSFJELD.—This little known corner of the Justedalsbrae was explored on August 8 by Mr. C. W. Patchell, with Johannes Vidgal. From Vasdalsaeter (2 hrs. from Sperle) the valley was followed almost to its head, and the snow-field reached by the steep N. side. A N.W. course was then steered until the snow began to slope away to Bakkedal, which was found to continue as a deep and narrow snow valley right through to Tunsbergdal, and to run almost parallel to Röikedal. This continuation is not shown on any map. Time from Sperle and back, 8 hrs., excluding halts.

Söndmöre.

SMÖRSKREDTIND.—Messrs. A. B. S. Todd and C. W. Patchell on August 20 made an ascent of this mountain by a new route. Starting from Habbastaddal, they reached the skar on the N.E. of the mountain partly by the rocks on the left (N.) side, partly by the snow in the couloir. A steep and difficult climb of 1½ hr. led to the first cairn. The work at two or three points was distinctly sensational, but the rocks are generally sound. The usual descent was made by the gullies on the S. face to the snow, which was followed back to the skar. Thence Habbastaddal and Øie were quickly reached. Time from Øie, exclusive of halts, 8 hrs. 10 min.

HANSENTIND (FIRST ASCENT).—On August 9 Messrs. E. L. Strutt,

C. V. Rawlence, and L. C. Rawlence left Holmebugt at 10.30 A.M. to ascend this small but sharply pointed peak, which lies high up on the left side of the Holmebugt Glacier. The party reached the summit at 3.30 P.M. by way of the Holmebugt Glacier to above the first icefall, and then up a very steep snow slope to the final peak. The descent was commenced at 3.45 P.M., and Holmebugt reached at 7 P.M.

LAXELUSKAR (FIRST PASSAGE).—On August 20 the same party left Holmebugt at 10.30 A.M., and went up the right bank of the Andersdalselv to a point just below the first ice lake, where, striking off at right angles, the party crossed the stream; they then ascended scree and old moraines to the glacier, which comes down to within a few hundred feet of the valley. Continuing up its left side for two hours they reached a large bergschrund at 4 P.M. (which gave some trouble). The summit of the pass, which lies between the Store Laxelvtind and the peak to its N.W., was reached at 5.30 P.M. The descent was commenced at 7 P.M. by the couloir on the S.W. side, Holmebugt being reached at 12.30 A.M.

STORE LAXELVTIND (FIRST ASCENT).—On August 23 Messrs. C. V. Rawlence and L. C. Rawlence left Holmebugt at 11 A.M., and reached Tomasskar at 6 P.M. by way of the couloir ascended by Mrs. Main on July 16. From the pass they ascended the narrow and rather steep couloir on the S.E. side of the peak to its termination, thence over a hundred feet of good rocks to the summit, which was reached at 7.25 P.M. The descent was commenced at 7.30 P.M., Holmebugt being reached at 1 A.M.

SOMMERBUGTTIND (FIRST ASCENT).—On August 16 Mr. Claud Rawlence, with the two Imbodens, made the first ascent of this peak, which is visible from Holmebugt, and is to the west of the Sörfjord. Having quitted Holmebugt at 8 P.M., they arrived on the summit at 1.30 A.M. by the E. ridge. Descending in a N.W. direction they reached a glacier lake at 3 A.M. Thence, ascending over easy rocks and traversing an upper glacier, they gained at 5 A.M. the top of

LALABAKTIND (FIRST ASCENT), which is the highest summit of the group. Thence, passing along a long arête and over another but less well defined summit, they traversed a narrow and interesting ridge, and arrived on the top of the

SKJURSNOESTIND (FIRST ASCENT) at 8 A.M. The descent to Sörfjordens Kirke was made by narrow snow couloirs down the east face, the fjord being reached at 11 A.M. The weather during the morning was fine.

ALPINE NOTES.

'THE ALPINE GUIDE.'—Copies of Vol. I. of the new edition of this work, price 12s. net, and of 'Hints and Notes, Practical and Scientific, for Travellers in the Alps' (being a new edition of the General Introduction), price 3s., can be obtained from all booksellers, or from Messrs. Stanford, Charing Cross.

BALL'S 'ALPINE GUIDE.'—Mr. Coolidge has resigned the editorship of the 'Alpine Guide,' and the Committee have accepted his resignation.

PRESENTATIONS TO THE ALPINE CLUB.—Sir Martin Conway has presented to the Club a wooden ice-axe used by natives in the Himalayas.

Colonel Arkwright has presented an interesting photograph to the Club, which illustrates the remarkable recovery in 1897 of the remains of his brother, who was lost on Mont Blanc in 1866.

THE ALPINE CLUB OBITUARY, 1899.—J. T. Beard (1876), G. Gruber (1880), General Blanckley (1892), G. Stibbard (1870), and Rev. C. H. Thompson (1896).

THE LIBRARY CATALOGUE is now printed and may be obtained, bound in cloth, on application to the Assistant Secretary, 28 Savile Row. Price, 3s.; postage, 3d. (*V. ante*, p. 35.)

HÜFI GLACIER—MADERANERTHAL.—Since the latest published accounts of the accessibility of this glacier, it has receded considerably, and can now only be reached from the valley on its left bank (S.), but it is not necessary to go up to the hut in order to make a glacier expedition. Follow the path leading to the hut till a few min. after crossing the Stäuberbach (under the waterfall). On reaching the brow of a ridge, take the path diverging to the left, and follow it, as far as it can be traced, to the site of the 'Blinden See,' now a stony waste. When near the end of the valley, bear up the slope to the right (S.), and cross above the first crest of rock, till, at some height up, a collar between slabs leads to the moraine at the edge of the glacier below two waterfalls. The distance may be covered in 1½ hr. from the hotel. Though few seem to have found their way to it, the glacier is well worth a visit. It ought to make a fine glacier excursion to cut through the ice fall and return by the new hut opened in August last at a fine position above the old one, and seen on the sky-line from the hotel. W. C. C.

COL AND POINTE DES DOVES BLANCHES.—It is pointed out in the new edition of Studer's 'Ueber Eis und Schnee,' p. 547, that there is a discrepancy between the definition of the Col des Doves Blanches in 'Climbers' Guide,' which places it between the Pointe des Doves Blanches (3,662 m.) and the Aiguille de la Za, and the travellers' accounts. The definition, however, is inconsistent with itself, the detailed description being that the Glacier des Doves Blanches is to be crossed, and the ascent to the col made from it. In the former work the col is defined to be over the high ridge, with no marked gap, between the Pointe des Doves Blanches and the S. summit, 3,628 m., as originally proposed by Mr. Leman.* This ridge was certainly crossed by the late Mr. T. S. Kennedy in 1874, but whether in doing so he ascended 3,662 (as is likely enough) I do not know. Our passage was just after (July 17). My recollection is that, for my own part, after reaching 3,662 (from the N. Miné snow-

* *Alpine Journal*, vol. ix. p. 107.

field) I proceeded along the ridge to 3,628, and then returning to the 'col' followed my companions down to the Glacier des Doves Blanches, the descent being parallel to the ridge from 3,662 to the Maja a little S. of it.* In Studer, vol. ii. p. 545, it is pointed out that the name in the form Dova Blangtzi was by Fröbel in 1840 and on Studer's Map applied to the peak, not the glacier as now.

AIGUILLES ROUGES D'AROLLA.—Kennedy's ascent of this peak (*ib.* p. 562; 'Alpine Journal,' ix. 170) was a few days later (about July 20). Our party, informed that it had not been as yet ascended, took with us to make sure of it two men at that time acting as local guides. Kennedy, apprised of the 'new thing' by us, and joining in it with our consent, gave us a clear start. From the top of the Glacier des Aiguilles Rouges we ascended a rock couloir to a broad gap between the highest summit (on our left), and another towards the Vouasson (N. summit). Our guides now abandoning the expedition as too dangerous, we awaited the arrival of Kennedy, who was accompanied by his guide Fischer, and I think a porter. The Oberlander gave one look at the peak, and then sat down to lunch with his back to it. Without more to do they went straight up the face to a point on the final ridge on our left (*i.e.* E.) of the summit. Our men remarked that it was a small party; to take three messieurs up rotten rocks was another matter. Kennedy found on the summit the names of a party who had ascended from Val d'Héremence (Herr Isler, 1870; Studer, p. 559).

A. CUST.

THE MÖNCH FROM THE WENGERN ALP—July 27, 1899.—This fine expedition, frequently impracticable on account of the state of the well known ice-wall, was made under fairly favourable conditions by the Rev. Walter Weston, Messrs. H. S. Bullock, T. G. Longstaff and R. Longstaff, with Peter Brawand and Christian Kauffmann, jun., of Grindelwald, on July 27. The party left the Guggi hut at 1.15, and reached the top of the rock buttress at 4.30. From here to the foot of the ice-wall took one hour, while the bulging ice-cliff was surmounted in 45 minutes. The top of the steep ice-slope above was reached at 7.15. The upper rocks overlooking the Jungfrau Joch were partly covered with snow, but beyond them the way was fairly easy, and the summit of the Mönch was gained at 9.45, the climb, exclusive of halts, having occupied seven hours. The condition on the south side, however, was so bad that the amount of time taken to the Concordia hut, also not including halts, was nearly five hours.

CORRECTIONS IN 'ALPINE JOURNAL,' No. 146.—'Haramok,' *not* 'Haramosh,' p. 624. There seems to be no doubt, from information for which we have to thank several correspondents that the peak climbed by Messrs. Neve and Millais was Haramok (16,903 ft.).

* *Alpine Journal*, vol. viii. p. 10, vol. ix. p. 170. In the latter passage and vol. viii. p. 97, an unfortunate mistake in the illustration at vol. viii. p. 15 is pointed out.

'In Memoriam' of J. H. Kitson, p. 585, line 7 from bottom of the page, for 'from the Faulberg' read 'from the Faulberg and back.'

ACCIDENT ON THE GRAND PARADIS.—We regret to have to report a fatal accident on the Grand Paradis. Signor G. D. Ferrari, a climber of experience, with Louis Jantet, of Cogne, after a successful ascent of the Grivola on November 18, 1899, started on the 21st to attempt the Grand Paradis from Cogne. On November 24 a search party from Val Savaranche discovered traces of the unfortunate climbers on the summit, and on November 26 the body of Signor Ferrari was recovered, but it was found impossible to recover that of Jantet. A full account of the accident will be found in the 'Rivista Mensile del C.A.I.' for November 1899, p. 470, and December 1899, pp. 495, 496, to which we are indebted for this brief note. It would appear that the climbers, instead of taking the usual route to the V.E. Refuge, attempted a more direct descent, for the bodies were found on the Lavaciu Glacier. As the 'Rivista' points out, the expedition in late November is much more difficult than in the usual climbing season; and, whilst we heartily sympathise with our Italian colleagues in their sorrow, we hope that the wise words of warning with which the notice of the accident concludes will be taken to heart by English climbers, as well as by those to whom they are more immediately addressed.

INTERNATIONAL ALPINE CONGRESS.—In connection with the Universal Exposition, the French Alpine Club, who celebrate their twenty-fifth anniversary this year, propose that an international congress of the various Alpine clubs be held in Paris on August 12-14. During those days sectional and general meetings will be held, at which various subjects of interest to mountaineers will be discussed under the divisional headings of—

1. *Scientific Subjects*.—Glaciers, avalanches, afforestation, fauna, speleology, influence of altitude, observatories, mountain railways, cartography.

2. *Practical Subjects*.—Huts, mountain hotels, distress signals, climbing without guides, tariffs, insurance of guides, school parties, equipment, international meetings.

3. *Artistic Subjects*.—Alpine art and painting, photography, reliefs and panoramas, preservation of natural beauties, names of mountains, customs, manners, legends, idioms, the music of mountain peoples.

The committee of management trust that the various clubs will take a practical interest in the congress, by members thereof attending and taking part in the various meetings, and will be glad to receive any offers of or suggestions for papers to be read.

Any member of the Alpine Club desiring to become a member of the Congress is requested to communicate as soon as possible with Monsieur H. Cuënot, Club Alpin français, Rue du Bac 80, Paris, from whom full particulars and forms of application may be obtained. Every member joining the Congress pays a subscription of 10f.

A VERY OLD GUIDE.—We regret to announce the death of Jean

Payot, of Chamonix. He was born at Chamonix on August 6, 1808, became guide in 1842, and retired in 1870. He was the father of the well known guides Frédéric, Michel, and Alphonse Payot. An interesting account of him appeared in Mr. Whymper's 'Guide to Chamonix,' fourth edition, 1899.

THE EAGLE'S NEST.—We learn with regret, from a notice in our advertisement pages, that Mr. Justice Wills has determined to part with his well known summer residence, The Eagle's Nest. He finds that he is no longer able to make sufficient use of it, now that his active mountaineering days are over. The house is so well known that any reference to its history is unnecessary; but it has the distinction of being the pioneer of its kind, having been built by Mr. Alfred Wills in 1859. In those days Sixt was a very inaccessible place, and the chalets of Les Fonds, close to which the house was afterwards built, were still more so, for the mule path from Sixt to Chamonix did not pass through them, as it has done for the last thirty years. Now, since the opening of the steam tramway from Annemasse to Samoens, communication has become very easy, and a considerable number of people now stay at Samoens or Sixt, or cross over to Chamonix by the Col d'Anterne or the Buet; but it is remarkable how the upper part of this valley of Les Fonds preserves its seclusion and its mountain charm. Probably there is hardly another spot in the Alps of Savoy within thirty hours' journey of London which still retains, and seems likely to retain for many a year, the unspeakable advantage of being free and 'far from the madding crowd.'

THE SHORTER EXPEDITIONS FROM THE BEL ALP.—We have received the following note from Mr. Charles Hopkinson:—'Certain claims for new expeditions amongst the minor and easier peaks around Bel Alp have been made from time to time (see "Alpine Journal," vol. xvii. p. 596, vol. xix. p. 249, &c.), some of which I know to have been anticipated in 1890 and 1894. From the very obvious character of the expeditions and their suitability for occupying "off-days" I should suppose that others have made substantially similar expeditions at earlier dates.

'As examples I will refer to the Sparrenhorn-Unterbachhorn ridge and the Fusshorn (3,628). In 1890 Messrs. J. C. and E. Hopkinson and W. N. Tribe traversed the ridge from the Sparrenhorn to the Hohstock, descending on the W. side of the S. arête of the Hohstock, almost due S. of the letter "s" in Hohstock. In the same year Messrs. E. Hopkinson and W. N. Tribe, prospecting for the S.E. arête of the Nesthorn, gained the ridge from the snow E. of the point 3,225, and traversed westwards along the Belgrat ridge nearly as far as the Unterbachhorn. In 1894 the traverse of the Unterbachhorn and the S.E. arête of the Nesthorn was completed (see "Alpine Journal," vol. xvii. p. 588). In the same year the route described as new ("Alpine Journal," vol. xix. p. 356) from the peak 3,628 of the Fusshörner was climbed from the Ober Aletsch hut by Miss A. Hopkinson with Messrs. J. and C. Hopkinson.

'May I enter a protest against the assumption, proper enough as

to important expeditions, that all short and easy expeditions within reach of a well frequented hotel are new unless previously recorded in the "Alpine Journal"?'

WESTLICHE ZINNE BY THE E. FACE.—On August 19, C. C. B. Moss and T. K. Rose, with Sepp and Michel Innerkofler, made this ascent, beginning from the col between the Grosse and Westliche Zinne, and proceeding up the gully which runs N.W. from this point. The leading guide, Sepp Innerkofler, climbed up inside the cave situated 200 ft. above the col, the others outside on the left. The difficulties in this pitch, 100 ft. high, were found to be great. From the top of the gully, 300 ft. above the col, the route taken lay straight up the face on easy rocks for 80 feet, then along a horizontal ledge to the right for 30 yards and up a crack in the face, which overhangs a little in places, to a wide terrace 600 ft. above the col. From this point the straight gully just to the left was followed to the summit, except for some traverses to the left in the first 100 ft. At about 100 ft. below the crest of the ridge the rocks were again found difficult, though less so than those in and above the gully cave. The ridge was reached 50 yards E. of the summit, but no difficulty was encountered in proceeding thither. The time occupied from the col to the summit was 3 hrs. 50 mins., exclusive of halts.

PATTERNKOFEL BY THE W. FACE.—On August 17 the same party ascended the Patternkofel from the track leading from the Drei Zinnen Hütte to the Patternsatl. No difficulties were encountered, and the ridge was gained about 100 yards S. of the summit. The descent was made by the northern arête.

DENT BLANCHE. NORTH-EAST—EAST RIDGES.—The east ridge of the Dent Blanche forks at a third of its length, one arm descending in great precipices S.E. to the Col de Zinal, the other longer and more gradually N.E. towards the Roc Noir. An attack on this ridge, the obvious highway from Zinal, had been planned during the perfect conditions which prevailed on the mountain in 1898, but was anticipated by local guides, of whose ascent a brief mention was made in 'A. J.' vol. xix. p. 248. As no account has appeared and the ascents differed considerably, a note of that made in 1899 may be of interest. On July 28, Messrs. Young and Mackay, with the brothers Theytaz, of Zinal, and a porter, left the Mountet Cabane at 1 A.M., and, passing the Roc Noir on the north, reached the foot of the N.E. ridge at 2.15. A loose, steep chimney, a passage over easy rocks just below the edge of the arête, and the traverse of a big tower on the south led to a conspicuous little snow col, where the rope was lengthened and the moonlight, by which the climbing had hitherto gone forward, yielded finally to the sun.

The route followed by the guides up the broken northern face being rendered impracticable by recent snow and ice-glazed rocks, the ever-increasing angles of the ridge itself were ascended, until they merged in the perpendicular walls of the great steeple, which marks the junction of the two ridges. An awkward traverse to

the right across glassy slabs, necessitating many steps, followed by several chilly chimneys, and the east ridge was regained just above the fork (8 A.M.). So far the route had justified itself, being free from the dangers experienced in other attempts from this side. The peculiarities of the remainder of the ascent—the ‘Viereselsgrat’—are well known, but on this occasion they were accentuated by unfavourable conditions, the ridge presenting a discouraging vista of heavy cornices and sharp snow-crests, only varied by the formidable, ice-draped towers. Consequently, owing to the necessity of caution and the frequent redistribution of labour, the summit was not reached until 5 P.M. In a cold, driving mist a twenty-minute halt—the only voluntary rest in the day—was taken, and then the descent to Ferpècle followed as rapidly as adverse circumstances would permit. On the way some marvellous storm-sunset effects, including a vivid ‘spectre’ of the party framed in concentric rainbow circles, were witnessed. The last rocks were descended as the light vanished, and a disinclination to the bergschrund by candle-light dictated a weary plough through soft snow almost to the summit of the Col d’Hérens before the tracks could be discovered by whose welcome aid Ferpècle was finally reached at 2.50 A.M.

THE MOST NORTHERLY CLIMB IN EUROPE. THE NORTH CAPE FROM THE NORTH. *July 20, 1899.*—Herr Kristian Bing and his companion, Herr Peder Grande, effected this ascent. They started between 11 and 12 o’clock at night, thanks to the midnight sun. The sea was by no means placid, and the landing from their boat difficult. The rocks were loose and handholds untrustworthy. But the risk from these causes was as nothing compared to the danger from falling stones when they had accomplished the moiety of the ascent. Hundreds of missiles fell round them, and it was not till they reached the top that they found out the cause of the cannonade. A great company of tourists had visited the Cape, and many of them had amused themselves by throwing or kicking stones down the steep sea-cliff. The height climbed was about 1,000 ft. We have to thank Herr Bing, who is one of the most famous of Norwegian mountaineers, for this interesting account.

THE ALPINE CLUB LIBRARY.—The following additions have been made to the Library since May 1899:—

New Books and New Editions.

- Abney (W. de W.). *Alpine Photography.* In ‘The Barnet Book of Photography.’ Barnet, 1898.
- Baillie-Grohman (W. A.). *Fifteen Years’ Sport and Life in . . . Western America and British Columbia.* Roy. 8vo. Pp. xii, 403. Maps. Illustrated. London, Cox, 1900. (Presented by the Author.)
- Ball’s *Alpine Guide.* General Introduction. Hints and Notes. Practical and Scientific, for Travellers in the Alps . . . A new edition, by W. A. B. Coolidge. 8vo. Pp. clxiv. London, 1899.
- Beraldi (H.). *Cent Ans aux Pyrénées, ii.* Paris, 1899. (Presented by the Author.)
- Collingwood (W. G.) and Stefánsson (J.). *A Pilgrimage to the Saga-Steads of Iceland.* 4to. Pp. 187. Coloured and other illustrations. Ulverston, 1899. (Presented by W. G. Collingwood, Esq.)

- Comba (E.). *Histoire des Vaudois*; Introduction. Nouvelle édition. 8vo. Pp. 208. Map. Illustrated. Paris et Florence, 1898.
- Filippi (Dr. F. De). *La Spedizione di S.A.R. il Principe Luigi Amadeo di Savoia, Duca degli Abruzzi, al Monte Sant' Elia (Alaska)*; 1897. Illustrata da Vittorio Sella. 4to. Pp. xvii, 284. Maps. Plates. Milano, Hoepli, 1900. (Presented by S.A.R. the Duke of the Abruzzi.)
- FitzGerald (E. A.). *The Highest Andes: a Record of the First Ascent of Aconcagua and Tupungato*. Royal 8vo. Pp. xvi, 390. Maps. Plates. London, 1899. (Presented by E. A. FitzGerald, Esq.)
- Gribble (F.). *The Early Mountaineers*. 8vo. Pp. xiv, 338. Illustrated. London, Unwin, 1899. (Presented by the Publisher.)
- Haushofer (Dr. Max). *Tirol*. Imp. 8vo. Pp. 198. Map. Illustrated. (Scobel's 'Monographien zur Erdkunde,' iv.) Bielefeld, &c., 1899.
- Heer (J. C.). *Schweiz*. Royal 8vo. Pp. 192. Map. Illustrated. (Scobel's 'Monographien zur Erdkunde,' v.) Bielefeld, &c., 1899.
- Javelle (E.). *Alpine Memories*. Translated by W. H. Chesson. 8vo. Pp. 444. Illustrated. London, Unwin, 1899. (Presented by the Publisher.)
- Lendenfeld (R. v.). *Die Hochgebirge der Erde*. 8vo. Pp. xii, 530. Illustrated. Freiburg im Breisgau, &c., 1899. (Presented by the Publisher.)
- Michelet. *La Montagne*. 3me édition. 8vo. Pp. xiii, 388. Paris, 1899.
- Norman-Neruda, *The Climbs of*. 8vo. Pp. 335. Illustrated. London, Unwin, 1899. (Presented by the Publisher.)
- Ruge (Dr. Sophius). *Norwegen*. Imp. 8vo. Pp. 140. Map. Illustrated. (Scobel's 'Monographien zur Erdkunde,' iii.) Bielefeld, &c., 1899.
- Sabersky (Dr. H.). *ber einige Namen . . . in der Umgebung von Madonna di Campiglio*. 8vo. Pp. xi, 54. Map. Strassburg, 1899.
- Studer (G.). *Ueber Eis und Schnee*. 2te Auflage. Vol. 2-3. 1898-9.
- Switzerland. *Bibliographie nat. suisse*; iii. *Landes- u. Reisebeschreibungen*. A. Wäber. 8vo. Bern, 1899. (Presented by the Rev. W. A. B. Coolidge.)
- Tyndall (J.). *Hours of Exercise*. New edition. London, Longmans, 1899. (Presented by the Publishers.)
- [Young, G. W.]. *The Roof-Climbers' Guide to Trinity*. Containing a practical description of all routes. 8vo. Pp. 35. Illustrated. Cambridge [1899]. (Presented by Sir George Young, Bart.)
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REVIEWS AND NOTICES.

The Highest Andes : a Record of the First Ascent of Aconcagua and Tupungato in Argentina and the Exploration of the Surrounding Valleys. By A. E. FitzGerald. With maps and illustrations. London: Methuen & Co., 1899.

THIS handsome volume is much more than a record of arduous ascents and indomitable pluck. It has a geographical and scientific value, for Mr. FitzGerald went to the Andes to explore as well as to climb. He purposed not only to ascend Aconcagua, but also to clear up some topographical difficulties, and to bring back as much information as possible on the geology and natural history of the neighbouring mountain region. The expedition was carefully planned; instruments for surveying, receptacles for specimens, apparatus for photography, and various kinds of portable food were duly provided. Its other members were Mr. Stuart Vines, Mr. De Trafford, and Mr. Philip Gosse, and it was joined in the country by Mr. A. E. Lightbody, engineer in charge of the Transandine Railway. Mr. FitzGerald was also accompanied by his old guide, Matthias Zurbriggen, together with five Alpine men—Joseph and Louis Pollinger, Lochmatter, Nicola Lanti, and Fritz Weibel—as porters. They left England for Buenos Ayres in October 1896, and went by train to Mendoza. Here a mountain line begins, which is intended to go across the Andes by way of the well known Cumbre Pass, but which at present halts on the Argentina side at the little hamlet of Punta de las Vacas.

Though this pass is barely twenty miles to the south of Aconcagua,

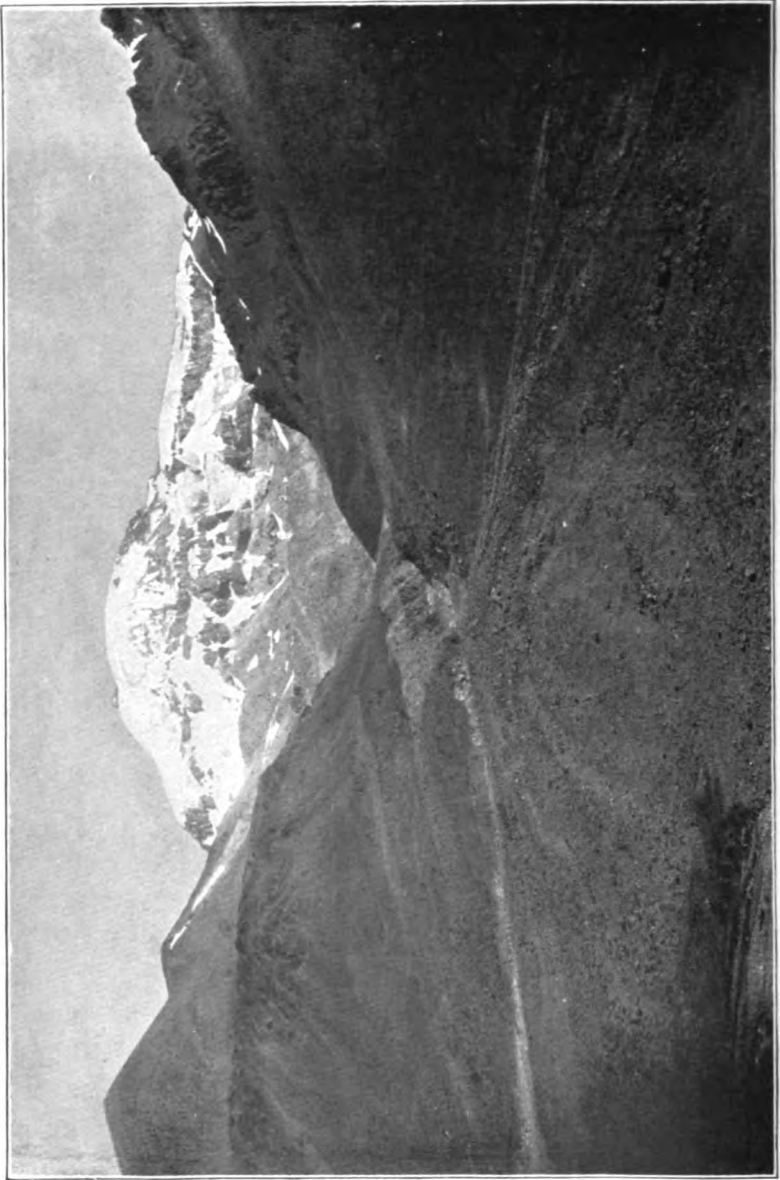
and the valley leading to it is joined by one—the Horcones—descending from the mountain, Mr. FitzGerald found great difficulty in obtaining any precise information about the peak or as to the best way of approaching it. Only one serious attempt had been previously made, namely, in 1883, from the side of Chile, by Dr. Paul Güssfeldt, of whose courage and perseverance Mr. FitzGerald speaks in well deserved praise. Without any competent guide—for one he had brought from Switzerland fell ill at Valparaiso and had to return thence—Dr. Güssfeldt made the first ascent of Maipo, an extinct volcano 17,448 ft. above sea-level, accomplishing the last part of the ascent alone; then he crossed the watershed into Argentina by the Boquete del Valle Hermoso. From the southern side of this valley a glen leads up to the foot of Aconcagua, where he pitched his camp a little below 12,000 ft., and after some preliminary explorations made an attempt upon the mountain, accompanied by two Chilenos, both without mountain experience. One broke down; the other struggled on till at a late hour in the afternoon they reached a point on the W. ridge of the mountain about 1,800 ft. below the summit. Time and the state of the weather made return imperative. A second attempt about a fortnight later was defeated by a snow storm. Thus Mr. FitzGerald and Dr. Güssfeldt attacked Aconcagua from exactly opposite directions, though their routes met on the W. ridge just where the latter had been compelled to turn back.

As the story of the two ascents of Aconcagua and Tupungato has been so recently told in this 'Journal' we need not dwell on details. Both show indomitable perseverance, and we sincerely sympathise with Mr. FitzGerald in being twice obliged to turn back from illness, when within about a thousand feet of the former summit. On the first occasion Zurbriggen completed the ascent, and on the second Mr. Vines, accompanied by Lanti. The experiences of the party are suggestive in regard to the general question of climbing at very high altitudes. Tupungato, according to Mr. FitzGerald, is nearly 22,000 ft. above the sea-level, and Aconcagua was determined by Dr. Güssfeldt as 22,867 ft.; the last camp, at which some nights and one or two days were spent, being about 18,700 ft. Thus the effects of diminished atmospheric pressure were fully tested. These were considerable and of the usual nature. Still Mr. Vines felt no serious distress on the summit of either peak. Yet on Aconcagua, the barometric pressure cannot have been more than two-fifths of that at sea-level. Evidently the limit of the possibilities of ascending, still less of existing, had not been reached. Diminution of atmospheric pressure was undoubtedly a difficulty, but less serious than loss of condition. The latter was due to two causes—the bitter cold, especially by night, and unsuitable food. Among such surroundings frozen Irish stew would disagree with even an ostrich. Cold and indigestion mainly caused the failure of some, the sufferings of all. We infer, then, that in attempts to scale still higher peaks special attention must be paid to the commissariat. On the present occasion valuable experience as to the

best kinds of food was obtained. It should be light, easily digested, and yet nutritious. Warmth also is a factor of the utmost importance. We may venture to say that a low thermometer is more formidable than a low barometer. To keep warm, at any rate at the bivouac, is of the utmost importance. This means requirements in regard to tent and wraps and camp furniture generally which sound very like counsels of perfection: for they are impracticable without weighty baggage; otherwise almost everything is staked on the chance of the weather. These Chilean mountains, however, seem exceptionally liable to gales, and so perhaps are less favourable to climbers than some other districts. Still we think that in any attempt to go much higher than 20,000 feet either the proverbial *robur et æs triplex circa pectus* or a fairly comfortable camp will be indispensable. It cannot be without significance that both Mr. FitzGerald and Mr. Vines were attacked by fever in Valparaiso, and the former, especially for some months after returning to England, suffered in health, which indeed has delayed the publication of the book. But the ascent of Aconcagua, repeated by Sir Martin Conway, demonstrates that so far as atmospheric effects are concerned man can reach a considerably greater elevation.

A few other ascents were made, the most important being that of a mountain called the Catedral, about 18,000 ft., which offered rather more difficulties than the two giants, and a midwinter passage of the Cumbre Pass in a snow storm was a distinctly perilous business. Crossing torrents was often as necessary as it was hazardous, for they are swift and full of deep, treacherous holes; on one occasion Zurbriggen had a narrow escape of being drowned—which indeed he anticipates will be his fate. In fact the expedition entailed much rough work and hardship. The Andes in this region are a remarkable contrast to the Alps. Trees are wanting; vegetation is represented by only a few stunted shrubs or scanty blades of grass. The beds of the valleys, the slopes of the mountains are covered with rocky débris; they are desolate almost beyond expression, as we can infer from some of the photographs. But the upper parts of the mountains are impressive. They are all built up of volcanic rock, but from each of those explored the crater has vanished; the carving tools of nature have gashed them with ravines, hewn them into great cliffs, and shaped them into peaks. Though the snow-fields are less extensive than might have been expected, especially on Aconcagua, some glaciers reach a fair size.

The expedition has added considerably to the knowledge of the mountain boundary between Chile and Argentina. Among its fruits are a sketch map of the country from Tupungato to Aconcagua, with one in greater detail and on a larger scale of the latter mountain. A collection of rocks, which has been described by the present writer, was brought from the more interesting localities, all being above 12,000 ft.. They are volcanic, excepting gypsum, which is probably the produce of mineral springs. A few fossils from a little below that level have been described by Mr. G. C. Crick; the animals by Mr. Gosse and others, and the plants by Mr. Burrill.



TUPUNGATO, FROM THE EAST.

The birds brought back were fairly numerous ; mammals and other animals few ; but one lizard, one spider, and a parasitic insect were novel. The plants are interesting, and lead Mr. Burrill to make some suggestive remarks on the question of distribution. Among them are ten genera whose home appears to be in the north. Their ancestors, he thinks, may have reached North America from the Old World, and then spread southwards along the mountain backbone of the New World continent.

Mr. Vines has contributed chapters to the book, and both authors have done their part admirably, while the 'get up' of the volume is in Mr. Methuen's best style. It is well illustrated from photographs taken by members of the party. Some, of course, are better than others, which under such great difficulties is no wonder ; but the best are simply admirable. They enable us to realise the scenery of this region in the higher Andes. In conclusion we heartily congratulate Mr. FitzGerald and his friends on the results of the expedition, and thank them for this addition, no less valuable than fascinating, to the literature of mountains. T. G. BONNEY.

[We are indebted to the courtesy of Messrs. Methuen for the illustrations of *Aconcagua and Tupungato*.—Ed.]

Bergfahrten in den Grödner Dolomiten. By Fritz Benesch. Munich: 1899.

When I went to Vienna in 1893 I tried to come in contact with the academico-alpine element of the University. Among those students whose acquaintance I then made, and whom I subsequently often met, was a pale and thin young fellow, whose frame seemed little suited for exploits in the mountains. 'That is Benesch, our photographer,' I was told. The epithet 'our' was justified in two ways. It expressed the pride that he was one of the 'set,' and that his camera was busy in the Langkofel group, the special district of the 'Akademische Section "Wien."'

Soon I knew more of him, especially on those occasions when he took me for a winter climb on the picturesque Rax mountains. To these, and the Schneeberg opposite, he devoted nearly all his Sundays, and the outcome of these excursions were two guide-books, which for accuracy and lucidity must rank as perfect models of their kind. At the age of seventeen, when still in school, he produced a plastic relief of the Rax, which is considered equal to the best work of Imfeld, Oberlercher, or Keil.

To a certain degree this was explained when one fine day he told me that I was celebrating with him his fiftieth ascent to the Rax plateau. Being generally alone and of a careful and painstaking disposition, he had acquired a marvellous eye for topographical detail and an astounding faculty of observation. Never have I seen him hesitate in the thickest fog or driving snow. Thus he has become one of the best living judges of the theoretical and practical merits of maps, and this intimate attention to the features of a district gives its great value to the text of the book now before me.

But it is, above all, of the photographer that I wish to speak.

His enthusiasm was great. When once I had induced him to show me some of his work, he complained of its mediocrity. I was then one of those simple-minded individuals who imagine that for photography nothing is necessary but a camera and chemicals. Pointing to a fine picture of snow and clouds, I asked him how such an effect could be rendered. Warmed by the interest shown in his efforts he eagerly tried to instruct me. 'Divide the height above sea-level by the focus, multiply by the intensity of the sunlight, subtract the value of the background from that of the foreground, and add the result to the diaphragm; then make an allowance for the yellow disc, the kind of plate you are using, the hour of the day, the moisture of the atmosphere, and you will have the exposure in seconds necessary to obtain a fairly good picture, if luck favours you and the apparatus acts without a hitch.'

I am not sure that I quote these hints quite correctly, but they give one an idea of the skill required to turn a good view. In every branch of art, science, and industry the good forms only a small part of the merely acceptable, and what was considered exceptional ten years ago is now judged by a higher standard. Likewise, the earnest striver after perfection will measure his progress by the work of earlier years, and as time advances the selection becomes more and more stringent. There is not the slightest doubt that this care in the choice of his views has earned for the author of this book the praise which he deserves. From the first he has been actuated by that severe self-criticism which always carries with it the guarantee of success.

When I met Mr. Benesch in 1893 I obtained a series of copies from him, but when he saw some of them on the walls of my room he strongly remonstrated. 'They are not fit to be seen by strangers: you have selected the worst of the lot'; whereupon he tried to convince me of their utter worthlessness, though I confess that the many defects which he pointed out did not entirely catch my uneducated eye. Subsequently he borrowed the pictures from me for some mysterious purpose which must be rather slow in its realisation, seeing that my requests for their return are only answered with the promise of a sure and certain hope. The idea of this book was conceived more than six years ago, but the author's friends had almost despaired of ever having the privilege of feasting their eyes on it. Every year he was urged to publish his rich harvest, but every year he grew more and more dissatisfied with himself. Vainly we told him not to miss golden opportunities, we always met with passive resistance; he gave himself the air of one who lacks the least particle of courage and enterprise.

In the spring of this year (1899) a mutual friend communicated to me the astonishing news, 'Benesch is publishing; I have seen the proofs.'—'At last, at last; I am very glad, though *he* will certainly regret it to the end of his days, in spite of the protestations of the world at large. I hope,' I continued, 'to be able to get a set of copies from all his plates; it would be a splendid and interesting

collection, a kind of supplement to the book.' 'Do not indulge in vain speculations,' my friend replied, 'for Benesch destroys all the plates which he does not like.' 'What, all the plates he does not like?—views that would make the reputation of many an amateur; and have not even the really bad ones at least their great topographical value?'

Well, we must be satisfied with what we have received.

The book contains a hundred illustrations, but the number of plates rejected must have been many times greater, in spite of the care which was always bestowed on each individual exposure, for Benesch never was a manufacturer of views.

As one turns over the pages one cannot help seeing everywhere the subtle instinct and the strong will of a true artist.

Nobody has hitherto so completely revealed to us the spirit of the Dolomites. Here they are, at all seasons, in all weathers, in all their moods and shades of moods.

The 'Thunderstorm on the Seiseralpe,' where the fitting shadows and the changing lights have been caught by the lens; or the cold and transparent light in which the 'Plattkofel Ostweg' is steeped, and which has been frozen to the paper with the same crystal clearness as in Nature; or the whiffs of 'Morning Mist' which are blown over the Plattkofeljoch to chill the climber who arrives on the top; or, again, the sombre, melancholy, awe-inspiring silence which hangs over 'Lake Pisciadù,' where the cliffs rise black in the face of an approaching storm; the peaceful joy spread over 'St. Ulrich at Easter' (a perfect gem), a peak in its wintry cloak, the peeps into dark recesses, the views of sunlit plains and the studies of trees—all speak to the heart of the mountaineer.

The human element is not forgotten, as little indeed as the villages and gardens of the lower valleys. But the climbers are never used for the production of merely sensational effects; they are there as actors for the sake of the landscape—not the other way, as in a theatre.

The text proves that the author is a careful man both as a climber and with regard to the facts he states. His prose forms a fitting and poetic background to the pictures. There are records of ascents and how pictures were won by many a daring trick; we also find descriptions of Nature and peasant life; everything pleasant and bright, never unduly spun out, and always correct. There is no 'padding' in the book, either with indifferent words or indifferent illustrations.

The reproduction of the seventy views in the text and the thirty full plates is in keeping with the best traditions of the German firms, the printing is generous, the cover very tasteful, and the price ridiculously small (20s.).

W. R. RICKMERS.

The Climbs of Norman-Neruda. By May Norman-Neruda. London: T. Fisher Unwin, 1899.

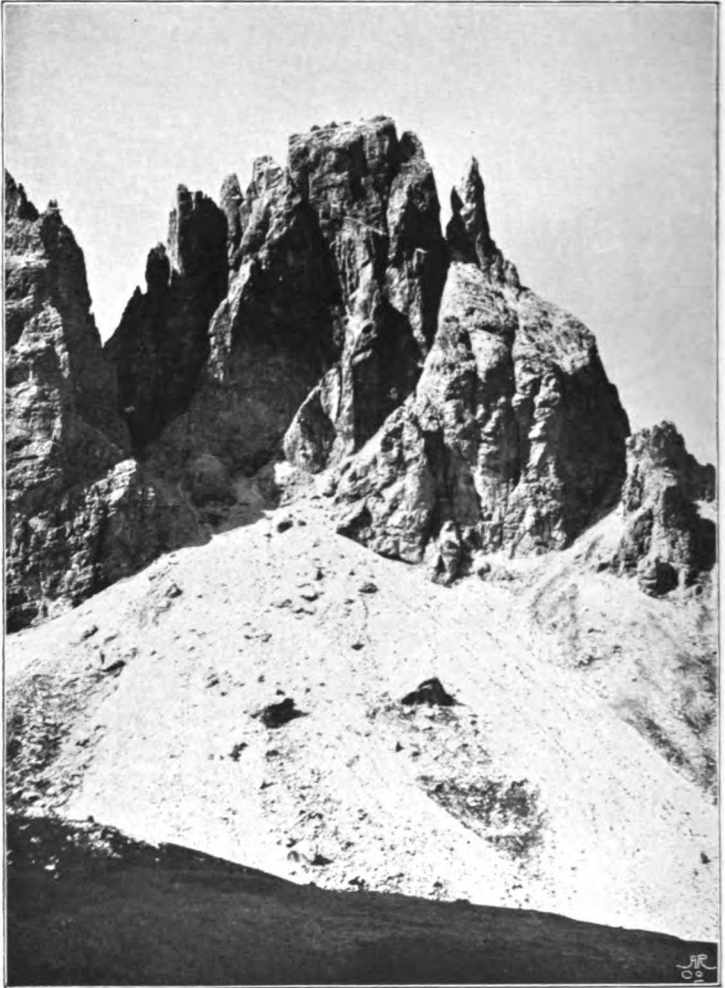
A book concerning the climbs of Norman-Neruda has long been expected, and at last it comes to us in the tragic form of a

VOL. XX.—NO. CXLVII.

F

collection of his manuscripts, edited by his widow. As that lady informs us in her preface, the actual text is given without any pretence at literary form, and exactly as it was found in the journals and notebooks of the writer. That this is so is evident; indeed, by far the best chapter, from a literary point of view, is that wherein 'The Last Climb' is described by Mrs. May Norman-Neruda with a force and detail which almost carry the reader into that 'grim chimney' in which the last act of a daring climber's career reached its tragic end. But it is impossible to resist the conclusion, brought to us by a perusal of the book, that, had the chapters before us received their finishing touch from their writer's hand, he would have disproved his own assertion that he was less competent to wield the pen than the ice-axe. There are many descriptive passages of real poetic power, and it may well be that the very absence of literary finish creates a sense of reality and freshness which more than compensate. Certainly one conclusion is inevitable, both from his life and from his writings, that Norman-Neruda climbed, not 'to make a book,' but from the pure love of climbing for its own sake, and in full sympathy with the loftier aspirations which inspire the true mountaineer. Some of the chapters have already appeared in the 'Alpine Journal,' or in the 'Zeitschrift' and 'Mittheilungen des Deutschen und Oesterreichischen Alpenvereins,' and 'Oesterreichische Alpenzeitung,' and these contain evidences of greater care and finish. If in some places—notably Klucker's 'fourteen steps horizontally,' 'each requiring on an average seventy blows from his ice-axe' (p. 75)—Norman-Neruda may seem to have indulged in a perhaps excessive minuteness of description, he at any rate managed to place before his readers a word-picture of a climb which in its very detail must not only prove interesting to those who may not intend to make the ascent, but distinctly useful to those who do, especially to the guideless climber. It is impossible to deal with the several climbs, some of them 'new ways' and first ascents, in detail, but the general remark may be applied to all, that the descriptions given are those of a sincere climber, who writes as he has felt, neither seeking to exaggerate the difficulties nor to minimise them—a departure from the accurate, which, in its incitement to the inexperienced to undertake that which is beyond his powers, is, in the opinion of the writer, equally to be deprecated. The narrative is always bright and realistic, but it is impossible, even when carried with him in spirit, by the enthusiasm of the writer, to some breezy mountain summit where everything seems instinct with the spirit of vigorous and happy manhood, to cast off the feeling that we have to view all these things with that sombre 'last climb' in the background. This, indeed, seems to provide the sad 'minor key' throughout the whole symphony of joyous life which pervades the writings from end to end.

Of his Swiss climbs, Norman-Neruda quotes, in order to confirm, Klucker's opinion, that few, if any, of the difficult expeditions which they had made, together or separately, before or since that climb,



THE FÜNFFINGERSPITZE, FROM THE SOUTH.

offered difficulties, so many, long, and lasting, and so few comparatively easy bits, as the steep rock-rib which had furnished their new route up the Lyskamm from the north.

But the Dolomites of Tyrol cast a stronger spell over Norman-Neruda, as they have done over many a climber. He was familiar with every noted Dolomite district; and his monograph, 'Die Rosengarten Gruppe,' commenced in the 'Zeitschrift' (1897) of the D.Ö.A.V., and continued, with his revising aid, by Herr Hans Forcher-Mayr in the 'Zeitschrift' of 1898, testifies to the completeness of his knowledge of that group, although the book before us contains no description of an ascent either of the Winkler or Delago *Thürme*.

But the Langkofel group, and, notably, the Fünffingerspitze, seemed especially to exercise over Norman-Neruda a fascination which led him again and again, by every known route, to its summit, until he could write that he had six times set his foot upon the peak. 'Strange as it may seem to the uninitiated,' he wrote, 'I do not for a moment assert that some future date may not again find me setting foot on those steep and difficult rocks.' And in September 1898, that 'last climb' of the Fünffingerspitze, by the Schmitt Kamin, was undertaken—with what result we know. The difficulties of that Kamin are known to all those who have made the ascent by their own exertions. 'The climb is the most difficult in my experience; in no other are there so many bad bits to overcome. Who will fetch our cards?' was the certificate and challenge of the daring Austrian climber who first conquered the Kamin. It 'still remains, and must ever remain, one of the hardest bits of rock-climbing it is possible to find,' wrote Norman-Neruda; and even with that ever-shifting 'Will-o'-the-Wisp,' 'the most difficult climb in the Dolomites,' before our eyes, Schmitt's opinion is likely to be shared by most of those who know the place. That Norman-Neruda, in full health and strength, was fully qualified to undertake and lead the climb no one who reads his account of his solitary ascent of the mountain by the Schmitt Kamin in 1894 can for one moment doubt. 'But,' and so runs the preface to the book, 'by a cruel irony of fate, he met his death on the very mountain with which he was most familiar, and through a momentary neglect of one of the rules of mountaineering upon which he insisted so strongly—that of not undertaking any very difficult ascent when not in the best of health. He himself has given the mountaineer the watchword of "Caution," and no one was more fully aware of the terrible penalty that the least deviation from the accepted rules for the avoidance of danger exacts from the climber.' It is well that these words have been fearlessly written by the hand of all the most entitled to pen them, and we feel that we may insist that a lesson so tragically taught shall not be taught in vain. 'The undertaking of excessive exertion when not in proper condition of health may,' wrote Norman-Neruda, in unconscious prophecy, in the book before us, 'produce a dangerous state of over-fatigue, or a momentary faintness, a temporary heart failure, which,

in a difficult place, may involve a fatal slip.' And that heart failure, and slip, came to the writer of those words in the Schmitt Kamin on September 10, 1898. 'Caution' is the watchword given by Norman-Neruda in his writings from end to end, and, with the ever-increasing 'Death Roll' of the Alps we must again, and ever again, insist upon it in order that mountaineering be not brought into disrepute. We need more prudence, more self-restraint, more of that ever needful care, without which, sooner or later, even the ablest mountaineer may meet with irreparable misfortune.

It is inevitable that the acts and writings of so daring and versatile a mountaineer as Norman-Neruda should directly raise some of the vexed questions of mountaineering science and ethics. 'We have nothing to say against climbing without guides, when practised by experienced mountaineers in proper numbers. It is for the thoroughly trained climber, not for the tyro.' These words have already appeared in the 'Alpine Journal,'* and Norman-Neruda has said much that is pertinent and true in his treatment of this question. But the claim of the solitary climber on the great peaks—whereof his own ascents of the Schmitt Kamin and of the Dent Blanche are instances; and the fate of Herr Winkler on the Weissshorn is another; it is with hesitation that we can accept to the full the position claimed by the writer. That the solitary climber has rewards not given to the multitude of climbers is well stated. 'The true spirit of the mountains,' wrote Norman-Neruda, 'is more often revealed in its most complete majesty to the solitary wanderer, whose mind is better fitted to rightly appreciate the sublime teachings of Nature than were he to seek her in the company of others in those "silent solitudes" where she is grandest and freest, unfettered by aught but her own unalterable laws.' Yes, it may well be that climbing alone for the gifted climber may win moments of unspeakable enjoyment—but how many climbers are so gifted? And how fine the line which separates these from those who, over-estimating their capacity, may be allured by the success of the more competent to an enterprise from which there is no retreat? 'Climbing alone' is already too often the epitaph in the annual death-roll.

And, again, even to the most gifted, may there not arrive that moment, due to sudden and unforeseen change of weather; to partial disablement by accident of stone or slip; when the presence of the companion-climber may mean all the difference between safety and disaster?

'A few hours, or even minutes, of severe rain or snow and hail may cause otherwise easy routes to assume difficulties of the most severe description, and involve serious risks to the climbers.' So wrote Norman-Neruda in his admirable chapter on 'Mountaineering in General'; and the solitary climber will do well to keep this fact sternly before him in the selection of the excursion which he may essay to make.

* *Alpine Journal*, vol. xix. p. 587.

Norman-Neruda is very, and rightly, severe in his treatment of a class who perhaps bring more shame to mountaineering than any other—the braggart—the person to whom the most difficult climb ‘does not exhibit any extraordinary difficulty,’ or is ‘quite easy,’ or merely ‘interesting,’ for the simple and sufficient reason that he, or she, has been ‘personally conducted’ to the summit by stalwart guides, with rope of adequate strength. The bubble reputations built on ‘diligent writing in the various papers,’ and ‘book after book’ filled with the scribblings of the ‘Mountain Dwarf,’ are treated with scathing irony, as are also the performances of those climbers, male and female, who, ‘without any special help,’ are hoisted to the most difficult summits in the Dolomites. Unquestionably the Dolomite peaks lend themselves more readily to ‘haulage’ than do the less vertical snow mountains. Oftentimes the aspirant for Dolomite fame, who boastfully recounts his, or her, wonderful adventures of slip, suspense, and rescue, would, were the laws of the game to be strictly applied, instead of being credited with the ascent of the mountain, be ruled out of action, and to have died upon it. But that there are lady climbers capable of the most brilliant performances Norman-Neruda had, of all men, the fullest opportunity of knowing. However, his rod falls only on the shams, and a certain well known Dolomite classic, which holds a quite unique position in Alpine literature, does not quite escape the lash.

But these may be considered the lighter sections of the book before us. The rest is serious, manly, and permeated throughout with evidences of the higher and purer feelings which we have come to recognise as inseparable from our favourite sport. ‘No sport,’ wrote Norman-Neruda, ‘is so well calculated to raise the moral and artistic tone of human nature by bringing into play all the better qualities of a man’s character, self-reliance, courage, and presence of mind, and by awakening, even in the dullest, a perception of the artistic and beautiful.’ This is well put. And the writer asks, ‘What friendships can equal those formed in the Alps? I doubt that any other sport can knit such ties as mountaineering.’

With this we think many of us will be found in close agreement; but he writes also, ‘Only he is dead who is forgotten, and the companion of the Alps will never be forgotten by his friends.’

And, in this sense, the writer of the book before us is not dead, but living.

C. E. S.

[We owe the Illustration of the *Fimnfingerspitze* to the courtesy of Mr. Fisher Unwin.—Ed.]

Jahrbuch des Schweizer Alpenklub. Vol. xxxiv. 1898.

This volume is in no way inferior to its predecessors. It is illustrated by more than fifty photographs. For the first time it is issued elegantly bound in cloth gilt. The editor may be congratulated on having obtained his wish in two respects. The

articles on Mont Blanc and the reviews by other hands than his own are twice as numerous as in the preceding volume. This does not, however, mean much, as there are only two articles and two reviews (out of twenty). The ascents, either new or by new routes, which have not appeared already in the 'Alpine Journal,' or which are described in the present volume, are as follows:—On August 7, 1897, H. H. Wödl, W. Lohnmüller, and Dr. A. Swaine ascended Mont Blanc by a new route. From the cabane on the Aiguille Grise they gained the upper part of the E. branch of the Glacier du Dôme, thence over steep slopes gained the ridge above the Cabane Vallot, and reached the summit along the Bosses ridge. On August 23, 1898, M. A. Archinard, S. Miney, and R. Montandon-Robert climbed the Aiguille du Gouter from the summit of the Tête Rousse.

On July 25 H. H. A. Hess and Leitz, with L. Croux and A. Pession, from the Cabane Jorasses followed the great couloir to the Rocher Whymper, and thence ascended by the usual route to the Grandes Jorasses. They then descended by the great couloir direct to the cabane. On July 22 the same party ascended the Aiguilles Marbrées from the Col du Géant by the N. face. On August 25 the same ascended the Aiguille de Brenva from the Brenva huts by the S. face. The same, together with Dr. Santi and C. Ollier, ascended the Dent and Tour du Jetoul from the col between the two peaks. On September 25 the same from the Col du Géant ascended the Aiguillettes du Tacul. On August 13 Dr. A. Ferrari, with L. Berthollier and C. Ollier, ascended the Aiguille de l'Aigle (3,573 m. = 11,722 ft.) from the Petit Mont Blanc. On September 2 the same, after ascending the Aiguille du Midi, descended to the Glacier du Géant, and thence ascended the Tour Ronde by the N.N.E. face (?).

On August 18 S. E. Canzio and F. Mondini, with G. Noro, reached from Prarayé the S. peak of La Sengla (3,690 m. = 12,106 ft.). On August 23 S. Mondini and N. Vigna, with G. Noro, ascended from Prarayé the Col des Lacs (3,200 m. = 10,499 ft.). On August 5 H. H. A. Hess, G. Levi, and A. Leitz, with J. Pettigax, L. Croux, and A. Pession, from the Chalets de By reached the Col du Sonadon, and thence ascended the Grand Combin by a new route over the S. face. On August 18 Signor Guido Rey, with J. B. Perruquet and two porters, reached the Punta Bianca (3,950 m. = 12,962 ft., between the Dent d'Hérens and Pte. Carrel), and then descended by the couloirs of the S. face direct to Giomein, but on the way were obliged to bivouac at 3,200 m. (10,499 ft.). The Punta Gnifetti was ascended from the Sesia Joch by S. G. B. Guglielmina and N. Schiavi, with the porter Motta Nicola. Starting from the Flua Alp on August 15, they bivouacked on an isolated rock E. of the S. outlier of the Parrot Spitze. On 16th by the Sesia couloir and the rocks on its E. side they mounted to about 4,200 m. (13,780 ft.), where they again bivouacked. On 17th snow hindered the further ascent of the couloir, and over difficult and dangerous rocks they

reached the S. ridge of Punta Gnifetti about 10 m. (33 ft.), above the lowest dip of the Sesia Joch, and along this the Capanna Margherita. Next day descent by the Col de Lys and Col d'Ollen. The passage of the Col Zurbrüggen (4,344 m. = 14,252 ft., between the Ludwigshöhe and the Schwarzhorn) was effected on September 10 and 11 by SS. G. F. and G. B. Guglielmina, with M. Zurbrüggen and Cl. Imseng, after two failures in August 1897 and July 1898, from a bivouac on the S. spur of the Parrot Spitze at 3,600 m. (11,811 ft.). From this they climbed the snow summit above, and then over steep rocks reached the narrow col. On August 12 SS. Pierluigi Donini and Sanguinetti, with a porter, reached from Alagna the dip between the Col delle Loccie and Pizzo Fallar. This was climbed with some difficulty and the ridge followed to Corno Fallar. On August 23 Signor P. Chiozzi, with Nicola Motta and two porters, ascended the Vincent Pyramide from the Col d'Olen by the S. face. On August 6 HH. E. Molliet and E. Cardinaux effected the first traverse from the Weisse Frau to the Morgenhorn.

On August 23 SS. D. Ferrari and E. Allegra ascended the Mte. Leone by the apparently inaccessible E. face from Veglia. On July 30 SS. C. Casata and R. Gerla, with Marani, from the Tosafall Hotel ascended the Punta della Valletta (2,910 m. = 9,567 ft.) by the N. ridge and descended by the S. ridge. They then climbed both peaks of the Gemelli di Ban and returned to the Hotel by the Nufelgiu Pass. The same party on August 25, after ascending the Punta Mottiscia, made the first passage of the Bocca Mottiscia to the Alp Veglia. Herr F. Weber, sometimes alone, sometimes with a friend or guide (J. J. Trösch or Jos. Gamma), has made a number of ascents round the Felthal (Uri). The names are often not to be found in the Siegfried atlas, but are used locally. They are considered to be new, as no traces were found of previous ascents. He also has made ascents by new routes of the Crispalt, Piz Giuf, the Bristenstock, and the Kronte. Mr. and Mrs. Baker Gabb made several new ascents from the Stein Inn on the Susten Pass. On July 15 they passed from the Steinlimmi to the Col between the Drosi and Gigli glaciers, and thence ascended the two peaks of the Wanghorn (2,823 m. = 9,261 ft., and 2,837 m. = 9,307 ft.) and the Drosistock (2,831 m. = 9,287 ft.). On July 26 from the Sustenloch they ascended a nameless peak which they propose to call Sustenlochspitze (2,931 m. = 9,616 ft.), and on August 23 they ascended the Vorderthierberg by a new route, from a point a little below the Steinlimmi. On July 26 HH. R. Helbling and E. Labhardt made the first traverse from the Fleckistock to the Stücklistock. On September 18 HH. R. Helbling and G. B. Litscher made the first traverse from the Ringelspitz to the Glaserhorn. Herr R. Helbling (no date) alone effected a new descent from the Winterstock by the S.E. ridge and E. face. On July 15 HH. K. Frey and P. Wirz ascended the Grosse Zwölflhorn (2,743 m. = 8,999 ft.). On August 7 two climbers (no names) effected the descent from the Bündner Tödi by the N. face. On October

80, 1897, Dr. O. Bernhard made the first traverse of the *Cresta Mora Grat* from the *Fuorcla Taverna*. On June 25 SS. Antonio Cederna, with E. Schenatti, ascended the *Pizzo Verona* by the W. ridge. On August 16 SS. G. Ongania, A. Redaelli and B. Galli-Valerio, with Bonomi, from the *Capanna Badile* ascended the *Piz Cengalo* by the S.W. face. On August 19, 1895, HH. A. Ludwig and H. Pahl ascended the *Hintere Plattenhorn* by the S.W. rock face and the W. ridge. In 1897 Herr W. Paulcke ascended the E. peak of the *Ungeheuerhorn (Silvretta)* by a new route. In September 1897 Mr. W. Clark, with L. Guler, made the first traverse of the *Hintere Ungeheuerhorn*. On August 12, 1897, Herr L. Purtscheller ascended the *Verstankla Horn* from the *Vernela glacier* by a new route. The same on Aug. 18, 1897, ascended *Piz Linard* by a new route from the *Vereina Pass*. In the summer of 1897 Herr Rob. Burckhardt descended by a new route from the *Ballunspitze* (2,669 m. = 8,756 ft.). In 1897 HH. Meynow, M. Schlesinger, and W. Weigand ascended the *Tirolerkopf (Bielthalspitze)* (3,094 m. = 10,151 ft.) from the S.E. On August 2 Dr. Bröckelmann, with Ignaz Lorenz, climbed the N. peak of the *Tirolerkopf*. The same, in 1897, made the first ascent of the N. tower of the *Krone* (?). The same, on August 8, from the *Wiesbaden Hut*, climbed the *Gross Buin* by the N. face. On August 26 HH. M. Henze and Lachmann, with Gottl. and Ignaz Lorenz, traversed the *Silvretta Horn* by a new route. On August 30 Herr M. Henze, with Ignaz Lorenz, ascended the *Klein Buin* by the N. face. On August 4, 1897, HH. Silvius Radlherr and Moritz Uhlik made the first traverse from the *Solaruel Joch* to the *Hornspitze*. On September 18 HH. W. Hock and E. Schottelius, with J. Poth, made the passage from the *Drusenfuh* to the *Eisjochl*, and thence ascended the *Hohe Thurm*. In 1896 Herr F. W. Sprecher ascended *Piz Sardona* from the W., and on September 17, 1898, made the first ascent of the *Mittlere Scheibe*.

There are but two articles on the *Club district*, though some references are made to it in the minor communications. M. Julien Gallet (who has written so much on the *Bernese Alps*) in 1898 visited the *Ofen Pass district*. He made his headquarters at *Zernetz*. Here Dr. Gröbli found much fault with him for taking two guides and so much provision and wine. 'I,'* said he, 'go alone with some bread and chocolate in my pocket and drink only water.' M. Gallet had with him his old guide, J. Kalbermatten, and a local 'Gemsjäger,' Meinrad Gross. In the inn were hung up lists of excursions and a tariff, but there were no guides. He gives many interesting particulars about the village and its inhabitants. The wealth of the commune is considerable, and they have already paid off the debt contracted for rebuilding after the fire of 1872. On August 6 they ascended *Piz Laschadurella* (3,054 m. = 10,020 ft.), a second peak without name not before ascended, then *Piz Flur* (3,050 m. = 10,007 ft.) and *Piz del Bosch*

* This reminds one of the late M. J. J. Weilenman.

(8,014 m. = 9,887 ft.); on August 8 Piz Plavna da Daint (8,174 m. = 10,418 ft.). On August 10 they made the first passage of the Arpschella Pass (2,900 m. = 9,515 ft.), from which over the Grialetsch glacier, then deep in snow, they reached the Grialetsch Joch (2,546 m. = 8,358 ft.), and descended by the Dischma Thal to Davos. On August 11 they ascended the Piz Diavel (8,072 m. = 10,078 ft.), probably the only ascent since it was climbed by Herr O. Schuster. They then crossed the Ofen Pass to S. Maria, and on August 14 made the first ascent of Piz Schumbraida (8,128 m. = 10,246 ft.), by the N. face. Herr C. Egger describes the experiences of a week spent in the Silvretta Club Hut along with friends, amongst whom were the president and vice-president (the well known Rzewuski) of the Section Davos. He tells us not so much of mountain excursions as of the hut life, the various kinds of visitors, &c. With regard to the complaint that so many people visit the easily accessible huts who make no mountain excursions, he says that in that week there was only one such case, and that was a little girl. On their last excursion on August 16 they were favoured with a fine exhibition of the spectre of the Brocken, the image being seen in the centre of two concentric rings.

Out of the special district Herr Dr. Raimond Schäfer (Uto) describes a traverse of Mt. Blanc. He had for guides F. Payot and L. Breton. They left Chamonix just as the funeral procession of Mr. Aston Binns's guide was passing through it. Next morning (September 21) from the Hôtel Bellevue, on the Col de Voza, they climbed the Aiguille du Goûter, and over the Dôme du Goûter reached the summit of Mt. Blanc in 18½ hours, halts included. They had the key of the observatory and spent the night there. On arriving his pulse beats were 150 per minute, and during the night never fell below 100. They had no fire, and no amount of coverings seemed to give warmth, as all were several degrees below freezing. Next morning over the Mt. Maudit and by a difficult descent over broken glacier to the Mt. Blanc du Tacul, and thence to the Col du Midi and the hut. They then climbed the Aiguille du Midi and returned to the hut, where they spent the second night. The hut was in very bad condition. Next morning by the Glacier du Géant and the Mer de Glace to the Montanvert and Chamonix.

Mademoiselle Eugénie de Rochat contributes another interesting paper on the Mt. Blanc district. On August 8 an attempt on the Blaitière failed, owing to the bad condition of the snow. The party had a narrow escape, as an avalanche swept the couloir just after they had left it. On August 21 they succeeded in reaching the N. and central peaks. This excursion from the Blaitière hut to Chamonix took 15½ hours. On August 23 they attempted the Petit Dru. Strange to say, neither of her guides, Joseph Demarchi and Félix Lambert, had made this ascent, though the former had been half-way. It need hardly be said that they lost much time in false attempts, and at last had to turn back when only about 20 metres (65 ft.) below the top. The ascent is

evidently very difficult, even with the most experienced guides. On August 30, with Giulio Proment, she climbed the Grandes Jorasses. On September 14, with Proment and Demarchi, she traversed the Aiguille de Bionassay from the Cantine de la Visaille to the Refuge des Bosses in 22 hrs. (2.15 A.M.-12½ A.M.). Next day to the Refuge Vallot, where M. Vallot entertained her, and thence in 55 min. to the top of Mt. Blanc.

Herr H. Biehly (Bern) describes the first ascent of the Weisshorn by the N. ridge. This had been proposed to Herr B. and a friend by Heinrich Burgener, the 23 years old son of the well known Alexander, but bad weather set in and the tourists returned to Bern. On September 18 Herr B. telegraphed to Burgener, but on arriving at Siders did not find him. In despair he engaged two other guides, who, however, were not enthusiastic. With these he went to Zinal, and all was ready for a start when the missing Burgener appeared. Three guides were now too many. However the two new ones cried off. They did not care to go with Burgener—he was too young and inexperienced. One of them, however, would go as porter to the Col Tracuit, where they meant to bivouack. From the col they made a reconnaissance, and on September 21 they started at 3 A.M. The steigeisen were soon useless and they had to cut steps by lantern light. After some ticklish passages they reached the ridge at 6 A.M. at the lowest point (about 4,120 m. = 13,517 feet) between the Weisshorn and Bieshorn. They got along the ridge with various difficulties and at 8 A.M. reached the gendarme. A precipice in front and ice-clad rocks to the right forbade any attempt. Only to the left could it be possible. After passing some smooth slabs with little hold, where a slip of either would have been fatal to both, they perceived a crack which, if they could attain it, would enable them to gain the ridge beyond the gendarme. Here a block must be passed * which swayed when Burgener attempted to climb it. It did not, however, turn over, and with caution they were both able to pass it, and the ridge was gained. The victory was won, but the rest of their task was by no means easy. The top was reached at 11 A.M. The descent was made by the usual route, but so slowly that Randa was not reached before dark. Here Herr B. thought to give Burgener a great pleasure and ordered a bottle of 'champagne extra-sec;' but Burgener said he had never tasted such bad wine in his life. In Zermatt no one would believe they had made the ascent by that ridge. Herr Dr. E. Amberg describes a visit to the little known district E. of the St. Gothard. He and his friend found good quarters at the St. Maria Hospice, on the Lukmanier Pass. The ascents of Piz Vitgera (2,984 m. = 9,790 ft.) and of Piz Ganneretsch (3,043 m. = 9,984 ft.) seem to be new. The article is illustrated by several views taken from drawings by Herr J. Müller-Wegmann made more than twenty years before.

* A fatal accident happened in this way on the Seekarles Spitz (Pitzthal) on August 14.

Herr R. Helbling (Piz Zol), with his friends Labhardt and F. Grob, made the first ascent of Piz d'Aela by the N. face on July 22. They had failed three times before. The snow was in bad order, which made the difficulties much greater. Several times Herr H. had to force his way up a crack (once for more than 80 ft.), and then help his friends up with the rope. When at last the ridge was reached the snow was so bad that they made very slow progress, and at last at 7.30 P.M. they made up their minds to bivouack, and spent a miserable night.* Next day the top was soon reached, and they descended by the usual route, which was found in very bad order, to the Club hut. Herr Helbling alone effected the traverse from the Gross to the Klein Sustenhorn. The S. peak (Gletscherhorn) of the Sustenhorn had never been climbed before. He started from the Kehlen Alp, in the Hinter-Geschenenthal, and descended by the Wallenbuhl glacier and the Voralpthal into the lower Geschenenthal. He also made the first ascent of Piz Linard by the N.W. ridge.

Herr D. Stokar (Randa) describes several partly new excursions in the former Club district. These were made from Savognin, in Oberhalbstein. On July 25 with some friends he ascended Piz d'Err by a partly new route. No regular guide was to be had, but they got a chamois hunter, Melchior Wasescha, who was ignorant of the use of either axe or rope, but soon became quite handy with both. The chief difficulty was a very steep snow-slope, where the leader had to cut holes for the hands as well as the feet. On August 13, with the young Oswald Mettier, he ascended the Piz Michel by a new route. On August 17, with Peter Mettier (father and son), he made the ascent of Piz d'Aela from the S. This expedition was difficult throughout. At one point advance was only possible by traversing a narrow horizontal ledge. The rock overhung, so that the ledge could not be traversed standing, or even kneeling; nor was it possible when lying flat on the face. The ledge was not wide enough; only by lying on the left side with face turned to the rock was it practicable. Herr Stokar would have turned back, but the elder Mettier would not hear of this and managed to worm his way across, and was followed with some trepidation by the others. Herr S. had no pleasure in this expedition, because of the many difficulties.

Herr A. Burckhardt describes various experiences between the Lake of Como and Landquart. On landing at Colico he was arrested for having no pass.† On relating this at the Maloya Hotel a guest said, 'I got through with a cattle pass (*Viehzettel*) which I picked up. It's quite enough to have a printed paper certifying something.' Herr B. is a professional drawer of panoramas. A mountain panorama often gives a great deal of

* They took off their boots and put their feet into their rucksacks. How did they get their boots on again? Some travellers have put lighted candles into them to thaw them, but they had none.

† This seems incredible.

trouble, as the artist is so dependent on the caprices of the weather. The article is largely illustrated from his own drawings.

Herr F. Zschokke (Basel) describes a holiday visit to Tyrol in September 1898. There was a large party of eight, amounting with guides and porters to thirteen. From Kaltenbrunn, in the Kaunserthal, by various passes and ascents to the Kaiserin Elisabeth Schutzhaus, on the Becher, on September 17. This was closed, to their disgust, as they meant to ascend the Sonklarspitze. However the neighbouring Teplitzer hut was still open, and they concluded their tour by the passage of the Magdeburger Scharte and an ascent of the Feuerstein. As they entered Gossensass singing on the evening of September 18 they were mistaken for a Tyrolean 'Führerverein.'

The notice of the late Christian Almer by the Rev. W. A. B. Coolidge, his friend for more than thirty years, is very interesting. The portrait of Almer, however, taken from the painting by Ch. Flach, is disappointing and far inferior to the photograph in the French notice, also by Mr. Coolidge.

Dr. A. Bähler (Biel) describes the German-speaking village of Bosco. This lonely village is only accessible by footpaths from the Val Formazza over the Criner Furka or from Bignasco (?), in Val Maggia. The archives contain one document dating from 1253. The dialect spoken varies from the German as at present spoken, but is quite intelligible.

Herr S. Stoffel (Piz Terri) writes of the various roads and paths in the Aversthal. Before the completion of the new road between Cresta and Andeer in the Hinter Rheinthal, communication with the outer world was kept up mainly on the E. side by footpaths over the mountains. Very heavy loads (sometimes as much as 200 lbs.) were carried on men's backs. The valley path to Andeer was so dangerous that it was rarely used, and mostly in winter.

M. Paul Mercanton (Diablerets) describes the devastations occasioned in the Val de Bagnes by the outbursts of glacier lakes. The great floods of 1595 and 1818 were occasioned by the advance of the glacier of Giétroz across the valley. The floods which have now occurred yearly since 1894 have been caused by the comparatively small glacier of Crête Sèche, which joins the large glacier d'Otemma, on the right bank, at the point where it turns at a right angle round the Pointe d'Otemma.

During the present period of retreat of glaciers which is going on the glacier of Crête Sèche has sunk below the level of its right lateral moraine, and behind this every spring a lake forms. This has generally discharged itself in June, but in 1898 the flood did not take place until July 17, when a great quantity of water had accumulated and the outburst did great damage. At Lourtier the Dranse left its bed and formed a new and deeper one, above which the village is raised some 40 feet. Strange to say, the new bed traverses the site on which the village stood previous to the flood of 1818. Various old foundations were exposed. It is now determined to make a cutting through the dam, which will prevent the

annual flood, but watchfulness will always be required. Attached to the next article is an interesting plate from a drawing made by an inhabitant of Vevey on May 16, 1818, showing the glacier of Giétroz and the lake formed behind it. The outburst took place on June 18.

Professor F. A. Forel (Morges) and M. Lugeon (Lausanne), with Inspector E. Muret (Morges), describe some interesting experiments with colouring matter on the glacier streams. On August 22, at 8.30 A.M., they put two kilogrammes ($4\frac{1}{2}$ lbs. Av.) of fluorescine (?) into a stream on the right bank of the glacier at the foot of the great lateral moraine above the icefall. This stream entered a glacier pit. At 9.15 they observed as they descended a jet of coloured water issuing from the ice. At 9.40 the main glacier stream became coloured at its exit, and it remained coloured until 10.30. The horizontal distance between the points of entrance and exit was estimated at 1 kilomètre, and the difference in altitude at 1,640 feet. The coloured water reached the hotel at Gletsch at 10 A.M., and was observed at Riddes (65 miles lower down) on August 26, at 5.30 P.M. Of the 70 glaciers observed in 1898 45 were still retreating; 5 certainly advancing; the others doubtful or stationary.

There are many complaints made of the Matterhorn Hut, which the Monte Rosa section will neither repair nor allow to be put in charge of another section. The new Cabane de Neuchâtel on the Clocher du Bertol (Arolla) is the highest of the Club huts, being 11,280 feet above sea level. The old Matterhorn Hut was 1,200 feet higher.

Attached to this volume is a case containing a pamphlet by M. Emil Courvoisier, on the Club Huts (there are now 54 in number, 6 being new in 1898), and a map of the Ofen Pass district. In December 1898 the number of members of the S.A.C. was 6,148, and the balance to the credit of the Club was 1,024*l.* J. S.

PROCEEDINGS OF THE ALPINE CLUB.

THE ANNUAL GENERAL MEETING of the Club was held in the Hall on Monday evening, December 11, 1899, the Right Hon. James Bryce, *President*, in the chair.

The following candidates were balloted for and elected members of the Club: Messrs. J. C. Atkinson, A. A. Booth, W. J. Clark, W. Douglas, G. W. H. Ellis, H. G. S. Lawson, C. M. Mathews, M. K. Smith, R. H. Warren, jun.

The PRESIDENT announced that Dr. von Zittel, of Munich, had been elected by the Committee as an honorary member of the Club.

On the motion of Mr. C. E. MATHEWS, seconded by Mr. MORTIMER, the Right Hon. James Bryce was unanimously re-elected President for the ensuing year.

On the motion of Mr. R. H. ROBERTSON, seconded by Mr. G. CHATER, Messrs. E. A. Broome and W. Pickford were unanimously

elected members of Committee in place of Mr. Norman Collie and Dr. C. Wilson, whose term of office expires.

On the motion of Mr. H. B. GEORGE, seconded by Sir F. POLLOCK, the Vice-Presidents, the other members of the Committee, and the Honorary Secretary being eligible, were unanimously re-elected.

The Hon. SECRETARY then read the following statement with reference to the re-publication of Ball's 'Alpine Guide.'

'The Committee have to report that the General Introduction to Ball's "Alpine Guide" was published in June this year, under the title "Hints and Notes for Travellers in the Alps."

'Mr. Coolidge has thrown all his accustomed energy into the difficult task of the revision of this introduction, and has produced a most interesting volume, which happily combines such of the original writing of Mr. Ball as it was possible to retain with the large amount of new material which the progress of mountaineering has made it necessary to introduce. At the same time Mr. Coolidge has been keeping in view Vol. II. of the Guide, and has already amassed a considerable amount of material for its completion.

'He has just informed the Committee that he hopes to have two-thirds of the text of this volume ready for the printers at the worst by June next year, and that if his health enables him to continue the work at the same rate, he anticipates the completion of the text next autumn.

'One of the two new district maps is nearly ready for the lithographer, and the other will be taken in hand at the same time as the text of the section (the Ortler). The remaining district maps being reproductions, with a few alterations, of the Alpine Club map, are not a serious difficulty. The general map will be a reproduction of the old general map in Vol. II., with alterations to bring it up to date. Mr. Coolidge would be glad if any member familiar with the Bernina district in recent years would communicate with him on the question of furnishing him with information.

'The question of the publication of Vol. III., which was mentioned at a meeting in summer, has been referred to a sub-committee with an instruction to inquire into the probable cost and to endeavour to find an editor who would be willing to undertake the work. When this has been ascertained, the important matter of ways and means will be again brought before a General Meeting of the Club.

'The Ball accounts may be summarised as follows:—

<i>Receipts.</i>				<i>Expenditure.</i>			
	£	s.	d.		£	s.	d.
Subscriptions . . .	1,018	12	2	On Vol. I.	1,025	16	8
Interest		55	9	Introduction		72	1
Nett amount received on sales of Vol. I. . . .		91	19	Balance		114	2
Estimated amount on further sales to date of both Vol. I. and of General Interest . . .		46	0				
	£1,212	0	6		£1,212	0	6

After hearing this statement the Meeting unanimously passed a hearty vote of thanks to Mr. Coolidge for his great and successful labours in bringing out the first volume and the General Introduction of the 'Alpine Guide.' In these thanks were included those numerous helpers, both members and non-members, who had given such valuable assistance to the Editor.

The PRESIDENT added that, if the Club thought it desirable to bring out the third volume, any member who knew the Eastern Alps would greatly assist by communicating with the Committee with a view to rendering assistance.

A cordial vote of thanks was also accorded to Mr. G. P. Baker for the work done by him in arranging the Equipment Exhibition and compiling the catalogue.

The PRESIDENT intimated that Sir Martin Conway had presented to the Club a wooden ice axe used by natives in the Himalayas.

The PRESIDENT then said: We have had the misfortune to lose several members during the past year. Among these were Mr. F. C. Hulton, an old member of the Club, known to many members as a true and loyal friend. Mr. Stafford Still had been a very zealous mountaineer, never letting a season pass without visiting the Alps. He was endeared to everyone by his courteous manner and by the warmth of his heart. I will not speak of the accident on the Dent Blanche—a matter of great sadness to us all—except to refer to the fortitude shown by the survivor, Mr. Hill, who found his way down alone, passing two nights on the mountain, and being 48 hours without food.

I have also to mention that a New Catalogue of the Club Library has been prepared, which may be obtained by members and others at the price of 3s. Much labour has been given to its preparation by the honorary and assistant librarians, to whom the Club, I am sure, will express their thanks.

Major BRUCE then read a paper on 'Mountaineering in the Himalayas,' which was illustrated by lantern slides.

Sir MARTIN CONWAY remarked that Major Bruce was the only man who knew that part of the Himalaya well. What he had done in training the Ghoorka troops was very important, as he had trained many for work above the snow-line.

Mr. NORMAN COLLIE spoke very highly of the Ghoorka as a climber and as a guide. He wished to express his warm appreciation of the trouble Major Bruce had taken in obtaining servants for Mr. Mummery and himself—he had spent two out of six weeks' leave in finding them good servants, which is one of the most important matters to attend to in Himalayan expeditions.

Mr. HASTINGS also wished to express his thanks to Major Bruce.

Mr. CHEETHAM asked about the height at which mountain sickness was experienced, and Major BRUCE replied that when in good health he did not suffer under 20,000 ft., though when out of condition he had felt discomfort at a much lower level.

The PRESIDENT said it was a matter of satisfaction to have such men as the Ghoorkas among our loyal subjects. Snow work was not required to be done on the Himalaya by troops as on the French and Italian Alps, where men were trained in glacier work. He had greatly enjoyed Major Bruce's paper, and proposed a cordial vote of thanks to him.

This was heartily accorded and the proceedings terminated.

An Exhibition of Alpine Equipment arranged by the Committee with the assistance of Mr. G. P. Baker was held in the Club rooms from December 2 to 23. Refreshments were provided on the afternoons of December 2 and 12. About 1,200 persons attended the Exhibition.

The Winter Dinner was held at the Whitehall Rooms, Hôtel Métropole, on Tuesday evening, December 12, when 269 members and guests were present; the latter including Sir Courtenay Boyle, Sir Alexander Binnie, Professor Henrici, Dr. Schuster, Mr. Moon, M.P., Major Moore, Colonel Selby Smyth, Canon Pelham Burne, Mr. T. R. Warrington, Q.C., Dr. Mitchell Bruce, and Mr. Warrington Hayward.



Sir W. Martin Conway. Photo.

ACONCAGUA FROM THE SMUGGLERS PASS.

Snow Electric Engineering Co.

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THE SOUTHERN ANDES : AN OROGRAPHICAL SKETCH.

By SIR MARTIN CONWAY.

MUCH ignorance still prevails about the orography of the great western chains of South America, which traverse the continent from Panama to Cape Horn. By mere chance, several years ago, my interest was attracted to their southern portion, but I found it quite impossible to attain any kind of general knowledge about its character, its anatomy, its glaciation, or the accessibility of its various parts. The Chilean and Argentine Governments, in consequence of the dispute about their common frontier, have sent several expeditions up to the edges, and sometimes even into the heart, of the mountains in recent years ; but the results of these expeditions have only been partially published, and in a form not very accessible to English students. Now, however, this mass of material is being made available, and I owe chiefly to the instruction of Dr. Moreno, and the paper recently read before the Geographical Society by Dr. Hans Steffen, the information sketched in the present article.

Before proceeding to discuss the main subject of this article let a word be written about the accompanying view of Aconcagua. It is the only existing photograph of the mountain that clearly shows the routes followed in Mr. Vines' and my ascents respectively, and it has not yet been published. It was taken by the Argentine Boundary Commission from a pass in the watershed a few miles N. of the Cumbre, and approximately S.E. of the mountain. On the left is accordingly seen the great N.W. face from a level of about 18,000 ft. upwards. It should be compared with the photograph facing p. 91 of FitzGerald's book, and some-

VOL. XX.—NO. CXLVIII.

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what unfortunately entitled 'The Summit of Aconcagua.' The little bands of rock-face, or 'palisades,' will be recognised easily in both, and the three main couloirs leading through the top cliff to the summit ridge. In neither photograph is the highest point seen, but only the second summit. In the accompanying photograph the highest point is almost exactly behind the second. FitzGerald's highest camp was situated on the left of the great slope, close to the point where it is cut by the nearer ridge. On the right of the face, just above the nearer ridge, is a wall of rocks, which are conspicuously red in colour. My camp was just above them, behind the little teeth that stand up about two-fifths of the way from their left end. Vines' route was up the left side of the face, just below the rocks, to the foot of the final buttress, and then up the gully beside that buttress. My route was up the right side of the face, and up the second or nearer of the two gullies whose openings are prominently seen. Careful inspection will show the foot of a third less direct gully, which leads to the lowest point between the two great peaks. When FitzGerald and Vines return from serving their country in South Africa I hope to get them to dot in their route accurately for the information of future travellers, it being, in my opinion, the better way.

For some distance N. of latitude 32° S. the main range does not rise to any very high altitude above the level of the elevated region on which it stands, but from 32° to 35° S. there are a series of very high mountains, of which Aconcagua is the chief. The northernmost peak of the group is Mercedario (22,300 ft. or more), a great snow-mountain. After several lower but yet big peaks comes Aconcagua (23,392 ft.),* and then Tupungato (22,408 ft.), the only two important peaks in the group that have been climbed. S. of Tupungato are the Bravard (19,619 ft.), San José (19,849 ft.), and a nameless snow-peak (18,537 ft.), and finally, Maipu (17,556 ft.), which was climbed by Dr. Güssfeldt in 1883. Between them are other peaks of considerable altitude, and passes about 13,000 ft. in height. At the Maipu Pass (11,433 ft.) the high range comes to an end. All the high peaks are of volcanic formation, and those to the S. mostly maintain the rounded and, to a mountaineer, relatively uninteresting volcanic form. But from Mercedario to Tupungato the

* The altitudes here given are the latest of the Argentine Government survey. Mr. FitzGerald's careful measurement of Aconcagua made it 23,100 ft. high.

mountains are precipitous and craggy, decked with great glaciers, and with avalanche slopes gouged out by the sun into *nieves pendientes*. It is probably easiest, in a general sense, to approach this group from the Chilean side, excepting, of course, the mountains near the main trans-Andean route. The base of operations, at any rate, should be Chile.

The next great division of the range is defined by the Maipu Pass on the N. and the Las Damas Pass (9,514 ft.) on the S. Its principal heights are the Bayo (16,370 ft.) and Castillo (16,535 ft.) peaks, there being several other mountains from 13,000 ft. to 16,000 ft. scattered along, with passes of 12,000 ft. and upwards. There are several parallel ridges, and the orography is rather complicated. The whole region is capped by volcanic deposits, but most of the separate volcanoes here stand on the W., instead of, as further N., the E. side of the main chain. Summits appear to be of more broken form, with very splintered crests. Glaciers are inconsiderable in number and dimensions. Chile is the better base for the exploration of this district, though the W. is the bad weather side of the range. From Valdivia to the Straits of Magellan the Pacific slope is terribly rainy, the maximum fall probably taking place about lat. 44° S. The wide and easy Las Damas Pass has been suggested as a convenient route for a trans-continental line of railway connecting the R. Colorado and R. Grande valleys with the Chilean province of Colchagua. There is little doubt that it will be constructed some day.

From Las Damas Pass to Lake La Laja, or rather to the Copahue Volcano (9,787 ft.) in the latitude of Los Angeles, a little S. of Concepcion, is the next convenient division of the range, which is still a complicated mountain area of many ridges. Few of the peaks rise above 10,000 ft. An interesting group, well worthy, I am told, of careful exploration, is formed by Mounts Planchon (12,762 ft.), Azufre (12,382 ft.), and Peteroa (13,297 ft.), N. of the Valle Grande Pass (7,490 ft.); whilst the splendid Mount Campanario (13,140 ft.), a tower of jurassic rock with a volcanic cap, must not be forgotten, nor the fine, somewhat isolated snowy Longavi, situated to the west of the main chain, though only 10,430 ft. A solitary exception standing out alone to the E. of the chain is the Domuyo volcano (13,983 ft.) in latitude 36° 40' S. Passes about 8,000 ft. high are very numerous across this part of the chain. Owing to the greater rainfall on the W., the rivers falling into the Pacific have eaten their way back into the soft jurassic beds, so that

the watershed now lies some way to the E. of the line of big peaks. Here also isolated volcanoes stand at intervals on the W.

At Mount Copahue the range bifurcates, the western branch being presently cut through by the Bio-bio river, which has eaten its way back and robbed the head-waters of a branch of the river Limay. Originally what is now the upper valley of the Bio-bio poured its waters southward over the present Arco Pass and down the Alumine and Collon Cura valleys into the Rio Limay. The E. range comes to an end near latitude 39° S. The district may be described as a granitic plateau, flanked on the W. by volcanoes, and on the E. by jurassic and cretaceous formations. It is in this division of the range that the dense forest, nourished by the continual precipitation of moisture from the damp south-western air current, begins to clothe the Pacific side of the range, making the approach to it exceedingly difficult, so that from about latitude 38° S. the base of exploration shifts from the Chilean to the Patagonian side. The valleys and plains to the E. all the way from Copahue to the Straits of Magellan form an admirable base for a mountain explorer. Guanaco, ostrich, and other game is plentiful. Estancias belonging to Argentine, American, Welsh, German, and English colonists are becoming more numerous every year. The scattered Indians are good people; the climate is delightful for open-air life--in fact, a mountain explorer could hardly imagine a more agreeable field for the exercise of his energies. The most interesting route of approach from Central Chile is by the valley of the Bio-bio river, the Arco Pass and the Alumine, Colon Cura and Limay rivers to Lake Nahuel Huapi. But from Port Montt a quicker and far more beautiful route leads by road to Lake Llanquihue; thence by a steamer to its eastern end, whence a road leads eastward in 2 hrs. journey to Lake Todos los Santos, with another steamer. A short voyage along this beautiful lake to its north-eastern extremity lands the traveller at a German hotel, an excellent climbing centre. Thence a track leads eastward, amidst magnificent scenery, along the N. base of Mount Tronador (11,155 ft.), and over a low pass to Puerto Blest on Lake Nahuel Huapi. Tronador is described as a stately structure crowned by three outstanding summits and draped with half a dozen fine and steep glaciers. It appears, in photographs, a most attractive peak. From Copahue southward the average height of the mountains is about 9,000 ft., though many rise above that level, such as the Villa Rica (9,393 ft.), Quetru Pillan (7,782 ft.), and Lanin

(12,882 ft.) volcanoes. The last was climbed by Señor Hauthal, of the La Plata Museum, who photographed the panorama from the summit. The mountains topped with lava are splintered in character and decked with glaciers. Now begins on the E. side of the range a long series of lakes, many of them formed by moraine dams, which are so characteristic of the western margin of Patagonia.

The range from Mount Tronador to about 46° S. may be described as consisting of Swiss-like mountains, with glaciers ever more numerous and larger as they stand farther S. The peaks do not average above 8,000 ft., but the towering Mount Minchinmáhuída, overlooking the Corcovado Gulf, is stated to have an altitude of 7,907 ft., and Mount 'San Valentin' rises to 12,716 ft., not far from Lake Buenos Aires. The range in all its width is cut right through by the Rio Huahum (latitude 40° S.), and thenceforward to the S. by many other streams emptying into the Pacific, which, in process of time, have eaten their way back and robbed the head-waters of the less amply rain-fed Patagonian rivers, or obtained access to lakes originally drained eastward. Three chief centres for the exploration of this part of the Cordillera are Lake Nahuel Huapi, the Valley of the 16th October, and Lake Buenos Aires. On both lakes there are steam launches, and about all three centres are fairly numerous settlements of civilised men, whilst the scenery is everywhere superb, and the weather, on the E. side of the range at any rate, much the same as we are accustomed to in the Alps. Supplies are easily obtained, and there is plenty of game to fall back upon if other sources chance to fail. A good description of all the eastern side of this part of the range will be found in Dr. F. P. Moreno's 'Notes Préliminaires sur une Excursion aux Territoires du Neuquen, Rio Negro, Chubut et Santa Cruz' (La Plata. 1897. 8vo.).

South of Mount San Clemente, between it and Baker Channel (Calén inlet), which enters the Gulf of Peñas at the mouth of Messier Channel after completely penetrating the Cordillera, there stands a great unexplored glacier mass, 80 miles long by 30 wide, with Mount San Valentin rising in the midst of it. This elevated ice-sheet is only broken across by one deep depression, the unexplored valley of the River Exploradores. On the E. the glaciers descend towards Lake Buenos Aires (an excellent base for their exploration) and the Rio Baker, but it is on the W. side that they are most remarkably developed. There they actually descend into the Gulf of Peñas and the head of the wonderful Moraleda Channel.

This channel was formerly continuous with the Gulf of Peñas, but a moraine deposit has now formed the low Ofqui isthmus across it, which unfortunately unites the Taitao land mass to the main, and renders it a peninsula instead of an island. But for the existence of this isthmus (so narrow that canoes can easily be dragged across it) there would be a continuous inland sea channel from Port Montt, at the head of the Corcovado Gulf, to the Straits of Magellan. Perhaps the most interesting expedition that remains to be made in South America is this: Start in a boat from Port Montt with a party of the excellent Chilotes—men of Chiloe and Reloncavi, who are good boatmen and porters—and sail to the Lago San Rafael, at the southern extremity of Moraleda Channel, through superb scenery. This lake is a wonderful spot. A great glacier actually debouches in it, and there are others close at hand. ‘Nothing grander can be conceived,’ writes Dr. Steffan, ‘than the sight enjoyed by the eyes of the explorer in these places; nothing more striking than the contrast offered by the blue-white colour of the icy streams protruding from large openings of the Cordillera with the sombre hue of the rocks and cracks of the latter, the ashy green of the lake, and the deep green frame of the surrounding forests. The ice blocks, that become detached at every moment from the front of the San Rafael glacier, float on the lake, and are transported through its river outlet to the neighbouring estuary.’ From this centre it would be easy to explore the W. side of the San Valentin range. That work accomplished, and a suitable pass found, the boats would be sent back to Port Montt, and a crossing boldly made to Lake Buenos Aires, the base for the exploration of the E. side of the mountains.

From Baker Channel southward the great snowfields succeed one another in a long procession, many of them resembling the Svartisen Glacier of Norway. The principal peaks S. of St. Valentin are San Lorenzo, or Mount Cochran (12,081 ft.), in latitude $47^{\circ} 40'$; Mount Fitzroy (11,089 ft.), a peak of remarkably precipitous form; Mount Agassiz (10,433 ft.); Mount Stokes (8,860 ft.), in latitude $50^{\circ} 50'$; and Mount Geikie (9,800 ft.), N.W. of Last Hope Inlet. The farther S. one goes the more does the bad weather from the W. reach over the eastern slopes and ridges, but the glacial phenomena correspondingly increase in magnificence. The mountains at the head of the three great lakes, San Martin, Viedma, and Argentino, are said to be particularly fine; magnificent glaciers descend into all three lakes and

beautify their waters with numerous small white icebergs. There is a great glacier pass over a considerable ice-sheet leading from Falcon Inlet of Eyre Sound to Lake Viedma; and in general it may be said that glacier tongues descend in or close to all the chief inlets that branch from Smyth Channel into the continent. Even more magnificent is the scenery of the labyrinth of fiords leading from Smyth Channel to Last Hope Inlet, where the cliffs are precipitous, the summits of the peaks generally buried in a dark roof of cloud, which sheds a mantle of majestic gloom over the deep-lying channels of the sea. At the very head of Last Hope Inlet stands Mount Balmaceda; the snow-field resting in its lap pours down a splendid ice-fall to the waters. Last Hope Inlet can be reached overland from Sandy Point by four days' riding on the grassy pampas, and four days more will carry the traveller thence to Lake Argentino, where the weather begins to be a little better than farther S., and a season of excellent mountain exploration may be obtained. Both Lake Argentino and Lake Viedma are accessible in three days' hard riding from Santa Cruz. Seeing that Sandy Point is in direct communication with England by several lines of steamers, and that it is a town where horses can be bought, men hired, and stores of all sorts obtained, it is not improbable that these mountains may attract some explorer before many years are past. To the geologist they are exceptionally interesting, not only for the extraordinary development of tertiary beds rich in fossils, and the cave remains of recently extinct mammals, but also for the extent and puzzling intricacy of the moraine phenomena. At the time of glacial extension the whole of this southern range was smothered in an enormous accumulation of ice, which completely buried out of sight the lower ranges to the W. It is the moraine phenomena of the easterly extension of these glaciers at their various stages of retreat that are specially deserving of careful study.

THE HIGH PYRENEES.

By HAROLD SPENDER.

(Read before the Alpine Club, June 6, 1899.)

IN these days of the remote and the colossal, when no travels are complete without their tale of suffering or torture, and the level of noteworthy climbing is steadily

driven upwards, there may seem something rather domestic in an attempt to draw attention to a range so humble and near as the Pyrenees. There are tortures, indeed, to be endured in Pyrenean inns, but they lack the dignity of red-hot irons or spiked saddles. Nor by any amount of thought is it possible to add many cubits to the stature of these mountains. The loftiest peaks are the Néthou, rising to 11,168 ft., and the Pic des Posets (11,047 ft.). But the snow-line in the Pyrenees is nearly a thousand feet higher than in the Alps. According to Schrader's estimate the total area of the Pyrenean glaciers amounts to 8,316 acres, or 13 square miles—very little more than the space occupied by a full-sized Alpine glacier—and the snow-fields that feed them are, of course, correspondingly small. Beautiful and neglected, the Pyrenees must always appeal to our chivalry; but for those intrepid Titans who will scale no Olympus under 20,000 ft. the tale they have to tell can signify nothing.

'The Pyrenees from Sea to Sea'—that was the fascinating idea first put into our heads by Sir Martin Conway, who, with characteristic generosity, handed over to Mr. Llewellyn Smith and myself the entire copyright. There is a fine sense of completeness in the idea of traversing every foot of the two hundred and eighty miles of mountains that stretch from the Mediterranean to the Bay of Biscay and form the barrier between France and Spain. What the mountains lose in height they seem to gain in continuity; and the sustained elevation of the passes, rarely dipping below 8,000 ft., would keep you always upon a high level throughout such a journey. I hand on the idea to those who have larger leisure. For ourselves, we compromised. A glance at the map will show that the 'high Pyrenees' begin at some distance from the coast on either side, and can be reached without starting from Perpignan on the E. or Bayonne on the W. We decided to start at Ax, on the eastern side, cutting off the Mediterranean corner. From Ax we tramped, on August 23, 1896, along the highroad over the Col de Puymorens, and put up at a fairly clean inn at the village of Porté. Thence we proposed to make our first essay by ascending the Carlitte, which lies to the eastward.

It was here that we first experienced some of the amusements of Pyrenean climbing. We were armed with Joanne's 'Guide,' but had not yet received the large-scale maps which we had ordered at Toulouse. Our first difficulty then was to find the mountain. No one in Porté seemed

ever to have heard of it. The old men of the village gathered round us and hazarded various speculations. But the only guide, or approach to a guide, was away. There was nothing for it, therefore, but to go and search by ourselves; and so, on August 24, we started off up the valley of the Fontive after 7 A.M.—an hour suggested by a certain shallow contempt, based on the size of the mountain. But after four hours' trudging we were still far from the base of our peak, and that day ended in a violent discussion as to which of the various mountains was the Pic Carlitte.

Next day the maps arrived and we were able to identify the rascal. Of course he had to be climbed; but the spirit pleaded for a variation in the approach, and so we drove round the next afternoon by the valley of Carol along an excellent road to a little bathing place on the eastern side of the mountain, called Les Escaldes.

We were now beginning to take the Pyrenees a little more seriously. We had approached them with Alpine conceit; our frontal attack had ended in a rebuff, and we could not afford a second. A stalwart fellow of some six feet, who looked as though he could carry, offered to take us up as far as the chain of lakes that runs round the foot of the mountain. Further he refused to go, and ran a hard bargain for that distance. But there was a chance of finding a shepherd at the lakes. So at 3 o'clock on the morrow (very punctually this time) we left Escaldes behind us and plunged northwards by the light of moon and stars. First we had to cross one of those vast deserts of rock-scattered pasture which in the high Pyrenees, especially on the eastern side, form that second mountain story which in Switzerland is so often draped with glorious pine woods, but lies here treeless and void—denuded, it is said, in the Middle Ages. Crossing this desert at night was, indeed, a weird experience. Desolate fragments of a broken world seemed to glimmer on either side of our path, and vast black outlines gloomed against the starlit heavens. Streams suddenly spoke out of the darkness, and then fell silent again. One by one the stars paled their ineffectual fires; the moon became a ghost; the dark outlines of the slumbering earth grew clear. At last the all-conquering sun shot up, and we poor, tired, and hungry mortals sat down to eat our breakfast in its warmth.

At 7 o'clock we had completed our flanking movement and reached the first of the chain of lakes on the N. of the Carlitte. Sure enough we found a young shepherd who was ready to take over our guidance, so, at half-past seven, we

started off up great grass slopes. By this time we had got unutterably weary of walking uphill and passionately longed for a little real climbing. The ridge in front of us seemed to curve round quite easily to the summit, and we contemplated it with despair. So we appealed to our friend the shepherd. Was it not possible to find a difficult way up? He responded like a man and a climber. He struck off from the ridge, across a crumbly face of scree, until we reached a long patch of snow, ending with a clamber. Crossing a frozen lake we then attacked the summit directly over steep rocks, finally rejoining the ridge and reaching the summit at a quarter past ten. We descended by the western side and rejoined the valley of the Fontvive by a series of steep gullies, thence home to Porté in the cool of the evening, arriving at 5.30, after a long day of more than fourteen hours.

From Porté we started early the next morning, mounted on mules and led by muleteers, to invade the Republic of Andorra, and we spent several off days in that roadless home of freedom. We found ourselves in a State enjoying the rudimentary government of an earlier day, and free from all the complexities of foreign relations. Cradled in the hills, she remains the paradise of smugglers and constitutional students, and every modern ought to be grateful to Napoleon that he left Andorra, in a strange fit of caprice, as the political curiosity of modern Europe.

On Sunday, August 30, we continued our tramp by the side of the Valira, due southward this time, until we crossed the frontier of Andorra. After a hazardous struggle with Spanish custom officers we struck westward once more to cross that piece of Spain which lay between us and Luchon. We took a mule to carry our baggage, but travelled ourselves on foot rather than be encumbered with a troublesome cavalcade of animals and men. This was in all a three days' journey, and I suppose that, outside Turkey, there are few less civilised parts of Europe than this unvisited corner of Spain. Needless to say there are no roads. Most of the journey is made along small mountain tracks; but even these fail at times, and the unhappy traveller has to resort to stony watercourses, on the somewhat hazardous principle that where a stream has once gone man can also go. Another difficulty is that the villages are so scarce as to compel very long journeys to a party unprovided with tents or sleeping-bags. On the fourth day we reached Bagnères-de-Luchon. There we found French civilisation in triumphant possession, gently abating the savagery of the mountains; and we were

able for a day or two to exchange sour mountain wine for the joys of Beaune, Mâcon, and Chablis.

Luchon is the nearest habitable town on the French side of the Pyrenees for attacking the group of snow mountains called the *Monts Maudits*, or *Cursed Mountains*, which give a centre to the range, though really lying S. of the main ridge and forming a separate group. On Friday, September 4, we started out from Luchon with a local guide, a porter, and a donkey to carry the luggage. Nobody but a donkey ever carries anything in the Pyrenees, and the term porter is merely a title of honour given to the man who drives the donkey. Our first day was spent in journeying to the hut which lies on the flank of the *Néthou*, and forms the best striking-place for that mountain. We crossed the *Port de Vénasque* (7,980 ft.), the pass on the main ridge between France and Spain, climbed the *Pic Sauvegarde* (9,139 ft.), and, just at six o'clock in the evening, mounted to the little fold in the *Maladetta* which encloses the *Rencluse* hut.

We were now in a real Alpine region. As you step through the little slit in the rock which is the *Port de Vénasque*, and which by the letters on the rocks, F. and S., you recognise to be the frontier between two Powers, you find yourself faced with what appears to be one big snow mountain from which descend two small glaciers. The *Maladetta* group is neither precipitous nor terrible to contemplate; but, as all the peaks of the group virtually rise from one 'massif,' you derive a great impression of size and breadth. From the *Vénasque* valley on the W. to the *Port de la Picade* on the extreme E. there is no break in the long rock ridge which here and there rises to the summits, emerging from the fields of snow and ice—the *Albe*, the *Maladetta*, the *Néthou*, the *Moulières*, and the *Pouméro*. But it is not the peaks that are imposing—they are little more than excrescences and even difficult to distinguish—but the whole group together, so strong, so massive, so solitary. There are many climbs in this group, and most of them have been done by Count Russell and are described in his '*Souvenirs*'; but the *Néthou* is the highest, and all the others may be taken almost as variations in the ascent of one and the same mountain.

The night was cloudy, and it was not until 5 o'clock that we were able to make a start from our hut after somewhat broken sleep in blankets on a wooden platform. The first hour of our ascent lay up a steep, rock-strewn slope, gradually turning into sheer rock, to the *Col du Portillon*, a passage in a long rock ridge which cuts the *Maladetta* group in half.

As we scrambled upwards we seemed about to pass into clouds, and our hearts were heavy within us. But suddenly the veil grew thinner, and then, in the twinkling of an eye, the mountain stood before us, sharply defined against a cloudless sky and clad in a radiant mantle of fresh-fallen snow. So it remained all day, while across the valley to the N. the main ridge lay still hidden in thick masses of cloud. We descended through a network of boulders until we reached the borders of the glacier. Here we roped and made a swift passage across the ice, which is very little crevassed and presents far fewer difficulties than you would imagine from the rumours of Luchon. An hour brought us to the foot of the summit, which rises from the glacier, in shape somewhat like a human head, with a back-hair of glacier behind, a ridge of rock for a fringe, and a precipice for a face. A brisk wind was blowing, and we had to tackle this piece with some care, as the glacier rises sharply. We cut good deep steps, but what with the frequent delays in face of the strong wind we were the best part of an hour before we stepped off the ice on to a rock ridge of some fifty yards which leads to the summit. This ridge has for some reason or other a great reputation; but it is really perfectly easy to anyone with a clear head, and can be walked across in an erect posture from start to finish. 'You feel verily suspended in mid-air,' says Mr. Packe. We felt nothing of the kind--nothing, in short, except profound gratitude to Providence for providing so much room. The summit gives a splendid view of the southern side of the Pyrenees, though far inferior to that we had obtained on the previous day from the Pic de Sauvegarde. We hastened our descent and managed to arrive at the Hospice de Louchon by 6 o'clock that evening, where we found a convenient carriage to drive us down to Luchon.

On the next day, September 6, we chartered three horses of swiftness and a chariot of bulk and continued our way westward by one of those excellent highroads which cross the lower passes on the French side of the Pyrenees. We drove N.W. to Arreau, and then, turning abruptly S., followed an inferior road up the valley of the Nesté as far as Aragnouet. There we slept in a mountain inn of a much cleaner nature than usual, and on the following day crossed the Col de Campbiel, a pass of 8,514 ft., dropping down thence to join the valley of the Gave du Pau at Gédres. Here we once more struck a highroad and threaded our humble and dusty way among the carriage-borne stream of

pilgrims flocking up from Lourdes to Gavarnie in the interval of their devotions. Here, at Gavarnie, we found peace in the *Hôtel des Voyageurs*, and rested for a day in contemplation of that glorious *Cirque*, a splendid amphitheatre of noble rock, presenting a hundred and one temptations to the cragsman. There, indeed, within easy reach of London by rail and road, is an ideal spot for mountaineers, where a pleasant month could be spent without exhausting all the climbs of the neighbourhood. But for that year we had but a few days in hand, and we were curious to climb the *Vignemale*, a mountain which has gained fame in France for being the site of Count Russell's grottoes and his favourite mountain property and resort.

So on September 8 we set out at 5 A.M., striking directly westward up the valley of the *Ossoue*, and fortified by the guidance of *Pierre Pujol*, a Gavarnie guide of the first class. For three hours we continued to penetrate this valley, a lovely sub-Alpine walk, and then found ourselves in a large, flat, treeless hollow, right beneath the great mountain masses of the *Vignemale* and its brother peaks. Here we breakfasted, and then struck up, first over steep grass, then over moraine, till we reached the long ridge of rock that runs up east of the glacier. We preferred this to the glacier itself, which is very thickly crevassed in its lower part and was covered with a nasty little film of snow. This rock ridge was really an inspiring climb, the glacier below us on our right and a great precipice falling away to the left. 'Each for himself' is the golden Pyrenean rule on rock, and it was not until we at last had attained the glacier that we roped. Here we plunged into the mist and traversed the glacier to the N.W. for a whole hour, without ever being able to see more than a few yards in front of us. Then suddenly out of the mist there emerged a great black mass, which was the highest of the rock peaks of the *Vignemale*, the *Pic Longue*, better known as the *Great Vignemale* (10,820 ft.). It looked a very formidable climb, but the mist is deceptive, and the chief difficulties were the frequent glazings of the rocks and those uninviting patches of snow which have a way of filling your best footholds. In another hour we had reached the summit, and then, after waiting in vain for the mist to clear, descended for our meal to the small grotto which Count Russell has blasted just below the summit. In coming down, our only variation was that we kept to the glacier, crossing the big crevasses in its lower part, and then glissading down the snow to the lower grottoes of Count Russell,

where he spends a few weeks nearly every summer. Here there is one grotto for the guides and another for himself and his friends, which he calls the Villa Russell. I have every sympathy for the eccentricities of mountaineers, and as the mountain belongs to Count Russell for a long lease of ninety-nine years, at the competition rent of a franc a year, it would be churlish to resent anything that he does with it—unless, indeed, he were to begin to chain or to rope it. But for my part I should much prefer that he built some commodious huts at far less labour than that he should mould and blast the obstinate rock into comfortless caves, where there must be an unavoidable peril of asphyxia whenever a fire is lighted.

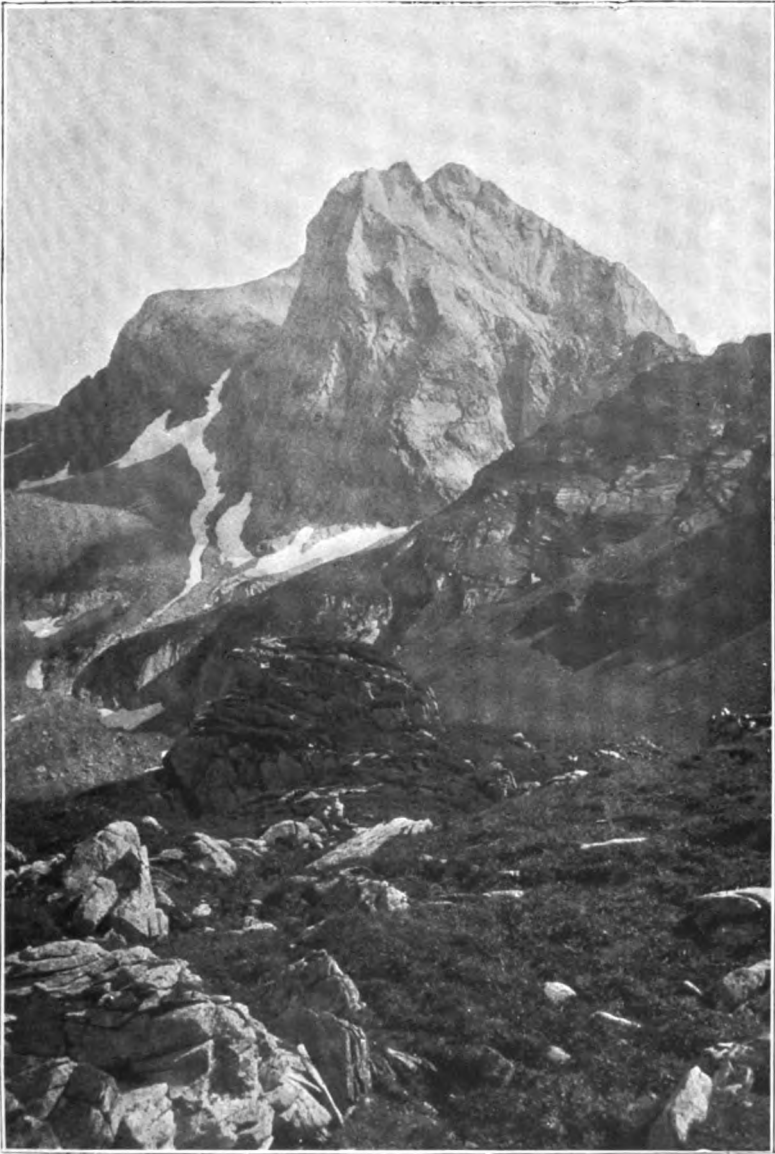
So much for our first visit to the Pyrenees—in 1896. I now come to our second visit—in August 1897.

When we had descended to Luchon from Viella in 1896, after crossing the country between Andorra and the Val d'Aran, we had left the mountains with reluctance and had quite determined to resume the high traverse on the first opportunity. Our ambition was to cross the Maladetta region from east to west, and to continue in the high mountains as far as the Pic du Midi d'Ossau. But we had formed a very definite opinion about Pyrenean inns, and for this second occasion we equipped ourselves with a Whymper tent and all the necessaries for a comfortable camp.

On August 4 we left the train at Marignac-St. Béat, where we met Pierre Pujo, our guide on the Vignemale in 1896, and drove up together to Bosost, where we spent the night in the little inn, less pleasant by night than by day. Pierre Pujo had chartered two mules and muleteers for us, and next morning early we started off and trudged all day by the side of our caravan up the valley of the Garonne de Jouéou to the high plateau under the Pouméro. Here we camped by the side of the Garonne, with a plentiful water supply, excellent shelter from shine or shower, and gorgeous scenery on every side; below, the Garonne dashing down in the midst of thick pine forests to the French plain; above, the lofty ramparts of the high mountains.

We pitched our camp in a thunder storm, with deluges of rain. But that quickly passed, and next morning broke fair and cloudless. We were astir at five o'clock, for we could not waste a day, and our plans had been already laid for an attack on the Fourcanade.

The Fourcanade is the Matterhorn of the Pyrenees. It is



THE FOURCANADE FROM THE NORTH.

a rocky peak of 9,456 ft. in height, rising to the E. of the Maladetta group. It has four summits, and, seen from the distance across the Maladetta valley, looks, in Hamlet's phrase to Polonius, 'almost in shape of a camel.' We had seen it from the Port de Vénasque in 1896, and coveted it from afar. We struck at first almost due S., across a long treeless valley, between two great mountain ridges—the Puméro to the N.W. and the Fourcanade to the S.E. We kept steadily ascending for 4 hrs., at first through thick bush and undergrowth, and then over heart-breaking moraine. We passed the spot where the Garonne de Jouéou gushes from underground after its long journey from the Trou de Toro, under the main ridge. Then we mounted to the Col des Aranais, and, skirting one of those long stagnant lakes with which the high Pyrenees are dotted, we turned S.W., and, rounding the Fourcanade, reached the Col Alfred, the pass between the Pic Moulières and the Fourcanade, to the S. of the Fourcanade. Here the climb really began. We left all the baggage, including, on Pujo's persuasion, the rope, on the Col Alfred, and, after a brief breakfast, struck directly northward up over steep rocks towards the great buttress of rock which is thrown out by the Fourcanade on this side. A half-hour's scrambling brought us to a sort of cave out of which there seemed no way of emerging. Our old guide tried it on every side, but at last began thoughtfully to unlace his boots. The idea was a good one, and we all followed suit. With stockinged feet we found it easier to obtain a grip on the smooth surface of the side of the cave, and, climbing cautiously, we at last, by means of certain cracks, surmounted the 30 ft. of almost precipitous rock above us to the right, and found ourselves on a rock-strewn plateau where we could rest awhile. It was certainly no joke to climb this place without a rope; still, we had some satisfaction in Pujo's assertion that we were the first to climb the Fourcanade on this side.

I was climbing second, and Pujo had stopped to let us both pass. When we had arrived I looked down, and became conscious that there was something wrong. We had entrusted the choice of a porter to Pujo, but instructed him to make sure of bringing a good climber. Relying on this, we had no anxiety about the lad who came with us as porter that day, and had left him to come last with the boots and the food, leaving everything else behind in the cave. But it soon became clear that there was a hitch. 'Chico,' as we called him—Spanish for 'boy'—refused to move out of the

cave. Pujo was hanging to the cliff like a fly on to the wall, and addressing him in his strongest patois; but Chico made one attempt to scramble out of the cave, looked up for a moment in a scared way at the cliff above him, and then disappeared again on a rapid retreat to safety. Pujo was furious. He yelled at him to come on, but soon found it necessary to move himself. Probably his annoyance had confused him, for he began to climb awkwardly: he fumbled unsurely for his hand-holds. 'My legs are not so long as yours,' he said, laughing up to me; the next moment he was very far from laughing. He took a false hold with his left hand—a hold not adequate to bear his weight, and yet so far removed from his right that he was pressed against the rock without being able to shift. He was, in fact, 'spread-eagled.' His legs shivered beneath him on the rock, every muscle quivering with the strain. He called loudly to 'Chico,' but 'Chico' was far below in the last extremity of fear. Fortunately I was not very far above him, and, getting a secure fixture on the rock, was just able to reach his arm, pull it off the rock face, and drag him up into safety by main force. The whole incident shows the use of the rope on a mountain. With that simple climber's instrument Pujo would have been in no peril, and we should have just dragged 'Chico' after us, whether he wanted to come or not.

Our position now was somewhat unsatisfactory. We were standing on a floor of sharp pieces of rock and stone without any boots, while above us towered the greater part of the mountain, still unclimbed. Above all, we had no provisions. At last a happy thought occurred to us. Tying together our waistbands, we made an improvised rope. This rope just reached Chico, who was standing on the rocks just out of the cave. We thus secured our boots; but Chico then disappeared, and all the fishing in the world brought us no food. We had to climb the rest of that mountain with as little outfit as a pack of schoolboys.

That did not matter at first. For the next two or three hours we were scrambling up steep rocks, and we were glad to have our hands free and our backs unladen—what with breathless grapples with the rock-face, precarious reliances on uncertain footholds, screwings, squeezings, and squirmings, always modified by mutual benevolence, the best and only substitute for a rope.

At last we reached the main ridge of the mountain, and found climbing much easier. For an hour or so we worked

our way along this ridge, and at 2 o'clock reached the second peak, which is the highest point in the mountain. From here we obtained a very noble view of the Central Pyrenees.

We were now very hungry ; but dirty frozen snow was our only possible diet. It was not very satisfying, and things became even less cheerful when the bank of clouds from the S.W. worked up and began to descend in hail and sleet. It soon became obvious that it would be impossible to descend without a rope by the rocks. They would be slippery and glazed long before we reached them. So we worked along the ridge, searching for some other mode of descent. Earlier in the day we had noticed a snow couloir running up to the ridge from the Col des Aranais. We determined to try our luck in this. The couloir was full of frozen snow, and ran down with extreme abruptness nearly the whole face of the mountain. With ice axes we could have cut our way down with comparative ease. As it was, every step had to be painfully kicked in the frozen snow, and we had to cling to the rock-sides with our hands in order to be able to gain a purchase. The descent was naturally very slow and very cold. We must have been nearly 3 hours in that couloir, and the annoying part of it was that all the time it looked as if we only had to slide down in five or ten minutes to the foot of the mountain. I dare say the time would have actually been shorter, but I feel more doubtful as to the condition in which we should have arrived.

All this time we dimly hoped that we should find 'Chico' waiting for us below, ready with a good meal. Our hunger now was ravenous, and we were frightfully thirsty. But when we reached the pass we discovered that he was lost on the mountain, and gone in the foray. Far more important, he had apparently left no food behind him. We had toiled for nearly 10 hours since we last ate, and now we had to descend for $2\frac{1}{2}$ hours before we reached our camping-place. I will draw a veil over that descent. The mist closed round us and hid our woe. We slipped and slithered down that mountain-side with agony in our hearts and nothing in our stomachs. At last the welcome tinkle of our mule bells struck on our ears, and we turned a corner to find our second muleteer sitting in solitude by the camp fire. 'Chico,' it seems, had suddenly appeared about midday, thrown down the baggage, and then proceeded to speak ill of the mountains. Then he had turned his back on our camp and fled away to the place of his fathers. 'He had fear,' said Pujó

solemnly; 'he was a coward. He could not sleep out of doors at night. He wanted to be at home with his wife and children.' That worst infirmity of the mountaineer was solemnly laid at 'Chico's' door, and his memory was blotted out within the camp.

We spent the next day in the camp, enjoying the luxuries of a mountaineer's off-day, sketching and photographing, fishing, bathing, and reading. On the morrow (Sunday, August 8) we struck camp at 7 o'clock, and crossed the Col de Toro—a very delightful walk through meadows of gorgeous flowers—passing caravans of mules, and enjoying a pleasant midday meal with the lonely shepherds, who live their arduous, solitary life all through the summer months on the top of these high passes. As we passed, the sheep running above us sent down volleys of stones with somewhat unpleasant frequency. One of these animals had fallen and met its death—a fact which the shepherds were inclined to lay at our door, resenting our presence in the mountains as a disturbing factor, introducing a new danger into the trade, constituting a ground for compensation. Crossing the pass, we found ourselves once more on the edge of our friend the Maladetta valley. In front of us stretched the great snow range, and below us that vast, desolate, treeless, marshy expanse of valley where no man abides and the very streams prefer to flow underground. Here we found a pleasant camping-place in the very centre of the valley, protected by a ridge and well watered. And there we stayed for two days, clambering about these mountains, one day climbing up to the Portillon ridge and visiting the marvellous Trou de Toro on our way home. There the Garonne—a broad, dashing stream—abruptly disappears into the depths of the mountain, not to come to the light again until it reaches that spot beneath the Fourcanade where we had met it a few days before.

We had now run so short of provisions that it was necessary to replenish, so we had to descend on the following day, Tuesday, August 10, to the little town of Vénasque, far below on the way to the Spanish plain. It was a long day's tramp down the valley by the side of the river Esera, and the heat of Vénasque was so great that we were fain to sleep there that night rather than mount again to the camping-place. But early next morning we climbed out of the Vénasque valley, striking off N.W. to the Cabane de Turmes, beneath the high pass of the Port d'Oo, a good striking place for the Pic de Posets. That same afternoon, after arriving in camp, we set

out again to the Port d'Oo, and, climbing all the afternoon to the top of the desolate pass, returned to camp at 9 o'clock. Just as we arrived, a thunder storm, which had been gathering all day, broke and raged all night. We were so weary that we partly slept through it; but the racket was terrific. We were in the centre of a circling storm, and it returned three times. The wind and hail were so powerful as to seem about to blow away our tent at any moment; but the ropes held firm and we emerged unscathed from the fight. The rain was, perhaps, fortunate, as in the middle of the night the wind caught up the blazing fire and threw it on to our tent, which would probably have caught fire if it had not been too wet.

The result of this storm was to postpone our climb for a day. But 4 o'clock on Friday, August 13, saw us setting out for the Pic de Posets—Russell's 'Viceroy' of the Pyrenees. The mules were sent round, and we arranged to meet at the village of Le Plan, on the other side of the mountain.

The Pic de Posets is the second highest mountain in the Pyrenees, but it is by no means a difficult climb, though it involves an immense amount of very hard work. For the first four hours we were rounding the mountain, traversing easy but torrid slopes. Then at last the real peak, which is hidden from the spectator below by the great swelling flanks of grass mountain, came into view. It is a long, jagged, black ridge with a deep cleft, through which a small glacier descends, and swathed on its other sides with snowfields. A long tramp up the snow brought us to the Col de Paoules, on the eastern side of the peak. Thence we crossed the glacier and stepped on to the rocks, which proved very fragile and crumbling. We traversed for some time, and then mounted to the ridge—a long, narrow ridge which winds to the summit with precipices on either side. After an hour on the summit, feasting on the glorious view, we descended rapidly on the other side westward towards Le Plan. The descent on this side is very easy, but the walk to Le Plan is very laborious, a tramp of 5 hrs. along a winding valley, beautiful enough at first, but in the end monotonous from its very length and tedious from very weariness. Arriving at Le Plan we managed to miss the mules, and had to sleep that night on the stone floor of one of the dirtiest inns that even the Pyrenees can boast of.

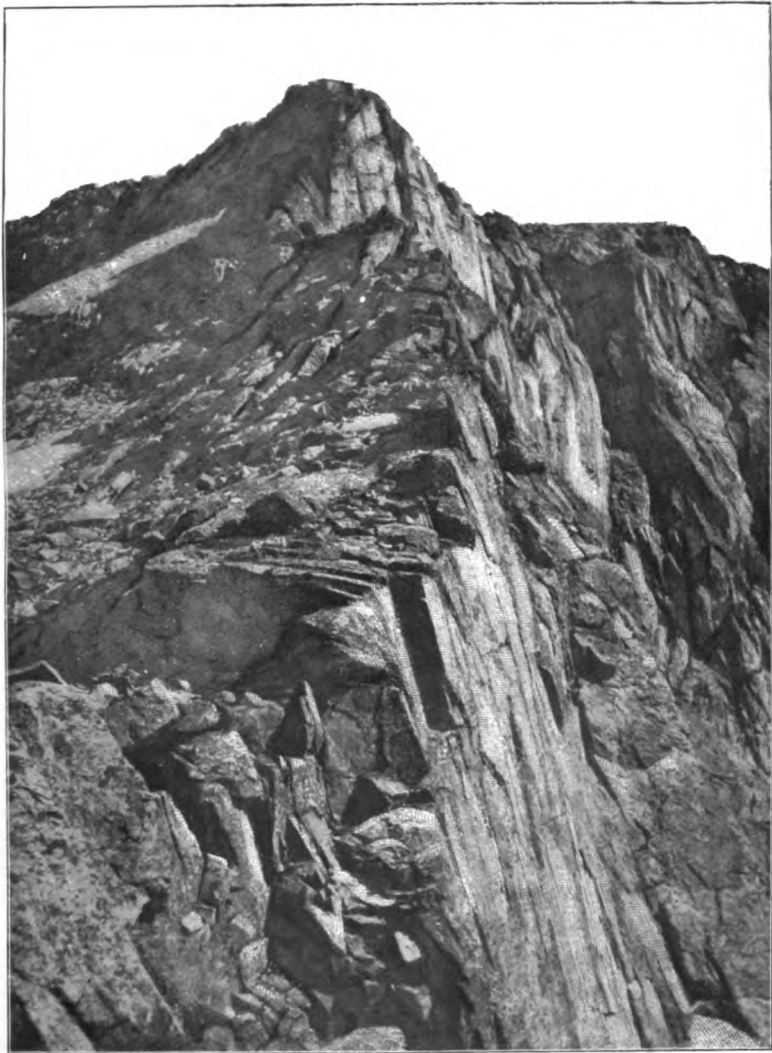
That inn drove us out early the following morning, and we rode ponies along the valley from Le Plan to Bielsa—a rough and arduous valley ride, along tracks which often disappear

and through villages that have no food to give you. A thunder storm compelled us to sleep at Bielsa that night, Saturday, August 14.

On the Sunday morning we once more sent off the mules on a valley journey, and started ourselves up the valley of the Pinède towards the Mont Perdu, intending to climb it the following day. But we were caught in a heavy storm and compelled to sleep in a barn which we fortunately discovered at the foot of the Perdu and which proved a very comfortable resting-place. On the following morning, finding that our food had run short, we had to cross a pass to the north of the Perdu—the Port de Pinède—and to descend to Gavarnie for rest and refreshment. This was a very disappointing expedition, as we saw enough of the Perdu to realise that it was a very beautiful mountain and to feel the failure very keenly.

After a day of rest at Gavarnie we set out once more on Wednesday, August 18, to penetrate the region of that remote mountain, the Balaitous. It rises to 10,318 ft. and is invisible from any town or village in the Pyrenees. We had to cross four passes in order to reach its foot and two to get away. So we decided to send home the mules and reorganise our caravan. We packed our goods into two sleeping-bags, which were carried for us by Pujo's two nephews. On the first day we crossed the first two passes—the Port du Pla Laube and the Brèche de Brazato. It was a passage across a weird and desolate country, almost entirely treeless, watered with few streams and dotted with black, melancholy lakes. At the end of the day we descended abruptly on to Panticosa, a little Spanish watering-place in the centre of the mountains, consisting of an appalling group of buildings that resemble a collection of workhouses rather than a civilised group of hotels. Here we were delayed for a day by storms—a delay which ultimately prevented us from climbing the Pic du Midi d'Ossau by cutting off the day which we had put aside for that mountain.

At 6 A.M. on Friday, August 20, we climbed up the steep heights towards the Col d'Enfer, and after three hours of laborious mounting we reached the third pass. We stepped through the gap, and stood on the edge of a great desolate region—a region of rock, ice, and snow. A piled-up snow-drift half blocked the pass, and below, on the western side, lay a chilly lake—the Lac Glacé de Bondeillos—partly covered with floating ice and snow. The eye ranged over a country deserted by man—a sea of billowy mountains,



PRECIPICE ON THE BALAITOUS.

crossing and recrossing like the waves in a battle of tide and wind. There seemed no easy passage through this region—no penetrating valley or low-dropping pass. The impression was one of endless mountain barriers—obstacle after obstacle, with ceaseless alternation of ascent and descent, and the Pic du Midi d'Ossau towering in the distance at the limit of the region.

From the Col d'Enfer we climbed to the summit of the Pic d'Enfer, and gained a number of distant views of the Balaitous, seen by us from here for the first time. From the summit we struck along the north-western ridge, and descended into a sort of basin like the crater of an extinct volcano. This basin was full of great broken fragments of rock, and we crossed it painfully, mounting to the final and fourth pass in our journey, the Col de Piedrafita. After a long and laborious tramp across the valley we reached our sleeping-place under the Balaitous by six o'clock, and there slept in our sleeping-bags under a perfectly clear sky. Below us lay a chain of great lakes, and round us on every side the jagged ridges of the great mountains. It was a glorious place for sleeping—a noble bedroom, its roof fretted with stars.

At four o'clock we were stirring, and soon after five were tramping up the valley of the Frondella towards the great circle of rock ridges which guard the Balaitous on this side like a row of battlements. But in this fortress two enterprising guides—Casso and Latour—made a breach some years ago, through which the enemy now enter. It bears the double name, the Brèche Casso-Latour. Up to this break in the rocks runs a tongue of snow and ice, up which we cut our way to precipitous rocks. After a short, sharp climb we found ourselves on quite an easy plateau, which led, after a laborious walk, to the summit. We arrived at nine o'clock, and spent an hour watching the vast sea of mountains that lay all round us below. At ten we were plunging down the steep gullies on the northern side of the Balaitous. We made our way cautiously, though without a rope, down the gullies until we reached the vast desolate valley which lies to the N.W. between the Balaitous and the Arrémoulit Pass. We tried to round this valley, but were stopped by an impassable precipice. This caused an hour's delay, and it was past midday when we crossed the Col d'Arrémoulit and descended to the lake on the other side. Even this was far from the end of our troubles. Another pass lay between us and home—the Col d'Arrius—and then a valley walk of two hours led us down to the road, still at a distance of four miles

from Gabas. It was therefore nearly dark when we stumbled into Gabas, after fourteen hours out.

Our second journey was over, and work called us back to England. But the Pic du Midi d'Ossau and many another mountain still wait there for us, and some day we shall return to keep our rendezvous.

For though there are more beautiful places in the world than the Pyrenees, and more perilous climbs than can be found on her mountains, that range has a unique charm which we have been unable to find since either in the civilised valleys of Switzerland or even in the simpler regions of the Tyrol. For here, nearer home than anywhere else, you can enjoy the wild, unfettered life of the pioneer, and steep yourself in nature away from the tumult and strife of troublesome humanity.

[*We are indebted to the courtesy of Messrs. A. D. Innes & Co. for the illustrations of the Fourcade and the Balaitous.—ED.*]

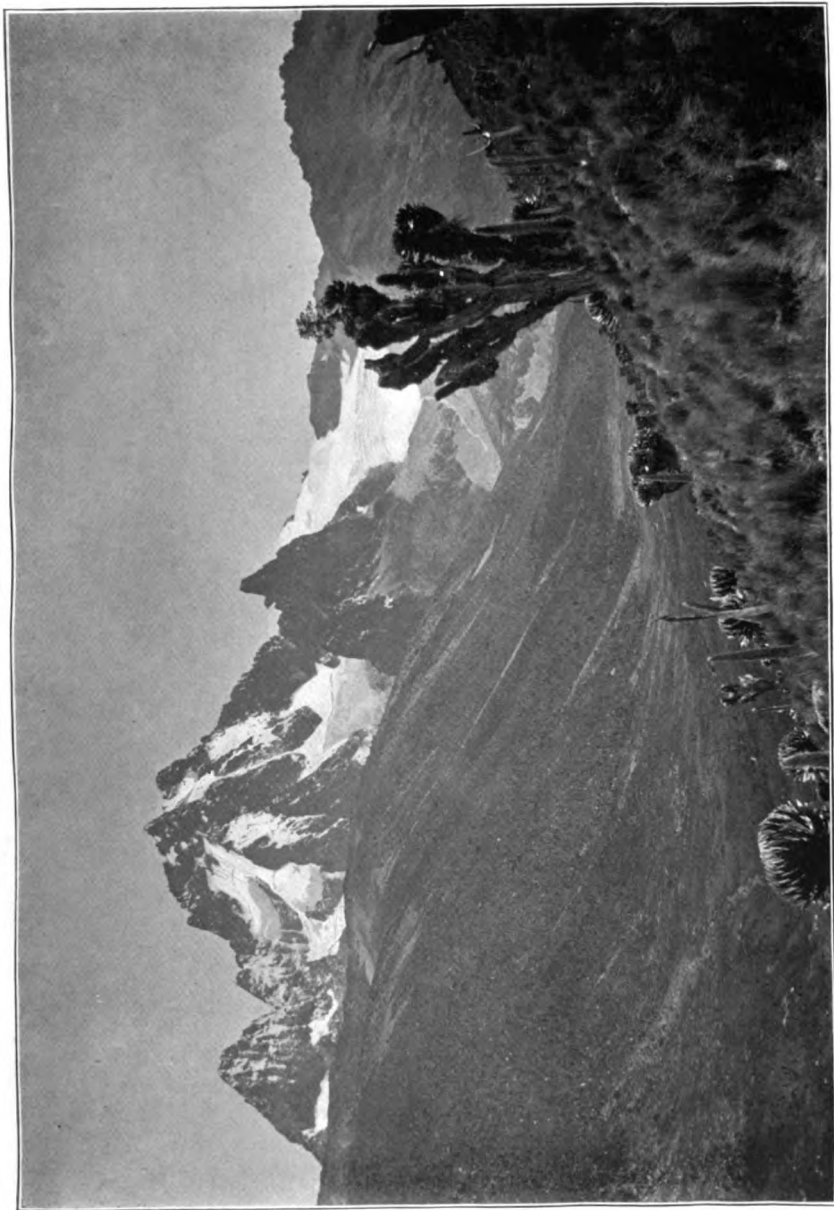
THE ASCENT OF MOUNT KENYA.

By H. J. MACKINDER.

(Read before the Alpine Club, March 6, 1900.)

THE Mount Kenya expedition left Marseilles on June 10, 1899. I had five white companions—my friend Mr. C. B. Hausburg, who shared the expenses of the expedition with me and rendered many invaluable services, besides taking most excellent photographs; two naturalists, Mr. E. H. Saunders, a collector, and Mr. C. F. Camburn, a taxidermist, both of whom are now again in Africa, this time on the Upper Nile, beyond Khartum; and two men from Courmayeur, a guide, César Ollier, brother of one of the guides who has gone with the Duke of the Abruzzi to Spitsbergen, and a porter, Joseph Brocherel.

We arrived at Zanzibar on June 28, and there received a telegram from Mombasa informing us that porters were in great demand, since a sporting and a missionary expedition were setting out. We owe it to the kindness of General Mathews that we were allowed to take out of the island of Zanzibar fifty Swahili porters. With these we crossed to Mombasa, the seaward terminus of the Uganda railway. Here famine and small-pox presented a second obstacle. To prevent the infection of our caravan Major Souter, in command of the troops, most kindly admitted our porters into the fort, and the following day they were sent to rail-head,



C. B. Hausburg, photo.

KENYA PEAK AND THE TELEKI VALLEY,
From the South-West.

Swan Electric Engraving Co.

then at Nairobi. During our stay at Nairobi we recruited local porters, and learnt something of the ways of the country and of its game. On July 26 we commenced our march.

It has been the fate of most African explorers to spend several weeks on the journey from the coast, traversing already well known country, during which they had time to discipline their caravan; but from rail-head we plunged into unmapped country in one day. On the Athi plains, a prairie of sweet grass, thousands of head of game were grazing. Sometimes we saw herds of 1,500 zebra, wildebeeste and hartebeeste mingled. On more than one occasion the caravan was charged by a rhinoceros. We steered across the open by the prominent mountain Donyo Sabuk, with the white dome of Kilimanjaro visible at sunset and sunrise 100 miles to the S., and 100 miles to the N. the striped peak of Kenya.

Among the Masai, Kilimanjaro is known as Donyo Ebor, 'the white mountain,' and Kenya as Donyo Geri, 'the striped mountain.' Kilimanjaro is, apparently, a still complete though extinct volcano; the crater is partially filled with ice, and the confluent glaciers coming from the crater lip give the appearance, as seen from below, of a white dome. But Kenya is older; the dome has been denuded, and a plug of hard lava, solidified in the throat of the volcano at the end of its activity, now rears itself above the mountain-stump as a precipitous pyramid streaked with glaciers, suggesting the striped flanks of a zebra and so giving rise to its Masai name. This interpretation I owe to Mrs. Hinde, who has made herself the chief authority on the Masai language, and rejects the hitherto accepted 'speckled mountain'; and certainly the appropriateness of the term, thus rendered into English, will be felt immediately by anyone who has seen Kenya from the N.W. On that side three parallel glaciers rest on the steep flanks of the peak and make the analogy almost inevitable.

After leaving the Athi plains we passed into the cultivated country of Meranga, which even in a year of drought, such as last year, has a rainfall sufficient to produce abundant crops. The whole country was so thickly populated that we had to camp in a market-place, or march for six miles more to another market-place. Though no white man had preceded us in many districts we visited, evidences of a certain degree of civilisation in the shape of primitive timber bridges and roads, divided by dykes and hedges from the fields, were everywhere apparent. The whole country-side was clothed with standing maize and luxuriant groves of banana.

Through this land we marched, 170 strong, for everything

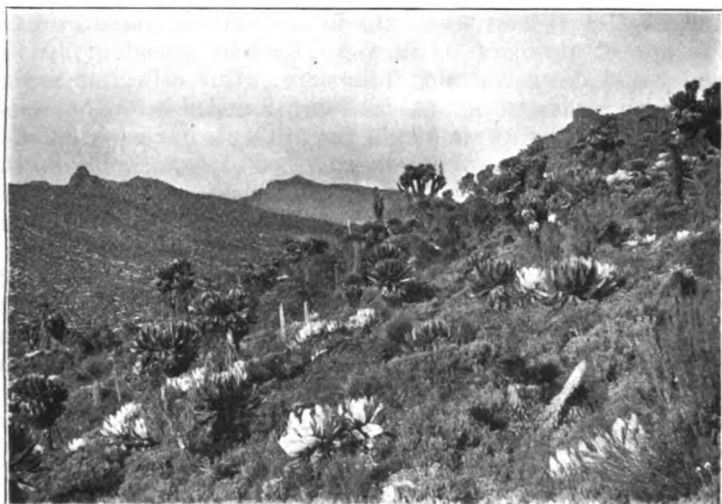
had to be carried on men's heads. The food which would be required by the white men upon the foodless mountain was packed in 25-lb. tin-lined cases, each containing a day's complete rations for six men. We had forty of these cases, and it is no exaggeration to say that they were the salvation of our expedition; for without them in such a year of drought a premature retreat would have been inevitable. With a dozen different cases open at once there would have been waste and theft to an extent which would have cost us the equivalent of many boxes. As things were we had no difficulty in feeding our white men until quite near the end of our journey. The black men's food, however, presented considerable difficulty, since, owing to the fact that he eats 50 lbs. weight in a month, a porter can carry little more than his own month's rations, unless his food-stock be replenished every ten days or so from local sources.

The people of Meranga we found very friendly, and from them we took all the food we could carry before passing into the hostile country belonging to the chief Wangombe—a slave-raider who for the last generation appears to have been in league with the Swahilis and Arabs from Zanzibar. With him we passed through a great elephant forest, which suddenly terminated on the plateau of Laikipia. Leaving the coast for the interior there is an almost imperceptible slope of about 5,000 ft., which rises to the great prairie of the Athi plains. Beyond is a further rise of 2,000 ft., clothed with magnificent cultivation. At the summit of this opens out the steppe district of Laikipia, on a level of 7,000 ft. And here on August 15 we pitched our base camp for the attack upon Kenya. A portion of the caravan was sent back to Wangombe's to buy food; another portion was left in the camp in charge of Hausburg, while I took the remainder and cut a way up the mountain through the jungle of juniper trees and bamboo.

Mount Kenya rises above its surroundings as a huge dome, measuring fifty miles from E. to W. and forty miles from N. to S. On the western slope it drops to the Laikipian plateau; on the eastern it falls to a level little more than 4,000 ft. above the sea. It is surrounded on all sides but the N. by a great forest zone of junipers and podocarpus, similar to the forest on the southern slope of the mountains between Cape Town and Port Elizabeth. Almost from the centre of the dome, though rather to the W., rises the pyramidal peak, whose major axis strikes W.N.W. and whose summit reaches an elevation of 17,200 ft. The peak differs wholly in cha-

racter from the remainder of the mountain. It is precipitous and beset with glaciers, while the rest is rounded and merely seared with valleys. Certain of the ridges, however, separating the valleys have craggy crests.

Above the forest the vegetation is curiously different from the familiar flora on the alps of European mountains, but it is generally similar to that of Kilimanjaro. The unbroken side of each valley, crowned with owl-haunted crags, has a moist, peaty soil, in which are set yard-broad hemispherical tufts of wiry grass, each tuft having a moist, rotten centre. Well beaten rat-paths branch in all directions between the



ALPINE VEGETATION IN THE HÖHNEL VALLEY, MOUNT KENYA.

Photographed by Mr. C. B. Hausburg.

tufts, while every here and there are groups of cactus-like giant lobelia, of which some send up tall spikes bearing the flowers. Very like the lobelia in general appearance, except as regards the flower, is a species of giant groundsel with silvery leaves; but most striking of all is the tree groundsel, with a thick dark trunk eight or ten feet high, surmounted by a cactus-like head of green leaves, beneath which is pendant a mass of dead leaves, dry as tinder towards their tips, but moist and rotten near the trunk. Occasionally a tall spike, several feet in height, bearing yellow groundsel flowers and fluffy seeds, stands erect above the leaf-head, or broken and leaning gauntly to one side. In other spots are yellow com-

posites, something like dandelions, but with blossoms sessile on the ground, and bushy everlasting flowers. Beautiful sunbirds with lark-like song fly from lobelia to lobelia.

We established an intermediate camp just above the forest at an elevation of 10,300 ft., and then pushed on to a valley discovered by Gregory, and by him named after Von Höhnel. Despite the beard moss of the forest and the peat moss of higher levels—evidences of a prevalent dampness—the vegetation, even at an elevation of 12,000 ft., was, at the time of our visit, very dry. One of us, unfortunately, dropped a lighted match, and in an instant the grass and groundsel on every side burst into flame. Tree after tree exploded, and as fast as one was extinguished others ignited, till the fire spread ahead of us in a lurid circle, sweeping up the valley and down the mountain slope. Our collecting space, rich with birds and plants, was being denuded before our eyes. For over two hours we fought the fire with our ice axes, with the result that we eventually arrested it from going up the valley. Night fell on a magnificent sunset. We had created our own Krakatoa. Water was cupped in the lobelia leaves, and as the plants smouldered the water evaporated and volumes of steam went up. This formed a great cloud of yellow smoke and white moisture above us, visible at night time, as we afterwards heard, eighty miles away. As the sun set limpid greens and pinks coloured the sky high to the zenith. The banks of smoke clouds were rimmed with orange and purple as the sun changed from blood red to burnished gold. Afterwards the whole sky turned a dull copper till it merged into the dense blackness of the velvety burnt hill-sides. In the midst of the blackened domes of grass the white silvery groundsel gleamed out, and, rising high on three sides, was the red glare of the fire in the neighbouring valleys. Behind us, towards the centre of the mountain, a space of darkness testified that our combat had not been in vain.

Early next morning we came to the pass called by Gregory the Phonolite Col. Here for the first time we saw the glaciers, and after determining the position of our top camp returned to the Höhnel Valley to pick up the stores. But that afternoon a messenger came with a note from Hausburg saying that he had arrived at the upper edge of the forest and wanted my revolver; that the camp below was without food, and that two of the men had been murdered. There was no alternative but to tell the guides to go on to prospect, while I hurried down again to join Hausburg. When we

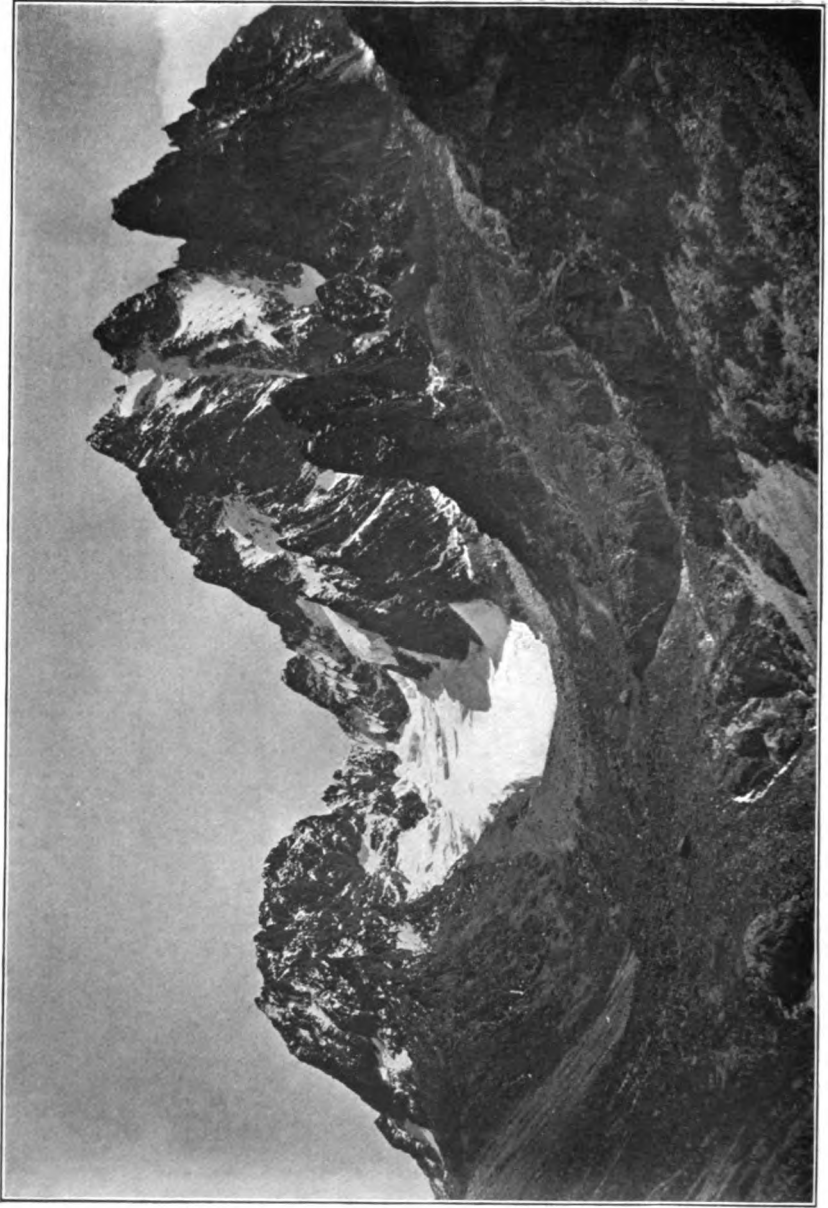
arrived at the foot camp I found that the caravan sent to bring in food from Wangombe's had procured a certain amount, but that difficulties had arisen. Wangombe told our headman, Sulimani, that he would supply no more, and that the caravan must go to his brother's village. This Sulimani declined to do; but one of our askaris and another member of the caravan volunteered to go. Accordingly they and four others set off, and after falling into an ambush and fighting for their lives returned with the weapons of five men they had killed and two of their own number missing. We thus found ourselves in the midst of the desert, with the only fertile region in our neighbourhood in hostility against us. Nothing remained but to break up our base camp and to send the porters to feed themselves elsewhere: they were accordingly despatched with Saunders over the Sattima range—crossed for the first time by a white man—to the Government station at Naivasha. All the food that could be got together amounted to six days' rations for a ten days' journey, but, owing to Saunders's pluck and determination, the detachment reached its destination in safety.

We then went back to our work with our numbers cut down to less than 20 men, in the hope that we should soon be relieved by the return of our comrades. While Hausburg and Camburn shot birds and collected plants I rejoined the guides at the higher camp, and we made our first attempt on the summit. Two glaciers descend from the axis of the mountain immediately to E. of the central peak, the one, which I have named after Gregory, flowing northward, the other, christened by Gregory after the late H. C. Lewis, flowing southward and bending westward. We went up the moraine on the left side of the Lewis Glacier, and then crossed the glacier to the eastern foot of the S. arête of the peak. We climbed the rock-face with the idea of following the crest up to the lower of the twin points which form the summit; thence it appeared possible to cross to the higher. On reaching the crest of the arête, however, we found it so difficult and broken that, after repeated traverses on the rock-faces, evening came upon us, cutting off both advance and retreat. We roped ourselves to the rocks, and were fortunate in choosing the sheltered side. Behind us the north-east wind whistled through the chinks of the rock, but it was not till about 2 A.M. that the cold air came over the crest and forced us to beat our hands and knees to ward off numbness. Although we were at an elevation of 16,800 ft. the air temperature did not fall more than 3° or 4° below freezing-

point; but there was great radiation into the cloudless sky. Morning came after the twelve hours of tropical night, and we attempted to get higher, but were brought up by a chasm separating the arête from the peak beyond, and, as our food supply had come to an end, we were forced to return to our camp.

I now went down to the foot of the mountain with two black companions to watch for the relief caravan, and Hausburg took my place, and went completely round the peak, making a series of photographs. Down on the Laikipian plain we hid our tent in a river gully, hoping thereby to escape the notice of the natives. Each day I went round the neighbourhood with my Mauser watching for the coming caravan. At last I saw in the far distance through my glasses what appeared unmistakably to be green tents. Under any other circumstances I should have been quite sure, but there was no smoke from the camp, and alone on the plain one is apt to doubt one's senses. The following morning the green marks had gone, a fact which logically indicated a passing camp; yet no one came. The next, being the day fixed for all to descend from Kenya and for a dash to Naivasha to avoid starvation, we went out early, and after a long and fruitless search were returning, when I heard a shot, and fired in reply. Captain Gorges, of Naivasha, had come with Saunders, and they had lost their way, hence the inexplicable delay after the removal of their camp. Two hours later the party from Kenya rejoined us, and after talking things over we decided that it was impossible to feed the whole force there, and that Hausburg, with Gorges, should take the majority back to Naivasha, while I led the other four whites and fifteen black men to make a further attempt on the mountain. It was arranged that porters should afterwards meet me at the foot of Sattima with food enough to carry us into Naivasha. The main party left within 6 hrs., and we set to work to carry our food loads to a depôt in the forest, a task which involved more than one journey, on account of our small number. Next morning when Saunders went back for the last loads he came upon a body of Wanderobo elephant hunters in the act of looting our store. They had taken tin-openers and other articles of luxury, but had failed to open the tin-lined food cases, the loss of which would have finally defeated us.

Leaving the collectors in the forest I went up again with the guides and porters to the foot of the glaciers. Having deposited the food at our top camp, we sent the black men



C. B. Hansburg, photo.

KENYA PEAK AND THE TYNDALL GLACIER.

Swan Electric Engraving Co.

back, for they could not endure the cold, and César, Joseph, and I remained alone for the final attempt to reach the summit.

An intermediate attempt had been made in my absence by César and Joseph, who, after cutting their way up the steep Darwin Glacier, which follows the western side of the S. arête, had experienced bad weather, and, not daring to descend by the way they had come, had climbed the arête and returned by our former route across the Lewis Glacier.

On September 12 we set out on what was, therefore, the third attempt. On the previous ascent I had suffered from indigestion and lassitude, and therefore determined to try starvation rations. I lived for 36 hrs. almost wholly on kola biscuits, with eminently satisfactory results, for I suffered from no mountain sickness, and felt far more energetic than on the previous occasion. We crossed the Lewis Glacier as before, climbed the face of the rock on to the arête, and spent the night in a Mummy tent. Next morning we traversed the head of the Darwin Glacier to a rib of rock which descended south-westward from the lower of the summit peaks. This we followed upward for a short space and then struck across the small but steep and very hard glacier hanging from the col between the peaks. It frequently took thirty blows to cut a single step, and we were 3 hrs. in crossing, though it had appeared that 20 min. would suffice. We reached the higher summit at 12 o'clock on September 13. It was entirely devoid of snow. The afternoon cloud had just come up, but we had had a fine view from a point 200 ft. lower. The temperature was 40° F., and I counted about five different kinds of lichen. Though we were all most anxious to climb the other peak, the afternoon storm was threatening and the risks appeared too great. Descending, therefore, cautiously through a mist of ice crystals—for the temperature had suddenly fallen—we reached the southern arête at sunset, but continued down the rock-face and over the Lewis Glacier to our camp, where we arrived after 10 P.M.

After a day's rest we set out on a high-level journey round the mountain, by a wider circuit than that followed by Hausburg. As we carried food and a plane table it was necessary to sleep in the open, but though the nights were cold we got through without harm. Three days later we returned to camp and found porters waiting to take our effects down to the base.

Striking across Laikipia, we climbed the Sattima range—which had not previously been traversed, except by parties

in connection with our own expedition—and descended into the land of Ondagobbus, among the Masai. We reached Naivasha on September 29, whence I rode ahead on a borrowed horse to the Kedong. Having walked up the escarpment I was lucky in finding Mr. George Whitehouse, the chief engineer of the Uganda line, engaged in the inspection of rail-head, and he took me down to Nairobi. Thence I returned with all speed to the coast and to England, arriving on October 30, only a week late for the recommencement of my work at Oxford.

Note.—It has not been possible to express here all the thanks due to those who befriended us in East Africa. But I cannot forego the pleasure of saying in the 'Alpine Journal' that it is to Mr. D. W. Freshfield and to Signor V. Sella that we owe the discovery of César Ollier and Joseph Brocherel.

THE DENTS DES BOUQUETINS.

BY A. G. TOPHAM AND H. V. READE.

A COMPARISON of the various accounts of the Dents des Bouquetins which have appeared in the 'Alpine Journal,'* and have been summarised in the 'Pennine Guide' (and in Studer's 'Ueber Eis und Schnee'), makes it certain that several of them cannot be reconciled with each other or with the features of the mountain itself, and the writers think it may be useful to point out what mistakes have been made and what are the real routes up the various peaks. To some extent this has been done by Signor Mondini's article 'In Valpellina,'† partly revised by Mr. A. G. Topham, to which frequent reference will be made.

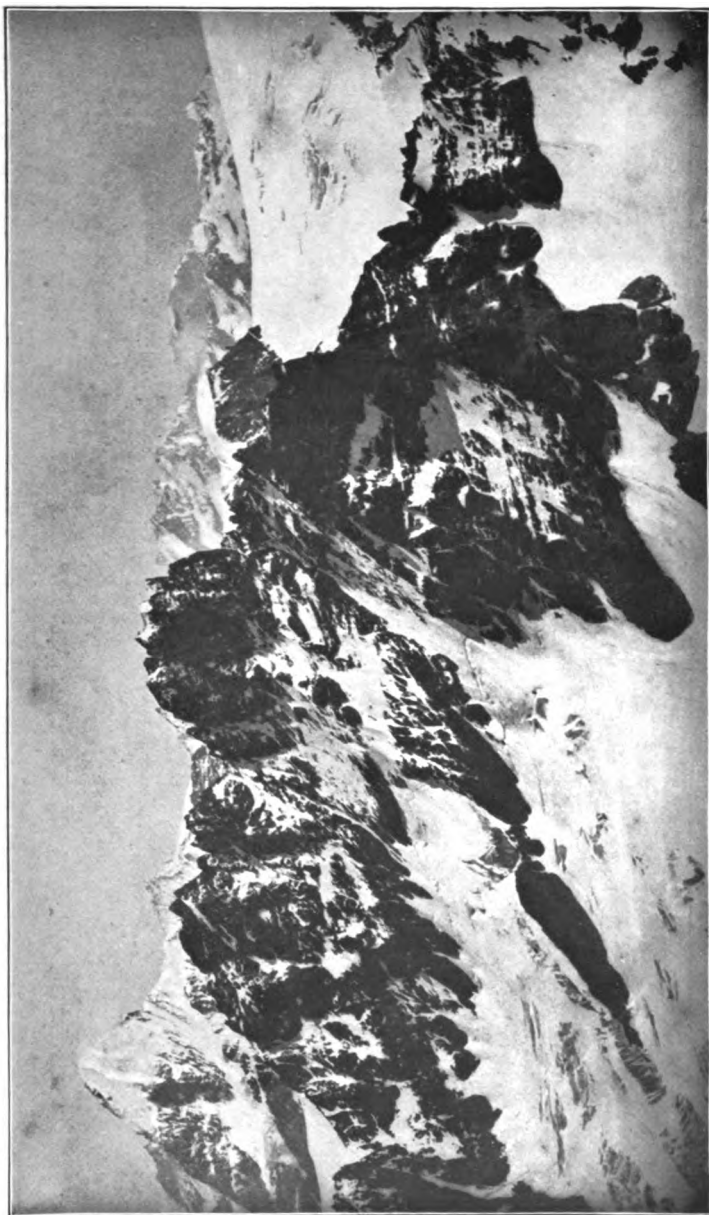
Beginning with the central and highest peak (3,848 m. = 12,625 ft.) and taking the routes as they appear in the 'Pennine Guide,' p. 64, route (2), which consists in reaching from the E. the lowest depression between 3,848 m. and 3,783 m. (the N. peak), since named the Col des Dents des Bouquetins,‡ and following the N. arête to the higher summit, is the route usually taken at the present time. But it is certainly not Mr. Hamilton's, as is stated. According to Mr.

* *Alpine Journal*, vol. vi. p. 28; vol. viii. pp. 140, 225; vol. xiii. pp. 410, 411, 529; vol. xiv. p. 498; vol. xvi. p. 266; vol. xvii. p. 254; vol. xviii. pp. 48, 527.

† *Bollettino del Club Alpino Italiano*, 1899, pp. 144 to 163.

‡ *In Valpellina*, p. 148.

North. Central. South.



Alfred G. Topham, photo.

WEST FACE, DENT DES BOUQUETINS.

Swan Electric Engraving Co.

Hamilton's own account * he did not go anywhere near the lowest depression, but ascended the E. face on the left (S.) of a glacier ending abruptly in an ice cliff, crossed a narrow snow couloir, and mounted rocks to the gap between 3,848 m. and a minor peak a little N. of it. This peak, which is necessarily crossed by any one following the N. arête to 3,848 m., may be called b^1 , as it is the first summit between b (3,848 m.) and c (3,783 m.) of the 'Pennine Guide.' The glacier mentioned is the one which descends from the Col des Dents des Bouquetins; it does not end in an ice cliff, but is merged in the névé near the Col des Bouquetins. On the S.E. side, however, it does fall away at more than one place in ice cliffs, which are referred to by Mr. Hamilton and later climbers.

Mr. A. Cust,† who had one of Mr. Hamilton's guides, took practically the same route, but reached the arête actually at, or only just S. of, b^1 —that is to say, a little further to the N. than Mr. Hamilton. Route (3) of the 'Pennine Guide,' Mr. Slingsby's,‡ also ascended the E. face to 'a minor summit' N. of 3,848 m., whence the N. arête was followed to the top. This minor summit is b^1 , referred to above, and the route is therefore a slight variation on those of Messrs. Hamilton and Cust, keeping more to the S. and affording better climbing, but taking more time. Fourthly, there is Mr. Calvert's climb, described in the 'Alpine Journal' (vol. xviii. p. 527) and in No. 1 of the 'Yorkshire Ramblers' Club Journal' (July 1899), where there is a photograph of the mountain from the N.E. He also climbed the rocks of the E. face of 3,848 m. to a point which, from below, appeared to be the summit, but proved to be a point N. of it, separated by a gap about 180 ft. deep. This point is, again, b^1 , and his route is much the same as those described above.§

These three routes, therefore (four, if we count Mr. Cust's,

* *Alpine Journal*, vol. vi. p. 28; vol. viii. p. 225.

† *Ibid.* vol. viii. pp. 140, 225.

‡ *Ibid.* vol. xiii. pp. 410, 530.

§ In Mr. Calvert's first account (*A. J.* vol. xviii. p. 527) he mentions a second tower between b^1 and the summit; but he has now informed the writers that this is nothing more than a hump on the final arête, that he reached the arête at b^1 , and that he thinks 180 ft. to be an over-estimate for the depth of the gap. A 'hanging glacier' to which he refers is no doubt what the photograph shows as a broad band of snow crossing the N.E. face, and is not part of the main glacier descending from the Col des Dents des Bouquetins.

which was not, however, claimed as new), are practically one, with variations, and are not route (2) of the 'Pennine Guide.' All lie on the not very large section of the E. face, which is bounded on the N. by the Col des Dents des Bouquetins and on the S. by the large snow couloir immediately N. of the E. arête—or, more properly, buttress—of 3,848 m., the buttress which was ascended by Messrs. Oppenheim and Arbuthnot,* and was descended last year.

The photograph of the Dents from the S.E. which accompanies this article gives the routes of Messrs. Slingsby, Calvert, and Arbuthnot as traced by the climbers themselves, showing that Mr. Calvert's crosses and recrosses Mr. Slingsby's. Mr. Hamilton's route has been inserted conjecturally. The true N. arête of 3,848 m. is in great part hidden.

Coming now to the N. peak (3,783 m. = 12,412 ft.) we have first M. Monnier's route. The 'Pennine Guide,' following the 'Alpine Journal' (vol. xiii. p. 531), states that he took the N.W. arête; but this cannot be reconciled with his own record, as quoted in the 'Journal' from Mr. Larden's MS. guide-book. M. Monnier says that the N. group consists of four peaks, of which the third, reckoning from the S., is the highest. He ascended from the W. to a gap between the first and second from the S., and is said to have then reached the third and highest by the W. arête. But it is obvious that he could not have reached the W. arête from his gap except by a traverse of the W. face, for which (even if it be possible, which is doubtful) there could be no motive, as the S. arête, the direct way to the top of 3,783 m., can be followed without difficulty. The conjecture that a slip occurred either in the original note in the visitors' book at Arolla, or in the translation or transcription of that note, and that for W. arête we should read S. arête, has been confirmed by communications with M. Monnier, and is adopted by Studer in his second edition (p. 409), and by the authors of 'In Valpellina' (p. 149).

Secondly, there is Sir H. Seymour King's route, briefly referred to in the 'Alpine Journal' (vol. xiii. p. 531), and in the 'Pennine Guide,' and given more fully, on the basis of a letter from the climber to Mr. A. G. Topham, at p. 149 of 'In Valpellina.' The party reached the Col des Dents des Bouquetins (for the first time) from the E., and, mistaking their way in dense clouds, went N. instead of S., and climbed 3,783 m. by its S. arête, thus joining M. Monnier's route about half-way to

* *Alpine Journal*, vol. xviii. p. 48.

the summit. Finding their predecessor's cairn they realised their error, and returning the same way to the Col ascended the central peak (3,848 m.) for the first time by the whole length of the N. arête. In the outline sketch facing p. 529 of vol. xiii. of the 'Alpine Journal,' 3,783 m. is wrongly denoted; it should be the point most on the left (N.), as there is nothing N. of it except an unimportant rock-tower, no doubt M. Monnier's fourth summit, which could be reached in about 10 min. The point 3,536 m., referred to on p. 531 as one of the northerly group of the Dents des Bouquetins, is not usually considered to belong to that mountain, but is called the S. peak of the Dents de Bertol. An ascent of it on August 13, 1886, by Messrs. A. Barran, F. Corbett, and the Rev. J. G. Addenbrook, is mentioned in the 'Alpine Journal,' vol. xiii. p. 410.

With regard to the S. peak, 3,690 m., it may be noted that the 'Alpine Journal,' vol. xiii. p. 411, erroneously states that the first ascent was made by Mr. Slingsby and others on August 30, 1887, a mistake which is repeated in the 'Yorkshire Ramblers' Club Journal,' No. 1, p. 97. The point then reached was, in fact, only a minor summit S. of the true S. peak, and separated from it by another peak. In the 'Alpine Journal,' vol. xiii. p. 529, and in the 'Pennine Guide' and Studer, the error is corrected. Mr. A. G. Topham ('In Valpellina,' p. 150) found it impossible to reach 3,690 m. from Mr. Slingsby's peak, which is shown in both the illustrations to this article, just N. of a steep cliff.

A complete list of the routes up the three peaks of the Dents des Bouquetins will then be as follows:—

(a) *South Peak*, 3,690 m. = 12,107 ft.

By E. face and W. arête (Mr. A. G. Topham, July 18, 1894, 'Alpine Journal,' vol. xvii. p. 254; Studer, 2nd ed., vol. ii. p. 411). Although the climbers started from the Stockje, on the return they traversed the E. face to the S. arête and thence descended the W. face, thus making this an Arolla expedition.

Note on the Illustration of the Mountain from the S.E.—There is a slight error in the route-marks on this photograph. Those representing the lower portions of Mr. Hamilton's and Mr. Slingsby's routes respectively should be transposed, the crosses indicating Mr. Slingsby's and the other marks Mr. Hamilton's, up to the point where the two lines appear to meet. Mr. Hamilton's route then goes over the couloir and disappears behind the buttress, to emerge in the line of crosses higher up. Mr. Slingsby's bears to the left and is in view the whole way. Mr. Hamilton's strikes the main N. arête at the gap between *b*¹ and the summit, and follows the arête to the top.

(b) *Central Peak*, 3,848 m. = 12,625 ft.

(1) By W. face and S. arête (Mr. A. G. Topham, August 10, 1889, 'Alpine Journal,' vol. xiv. p. 498).

(2) By E. buttress (Messrs. E. C. Oppenheim and G. A. Arbuthnot, September 4, 1895, 'Alpine Journal,' vol. xviii. p. 48).

(3) By N.E. face (Mr. Hamilton, September 6, 1871, 'Alpine Journal,' vol. vi. p. 28, vol. viii. p. 225; Mr. Cust, August 10, 1876, *ibid.* vol. viii. pp. 140, 225; Mr. Slingsby and others, August 27, 1887, *ibid.* vol. xiii. p. 410; and Mr. Calvert, August 14, 1897, *ibid.* vol. xviii. p. 527).

(4) By N. arête, from the Col des Dents des Bouquetins (Sir H. S. King, September 1, 1885, 'Alpine Journal,' vol. xiii. p. 531; 'Boll. del C.A.I.,' 1899, p. 149), reached either from the E. (same party and references) or from the W. (Mr. F. W. Oliver, September 19, 1892, 'Alpine Journal,' vol. xvi. p. 266; 'Boll. del C.A.I.,' 1899, p. 148). Note that the 'Alpine Journal,' vol. xvi. p. 266, attributes this climb to M. Pasteur and others. This is corrected in the errata, p. 539, but Studer, 2nd ed., vol. ii. p. 408, repeats the mistake.

(c) *North Peak*, 3,783 m. = 12,412 ft.

(1) By S. arête, from Col des Dents des Bouquetins (Sir H. S. King, as above.)

(2) By W. face and (in part) S. arête (M. Monnier, August 8, 1884, 'Echo des Alpes,' 1884, p. 332; 'Alpine Journal,' vol. xiii. p. 531; 'Boll. del C.A.I.,' 1899, p. 149).

(3) From the N. This expedition was made by Messrs. H. A. Beeching, L. W. Rolleston, and H. V. Reade, with Antoine Bovier as guide and his son Antoine as porter, on July 22, 1899. Starting from the Bertol hut, they ascended 3,848 m. by what has been called above the usual route, reaching the col from the E. and thence following the N. arête, in 2 hrs. 50 min. They then returned to the col in an hour, and in another 2½ hrs. climbed 3,783 m., following the arête all the way, and crossing a well-marked intermediate peak.* The N. side of this peak was in a very rotten condition, otherwise there was no particular difficulty. So far the route was that of Sir H. S. King. Not thinking it worth while to climb the remaining rock-tower they then descended in a direction almost due N., partly by patches of rock and partly by an ice slope covered with a little loose snow, which gave some trouble. Towards the bottom they were compelled

* The gap at which M. Monnier reached the arête is probably the one N. of this peak.

to traverse to the left (W.), owing to a big crevasse which was invisible from the upper part of the slope. Flat glacier was reached in 1 hr. 50 min. and the hut in 50 min. more. Total climbing, 9 hrs.

This route, which, though not visible on the photographs accompanying this article, can be traced on the views facing p. 160 of 'In Valpellina' and p. 33 of the 'Yorkshire Ramblers' Club Journal,' affords a means of traversing a large part of the ridge, and is strongly recommended. It would, perhaps, be preferable to take it in the reverse direction, as the slope at the N. end would be found in better condition earlier in the day, and the way to avoid the crevasses could more easily be seen from below. If a longer day were desired the descent could, of course, be made by the E. buttress, or to the Arolla glacier by Mr. Topham's route on the arête S. of 3,848 m. and the W. face.

Further information as to the above-mentioned routes (except the last) will be found in the article 'In Valpellina,' where the sketches on p. 146 and 147 show all the routes (except Mr. Cust's) on the south and central peaks made up to the end of 1898. In the sketch on p. 147, however, there are two errors. (1) The word 'centrale' is printed too far to the left; the central peak is the foreshortened summit under the last letter of the word, as shown in the view from the S.E. accompanying this article. (2) As in the letterpress, p. 145, and in the 'Pennine Guide,' the 'via usuale' is wrongly attributed to Mr. Hamilton.

The Italian Government map shows a point on the E. buttress of 3,848 m., some distance from the peak, with the altitude of 3,801 m. Studer, 2nd edition, vol. ii. p. 408, calls this an E. peak of the mountain, and, while doubting its existence, states that it is unclimbed. But there is no such point far E. of the summit. The only point anywhere near is formed by the junction of the S. arête and E. buttress just S. of 3,848 m., and this point was crossed by Mr. A. G. Topham from the S., and subsequently by Messrs. Oppenheim and Arbuthnot from the E. The Italian map is most erratic at this part of the range, for it also marks the highest peak far N. of its true position, and gives it no name, confining the title 'Dents des Bouquetins' to the S. and lowest peak. These and other errors have been corrected in the map at the end of the 'Bollettino del C.A.I.,' 1899, and will not reappear in the new sheets of the Government map.

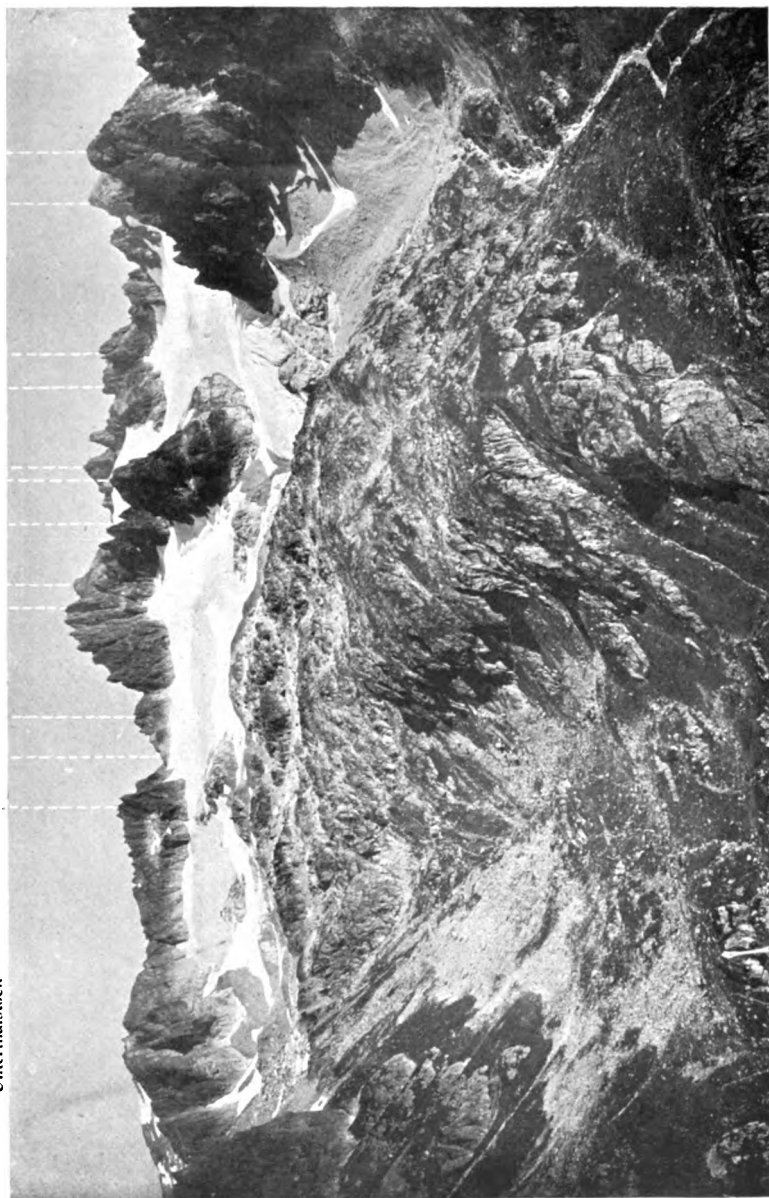
THE FÜNFFINGERSTÖCKE.

By A. V. VALENTINE-RICHARDS.

THIS interesting group of rocky peaks, which, with their bold outlines, serrated ridges, and sheer precipices, recall in miniature the Chamonix aiguilles, lies due S. of the Titlis, high above the Wenden Glacier, and is most easily accessible from the little inn at Stein. The Swiss map (Siegfried Atlas, sheet No. 394) being for once seriously at fault, there is some confusion in the records of expeditions made among these summits; and the object of the present paper is to throw light on the topography, and to identify and tabulate the various routes that have been followed. The accompanying sketch map (to which has been added, for convenience of reference, an enlarged copy of the Swiss map) is based mainly on photographs, and gives, it is hoped, a fairly accurate representation of the relative positions of the principal points; my friend Mr. W. C. Compton has helped me with this and in many other ways. For the excellent view from Seeboden we have to thank some kind but unknown correspondent. I am further indebted for information and assistance to members of all the English parties mentioned below, particularly Mr. Coolidge, as well as to Dr. Dübi, who seems to have been the first explorer of this comparatively neglected district.

The group consists of three main summits (Nos. 2, 3, 4 in the view from the Sustenloch, facing p. 23 of the previous number of this 'Journal'), with some subsidiary ridges, all grouped round the two branches of the Oberthal Glacier on the S., and with these is usually associated a fourth and higher point (No. 1), which lies further E. at the head of the two branches of the Klein Sustlifirn. All four are on the ridge which rises above the Wenden Glacier on the S.E. and S. This last point (No. 1), which is very conspicuous from the Meienthal, appears to be an independent summit, and Dr. Dübi kindly informs me that it is doubtful whether it is meant to be included among the Fünffingerstöcke on the Swiss map. When he visited the district with a local chamois-hunter, named Mohr, in 1871 the latter termed it the Wendenhorn, thus distinguishing it from the lower summits on the W., to which he gave the name of 'Fünffingler.' The name 'Wendenhorn' might with advantage be recognised nowadays.

The central point of the main group is No. 4, which is seen to advantage in the view from Seeboden (a grassy



2740 2800
No. 3
Ober Heuberg

W. Ober-
thaljoch
No. 4.

2831

Sustenlochspitz

Unterthalstock

Suan Electric Engraving Co.

FÜNFINGERSTÖCKE FROM SEEBODEN (Stein).

Unbekannt, photo.

eminence S. of Stein). This peak is the most conspicuous of any when viewed from the S. or S.W., and its curiously formed W. arête may well (as Mr. Compton conjectures *) have suggested the name Fünffingerstock. It stands at the head of the ridge that separates the two branches of the Oberthal Glacier, while its N. face falls in a great precipice to the Urat Glacier. It is, therefore, certainly to be identified in position with 2,993 m. of the map. The col in its S. arête (just N. of the point 2,831 m.), † which is marked by a striking rock obelisk and may be called *Thurmjoch*, gives easy access by a couloir from the W. Oberthal Glacier to the E. branch, which is here at a higher level. The W. arête of No. 4 forms the head of the W. Oberthal Glacier. It descends in a series of nearly vertical steps almost to the level of the snow, and then rises slightly to form a rounded summit further W., which must correspond to 2,890 m. of the map. S.W. of this is a well marked col, the *W. Oberthaljoch*, beyond which the ridge rises again to the point 2,740 m. It continues in a S.W. direction as far as the *Unterthalstock*, when it trends more to the S. and forms the W. boundary of the W. Oberthal Glacier.

All these points can be distinguished in the views from the Sustenjoch, Seeboden, and the Reissend Nollen, and it is at once apparent that the Swiss map is in error. The distance from 2,993 m. to the W. Oberthaljoch is made greater, and that from this col to the Unterthalstock less than it is in reality. From calculations made from these and other photographs it seems that 2,740 m. should be placed a little S. of the point marked 2,890 m. on the Swiss map, and the position of the col and 2,890 m. altered accordingly. But these last figures cannot possibly be right. A glance at any of the photographs will show that this little point is much more than 100 m. lower than No. 4, and very little different in height from 2,740 m. Lastly, the W. Oberthaljoch really lies at some height above the Urat Glacier on its N. side, from which the col is reached by a steep slope of rock and snow, seen in the Reissend Nollen view.

On the E. of No. 4 is the E. Oberthal Glacier, the head of which is well seen in the Sustenjoch view. Peaks Nos. 2 and 4 rise in the N.E. and N.W. angles respectively, and between them is No. 3. Between Nos. 2 and 3 is a broad snowy gap,

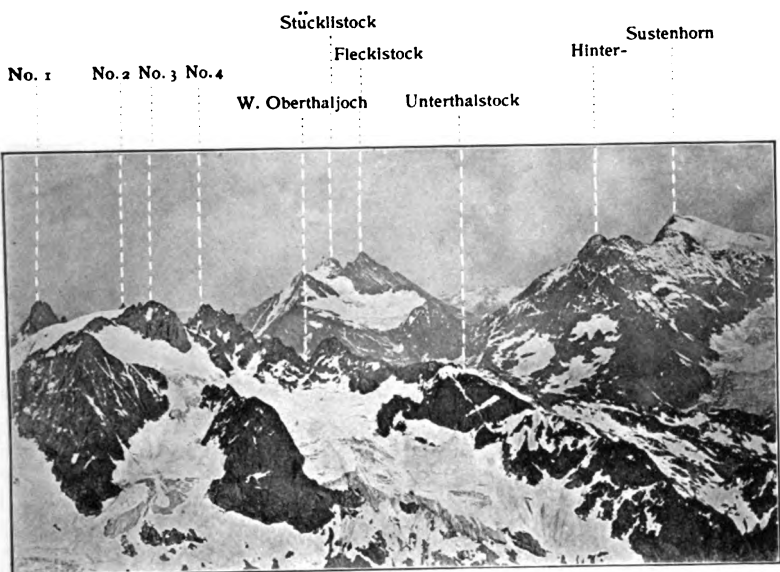
* *Alpine Journal*, vol. xx. p. 23.

† Both Mr. Powell and Mr. Hope have pointed out to me that the W. buttress of 2,831 m. is much exaggerated in the map.

and between Nos. 3 and 4 a narrow one. No. 3 itself is a ridge of rock running E. and W. with three summits, the highest and principal one being at the W. end. From its N. foot (and not from 2,993 m., as on the Swiss map) a low ridge runs to the Hinter Uratstock (2,909 m.) On the W. of this ridge the névé falls steeply, and is lower down divided into two branches by the Vorder Uratstock (2,671 m.) This may be named the Urat Glacier, and the col between No. 3 and 2,909 m. the *Uratjoch*. They are clearly shown in the view from the Reissend Nollen. The gap between Nos. 3 and 4, which is made much too conspicuous in the Swiss map, really leads—by a long steep couloir—to the Urat Glacier. And this glacier itself is represented wrongly; the Vorder Uratstock extends further E. than is shown on the map, and there is a wide stretch of névé between it and the ridge which bounds the W. Oberthal Glacier on the N.

On the E. of the Uratjoch is a nearly level plateau of snow (not indicated on the Swiss map), which further on descends steeply to the N. to join the Wenden Glacier near its head. The pass between Nos. 2 and 3, the *E. Oberthaljoch* (which is also not shown on the map), leads to this plateau; and No. 2 itself rises to no great height above it, but falls in sheer precipices to the Klein Sustlifirn on the E. and the E. Oberthal Glacier on the S.W., while a long, jagged ridge runs from it S.E. to point 2,918 m. No. 2 would appear, therefore, to coincide with 2,922 m. of the map. As, however, an observation taken on the top of No. 3 (which would thus be identical with 3,002 m.) showed the two peaks to be approximately equal in height, and No. 2 is certainly much higher than 2,918 m., the figures could not in any case be correct. But the error is really a much worse one. The Sustenjoch view shows that a line from the Sustenjoch through 2,918 m. (which on other grounds appears to be correctly placed on the map) passes to the right, *i.e.* E., of No. 2, and almost over the col between Nos. 1 and 2, which is concealed by 2,918 m. The same line on the Swiss map passes some distance to the W. of 2,922 m. It follows that the rock buttress marked 2,922 m. has no existence, and it becomes necessary entirely to reconstruct the head of the E. Oberthal Glacier, as shown on the revised map, No. 2 being placed much further W. These alterations are supported by other observations. No. 3 will then lie nearer 2,993 m. and also further N. than 3,002 m., as was remarked by Mr. Powell in 1884.*

* *Alpine Journal*, vol. xii. p. 267. Since the above was written

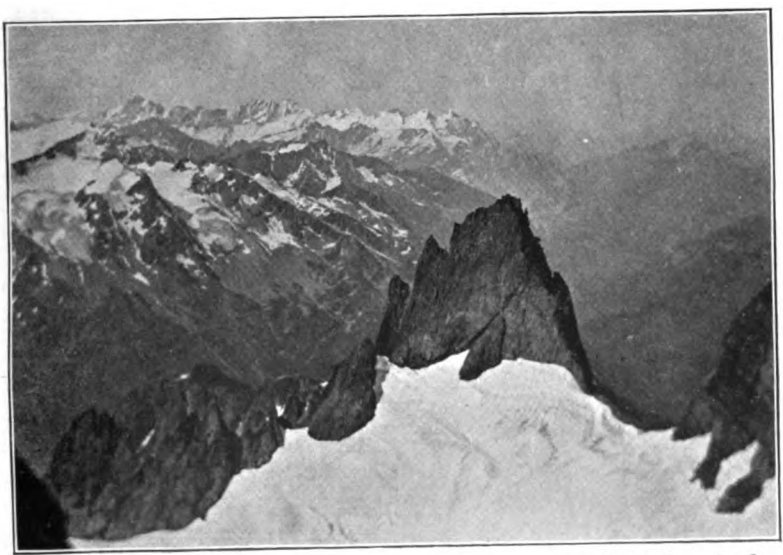


Hinter- Uratstöcke Vorder- Ober Heuberg Urat Glacier

FÜNFFINGERSTÖCKE FROM REISSEND NOLLEN.

R. P. Hope, photo.

Swan Electric Engraving Co.



W. C. Compton, photo.

"NO. 4," FROM "NO. 2."

Swan Electric Engraving Co.

It has already been mentioned that an observation made on No. 3 showed Nos. 2 and 3 to be of very nearly equal height. This is confirmed by a photograph of Mr. Compton's from the summit of No. 2, which also proves that No. 4 is considerably lower, certainly more than 9 m. For various reasons it appears probable that the altitude of No. 3 is about 3,002 m., the figures given on the Swiss map; hence No. 4 must be less than 2,993 m. On the supposition that No. 3 coincided in position with 3,002 m., the difference in height between the two summits was reckoned to be about 100 ft.* As, however, No. 3 is undoubtedly nearer to No. 4 this estimate must be correspondingly reduced, but the difference is certainly not less than about 60 to 80 ft. Mr. Compton prefers the latter figure, and he is supported by independent calculations made by Mr. Hope.

Point 2,918 m., the *Sustenlochspitz*, appears to be correctly represented on the Swiss map. The col in its S.W. arête leading from the Sustenlochfirn to the E. Oberthal Glacier has been called the Heubergjoch, and that in the S.E. arête leading to the Klein Sustlifirn may be termed the *Gufernjoch*. It is worth noticing that the latter is approached from the Klein Sustlifirn by a rock wall broken only by a steep and narrow snow couloir, and not by easy snow slopes, as shown on the map.

Between No. 2 and No. 1 is another snow col—or more precisely there are two cols separated by a rock island—leading from the snow plateau to the Klein Sustlifirn, which may be called the *Sustlijoch*. Further E., not N., of this is No. 1, corresponding to 3,036 m. of the Swiss map, which again represents the ridges wrongly. There is no indication of the long summit ridge, overlooking the Wenden Glacier on the N., the prolongation of which towards E.S.E. divides the Klein Sustlifirn, as the map correctly shows. On this summit ridge are three well marked points, the highest at the E. and the lowest at the W. end. From the former an arête falls steeply to the N.E., and from the latter another arête descends S.W. to the Sustlijoch.

I will now give briefly the history of the various peaks and passes, so far as it has been recorded. It will be convenient to take them in geographical order from E. to W.

Mr. Hope has kindly sent me a map of the group which he has made quite independently, and this confirms in all important particulars what has been said as to the relative positions of the various points at the head of either branch of the Oberthal Glacier.

* *Alpine Journal*, vol. xx. p. 29.

No. 1 was first climbed in 1884 by Messrs. Hutchison and Powell by the couloir in the S.W. face which descends from the gap between the highest and central summits.* Practically the same way was taken by Herren Kruck and Amberg in 1898 and by Mr. Compton and myself in 1899. The route taken by a party in 1892—whose illegible record was found by Herr Kruck—is unknown. Messrs. Hope and Kirkpatrick struck out a new way by the great couloir on the N. face in 1899.† This peak has been called 3,036 m. by all parties.

Sustlijoch.—This was crossed by Messrs. Hutchison and Powell in 1884, on their way to climb No. 1 after making the ascent of No. 3. But the Rev. W. A. B. Coolidge in 1889 was the first to show that it afforded a way of reaching the Meienthal by descending the whole length of the S. branch of the Klein Sustlifirn.‡ He described the col as lying between 3,036 m. and 3,002 m.

No. 2.—The first ascent was made by Mr. Coolidge in 1892,§ but described as the second ascent of 3,002 m. Dr. Ransendorff in 1893 and Herr Kruck in 1899 were similarly misled by the inaccuracies of the Swiss map. All parties have followed approximately the same route, viz. straight up the rocks from the snow plateau on the N.

Sustenlochspitz.—This was first climbed in 1898 by Mr. and Mrs. Baker-Gabb, who are also the first to record the crossing of the *Heubergjoch*.|| The *Gufernjoch* was traversed in 1889 by Mr. Coolidge on his way back to Stein from the Sustlijoch.¶

E. Oberthaljoch was crossed by Dr. Dübi in 1871, coming from the Wendenthal by the *Üratjoch*; his route is more fully described below. Since then it has been traversed by almost all visitors to the group, but Messrs. Powell and Gare were the first in 1891 to use it as a direct route from Stein to the Wendenjoch, the descent to the Wenden Glacier being made by the snow slopes N. of 3,036 m.** The whole route from Engelberg to Stein was first made by Dr. Ransendorff in 1893. Mr. Powell (*loc. cit.*) has described the pass as lying between 3,002 m. and 2,992 m. (a misprint for 2,922); Mr. Coolidge †† and Dr. Ransendorff, as between 2,993 m. and 3,002 m. It really lies between No. 2 and No. 3.

No. 3.—The middle point of this triple peak was reached by Dr. Dübi as early as 1871. Starting from Gadmen, his

* *Alpine Journal*, vol. xii. p. 267.

† *Ibid.* vol. xx. p. 46 sq.

§ *Oest. Alpenzeitung* for 1892, p. 293.

|| *Alpine Journal*, vol. xix. p. 253.

** *Ibid.* vol. xvi. p. 115.

‡ *Ibid.* vol. xv. p. 72.

¶ *Ibid.* vol. xv. p. 72.

†† *Ibid.* vol. xv. p. 72.



GROUP OF THE FÜNFFINGERSTÖCKE (STEIN)

party ascended the Wendenthal, and striking the Urat Glacier went up between the Uratstöcke to the *Uratjoch*. From this they turned N. and reached without difficulty the summit of the Hinter Uratstock. They then went on to the E. Oberthaljoch, and followed the ridge W. from it as far as the central summit of No. 3, and subsequently went down the Oberthal glacier to Stein.* Dr. Dübi (as well as others) has described this peak as 2,993 m., an impossible identification. The highest point of No. 3 was first reached by Messrs. Hutchison and Powell in 1884. They followed the whole ridge from the E. Oberthaljoch, and found the rocks difficult.† They identified the peak with 3,002 m. A much easier and shorter route is that taken by our party in 1899, viz. up the snow couloir just S. of the central pinnacle (well seen in the Sustenjoch view), leaving it near the top for the rocks of the main peak.‡ A similar way was probably taken on the two other recorded ascents, those of Herr Prell in 1892 and Herr Kruck in 1899.

The gap between Nos. 3 and 4 is not known to have been crossed as yet.

No. 4 was first climbed by Messrs. Hutchison and Powell in 1884. They reached the S. ridge high up from the W. Oberthal Glacier by rock couloirs, and descending the same ridge made their way down to the E. Oberthal Glacier at a point near the gap just referred to.§ They rightly describe the peak as 2,993 m. Our party in 1899 took another route from the gap by the rather difficult rocks of the N.E. arête and N. face.|| The Thurmjoch was crossed by Messrs. Hutchison and Powell in 1884, and frequently since.

W. Oberthaljoch was first traversed by Messrs. Bastow and Lacey in 1875.¶ They appear to have attempted to force the descent of the icefall between the Uratstöcke (Dr. Dübi's route), but failing in this they went down the S. branch of the Urat Glacier. This expedition was repeated by Messrs. Benecke and Reade in 1893.

An ascent of the *Unterthalstock* is recorded in the Stein Visitors' Book.

The Fünffingerstöcke can be thoroughly recommended to those who like little frequented districts, as affording in a modest way good scrambling and fine views; and the 'novelties' are not yet quite exhausted.

* *S.A.C. Jahrbuch*, vol. xi. p. 588 and vol. xxviii. p. 316.

† *Alpine Journal*, vol. xii. p. 266.

‡ *Ibid.* vol. xx. p. 28.

§ *Ibid.* vol. xii. p. 266.

|| *Ibid.* vol. xx. p. 28.

¶ *Ibid.* vol. vii. p. 327.

THE ASCENT OF HARAMOUK.

BY DR. ERNEST F. NEVE, F.R.C.S.E.

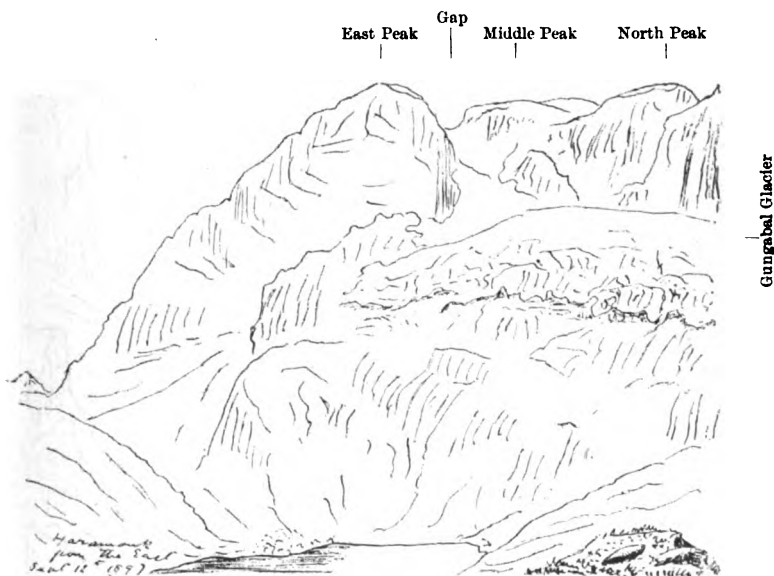
THE valley of Kashmir forms one of the most important bases for climbing expeditions in the Himalayas. From Kashmir the intrepid Mummery started for his bold attempt on Nanga Parbat, but, alas! perished in the attempt—probably in an avalanche. The interesting work, too, done by Sir Martin Conway in the Kashmir Himalayas is well known to English readers.

To the climber Haramouk presents especial interest. Its height is not very great, being 16,900 ft. But it is the most distinctly Kashmiri of all the outstanding mountains. Its shoulders and ridges slope well down into the vale, and it forms one of the most striking mountain masses which compose the magnificent background to the panoramic view of the western end of the valley of Kashmir, seen from the S. and E. Rising like a giant above the ranges round, its wall-like cliffs and snowy domes glitter in the sun—a very dream of beauty.

Haramouk has, by both the Mahammedans and Hindus of Kashmir, been invested with a halo of romance, chiefly on account of its supposed inaccessibility. The Hindus say that there is a vein of emerald in the southern cliff, and that no snakes can live in any part of Kashmir from which this can be seen. They add that the mountain never has been and never can be climbed. The Mahammedans, however, relate that a religious mendicant once upon a time did succeed in reaching the summit, but was pushed over the edge during the night and perished. The shepherds look up with awe at the snow fields which crown the mountain and from which the various summits arise, and tell you with bated breath that fairyland lies up there and that since the days of Father Adam no foot has ever trod those upper snows.

The lowest of the peaks is a conical mass of rock, which was used for survey purposes many years ago. It is known as the 'Station Peak,' and can be fairly easily approached from the W. by a long rocky ridge. The other summits are the Western, Middle, Northern, and Eastern. The last, which is the highest of all, is separated by a gap 400 ft. deep from the rest of the mountain. On three sides—namely, the N., E., and S.—there is a deep snow cornice, resting on a sheer rock precipice which drops about 3,000 ft. to the upper edge of the Gungabal glaciers.

The Woolar Lake—the largest sheet of fresh water in India, and through which the Jhelum River flows before it leaves the vale of Kashmir—forms a convenient starting point for Haramouk. On it one can carry one's supplies to the mouth of Erin Nalla, a valley which leads right up to the watershed on either side of the mountain. Starting from the lake, which is 5,000 ft. above sea-level, our first march leads us through rice swamps, then through patches of jungle bright with balsam, blue larkspur, and the pink blossom of the wild indigo. The hill-sides are a rich green, with heavy crops of maize. Presently we reach the lower margin of the pines,



HARAMOUK FROM THE EAST.

From a pen and ink sketch by E. F. New.

which we have seen clothing the slopes above us. After this the route becomes much more distinctly mountainous; the valley narrows; the sides become steeper, and broken here and there by patches of cliff. Already we can see the upper level of the pines and the birches, crooked and twisted from the pressure of many a winter's snows. A long, steady climb through a forest of firs, and at last we emerge on the upland meadows, gay with alpine flowers, and finally pitch our camp by the side of a shallow lake at a height of

12,500 ft., far above the level of trees and very near the upper limit of vegetation. This is the base camp.

From here in 1887 Dr. A. Neve and I successfully reached the summit of the Western Peak, and returned the same day.



STATION PEAK, FROM RIDGE CAMP.

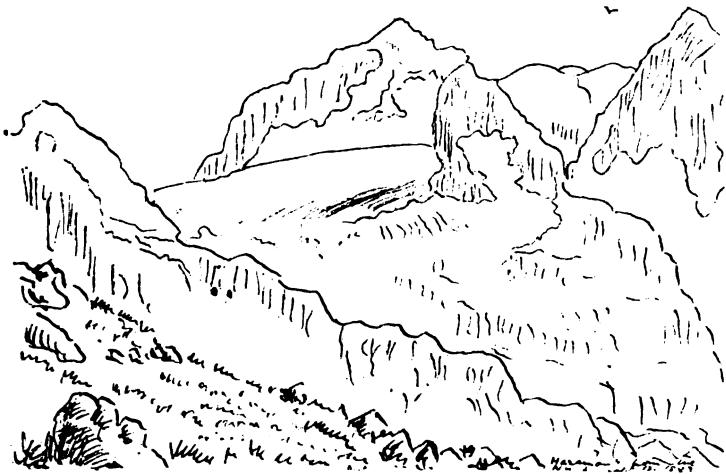
From a pen and ink sketch by E. F. Neve.

That year we proved that the higher peaks could only be reached by placing another camp higher up.

In 1897 I carried this into effect, and with Dr. Lechmere-Taylor climbed up to, and placed a *tente d'abri* on, a ridge 2,500 ft. above the base camp. For this we had to build

with stones a level place to hold the tent. The following day we made a further ascent, and I reached the summit of the middle dome and placed a pole at the top of its precipitous southern face. The chief difficulty was a bergschrund, which completely surrounded the snowy side, while the precipitous rock-face appeared impracticable. Eventually we found a small snow bridge over the chasm, and were able to cut our way up the steep slope.

In 1898, accompanied by the Rev. E. I. E. Wigram and Mr. J. H. Oldham, I made another attempt. We spent the night on the same ridge. But this year the bergschrund was



HARAMOUK FROM THE NORTH.

From a pen and ink sketch by E. F. New.

quite impossible without ladders, so we made a circuit below it and ascended the Northern Peak—a very fine summit, only a few hundred feet lower than the eastern top, of which we obtained a near and very fine profile view. The fatigue was great, as we spent 8 hrs. on unusually soft snow. All these attempts were made in September, as the weather in Kashmir is usually more settled in the autumn.

Hoping that in June, owing to the greater amount of old snow, the ascent of the middle dome—the only route to the top—would be easier, accompanied by Mr. Geoffrey Millais, I made in 1899 another ascent. We placed our base camp in the usual situation, and took up ten porters and two light tents to the ridge camp. The weather was mild and free from

wind, but a little cloudy. Starting at 4.30 A.M., we posted six of our porters along the route within hail of each other at all the difficult parts on the rock-climb. This precaution was taken to secure our return if the weather should prove bad. Taking two picked men with us, 45 minutes' stiff crag work brought us to the snow. This was in good condition. Working round the N. slopes of the Western Peak to the gap between it and the middle dome, we found that once more a large crevasse, surmounted on the upper side by ice cliffs, blocked off all access to the latter. A slender snow bridge which I attempted

to cross was too soft and let me through at the first step. We next turned our attention to the point where the snow joined the rocks on the S. face, and found that, by working up the rocks where practicable, and cutting steps up the steep snow slope where the rocks were impassable, we were able to make good progress. Indeed, we reached my 1897 pole by 9.45 A.M. From this point there was a drop of 400 ft. down steep rocks to the gap between the middle dome, on which we were standing, and the Eastern Peak. This was rather difficult, owing to the looseness of the rocks. We reached the bottom at 11 A.M., and felt that the battle was won. From this point a steady climb—at first on a fairly easy gradient,



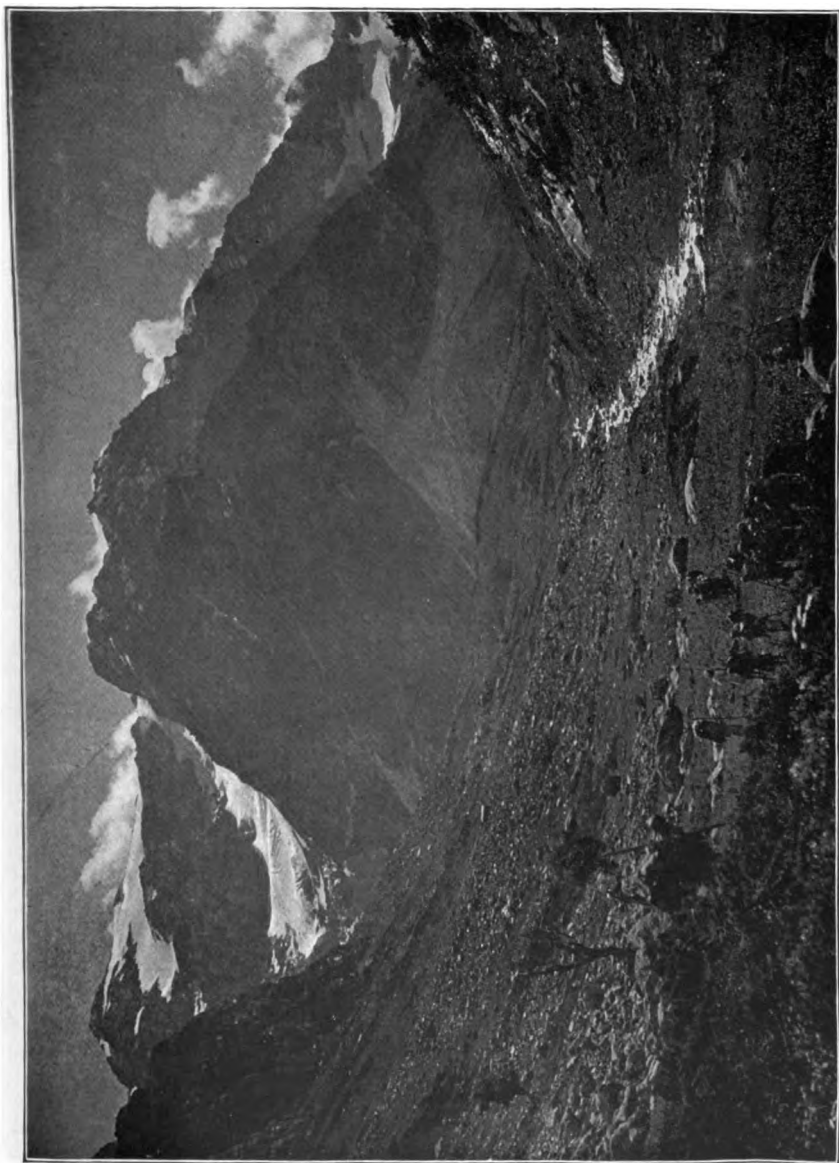
*View to the N.W.
1919*

**THE DESCENT TO THE GAP BETWEEN
THE MIDDLE AND EAST PEAK.**

From a pen and ink sketch by E. F. Nee.

and later on up a steeper slope, requiring some step-cutting—brought us to the summit, which was reached at 11.45 A.M.

The scene was too grand for words to describe. One looked right over the top of the great Pir Panjal range, which lies to the S. of the valley of Kashmir, and the higher peaks of which rival and even surpass Mont Blanc in height. Looking around one saw, standing out like giants, the still unclimbed mountains—Kolahoi, with its Matterhorn-like peak; Nun Kun; to the N., Gwasherbrum and Masher-



G. W. Millais, photo.

HARAMOUK, KASHMIR.

Swan Electric Engraving Co.

brum ; and, above all, sixty miles away, the grand range culminating in Nanga Parbat.

Haramouk has been removed from the list of 'virgin peaks, but a splendid field for really difficult work awaits the alpine climber in Kashmir.

IN MEMORIAM.

JOHN RUSKIN.

MR. LESLIE STEPHEN, in a very interesting article in the 'National Review' for April last, has informed the world and reminded our members that Mr. Ruskin not only on one occasion attended as a guest an Alpine Club dinner, but that he was so well pleased with his company that he joined our Club, and remained a member (from 1869 to 1882) until illness overcame him and shut him off from the outer world. We do not propose to attempt to repeat at any length here what Mr. Stephen has so well expressed elsewhere about Mr. Ruskin's relation to the mountains and his claims to the love and gratitude of all true mountaineers. The son of an Evangelical City wine merchant, brought up in a suburban villa, John Ruskin, from the day when he first caught sight of the Alps from the crest of the Jura, saw and understood mountains and taught our generation to understand them in a way no one—none even of those who had been born under their shadow—had ever understood them before. To begin with, he had a faculty of precise observation, the basis of all scientific research, which made him the most formidable of critics to any man of science, whose eyesight might be temporarily affected by some preconceived theory. But this appreciation of detail in no way interfered with Ruskin's romantic delight in the whole, in the sentiment and spirit of mountain landscapes. In some minds mountains take the place of cathedrals as a source of an emotion that may be called—in the wide sense of the word—religious. Ruskin was so happily constituted that he drew equal delight and inspiration both from architecture and from scenery.

To the expression of his observations or his feelings Ruskin brought, even from his youth, the gift of a style which has placed him among the masters of English prose. No one else has written at once so naturally and so ornately. He was, it need hardly be said, seldom quite fair as a critic, and hardly ever an impartial judge. He was born an advocate and an enthusiast; he cared nothing for consistency. He would confess to his self-contradictions with the readiest candour and good humour. He delighted in paradox; he loved to push morality into matters with which it has no concern—such as, for example, the oscillations of glaciers—and he did this without any apparent consciousness of extravagance. But, as Mr. Stephen has suggested, even when most extravagant

Ruskin leaves his readers with an uncomfortable sense that he has his finger on their weak points, and that he is not quite easy to answer. While we talk of 'doing peaks' and 'making records' we can hardly altogether demur to the 'greased pole' comparison. He was mistaken, doubtless, in denying beauty to the upper snows, to the region which is closed to the cripple and the greybeard. But if we who most frequent it treat it only as a playground can we blame him? Again, as facilities of travel increase, and the field of climbing extends, may not even the following passage serve some day as a wholesome warning?

'The vital difference between the strong and weak—or, let me say rather, between the availing and the valueless intelligence—is in the relation of the love of self to the love of the subject or occupation. Many an Alpine traveller, many a busy man of science volubly represent to us their pleasure in the Alps; but I scarcely recognise one who would not willingly see them all ground down into gravel, on condition of his being the first to exhibit a pebble of it at the Royal Institution. Whereas it may be felt in any single page of Forbes's writing or De Saussure's that they love crag and glacier for their own sake's sake; that they question their secrets in reverent and solemn thirst: not at all that they may communicate them at breakfast to the readers of the "Daily News"—and that although there were no news, no institutions, no leading articles, no medals, no money, and no mob, in the world, these men would still labour and be glad, though all their knowledge was to rest with them at last in the silence of the snows, or only to be taught to peasant children sitting in the shade of pines.'*

Whether or not we agree in these criticisms we shall all admit that no writer has added so much to our enjoyment of Alpine scenery as Ruskin. By the kind permission of his literary representatives we are now in a position to show that but for his breakdown in health our Club would have been under a still further and more direct obligation to its distinguished member; that he read with interest, and was on the point of becoming a contributor to, this 'Journal.' The following letters contain hints and suggestions which must make those who read them regret that the purpose for which they were written remained unfulfilled. Even after the lapse of twenty-two years they seem to carry, beyond their biographical interest, a message our members may be glad to have delivered to them.

Very few words will serve to explain the circumstances in which they were addressed in 1878 to the then Editor of this 'Journal.' The number (61) for August in that year contained two articles by Mr. Douglas Freshfield, one on 'The History of the Buet,' the other on 'Alpine Art.' In the latter the writer referred to certain

* *Fors Clavigera*, letter 34, reprinted in *Arrows of the Chase*, vol. i., and *Rendu's Glaciers of Savoy*, edited by Professor G. Forbes: Macmillans, 1874. p. 206.

apparently contradictory dicta of Mr. Ruskin's with regard to the painting of snow and ice.

Brantwood, Coniston, Lancashire :

August 27, 1878.

MY DEAR SIR,—I have only this morning taken up the August number of the 'Alpine,' and should have before thanked you for the candid and exhaustive history of the Buet, and its just notices of dear old Saussure and Bourrit.

No less for the courteous paper on Alpine art, the most sensible I have ever seen.

I should like to send you a few words on the matter for your October number, if September 12 will be in time for it, of which the gist will be an affirmative answer to your question whether I have ceased to hope for Alpine art, and a courteous reproach to the writer of the article for supposing snow paintable.

I have told my publisher to send you the back numbers of 'Deucalion,' and to continue it for the Club library. I hope that some day the members of the Club may desire to gather together their knowledge of glaciers, and make a wholesome end of all glacier theories, by due acknowledgment of James Forbes's conclusive ascertainment of glacier facts.

They owe this duty to science, and should, it seems to me, take honourable pride in fulfilling it. Always believe me, my dear Sir,

Your faithful servant,

J. RUSKIN.

Douglas W. Freshfield, Esq.

Brantwood, Coniston, Lancashire :

September 1, 1878.

MY DEAR SIR,—I am greatly delighted with your letter, and most glad of all the suggestions in it, especially of that about the spirit of climbing and travelling in Switzerland. It will be very refreshing to me to think over all these once so much loved subjects, and I hope to be able to send you an interesting though a very quiet paper, for I can't let myself get excited in writing since my illness without too much fatigue.

Ever most truly yours,

J. RUSKIN.

In a third letter, undated, but written about the end of the same year, Mr. Ruskin wrote—

DEAR MR. FRESHFIELD,—I have at least ten times set myself to do that paper for you, and ten times have been unable to write a word for sorrow as I thought of the wasted pride and energy of our youth and the total destruction of the beauty of Switzerland. . . . I find myself still unable to write, and cannot venture to think on a subject to me so appalling. But as to the possibility of Art for alps I may say, merely for your own guidance in what you write in future, that, if an artist could paint an icicle or an opal, he might in time paint an alp. But if he will first try a branch in hoar frost, and succeed—I shall like to see it! Calame and that man . . . I forget his name—are merely vulgar and stupid panorama painters. The real old Burford's work was worth a million of them. In true sorrow for my failure,

Faithfully yours,

J. RUSKIN.

DR. WILLIAM MARCET.

IN the death of Dr. Marcet, which took place at Luxor on March 4 last, the Alpine Club has sustained a great loss. Born at Geneva on May 13, 1828, he was in his boyhood a pupil of M. Toepffer, and figures as 'Alfred' in the 'Voyages en Zigzag.' After four years at the Academy of Geneva he proceeded to the University of Edinburgh, where he took the degree of M.D. in 1850. He came of a scientific stock. His grandfather, Alexandre Marcet, a Genevese settled in England, was naturalised, and acquired a large practice in London as a physician. His grandmother, Mrs. Marcet, was best known as the authoress of 'Conversations on Chemistry,' which went through sixteen editions, and in Dr. Marcet's youth still held its own as the best popular introduction to that attractive study. His father was for some years Professor of Physics in the Academy of Geneva, and afterwards was elected a Fellow of our own Royal Society. William Marcet, the subject of this notice, inherited the family instinct. After taking his degree he completed his chemical studies under Verdier in Paris, and then returned to England and set up as a consultant physician in London. He held the office of assistant physician to Westminster Hospital and to the Brompton Consumption Hospital. This is not the place in which to enlarge upon his scientific attainments and work, but some mention of them must be made. Botany and geology fell within the range of his studies. He was a profound student of meteorology, and from 1888 to 1890 held the post of President of the Royal Meteorological Society. He was an excellent chemist, both theoretical and analytical, and chemical analysis entered very largely indeed into his scientific researches. He studied the action of alcohol on the human frame, and demonstrated in a book entitled 'Chronic Alcoholism,' published in 1860, that the mischief wrought by alcohol taken to excess is chiefly due to its action upon the nervous system. He took a very active part in the labours of a committee of the Medico-Chirurgical Society, which investigated the operation of anæsthetics, and after a long course of exhaustive experiment established the fact that a mixture of ether and chloroform is, under ordinary circumstances, the safest of them. In 1865 he prepared a report for Government upon the chemical pathology of the Cattle Plague, of which Sir Thomas Watson said that 'probably no disease of man or of animals has ever undergone such an investigation in all its details.'

For three seasons he resided and practised at Nice, and for six at Cannes. His book upon 'Southern and Swiss Health Resorts' is, perhaps, unequalled for completeness and condensation. His principal scientific work, however, which in one shape or another engaged his attention during the greater part of his life, was in connection with digestion and the waste products of the vital economy. A series of researches of this nature, chiefly chemical, was undertaken very early in his professional life, and pursued with unremitting industry for something like two years. Together with

a work published in 1856 upon the cognate subject of 'Food, its Composition and Adulterations,' they undoubtedly had an important share in procuring him at the early age of twenty-nine the distinction of being elected a Fellow of the Royal Society. The rare spectacle was thus presented of the Fellowship of the R.S. being enjoyed at the same time by father and son. Shortly afterwards he was elected F.R.C.P.

The portion of his physiological work, however, which had perhaps the chief interest for Dr. Marcet, and which has a special connection with his mountaineering tastes, was that which had to do with the pulmonary excreta. He began to work upon this subject somewhere about 1876, and made experiments and observations in connection with the influence of altitude upon respiration both in the Alps and upon the Jura. In 1878 he spent three weeks upon the Peak of Teneriffe, partly at a height of 8,000 ft. above sea-level, partly at a height of 10,700 ft., and partly upon the very summit, some 2,000 ft. higher. Meteorological observations and quantitative analyses of respired air were carried on with extraordinary industry, under circumstances often of extreme discomfort and difficulty. In 1880 he spent three days on the Col du Géant, engaged upon similar researches. During nearly the whole of the rest of his life the subject was pursued at home with unremitting zeal. Respiration was observed and charted, and its products analysed under innumerable conditions of health and disease, of activity and repose, of volition and its absence, of barometric pressure, of exercise, fatigue, and rest. Many of the most interesting results arrived at are given in a volume called 'A Contribution to the History of Respiration of Man,' consisting chiefly of the Croonian lectures delivered before the Royal College of Physicians in 1895. His latest work—upon human calorimetry—was done so late as 1898 and 1899. Very fertile in mechanical resource, he was constantly inventing new apparatus—often of the most delicate and complicated nature—and he counted no pains too great to get rid of all sources of disturbance and error.

The same energy which distinguished his scientific work was carried into his recreations and amusements. He was an ardent mountaineer, and at different times visited pretty nearly all parts of the Alps. Wherever he went guides and ice axe were at once at work. He had no particular ambition to make first ascents or to discover new passes, but he loved to be amongst the great snows, to thread complicated mazes of crevasses, to feel the thrill, the joy, and the freedom of the ice world. He was a keen rock-climber. He feared nothing, and thought little of discomfort or fatigue. He often went straight from the hardest work of the laboratory to the most vigorous exercise and the heaviest walking—in later years sometimes at the sacrifice of health, which would have profited by a season of repose; but his physical activity was as great as his mental energy, and he often seemed incapable of rest. This was the more noticeable because in later years he suffered—cruelly at

times—from asthma; but the moment the pressure of an attack was relaxed he must be up and doing.

He was a great traveller. In 1863 he visited the States, going out in the 'Great Eastern.' She encountered terrific weather, and it was characteristic of him that during the very height of the gale he got the captain to allow him to be lashed to a mast, that he might see the full majesty of an Atlantic hurricane. Keen in sport as in everything else, he went hunting in Michigan. In 1873 he was in Nebraska, hunting buffalo, and extended his journey to the Pacific, visiting Vancouver and Victoria by way of the Canadian Pacific Railway, and turning aside to visit Utah and Salt Lake City. He bathed in the Great Salt Lake, and gives in his 'Health Resorts' an interesting account of his sensations whilst vainly endeavouring to immerse himself, and to swim in the ordinary fashion, face downwards, in that buoyant medium. On one or both of these visits he explored parts of the Rocky Mountains. In 1874 he went to Corsica and Sardinia. In 1878 he was at Gibraltar, and also in Madeira and the Canaries. In 1880 he travelled in Algeria and Morocco. As late as 1898-9 he made a long journey in India, and he had started upon an expedition of which he hoped that Khartoum would be the goal when the illness overtook him which unfortunately ended in his death at Luxor.

He joined the Alpine Club in 1871, and became subsequently a member of the Swiss Alpine Club. Many—nay, most—of his autumn holidays, both before and after 1871, were spent in Switzerland or in the French, Italian, and Austrian Alps. During his father's lifetime he had a modest 'campagne' at Yvoire, on the S. side of the Lake of Geneva, nearly opposite his father's most beautiful property at Malagny, close to Versoix, to which he removed after his father's death. At both places he was an ardent competitor in yacht races, and apart from regattas maintained a constant though affectionate rivalry in yacht-sailing with his son-in-law, the Comte de Pourtalès, to whom he was tenderly attached. Both at Yvoire and at Malagny he made great use of his steam launches, of which he had several in succession. One of them very nearly brought him to a tragical end. The writer of this notice paid a visit to Yvoire in September 1874. Dr. Marcet had gone in his steam launch to Lausanne to attend a medical congress, but was expected back that night. About 8 o'clock a violent thunder storm broke out, accompanied by a perfect hurricane of wind. The hours went on, but Dr. Marcet did not arrive, and it was concluded that he had not left Lausanne or had returned to it. He had left Lausanne, however, but the launch never returned. The short waves of the lake, too short for the launch to rise to them, had lapped over the side into an open well forward of the engine bulk-head. Dr. Marcet noticed that his bow light got nearer and nearer to the water. Realising the situation he pulled the dinghey up, got his two men into her, jumped in himself, and had just time to cut the painter and fall a few feet astern when the launch plunged bows foremost into 600 ft. of water. They were some six

miles out and had a hard struggle to get safely back to Lausanne. He returned by the first steamer the next morning. His father was staying at Yvoire, and his remark on hearing the story was characteristic of the tranquil philosophy of the speaker. 'Get another, William,' he said, 'get another. You may depend upon it the same accident will not happen to the same man twice.' William did get another, but it was some time before his nerve was quite as steady as before the accident.

Truth, generosity, kindness were features of Dr. Marcet's character. In discussion or controversy he was always courteous and respectful to those from whom he differed. He was a warm and generous friend, as the writer well knows after an intimate and affectionate intercourse which began more than forty years ago, and has continued unbroken and unchequered ever since. He will never forget a signal act of kindness rendered to him in 1862, when Auguste Balmat lay dying by inches at his house in the Valley of Sixt. Dr. Marcet had heard of it somewhere in Switzerland, and came a very long distance out of his way to render what help he could. He stayed two days at the Eagle's Nest, where such assistance and sympathy were sorely needed. A sketch of such a life, confined within the limits permissible on the present occasion, must necessarily be incomplete. It would be singularly so without an allusion to one crowning grace of his character—his perfect modesty. In departments of learning where he was well entitled to pose as an authority he never asserted himself or asked even an outsider to accept a proposition because it came from him, but would patiently explain and show why and upon what data he held an opinion or stated a fact. Such attributes, together with his cheeriness, his many-sided interests, his good temper, and his warm affections, made him greatly beloved, not only in his own family, but by a wide circle of friends to whom what remains of life will be much the poorer for his death.

ALFRED WILLS.

LUDWIG PURTSCHELLER.

POSSIBLY not a dozen readers of the 'Alpine Journal' were personally acquainted with the subject of this notice. His retiring disposition and excessive modesty made the circle of his intimate acquaintances even in his native land a comparatively narrow one; but few names stand higher in the chronicles of Alpine achievement than that of Ludwig Purtscheller, and certainly still fewer climbers have exercised such a widely ennobling influence amongst their contemporaries.

Every Alpine publication on the Continent of any value and many a popular magazine bear witness to his extended knowledge and exceptional powers; best of all the 'Hochtourist,' to which, aided by his friend Heinrich Hess, he devoted an immensity of time and labour.

A native of Tirol, and in every sense a son of the mountains, his career as a mountaineer did not begin, strange to say, till he was

in his twenty-third year. It was whilst officiating as a teacher of gymnastics at Klagenfurt that he began to employ his holidays in exploring the wilds of the Carinthian, Carnic, and Julian Alps. In the same way later, at Salzburg, each Saturday evening during term saw him start for a fresh expedition in the region within reach of a night's journey, and often a tremendous night march following an arduous day was necessary to enable him to reach home and his duties on Monday morning. The whole of the summer vacation was always given to greater tours in Tirol, Vorarlberg, and the Bavarian Alps. His devotion to the mountains became a *feu sacré* that burned with ever-increasing ardour, absorbing his whole leisure, and inspiring him not only to the greatest physical exertion, but to a persevering study of science in the many branches that are involved in an intelligent study of the Alps. His wide reading and poetic feeling made his companionship on an Alpine campaign very delightful, apart from the lessons he was able to impart in Alpine craft.

Purtscheller's earlier exploits, often carried out alone, but generally with one or more congenial companions, all of whom even then looked up to him as *facile princeps*, were confined to the Eastern Alps, but in 1883 he was introduced to the Great Alps of Switzerland by Dr. Diener and Louis Friedmann, and thenceforth hardly a year passed without adding to the number of first-rate peaks on his list.

In 1884 and 1885 Purtscheller and the brothers Emil and Otto Zsigmondy, without guides, carried out a series of ascents in Wallis and Dauphiné, which, in spite of hostile criticism and even attempted interference, excited the wonder and admiration of all but the most rigid Philistines. The traverse of Monte Rosa from Macugnaga, of the Matterhorn and Bietschhorn, and the passage from the Pic Oriental to the Grand Pic of the Meije were among their triumphs; 1887 and 1888 also found him in the Bernese Oberland and the Western Pennines.

Thus he acquired an amount of experience and skill hardly equalled and certainly never excelled by any climber, whether guide or amateur. Some of his friends were, as he freely admitted, more brilliant cragsmen, but in the planning and carrying out of difficult expeditions, in which general knowledge and ice craft have full play, he showed himself their unquestioned superior, and more than one first-rate local guide has unhesitatingly followed his lead through an intricate icefall.

These qualifications led Dr. Hans Meyer to choose Purtscheller as his companion on his third expedition to East Africa, and the successful ascent of Kilimanjaro, on October 6, 1889. Purtscheller's fortieth birthday, was in great measure due to his skill and energy.

In 1891 also he accompanied Gottfried Merzbacher to the Caucasus, and took part in the ascents of Tetnuld, Dongusorun, three peaks of the Leila, Adyrsubashi, Janga, and Elbruz.*

* *Alpine Journal*, vol. xv. p. 558.

The last years of his life swelled the sum of his achievements in the field, and made him more and more widely known as a contributor to the Alpine literature of his own and foreign lands. His eagerness to complete his knowledge of a particular group at times laid him open to the accusation of being a mere peak-hunter, and no doubt he was proud of having a record only second to that of Mr. Coolidge; but he just as often proved how thorough was his appreciation and enjoyment of well-known scenery at moderate elevations.

A devoted adherent to the 'Deutsch-National' party, when conversation turned on the unfortunate racial feuds that distract his country his ordinarily well-controlled tongue would often give vent to the bitterest language. But his best energies were put forth in the cause of the German and Austrian Alpen-Verein, which will ever have cause to honour his memory as one of its most zealous workers in promoting 'Bergsport' as an element of education amongst the German youth of both empires, in the cause of civilisation amongst the mountain population, and for the development and regulation of the corps of authorised guides.

The whole tenour of his life and writings may well be epitomised in his own expression: 'Mir sind die Alpen ein Hort der körperlichen Erfrischung und des lebendigsten Seelenglückes; mir gelten Arbeit und Kampf, Sieg oder Niederlage mehr als alle verweichlichende Zerstreungen des modernen Culturlebens; mir widerstrebt es Dinge zu geniessen an welchen der Schweiß anderer Menschen klebt.'

A man of such ideal aims could but be disgusted with the banality of the common horde of tourists: the atmosphere of frequented inns and club huts sometimes drove him out into the rain or an empty hay shed.

Dr. Blodig, who of late years was his most regular companion in Switzerland, writes, 'Purtscheller's whole life was a battle for all that is noble, fair, and true; one look into his honest eyes, his earnest, open countenance, was enough to convince the most rabid pessimist that there still live men who strive to live up to their own high ideals. His frugality and simplicity were proverbial, but his hand was always open for those poorer than himself, and more than once has the writer had occasion to hinder him from giving disproportionate tips to people who had rendered him insignificant service.'

Like the self-denying Brahmin professors in the Fergusson College at Poonah, Purtscheller preferred to remain a poorly paid usher in a Government school rather than by seeking higher emolument to lose his hold of the things that gave him, as he believed, his best opportunities for good to his students and those with whom he was in touch.

The story of the accident on the Dru on August 25, 1899, is still too fresh to need repetition here. Though not at the time fatal, the injuries Purtscheller sustained kept him over six months a prisoner at Geneva and Bern, and so reduced his robust system

that it was unable to resist an attack of influenza at the end of February. On the very day on which he had planned to return to his home at Salzburg his mortal remains were escorted to the grave in the picturesque cemetery surrounded by the hills he so loved, by a vast concourse of admirers—I may say, of disciples—from all parts of the Continent. E. T. C.

THE PHOTOGRAPHIC SECTION OF THE ALPINE CLUB EQUIPMENT EXHIBITION, DECEMBER 1899.

It will be generally admitted that while this section of the exhibition formed an important feature of the winter show, the exhibits of cameras and their accessories were confined very strictly to the one branch of photographic paraphernalia which appeals to the mountaineer.

The principal points to be emphasised in a mountaineer's outfit are:—

- (a) Compactness and portability.
- (b) Lightness consistent with sufficient strength and rigidity.
- (c) Sufficient potential *camera extension* to permit of the use of long focus and telephoto lenses.
- (d) The use of magazine or changing box, or six double backs, which may be deemed sufficient for each day's work.
- (e) The ability to employ a 'single' lens, as well as a R.R. or R.S.
- (f) A rising front and swing back or front. (This is *absolutely necessary*.)
- (g) Snapshot cameras for those who are content to limit their work.

The task we have before us is to consider how far the more important exhibits of cameras carry out these principles.

Exhibit No. 16 (Newman & Guardia).—(a) See catalogue; $\frac{1}{4}$ -plate camera, with vertical and horizontal rising front and double extension. The workmanship is good, and possesses the advantage that the mechanism can be got at from every point. Its bulky shape is a decided drawback to the rock-climber. Its weight—5 lbs.—is too great.

(e) 'Nydia' $\frac{1}{4}$ -plate pocket camera. The only fault of this make is that it has no rising front; otherwise its very compact size ($7\frac{1}{2}$ by $1\frac{3}{4}$ by $4\frac{1}{2}$ in.) and its weight of only 1 lb. 15 oz. make it one of the most efficient of its kind. It is self-contained, without any loose parts, and includes a changing box for eight plates, with shutter made entirely of metal. It can be used as a stand camera.

(f) Surveying camera. This is the first attempt we know of to apply the Bridges-Lee patent of photo surveying to an ordinary 5 by 4 camera. It is fitted with three levelling points with a screw adjustment and spirit level, and, in order to make it self-contained, an aneroid barometer and compass are attached to the top of the

camera, though these may be carried separately. The changing box for twelve plates contains a cross-thread frame carrying the tangent scale. The camera is very portable, weighing only seven pounds with an unloaded changing-box, and for amateur map-making should be of great value. For ordinary landscape work an extra changing box is necessary, as the frame carrying the tangent scale cannot be detached. (h) 'Eiffel' stand. This make of stand does not commend itself to us. It appears too fragile and too bulky.

J. H. Dallmeyer (Limited).—Much has been said elsewhere on the usefulness of the (a) telephoto lens introduced by this firm; for us it only remains to record our experience. These lenses need very careful using, and should be tried experimentally at home before they are taken abroad. They need improvement by the substitution of a slow-motion screw for focussing the positive and negative elements of the lens. We are also of opinion that a finer medium than ground glass for the focussing screen is required to be fitted to a telephoto-camera. Furthermore a very rigid stand is essential with a large base, and the stronger and heavier the camera the less likely is one to get vibration and blurred negatives.

(e) *Burchett screens.*—It is doubtful whether these are better than the ordinary yellow screens; at any rate they are in an experimental stage, and their superiority has yet to be completely demonstrated.

(f) Long-focus camera. This is very good; it has been found all that can be desired, save on the points of the ground glass and the want of an arrangement to keep light out of the plate carriers when the slide is withdrawn.

Exhibit No. 19 ('Tella' Camera Company, Limited).—This make is of recent introduction with a number of ingenious contrivances, which are no doubt very excellent so long as they work smoothly. The 'Tella' carries fifty films registering the exposures as they are made, the mechanism being such as to make it impossible to record a double exposure, a fault so common with all operators. The shape is awkward and bulky for a climber.

Exhibit No. 20 (Kodak, Limited).—Of these exhibits the No. 2 folding pocket 'Kodak' commends itself for snap-shot work. It is only $1\frac{1}{2}$ inches thick when closed, and weighs $16\frac{1}{2}$ ounces. A special advantage of the daylight cartridge film roll-holder is that the spool can be changed in the daylight.

Exhibit No. 21 (J. F. Shew & Co.).—Of all the exhibits (a) the cameras by this firm are the best adapted for the climber. They are portable, very light; being mounted, as they are, with aluminium. A $\frac{1}{4}$ -plate weighs 15 ounces, whilst the (d) magazine to fit weighs another 12 ounces. (k) The 'Eclipse' pattern is particularly well adapted for telephotographic work, but whether rigid enough is very doubtful.

Exhibit No. 23.—R. & J. Beck (Limited).—From a purely mountaineering point of view the (a) 'Frena' is defective, in that it has no rising front, for which defect the limited swing back does not fully compensate. The interior mechanism also is easily liable to injury, and films or backings sometimes get detached

and remain in the camera-front, and so spoil a whole set of pictures.

Exhibit No. 24.—Ross (Limited).—It is needless to say that the lenses of this firm are first class.

G. P. B.

ALPINE NOTES.

'THE ALPINE GUIDE.'—Copies of Vol. I. of the new edition of this work, price 12s. net, and of 'Hints and Notes, Practical and Scientific, for Travellers in the Alps' (being a new edition of the General Introduction), price 3s., can be obtained from all book-sellers, or from Messrs. Stanford, Charing Cross.

THE LIBRARY CATALOGUE is now printed and may be obtained, bound in cloth, on application to the Assistant Secretary, 23 Savile Row. Price 3s.; postage, 3d.

PRESENTATION TO THE ALPINE CLUB.—Dr. F. P. Moreno, Director of the Argentine National Museum at La Plata, has presented the following photographs (shown at the May Exhibition in the Hall) to the Club—viz. :—

(1) The Cordillera of the Andes and Aconcagua, taken from Contrabanista's Gap.

(2) Glacier in the Western Branch of Lake Argentino, Patagonia.

(3) Glacier of Lake Viedma, Patagonia.

(4) Glacier of Mount Balmaceda, Last Hope Inlet, Patagonia.

INTERNATIONAL CONGRESS OF ALPINE CLUBS.—As announced in the last number of the 'Journal,' an International Congress will be held in Paris on August 12-14, under the auspices of the French Alpine Club, who will at the same time celebrate the twenty-fifth anniversary of the foundation of the Club. The President of the French Club having asked the Alpine Club to nominate delegates to attend the Congress, the Committee has appointed the following members: Mr. James Bryce (President), Sir Martin Conway, Sir Henry Bergne, Sir Frederick Pollock, Mr. C. E. Mathews, and Dr. W. A. Wills (Hon. Secretary). Dr. Wills has also been appointed corresponding member of the Organising Committee, and will be glad to receive the names of any members of the Alpine Club who may wish to attend the Congress, and to forward to them forms of application for membership. The subscription for membership of the Congress is 10f.

IN VALPELLINA.—This splendid monograph by SS. E. Canzio, F. Mondini, and N. Vigna, extracted from the 'Bollettino of the C.A.I. for 1899' (Vol. xxxii.) should be studied by all climbers and travellers who visit the Valpellina. The authors, as they gracefully acknowledge in the introductory pages, received much help from Mr. A. G. Topham. We hope shortly to notice the work at greater length.

THE ALPINE CLUB LIBRARY.—The following additions have been made to the library :—

Recent Books.

- Camena d'Almeida, P. Les Pyrénées. Développement de la connaissance géographique de la chaîne. 8vo, pp. 328. Paris, Armand Colin [1893]
(Presented by the Publisher.)
- Chapman, Abel. Wild Norway; with chapters on Spitsbergen, Denmark, &c. Illustrated by the author. 8vo, pp. xiii, 258.
London and New York, E. Arnold, 1897
(Presented by A. L. Mumm, Esq.)
- Cobbold, R. P. Innermost Asia. Travel and Sport in the Pamirs. With maps and illustrations. 8vo, pp. xviii, 354. London, Heinemann, 1900
(Presented by the Publishers.)
- Dellepiane, G. Guida . . . negli Appennini e nelle Alpi Liguri . . . 2da edizione. 8vo, pp. xiv, 350; maps, &c. (Genova) C.A.I., Sez. Ligure, 1896
(Presented by the Section.)
- Fatio, Y. Faune des Vertébrés de la Suisse, II., 1re Partie, Oiseaux rapaces, &c. 8vo; ill. Genève et Bâle, Georg, 1899
- Fontana, Carlo. Guida storico-alpina di Valdagnò, Recoaro, Schio, Arciero, pubblicata sotto gli auspici della Sezione di Schio. 8vo, pp. xxiv, 154; ill. Schio, 1898
- Moreno, Dr. F. P. Reconnaissance de la Région Andine de la République Argentine. I. Notes préliminaires sur une excursion aux territoires du Neuquen, Rio Negro, Chubut et Santa Cruz. 4to, pp. 186; map; 42 photographures. La Plata, Musée de la Plata, 1897
(Presented by Dr. Moreno, Director of the Museum.)
- Radde, G., herausgegeben von. Die Sammlungen des kaukasischen Museums. 4to; ill. Tiflis, 1899
(Presented by Dr. Radde.)
- Rossel, Virgile. Nivoline. Poème alpestre. . . Ill. de Mlle F. Archinard. 8vo, pp. 92. Neuchâtel, Attinger [1898]
(Presented by the Publisher.)
- Trutat, Eugène. La photographie en montagne. 8vo, pp. xix, 137; ill. Paris, Gauthier-Villars, 1894
(Presented by the Publisher.)
- Vallot, J. La photographie des montagnes, à l'usage des alpinistes. 8vo, pp. 42; ill. Reprinted from 'Annales du Conservatoire d. Arts et Métiers.' Paris, Gauthier-Villars, 1899
(Presented by the Publisher.)

Older Books.

- Archer, Major. Tours in Upper India, and in parts of the Himalaya Mountains. 2 vols. 8vo. London, Bentley, 1833
- Berthoud, Fritz. Sur la Montagne. 1re partie: Alpes et Jura. 8vo, pp. iv, 362. Neuchâtel, Delachaud et Sandoz, et Paris, 1865
- Chateaubriand, F. R. A. de. Voyages . . . au Mont-Blanc (1805). Nouvelle édition. 8vo, pp. 13; frontispiece. Paris, Garnier, 1873
- Coghlan, F. Guide through Switzerland and Chamounix . . . 20th edition. 8vo, pp. 160; map, &c. London, Trübner, 1864
- Desor, E. Compte Rendu des recherches de M. Agassiz . . . à l'hôtel des Neuchâtelois . . . 8vo, pp. 79. Reprint from 'Bibl. universelle de Genève.' Mars 1843.
- Dollé, Frédéric. Souvenirs de voyage: Suisse, Savoie, France. 12mo, pp. 360. Paris, 1843
- Durier, C. Le Mont-Blanc. 3me édition. 12mo, pp. xii, 416; map. Paris, Fischbacher [1881]
- Ebel, J. G. Manuel du voyageur en Suisse. Nouvelle édition. 8vo, pp. xcix, 541. Paris, Audin, 1826
(Imperfect, lacking map.)

- Ebel, J. G. *Le nouvel Ebel. Manuel du voyageur en Suisse et dans le Tyrol.*
Revue d'après Murray. 8vo, pp. xxxi, 596; plates, &c.
 Paris, Maison [successors to Audin], 1841
 (Preface signed 'Richard' [i.e. J. V. M. Audin].)
 ——— 3me édition, par R. Glutz-Blotzheim. Zürich, Orell, Füssli, 1828
 (A reprint of the 1827 edition.)
- Étrennes helvétiques pour 1788. 32mo. Lausanne
 (Contains 'Course dans le Jura.')
- Johnston, H. H. *The Kilima-Njaro Expedition.* 8vo, pp. xv, 572; maps; ill.
 London, Kegan Paul, 1886
- Krapf, Dr. J. Lewis. *Travels . . . during an eighteen years' residence in Eastern
 Africa. . . . With an appendix respecting the snow-capped mountains. . . .*
 8vo, pp. xxii, 566; map; plates. London, Trübner, 1860
 (Contains Rebmann's 'Diary of a Journey to Jagga,' describing the first
 view of Kilimanjaro.)
- L[ajarriga], V[imal de]. *Souvenirs de Sixt. Itinéraire complet de la
 Vallée.* 8vo, pp. 220; map. Genève, 1856
- Macquoid, G. S. *Up and Down. Sketches of Travel.* 8vo, pp. x, 211; ill.
 London, Ward and Downey, 1890
- [Malten, Baron de.] *Itinéraire du voyage à Chamouny, autour du Mont-
 Blanc . . .* Sm. 8vo, pp. xxviii, 160. Genève, Jullien (1829)
 (The reprint of 1845.)
- Marmier, Xavier. *Voyage en Suisse.* Imp. 8vo, pp. xxiii, 468; plates.
 Paris, Morizot [1861]
- Martel, Peter. *An Account of the Glacières . . .* [2nd edition.] Small 4to,
 pp. 34. Ipswich, Craighton, 1747
- Matthey, Dr. André. *Les bains de Saint-Gervais, près du Mont-Blanc.* 8vo,
 pp. xvi, 240; frontispiece. Paris et Genève, Paschoud, 1878
- Mayhew, H. and A. *Mont Blanc. A comedy, in three acts. First produced
 at the Theatre Royal, Haymarket, Whit Monday, May 25, 1874.* 8vo,
 pp. 61. Privately printed, London, 1874
- Meneval, Baron. *Récit d'une Excursion de l'Impératrice Marie-Louise aux
 Glaciers de Savoie en Juillet 1814.* 12mo, pp. 115. Paris, Amyot [1847]
- Petrarch. *L'ascension du Mont-Ventoux. Traduite pour la première fois par
 Victor Develay.* 32mo, pp. 39. Paris, Librairie d. Bibliophiles, 1880
- Richard [ps. i.e. J. V. M. Audin]. *Promenades dans l'Oberland, par Wyss et
 Lutz; revues par Richard.* 3me édition. 18mo, pp. 152; map, ill.
 Paris, Maison [c. 1840]
- Savigny, Abbé de. *Le Robinson des Alpes.* Roy. 8vo, pp. 283; lithographs.
 Paris, A. de Vresse, n.d.
- Schaub, C. *La Suisse pittoresque.* Roy. 8vo., pp. 584; ill.
 Genève et Berne, 1856
 (The second part of 'La Suisse historique et pittoresque,' by Gaullieur
 and Schaub.)
- Switzerland. *Switzerland and the Swiss.* By an American Resident. 8vo,
 pp. xxvi, 203; ill. Zürich, &c., 1875
- Taine, H. *Voyage aux Pyrénées.* 3me édition. Illustrée par Gustave Doré.
 8vo, pp. vi, 354. Paris, Hachette, 1860
- T., J. G. D. *Belegenheit und heutiger Zustand dess Hertzogthums Savoyen
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 in Teutscher Sprach bisher geschehen, beschrieben, Durch J. G. D. T.* 4to,
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 (Presented by G. D. H. Ellis, Esq.)

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- C.A.I., Milan. Library Catalogue. 1899
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 — Confédération internationale des Clubs Alpins . . . à Genève . . . Août
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 Landschaftsmaler E. T. Compton. 8vo, pp. 54; ill. 1897
- Soc. des Touristes du Dauphiné. Guides et Porteurs. 1899

Pamphlets and Magazine Articles.

- d'Angeville, Mlle Henriette. Ascension au Mont-Blanc. Diary first printed in
 'Revue Alpine,' C.A.F., section Lyon, 1900.
- Ball, John. Alps. 4to, pp. 18. Article in the 'Encyclopædia Britannica,'
 9th edition.
- The Distribution of Plants on the South Side of the Alps. 4to, pp. 109.
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- Baltzer, A. Studien am Unter-Grindelwald Gletscher . . . 1892 bis 1897. 4to,
 pp. 20; plates, maps. Reprinted from 'Denksch. d. schweiz. natur-
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 (Presented by the Society.)
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 and now exhibiting in the Great Rotunda of his Panorama, Leicester
 Square. 8vo, pp. 12; view. London, Allard, 1821
- 'Bergkraxler, Die.' Ein lustiges Gesellschaftsspiel. Stuttgart, Meggendorfer [1899]
 (A parlour game. Presented by W. R. Rickmers, Esq.)
- Bing, K. Paa Bræer og Tinder. 1. Mellem Hyen og Nordgulen. 2. Paa
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 (Selbstverlag, Salzburg, c. 1882)
- Eintheilung der Alpen. 8vo, pp. 7; map. Reprinted from 'Deutsche
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 (The two above presented by E. Whympfer, Esq.)
- Boussingault, J. B. Brief an Humboldt ü. einen wiederholten Versuch auf
 den Gipfel des Chimborazo zu gelangen. 8vo, pp. 26-46 in Hendel's
 'Biblioth. d. Gesamtlitteratur,' no. 388, Halle a. S., reprinted from
 'Kleinere Schriften,' I.
- Buchheister, J. Die Berechtigung und gesundheitliche Bedeutung des
 Bergsteigens. 8vo, pp. 32. Hamburg, A. G., 1892
- Colleoni, G. Per il xxv Anniversario della Sezione di Vicenza. pp. 19.
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 (Presented by the Author.)
- Conway, Sir W. M. Karakoram Expedition. 8vo, pp. 753-777. In 'Proceed-
 ings of the R. G. S.' London, November, 1892
- Dibos, Capitaine. La Vie aux grandes altitudes. 8vo, pp. 11. Reprinted from
 'Journ. d. Sciences Militaires,' October 1898. Paris, Baudoïn, 1899
- Doering, O. Alturas tomadas en la provincia de Córdoba. 8vo, pp. 29. In
 'Bol. Acad. Nacional de Ciencias en Córdoba.' Buenos Aires, 1899
 (Presented by the Author.)
- Durègne, E. L'alpinisme dans le Sud-Ouest. 8vo, pp. 19; ill. Reprinted
 from 'Rev. Philomathique.' Bordeaux, 1899
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- Hamberg, A. Om Kvickjockfjällens Glacierer. 8vo, pp. 695-707; plan. In
 'Geol. Fören. Förhandl.,' xxi. Hft. 7. Stockholm, December 1889
 (Presented by the Society.)
- Howell, F. W. W. The Öræfa Jökull, and its First Ascent. 8vo, pp. 841-50.
 In 'Proceedings of the R.G.S.,' London. December, 1892

Humboldt, A. v. Über einen Versuch den Gipfel des Chimborazo zu ersteigen. 8vo, pp. 5-25 in Hendel's 'Biblioth. d. Gesamtlitteratur,' no. 388, Halle a. S. Reprinted from 'Kleinere Schriften,' I.

Meurer, J. Bergtouren in den Dolomit-Alpen . . . 2te Auflage. Beigabe zu Maschek's Dolomitenkarte. 8vo, pp. 13. Wien, Artaria, 1898

Pretto, Dr. Olinto de. La degradazione delle Montagne e sua influenza sui ghiacciai. 8vo, pp. 28. Reprinted from 'Bol. d. Soc. Geolog. Italiana.' xiv. Roma, 1896

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Radde, G., gedruckte Werke von. Portrait, &c. 8vo, pp. 8. Tiflis, 1899

Reid, H. F. Studies of Muir Glacier, Alaska. 8vo, pp. 19-84; ill. In 'The National Geographic Magazine,' Washington, vol. iv. March 21, 1892

--- Mechanics and Variations of Glaciers, i-iv. 8vo, pp. 36. Reprinted from 'The Journal of Geology,' Chicago, 1896-9; vol. iii. pp. 278-288; vol. v. pp. 378-383; vol. vi. pp. 473-6; vol. vii. pp. 217-225.

--- Glacier Bay and its Glaciers (Alaska). 4to, pp. 421-461; maps, plates. Reprinted from the sixteenth Annual Report of the U.S. Geological Survey, 1894-5. Washington, 1896

(The above three presented by H. F. Reid, Esq.)

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S., E. R. Mount St. Elias. The Expedition of Prince Luigi Amadeo of Savoy, 1897. 8vo, pp. 93-6. In 'The National Geographic Mag.'

Washington, 1898

(Presented by the Society.)

Soc. de Géographie. La Géographie, No. 1. (The first number of the enlarged 'Bulletin.') Paris, 1900

MOUNT ST. ELIAS.—We have just received the English translation, by Signora Linda Villari, of Dr. Filippi's book on the Ascent of Mount St. Elias by H.R.H. the Duke of the Abruzzi.

FINSTERAARHORN.—On September 24, 1898, four guides from Meiringen made a new route up the Finsteraarhorn. According to the record left in the book at the Oberaarjoch Hut they ascended from the (Ober) Studerjoch by the E. arête, and fixed a rope of 30 mètres length at the most difficult place, immediately below the summit. Much the same way seems to have been taken by Herr Alb. Wäber (although he calls it an 'erste Besteigung') with Alex. Tännler and another guide on July 16, 1899. He climbed from the Studerjoch by a small glacier and the 'Ostflanke.' The Meiringen guides recommend this expedition to climbers, and estimate the time required from the Oberaarjoch Hut at 7 to 7½ hrs. The route leads straight up to the S. (or, more strictly, S.E.) arête at the foot of the precipice close under the summit, and it is here the rope is fixed over a smooth slab and up a gully on the W. side of the arête. It is not indispensable when the rocks are free from ice, as the slab can be turned by a slight descent. The rocks of the E. face, as seen from above, look rather rotten. The new way is said to be easier than that by the S. arête, and probably does not afford as interesting a climb. The latter, which is a splendid expedition, seems to be undeservedly neglected; not a single ascent by the S. arête is recorded in the books at the Oberaarjoch Hut and the Concordia Pavillon. It may be reckoned among the finest climbs in the Alps, in some details resembling the Italian side of the Matterhorn; but when the mountain is in

good order it presents no point of special difficulty. It is perfectly safe and not very long. Mr. Compton and myself, with Abraham Müller and Siegfried Burgener, on August 30 took 7 hrs. 35 min. (including halts) from the Concordia, following the route taken by Mr. Morse,* who made the ascent in 1 hr. less. It is perhaps worth while to describe this again, as it certainly appears to be the best way of reaching the arête from the E. The ordinary route is followed for 1 hr. from the Viescher Glacier, till one can bear E. over snow and round or across the foot of the great buttress whose lowest point is marked 3,536 m. to the bergschrund below two snow couloirs. One to 1¼ hour's interesting climb up these couloirs and the red rocks between them leads to the ridge at nearly the same point at which it was struck from the E. by Messrs. Farrar and Blezinger,† viz. a little above the third of the great rock towers (counting from the Rothhornsattel). The foot of the couloirs can also be reached from the Oberaarjoch Hut in about 3 hrs. by the route usually taken from this side. The arête, which affords excellent climbing over sound rock, is then followed to the top in 2 to 2¼ hrs., of which the final cliff takes about 20 min. when the rocks are in the best possible condition. The great difficulties met with on the latter part of the ridge by M. Cordier and Mr. Farrar's party were clearly due to the snow and ice which covered the rocks, and hence the time occupied was much longer than that given above. The fixed rope would now be a great help under these circumstances. Mr. Farrar reached the arête in 2 hrs. 50 min. from the Oberaarjoch Hut by the Studerfirn and steep snow, and this is no doubt the shortest way when the snow is favourable. Herr Bodenehr ‡ took 3½ hrs. from the same starting point to gain the ridge lower down (between the second and third towers) by another snow slope. As is pointed out by Herr Blezinger § Dr. Meyer's party, on the first ascent in 1812, must have struck the S. arête at or above the lower summit, which is the culminating point of the buttress running up from point 3,536 m. on the W. side; so his route is not approximately the same as that taken by Messrs. Farrar and Blezinger (as stated in the new 'Studer' ||), but lies further to the N., and is probably not very different from the new way made in September 1898. It would be interesting to know where Dr. Meyer descended from the S. arête on the W. side. He describes the way as easy, and though the summit was not left till 4.30 P.M. the party went down to the Viescherfirn and regained their bivouac on the Rothhornsattel the same evening. We did not attempt to return by the same route, but descended to the Hugsattel, and reached the Grimsel by the Oberaarjoch in 18½ hrs. from the Concordia.

A. V. VALENTINE-RICHARDS.

* *Alpine Journal*, vol. xiii. p. 422.

† *Ibid.* vol. xi. p. 368.

‡ *S.A.C. Jahrbuch*, vol. xx. p. 459.

§ *Zeitschr. des D. u. Oe. A.V.*, vol. xiv. p. 503.

|| Vol. i. p. 114.

THE ACCIDENT ON MOUNT RAINIER, U.S.A.—The Mazamas Society* has had its first fatal accident to record during the season of 1897. In addition to the various personal ascents of North-Western peaks during the season it has been the custom of this society to hold an annual assembly or outing for ten or twelve days at some previously chosen mountain, in July or August of each year, when the hardier and more experienced members make the ascent while their friends remain in camp at timber line, to explore the glaciers and enjoy the outing at their leisure. For 1897 the mountain chosen was Mount Rainier, Washington (lat. $46^{\circ} 51' 05''$ N., long. $121^{\circ} 45' 28''$ W.), and on July 14 the Oregon contingent left Portland by rail for Tacoma, 145 miles distant, where they were met by the Washington contingent, and the start for the mountain was made the next morning by waggon as far as Longmire's Springs, 60 miles; thence on foot over a mountain trail to timber line, some seven miles further, where permanent camp was made in Paradise Park—a beautiful, flower-bedecked Alpine meadow—at 5,932 ft. (1,808 m.) above sea-level. This point was reached on July 23, amid a severe storm of wind and rain, which necessitated a stay about camp for a day or two to allow the weather to settle, and by evening of the 25th some two hundred persons, including representatives from the various Government departments in Washington, D.C., and a number of ladies, had assembled in camp.

Professor Edgar McClure, of the University of Oregon, Eugene, Or., the best recognised authority in the State on the use of the mercurial barometer, was chosen to make a barometric determination of the height of the mountain, and at daybreak on the morning of the 26th he, in company with three companions, set out, carrying two days' provisions, their sleeping-bags, and the instruments, which, besides the mercurial, included maximum and minimum thermometers, aneroid, anemometer, heliograph, field glasses, and camera. On reaching the head of Gibraltar Rock, 12,700 ft. (3,871 m.), two of the party decided to remain there for the night, but McClure and one companion continued on till about 5 P.M., when, finding the surface of the névé converted to a glaze of ice by the rapidly increasing cold, and further progress that night exceedingly hazardous, they returned to Gibraltar, where their two companions had piled up rocks to afford some slight shelter from the wind, which had now become a gale.

While preparing to pass the night the anemometer was set up, and showed that the wind had reached the high velocity of 88 miles an hour. Here, amidst the bleak winds which ever sweep over that frowning cliff, they huddled together, in a vain attempt to keep warm, till sunrise on the 27th, when the gale abated. Owing to the severe climb of the day before and lack of sleep during the night Dr. Amos was too exhausted to proceed any further, but McClure and his two companions resumed the ascent, reaching the

* An association of mountain-climbers, with headquarters in Portland, Or.

summit about noon, when he at once set up the instruments, and began taking readings, which he continued until the arrival of the large party at 4 P.M.

The main party, consisting of sixty-seven, left timber line at 8 A.M., and leisurely made its way to Camp Muir, 10,092 ft. (3,076 m.)—a projecting ridge of broken basaltic rock which at that season of the year is unusually devoid of snow for a small space—where they arrived between 4 and 5 P.M., and seeking the shelter of some rocks to protect themselves from the piercing wind, which had grown very cold as the sun disappeared behind the mountain, they proceeded to pass the night as best they could.

At 4 A.M. on the 27th all turned out, and about an hour was spent in a vain endeavour to make the alcohol lamps, which had been so patiently carried to this point, burn in the high wind which still continued to blow, and breakfast had to be eaten without the hot coffee to which all had so eagerly looked forward. Those who did not feel equal to the ascent now returned to the main camp, and fifty-one formed into line and the ascent began at 5.25. The Cowlitz Cleaver was safely passed and the base of Gibraltar Rock reached at 8 A.M. The most dangerous part of the ascent had now to be made; the life lines were adjusted, and for 4 hrs. and 20 min. great anxiety prevailed while the long line toiled on past the huge mass of basalt and volcanic conglomerate, almost 2,000 ft. (609 m.) in sheer height, of which Gibraltar is composed. During this time every person in the party had to be constantly on the alert to dodge the flying stones which the warm sun was constantly setting free from the top and sides of the almost perpendicular walls, as it melted the scanty ice which held them in place, and it was with a feeling of relief that the top of the cliff was reached at 12.20 P.M. A halt of 40 min. for lunch and rest was here made, and one of the ladies giving out had to be left at this point until the party returned. The ascent was resumed at 1 P.M., and at 4 P.M. the S. side of the crater rim, 14,275 ft. (4,351 m.), was crossed, and 4.25 P.M. found the more adventurous spirits on the top of Liberty Cap, or Crater Peak, the extreme summit, 14,352 ft. (4,429 m.) above sea-level.

Six of the party remained on the summit all night for the purpose of signalling to the cities of Puget Sound with red fire, and at 4.45 the remainder commenced the descent, reaching the top of Gibraltar at 6.15, the base at 7.55, and Camp Muir at 9.20. Here the life lines were discarded and the majority decided to remain for the night, but a few determined to make their way down to the main camp at timber line, in order to obtain dry clothing and warm food, and at 9.40 four, including Professor McClure, Miss McBride, Dr. E. de Witt Connell, and the writer, set out over the now firmly frozen névé above Paradise Glacier. The night, though cloudless, was rather dark, owing to the absence of moonlight, but the route being well known no danger was apprehended. All went well till about 11 P.M., when the 'Sphinx'—a large mass of crumbling basalt somewhat resembling

the famous work of art of that name in appearance--was reached, and all traces of our ascent having faded out the steep snow slope to the E. was chosen instead of the safer though slower route by the edge of the rocky moraine on the W. We soon found that a safe descent was going to be a matter of some difficulty, and in an endeavour to find safer footing opened out abreast of each other and a few yards apart. We had not descended more than 100 ft. in this way when Professor McClure, who was on the left (E.) and a little in advance, called out, 'It's awful steep here; don't come down.' Those were the last words I heard him utter. The rest of us slowly moved backward, and setting our alpenstocks firmly in the frozen névé waited for him to join us, and when last seen he was about 60 ft. from the party, was facing upwards and slowly making his way towards us. No one saw him slip, but a moment later he was missed, and no response being made to our repeated calls we feared the worst and at once raised the cry of alarm.

It took some time to reach and arouse the main camp, but as soon as this was done a party of six set out at once, fully equipped, and at daylight the body was found on a small jutting patch of rocks a little to the E. of the 'Sphinx.' The deceased was encumbered with a rather bulky blanket sleeping-bag on his back, to which the mercurial and the two thermometers were securely fastened, and he had apparently rolled over or bounded in the descent. He had rolled or fallen fully 300 ft., retaining his hold of the alpenstock with a death grip, and struck head foremost on a sharp granite rock. Death was instantaneous. The end of the alpenstock handle was smashed but did not split; the barometer was shivered into atoms, even the leather case being burst into pieces; the mercury was scattered over the rocks in tiny globules; and the straps by which the sleeping-bag was slung breaking, the body had bounded on about 40 ft. from where it first struck. A stretcher was improvised from alpenstocks, and the body borne to camp, which he had left so full of hope and life just 48 hrs. before. An inquest was at once instituted, witnesses were sworn and examined, and there being two clergymen present services were held in camp, and at their close a comrade started on foot to Longmire's Springs, seven miles distant, there to mount his bicycle and ride sixty miles over a rough mountain road to the nearest town to telegraph the sad news to the relatives of the deceased, while the body, carefully bound on a pack horse, followed after.

The jolly songs, choruses, and music which heretofore prevailed around the camp fire at night, as on the outings of previous years, were now hushed for the remainder of the trip, and the Society was called upon to mourn the loss of the first comrade from its ranks.

Professor McClure was barely in the prime of life, being thirty-five years of age, was an ardent and cautious mountain-climber, and was known throughout the North-West for the accuracy of his

barometric determinations. He took great pride in this work, having made a determination of the altitude of Mount Hood in 1894, and of Mount Adams in 1895, when for the first time it was made known to the outside world that the latter mountain, instead of being 9,570 ft., as laid down on all the old maps, is in reality 12,402 ft. high. The barometric readings and data regarding the height of Mount Rainier obtained by Professor McClure were entered in a note-book which was found on his body after the accident, and being carefully compared with synchronous readings at Seattle, Portland, Fort Canby, and Walla Walla, were subsequently computed by Professor E. H. McAllister, of the University of Oregon. The result obtained, 14,528 ft. (4,428 m.), agrees closely with the two triangulation determinations made by the United States Geological Survey, viz. that of 1895 by Mr. S. S. Gannett, 14,532 ft. (4,429 m.), and that of 1896 by Mr. G. E. Hyde, 14,519 ft. (4,426 m.) above sea-level.

In conclusion it may be well to consider what are the lessons, if any, to be derived from this accident. I think there are two—first, that all mountain-climbing after nightfall should be discountenanced except for the rescue of a comrade, or where, for lack of shelter or protection, the necessity for reaching camp is imperative; second, that in all mountain-climbing, even after the most dangerous points are passed, the risk should never be considered as entirely over until camp is reached.

MARTIN W. GORMAN.

THE NANTILLONS ICEFALL.—The following variation of the ordinary route to the Grépon was made on August 21 last by Mr. T. G. Longstaff, with the guides Christian Kaufmann, jun., and Ulrich Brawand, of Grindelwald: Leaving the Montanvert at 1.15 A.M., they reached the Nantillons glacier at 4, and walked straight across to the steep salient buttress which juts out from the Aiguille de Blaitière and forms the left bank of the lower portion of the Nantillons glacier. By climbing this buttress the upper level of the glacier was reached. Steps had then to be cut for some time up the glacier between the cliffs of the Blaitière on one side and the Nantillons icefall on the other. At 7.30 the highest plateau was reached: a descent of 5 min. brought the party to the foot of the Charmoz-Grépon couloir. The summit was reached at 12.15 and the Col de Blaitière at 3.20. The descent was made by the same route, and the rope taken off on the lower glacier at 6.15 (2 hrs. 25 min. going from the col). The inn was reached before 8 P.M. This route is suggested as the safest, though not the easiest, way of attaining the upper levels of the Nantillons glacier. The dangers of the icefall are entirely avoided, and there were no traces of falling stones over any part of the route. But it must be admitted that the glacier might easily become impassable.

Mr. Holmes's photograph of the Blaitière (No. 230) shows a good deal of the route.

EQUIPMENT EXHIBITION—PROFESSOR BONNEY'S ICE-AXE.—In the review on the historical ice-axes, fig. 9 on p. 43 ('A. J.', vol. xx.) does not represent Professor Bonney's axe. A good representation

of his axe is No. 2 in the report of the A.C. Committee (see 'A. J.,' vol. i. p. 255).

CORRECTION -- FURGGEN RIDGE OF MATTERHORN. — 'A. J.,' vol. xx. p. 19, line 18, should read as follows: 'Therefore I had sent a party of men, led by David Maquignaz, to the top of the Matterhorn by the usual route. While we were resting on the "Epaule" this party descended . . .'

SKJURNSNOESTIND. — 'A. J.,' vol. xx. p. 48. We learn from Mr. G. Hastings that he made this ascent on September 8, 1897, found the vestiges of a cairn on the top, and heard of at least one person who had been up before. He found the height to be 8,800 ft.

REVIEWS AND NOTICES.

Zeitschrift des Deutschen und Oesterreichischen Alpenvereins, vol. xxx., 1899.

THIS volume has twenty-three full-page illustrations and sixty-eight others in the text. There are also four maps in the text, and attached to the volume is a beautiful map of the Fervall district (1 : 50000), between the Arlberg Pass and the Paznaum Thal, W. of Landeck. The illustrations are largely from the pictures of Mr. E. T. Compton and the photographs of Herr F. Benesch. They are both good mountaineers as well as artists. It almost seems as if the former made excursions on purpose to illustrate special tours. This is notably the case with the articles on the mountains of Glarus and of the Thannheim district. Many of the papers, however, connected with the Alps only refer indirectly to mountaineering. Such are the article by Herr John Ranke on the 'Prehistoric Inhabitants of the Eastern Alps,' of Herr E. Richter on the 'Formation of Hills and Valleys,' of Herr Fritz Eck on 'The most Important Mountain Observatories.' Of these the oldest was a convent on the Hohen Peissenberg (8,160 ft.), S. of the Ammer See, near Weilheim. Here observations were taken from 1761 of the barometer, thermometer, hygrometer, rain-fall, wind, &c. The highest in the world is on Pike's Peak, at a height of 14,144 ft.* France exceeds all other countries in the number and completeness of her meteorological stations. Herr Johann Alton contributes a second article on the social and economic condition of the inhabitants of Enneberg (near Bruneck). This is in many respects interesting, but it is sad to observe how largely the farms are mortgaged. This is, indeed, the case over the whole of Tyrol. Herr Hans v. Zwiedineck-Sudenhorst has a third article on the French Wars in the Eastern Alps. Professor Dr. Max Hairhofer writes on 'Sport.' After describing a number of different kinds

* The observatory on Mt. Blanc is, of course, higher, but it is generally considered to be a failure.

of sport he concludes that the sport of the future will be 'flying.' Herr G. Strele writes on the best mode of preventing the ravages of mountain torrents. The story is still the same. The streams must be attacked at their source, and artificial falls constructed in the bed, to prevent the water coming down so fast. This is illustrated from the stream Vanoi, near Caoria (Brentathal). Herr Obermayr (Roy. Bav. lt.-col.) describes the Ordnance maps of the principal European countries. He gives a simple mechanical method of estimating heights, and also by the barometer; also different methods of orientation when the compass is wanting. Herr Max Ebeling describes an ascent of Mt. Ararat (5,156 m. = 16,917 ft.), made on September 30, 1897, from a bivouac (about 3,000 m. = 9,843 ft.). They were accompanied by an escort of Cossacks, for fear of molestation by the Kurds. The ascent from this point took 11½ hrs. The view is, in its way, unique, as the top is upwards of 14,000 ft. above the surrounding plain. Faithful Armenians believe that the mountain never has been, and never will be, ascended. Herr Hans Loretz and his friend, Ed. Wagner, effected, on September 2, 1898, a traverse of the Weisshorn by the S.W. ridge from a bivouac on the S. of the Schallihorn glacier. Many difficulties were encountered, and the ascent took 11 hrs. In estimating the claims of Mr. Davidson's party in 1877 and of Mr. Broome in 1895 to have made the first ascent by this ridge he concludes that the former made the first ascent by the S.E. face (? flank), and the latter the first ascent by the S.W. ridge.

The late lamented Herr Ludwig Purtscheller describes a number of ascents in the Glarus group in 1897 and 1898. He ascended alone the western peak of the Grosse Windgelle, the most difficult climb in the Maderanerthal. He complains that the guides demand 20 francs extra for the passage from the eastern to the western peak, thus raising the whole cost of the expedition to about 100 francs. He himself effected the traverse in 15 min. He forgets that the guides may have charge of a tourist not so sure-footed and expert as he himself is. His most lively experience was in passing from the Cavestraupin to Cavestraugrond (Brigels). An overhanging rock had compelled one party to make a circuit of 2 hrs. and another to turn back. He did not wish to do either of these things, and managed to lower himself down about 30 ft. Herr M. v. Prielmayr writes on the Adula group, whose principal summit is the Rheinwaldhorn. The best starting-point for excursions is Hinterrhein, and these are much facilitated by the Zapport Hut (1,956 m. = 6,418 ft.). Dr. C. Blodig, who has so often been the companion of Herr Ludwig Purtscheller, describes a number of excursions in the Fervall group (S. of St. Anton, on the Arlberg). He hopes to direct the attention of mountaineers to a comparatively neglected district. The three articles which follow may be described as guide-books to the districts of which they treat. The excursions in them are arranged in order of difficulty, and every peak and pass is described. In this manner the mountains of Thannheim (S.W. of Füssen) are treated by Herren Max Forderreuth

and August Weissler. The mountain forms are picturesque, and the climbs sometimes lively enough, and sometimes made more difficult by going the wrong way. Thus in the descent from the Hochgimpelspitze, at a point where a sudden drop occurred of some 30 ft., after lowering his friend the second man found no means of attaching the rope. Half an hour's labour was required to hack out of the ridge a nut about 1 in. broad and 2 in. deep. As it was before he reached the bottom he swung free in the air. The same difficulty was overcome the reverse way later by the first man standing on the uplifted hands of the second.*

The Dolomites of Lienz, lying between the valley of the Drave and the Lessachthal, are similarly described by Herr Philip Wilhelm Rosenthal. The highest summit, the Sandspitze, is only 9,350 ft. high, yet this comparatively small group has three huts, at heights of 5,928, 7,990, and 8,805 ft. respectively, the last being only 100 ft. below the top of the Spitzkofel. The Sella group is described by Dr. Karl Bindel. This group of mountains, lying just S. of the Grödner Joch, was comparatively neglected by tourists until the building of the Bamberger Hut in 1894 led to its exploration. The scenery is as beautiful and the mountain forms as striking as any part of the Dolomites.† A concluding article on the Rosengarten group is contributed by Herr Hans Forcher-Mayr and Dr. Th. Christomannos. The Grasleitenspitzen and the peaks of the Junge Schlern seem almost as difficult as the famous Vajolettspitzen. The Mugoni Kamm was specially explored by Dr. Christomannos in order to make this paper complete. J. S.

From the Alps to the Andes. By Mattias Zurbriggen. London: Fisher Unwin. 1899.

It is understood that once upon a time one of the Continental Alpine societies started the brilliant notion of 'Herrenbücher.' It was plausibly argued that as it is desirable that a guide should produce on demand his 'Führerbuch,' recording his performances and the more or less valuable appreciations of his employers, so is it only reasonable that the obligation should be reciprocal, and that the guide, when invited by a stranger to convoy the latter up a difficult peak, should be entitled to some information about the aspirant in the shape of the candid opinions of his former guides. So far as is known the scheme came to nothing, but the thought was a kindly one, and the compilation of imaginary 'Herrenbücher'

* *Vide* the frontispiece of *Zeitschrift*, 1895, where Dr. Blodig is holding up Herr Purtscheller at the 'mauvais pas' on the Southern Aiguille d'Arves.

† This article, as well as the two preceding, are illustrated by maps of a very simple but very intelligible character. The mountain ridges are represented by thick black lines; the summit, by circles or triangles; the passes, by two cross lines; roads, by double or single, continuous, or dotted lines; streams, by waving lines. It would seem that such maps might be adopted to diminish the cost of the new edition of Ball, though hardly in keeping with the only volume which has yet appeared.

is an idea which must have considerable charm for those of us who are pleasantly conscious of each other's shortcomings.

The next best thing would be a book by a first-rate guide, anecdotal in form and uncompromising in spirit. This book would give us the writer's frank opinion upon the relative merits of guides and amateurs, with illustrative examples; it would display the real attitude of the guide towards his employment and his employers; it might even give us some idea of the subject of the endless, and apparently amusing, discussions which rage whenever two or more guides are in conclave, and which cease uneasily on the approach of the complacent Herr.

Such a book will probably never be written. For obvious reasons no guide could afford to write it until he had definitely retired from his profession, and as a rule the talents of the fraternity are not of a literary character.

However this may be it is certain that the book under review does not fill the gap in our Alpine literature, but, nevertheless, it is a most interesting production.

Zurbriggen stands in the front rank of his profession: his experience has been vast and varied, his performance splendid, and he possesses an intelligence and an education of a quite exceptional character. He is probably better equipped for authorship than is any other living guide, and although his book has no doubt been slightly touched up, and even padded, it is easy to see that in the main it is his own, and most creditable it is to his powers of observation and expression.

The bulk of the volume is occupied with the expedition to the Himalayas with Sir Martin Conway, and those to New Zealand and South America with Mr. FitzGerald, and the interest of the actual narrative is necessarily somewhat discounted by the fact that these expeditions have already been dealt with in volumes of colossal dimensions. The point of view is, however, different, and the treatment refreshingly compact.

The rest of the book is devoted to various other journeys overseas and in the European Alps, and to autobiographical details.

It is interesting to note that Zurbriggen has by no means spent all his life among the mountains, tending goats and hunting chamois, after the manner of the traditional guide. On the contrary he left his Alpine home as a youth and spent many years in wandering about the world and exercising all kinds of urban handicrafts, then went home to Macugnaga and straightway began to act as guide on such expeditions as the ascent of Monte Rosa by the S.E. face. Indeed, his apprenticeship would seem to have been little or none, and in a very few years he was in the first flight, his career by no means bearing out the theory that guidecraft is acquired only by lifelong devotion to the mountains.

The book is, of course, excellently got up, and the illustrations, if not always original, are good.

Chamonix and the Range of Mont Blanc. By Edward Whympfer.
Fifth Edition. London: John Murray. 1900.

Zermatt and the Matterhorn. By the same. Fourth Edition.
Same Publisher.

These well-known guide-books, which have, as usual, been brought up to date, are published earlier this year. We have examined them with pleasure, and notice several new features of interest in them—*e.g.*, at pp. 164 and 165 of the 'Chamonix Guide' will be found a useful list of villages and hamlets, &c., in the Valley of Chamonix. The list of guides has been corrected to January 1900. There is a full account (p. 153) of the new *Rifugio Torino*, erected a little below the summit of the Col du Géant, on the Italian side, by the Turin Section of the C.A.I., at a height of very nearly 11,000 ft. above sea level. We have heard this refuge highly commended, and the *tarif* certainly seems moderate, not to say very moderate, by comparison with that of the Grands Mulets, which is nearly 1,000 ft. lower than the *Rifugio*. The inn on the Tête Rousse (10,400 ft.) is described as having reasonable prices.

We learn from the 'Zermatt Guide' that the number of visitors to Zermatt in 1899 exceeded the total of 1898, which was itself unprecedented. Many English travellers of an earlier generation will hear with pleasure that a subscription is being raised for the erection of a memorial to the late M. Alexandre Seiler and his wife. Contributions, we understand, may be sent to Dr. Courten, Zermatt.

The Yorkshire Ramblers' Club Journal, vol. i. No. 2. London:
T. Fisher Unwin. 2s.

This second number of the 'Yorkshire Ramblers' Club Journal' quite reaches the high standard of the first. Mr. Horace Walker contributes a capital paper on the 'Growth of Mountaineering' from the earliest times to the Conquest of Kenya. Mr. W. Cecil Slingsby treats with enthusiasm of 'Mountaineering in Norway in 1899,' though there are mournful words as to the advent of science among the mountains in the shape of the cream-separator, whereby the greatest luxury of the sæters, the *romme kolle*, has disappeared. There are interesting papers by Messrs. E. Calvert and F. Ellet on 'Gaping Ghyll Hole' and 'Long Kin Hole,' with many illustrations. The Lake District is not neglected; and the record of the Club's work both at home and abroad must be highly satisfactory to the members.

Die Hochgebirge der Erde. By Robert von Lendenfeld.
Freiburg i. B.: 1899.

The ambitious and difficult task which the author of this book set himself has been well carried out. Mr. Lendenfeld wishes to

present to us in a compact manner all the high mountain ranges of the world. Nothing is more forcibly conveyed to the reader who turns over these pages than the fact that climbing outside the Alps has only just begun. Of the five hundred pages nearly half are devoted to the Alps, and all our explorers have not been able to proportionately balance the remainder—a remainder large enough to swallow the European systems very many times indeed. The two parts likewise differ as to the sentiment which they awaken in us; the feeling caused by the first is retrospective, whereas the second is decidedly suggestive in its effect. The one reminds, the other hints and promises; here we know, there we hope to know.

I think one may fitly call this compendium 'A Manual for the Study of Orology.' As such its subject can be said to be the teaching of the undergraduate in the art, and the provision of a 'repetitorium' for the professor. The absence of all bibliography goes far to justify the simile. Neither the beginner nor the expert could be well served in this respect within the scope of the book. I recommend it to the climber as a companion for his reflections on the past and his dreams of the future.

W. R. RICKMERS.

Beiträge zur Kenntnis der Spanischen Sierra Nevada. By J. J. Rein.
(In 'Abhandlungen der k. k. Geogr. Ges. Wien,' 1, 2, and 3.)

This is an excellent and interesting monograph on the highest chain of the Iberian Peninsula. Professor Rein draws a very scientific picture, topographical, meteorological, geological, botanical, &c. Even mountain-sickness is alluded to. The bibliographical appendix is quite a revelation.

W. R. RICKMERS.

Bibliotheca Geographica. By Otto Baschin. Vol. v. 1899.

All students of geographical literature ought to know this excellent list, which is published by the Gesellschaft für Erdkunde in Berlin.

W. R. RICKMERS.

PROCEEDINGS OF THE ALPINE CLUB.

A GENERAL MEETING of the Club was held in the Hall of the Club on Tuesday evening, February 6, at 8.30, the Right Hon. James Bryce, *President*, in the chair.

Messrs. W. G. Adams, T. C. Fitzpatrick, G. L. Stewart, and G. W. Young were balloted for and elected members of the Club.

The HONORARY SECRETARY read a statement from the Committee with regard to the editorship of the second volume of Ball's 'Alpine Guide.' Mr. SCHUSTER afterwards made a few remarks.

Mr. W. RICKMER-RICKMERS read a paper on 'Lasistan and Bokhara,' which was illustrated by lantern slides.

Mr. WOOLLEY wished to express his pleasure in having listened to a paper which, with the excellent slides, had given him a very clear impression of the country passed through. He could not understand, from the barren appearance of most of it, how there was any subsistence for man or beast. He had not himself been among the Karchkhal Mountains, but had much admired them as seen from a distance. The views of them had reminded him of many parts of the Southern Caucasus, where the formation seemed to be much the same.

Mr. BAKER had been much interested in the paper, as, though he had been in the neighbourhood of the Karchkhal Mountains, he had not any idea that they were such fine mountains. The conglomerate of Bokhara reminded him of a somewhat similar formation in parts of Daghestan, which was also subject to very heavy rainfall.

The PRESIDENT asked Mr. Rickmers if he had heard anything of the remains of the once famous Roman fortress of Petra, which at one time had stood very long sieges. He would like to know its situation. Since Roman times no one had properly explored the country. Since the time of Justinian the inhabitants had relapsed from civilisation, and the district had been almost forgotten till the Congress of Berlin. He could bear witness to what had been said of the fine qualities of the Lazes, as he had seen many of them at Constantinople.

He had listened with much interest to what had been said about Bokhara. With regard to the burying of a saint on a mountain-top it was curious to note that at Montserrat, to which the Spaniards made pilgrimages in a similar manner to visit the mountain grave of a saint, they had built a railway to save themselves from the physical exertion which the indolent Oriental still submitted to. As the mountains visited by Mr. Rickmers lay not far from the Pamirs he hoped that some members of the Club would follow in his footsteps and from there explore the Pamirs. There did not seem to be any difficulty in regard to obtaining permission from the Russian authorities. He thought the Club was much indebted to Mr. Rickmers for his paper. He had told them that at one time he spent three days and nights in getting impressions, and he thought that the time had been well spent, as Mr. Rickmers had been able to convey to his hearers a very vivid impression of the country and its mountains.

Mr. RICKMERS, in reply, said that though the country looked barren there were in the valleys many patches of grass on which the shepherds feed their goats and sheep, and an occasional cow. They also grew a little wheat and Indian corn, but famine was very common. As to the fortress of Petra, he had not heard what its position was supposed to be. There were many caves, some in places which are now quite inaccessible to the ordinary traveller, but which had evidently been used by cliff-dwellers. In Bokhara

he had seen enough mountains to allay the fears of anyone who thought that the supply of mountains was likely to run short. He had made a rough calculation of the mountains of the world still available, and had stopped when he came to about 500,000. With regard to the Hazrat Sultan Mountains he did not think that it would be difficult to obtain permission to visit them. They lay two days' ride from Samarcand, and were really within easier reach than the mountains of the Caucasus. The conglomerate region of Bokhara lay on the borders of the Pamirs. From their highest summit as one looked W. one saw no snow mountains, but to the right there was only snow and ice. To the N. lay the Hissar Alps and others; to the N.E. the mountains near Garm, which are about 17,000 ft.; almost due E. lay the undulating Pamir snow-fields; to the S.E. the mountains of Roshan, and to the S. the mountains of Afghanistan. He hoped soon to see some English or Russian climbers groping about in that neighbourhood.

A hearty vote of thanks was accorded to Mr. Rickmers and the proceedings terminated.

A GENERAL MEETING was held in the Hall of the Club at 8.30 on Tuesday evening, March 6, 1900, the Right Hon. James Bryce, *President*, in the chair.

Mr. T. G. Longstaff was balloted for and elected a member of the Club.

The PRESIDENT announced the death of Dr. W. Marcet, one of the early members of the Club, whose name was remembered as one who took a great interest in experiments in regard to respiration carried on at great altitudes, as also in all other scientific questions connected with Alpine climbing.

Mr. H. J. MACKINDER read a paper entitled 'Mount Kenya, British East Africa,' which was illustrated with lantern slides.

Sir MARTIN CONWAY had been much interested in the description of the glaciers, the peculiar appearance of which was noticeable in the slides shown. They seemed to resemble the glaciers of the Bolivian Andes, which were extraordinarily dry tropical glaciers about 170 miles south of the equator. Though some were larger than the Gorner Glacier the stream issuing from them was never larger than one could step over; often there was no stream and no sign of any considerable flood at any time of the year. The surface of the ice looked like granite, and was perfectly dry; there was rarely a pool of water on it; it was also greyer in colour than any others he had seen. He had never seen any piece of ice fall, except once, over the edge of a cliff: the ice seemed singularly rigid. He had made no attempt to measure the rate of motion, but imagined it must have been very small. He concluded, therefore, that the characteristics observed by Mr. Mackinder belonged to tropical glaciers generally. He was not inclined to think the character of the ice dependent on a slight snowfall, for in Bolivia there was a very considerable snowfall. It was due rather to the great evaporation in equatorial latitudes, for round

Aconcagua the glaciers, though not so big as those in Bolivia, had large streams, caused by rapid melting, and the surface of the ice resembled that in Europe and the Himalayas. He would like to know if Mr. Mackinder had come across a formation known as *nieves penitentes*, formed out of beds of avalanche snow, melted by the sun into a series of spires of hard snow, and found only within certain latitudes. In South America they were never further S. than Maipu, nor much further N. than Mercedario. They were found on Orizaba and Popocatepetl, in Mexico, but he had never seen them in the Himalayas, nor heard of their being found there.

Mr. FRESHFIELD congratulated Mr. Mackinder on having discovered a region not within the President's experience. Volcanoes were usually an uninteresting type of mountain, but Kenya appeared to be a very old volcano, which had had time to assume a less monotonous shape than the usual dome. The investigation of the mountain had been very satisfactorily carried out by Mr. Mackinder.

Mr. SOLLY suggested that it might be most convenient to retain the native name of Kenya for the highest peak.

The PRESIDENT was sure that he was speaking on behalf of all in saying that they had listened with great interest to the account given by Mr. Mackinder. He regretted that Mr. E. N. Buxton, who knew the district, was unable to be present. He would like to know to what language the name belonged. He had been struck by the fact that traces of glaciation had been noticed at a point much below that to which the glaciers now reached, which was very important in connection with theories of the glacial epoch. The existence in the northern hemisphere of glaciers at a lower level than they now occurred was supposed to be due to the angle at which the earth was then inclined to the sun, but if the same had occurred at the equator this could not be the whole explanation. He had not heard of any such traces being found in other parts of Africa. The question of the angle of Mount Kenya was of interest. The angle of a volcano depended on the fluidity of the lava. He would like to know if all the rock was volcanic, and, if so, whether it was basalt. The vegetation was interesting, as the forms characteristic of dry countries were impressed on families very dissimilar to one another. The composites took a tree form—a character very remote from the same family in temperate climates. When Kilimanjaro was, at the special request of the German Emperor, included within German East Africa, it was a matter of regret to many; but now we found that in Kenya we had a mountain nearly as high, more striking in its physical features, more difficult of ascent, and possessing a flora quite as interesting as its German rival. He thought the Club had not for long listened to an account of more general interest, and he was sure that members would accord Mr. Mackinder a very hearty vote of thanks.

This was unanimously agreed to.

Mr. MACKINDER in replying said he had come across no *nieves penitentes*. Sir Martin Conway had found them chiefly in connection with fallen avalanches, but on Kenya he had seen no traces of avalanche. He would like to take this opportunity of expressing something of what he owed to his guides and to his other colleagues. Not for one moment during the whole of his journey had he regretted having taken César and Joseph. He would recommend César as an admirable guide in any similar expedition. Both César and Joseph were expert foresters, and were therefore of the greatest service even below the snow line. He could not speak too highly of the tempers and capacities of these two men. But he must not forget also to mention the quite indispensable aid which he had received from his other colleagues—above all from his friend Mr. C. B. Hausburg. They had contributed as greatly to the conquest of Kenya as had those who had climbed to the summit.

With regard to the naming of the mountain, Kenya and Kilimanjaro were the names of two great *massifs*, not of peaks. Kilimanjaro had two peaks, Kibo and Mawenzi. In the case of Kenya the central rock pyramid was only a small portion of the whole mountain, which was 50 miles across, and the name Kenya was that of the whole. Krapf got the name from the Swahilis, who got it from the Wakamba, and these again may have had it from the Masai, for there is a Masai word 'Arrokenya,' which means 'mist,' and this appears to be the only East African word like it. The natives in its neighbourhood do not know the name Kenya. The Masai call it Donyo Geri, and the Wakikuyu speak of it as Kilinyaga.

He had not found any evidence of glaciation below 9,000 ft. On the east side at 14,000 ft. there was magnificent glaciation. The whole Gorges valley was floored with a platform a mile broad, perfectly smooth, with numerous tarns scattered over it. In the dry beds of some of these tarns lay quantities of pumice, and he had little doubt that the small volcanoes along the eastern skirt of the mountain were in eruption after the glaciers had retreated from their maximum extension.

The general angle of the slope of Kenya was low. The dip of the lava beds was from 5° to 15°, the actual slope of parts of the mountain lower than that. The central pyramid, on the other hand, was precipitous.

The proceedings then terminated.

A GENERAL MEETING was held in the Hall of the Club on Tuesday evening, April 8, at 8.30, the Right Hon. James Bryce, *President*, in the chair.

Mr. W. L. Clarke was balloted for and elected a member of the Club.

The accounts for 1899 were presented by the HON. TREASURER, who said—

‘The income for 1899 was 1,131*l.* 18*s.*, against 1,103*l.* 18*s.* 4*d.* for 1898, being an increase of 27*l.* 19*s.* 8*d.*, which was mainly made up of an increase (27*l.* 6*s.*) in subscriptions. This results from an increase of 35*l.* 14*s.* in 2-guinea subscriptions and a diminution of 8*l.* 8*s.* in 1-guinea subscriptions. There was a diminution of 4*l.* 4*s.* in entrance fees, against which must be set 5*l.* 5*s.* more obtained by letting the Hall in 1899 than in 1898. In this connection it may be mentioned that the letting of the Hall during 1900 has already brought in nearly 60*l.*, and we have undertaken to let it again for January 1901 on similar terms.

‘The sale of the equipment report and index has been this year transferred from the “Income” side of the accounts to the “Alpine Journal” account, of which it really forms part; naturally during the last year of the old library catalogue its sale entirely ceased.

‘Our expenditure last year amounted to 1,126*l.* 17*s.* 6*d.*, being an increase of 147*l.* 6*s.* 3*d.* over that of 1898.

‘This is a large increase, and has resulted in a balance on the whole year’s accounts of only 5*l.* 6*d.* It must be mainly put down to the increase of 53*l.* 6*s.* 10*d.*—from 69*l.* 19*s.* 11*d.* to 123*l.* 6*s.* 9*d.*—for exhibitions, and 96*l.* 7*s.* 11*d.*—from 59*l.* 19*s.* 1*d.* to 156*l.* 7*s.*—for the “Alpine Journal.”

‘When the Committee decided to hold the Equipment Exhibition, which they knew would be somewhat expensive, they were not aware of how large the increase in the cost of the “Journal” would be, or they might have postponed this exhibition until another year. I can only say I think the expenditure of 50*l.* was fully justified by the very excellent result which Mr. Baker put before you. We also gave our friends refreshments at our exhibitions on five occasions, which alone cost us 50*l.*

‘Under the heading “Alpine Journal” there is a misprint. Nos. 139–142 should read Nos. 143–146.

‘As to the increased cost of the “Alpine Journal” I have the following remarks to make:—

‘In 1898 the “Journal” cost exceptionally little. We may take its average cost during the last ten years to be 84*l.* (omitting 1893, which, owing to special circumstances, was only 3*l.*), showing an increase over the average for 1899 of 72*l.* The cost of illustrations will be seen to have risen over 50*l.* The Committee gave the Editor permission for an increase of expenditure on illustrations up to 90*l.* last year, as it was felt very desirable for the credit of the Club that the “Journal” should be more fully illustrated. They hope that the Club as a whole will approve of their decision.

‘The increase of 34*l.* 17*s.* 6*d.* in the cost of printing and publishing the “Journal” is almost entirely due to the increased number of pages—namely, 70—from 284 to 354. The cost of production in 1899 has thus been 88*l.* 2*s.* 3*d.* more, and the receipts from sales of

current and back numbers and advertisements have been 8*l.* 5*s.* 8*d.* less than in 1898. This diminution of sales has been entirely in the back numbers, as the sale of current numbers has increased.

'It will be noticed that in the accounts this year the sum of 20*l.* 15*s.* 1*d.* for sales of back numbers has been separated from the receipts for current numbers and advertisements, as it was felt that strictly their sale ought not to be set off against the cost of the "Journal" for the year, but they ought rather to be regarded as an asset of the Club. If this view be taken the cost of the "Journal" appears as 177*l.* 2*s.* 1*d.*, instead of 156*l.* 7*s.*

'The other item in which there is a large increase is furnishing. This sum of 108*l.* 10*s.* 10*d.* includes an item of 53*l.* for new book-cases, which the Hon. Librarian said he absolutely required. He has already half filled them, so that his requirement was evidently justifiable.

'Repairs and cleaning show a diminution of 55*l.* 4*s.* 1*d.* It will be remembered that last year this item amounted to 66*l.* 3*s.* 2*d.*, owing to the cost of outside painting (43*l.* 14*s.*) being included.

'The cost of refreshments at meetings, including spirits and mineral waters at meetings, has risen about 14*l.* This the members are responsible for rather than myself, and I presume I may conclude that our meetings are more popular. Firing, electric light, gas, stationery, postages, and petties all show a slight increase, due to the greater use that has been made of the Hall for our own exhibitions and for the occasion on which the Hall was let, and the increase in the correspondence of the Club.

'The Committee have decided this year that our exhibitions shall be restricted to a photographic exhibition in the spring and a picture exhibition in the winter, with the exception of an exhibition of Himalayan photographs which Mr. Freshfield intends to hold himself in June. These arrangements, we hope, will result in a decrease in the expenditure.

'It is to be hoped that the improvement in the "Alpine Journal" text and illustrations will result in an increased sale, which will somewhat recoup us for the extra expenditure we have incurred.

'As to the "Alpine Guide" Republication Fund, I referred to this matter in December. I need only add that the actual balance in hand has been increased since the date of printing these accounts by a sum of 48*l.* 18*s.* 9*d.* received from Messrs. Longmans for further sales of Vol. I. and General Introduction.'

The accounts were unanimously passed.

Dr. CLAUDE WILSON read a paper entitled 'The Dent d'Hérens from Breuil to Prarayé,' which was illustrated with lantern slides.

Mr. WICKS thought that at Breuil one could find as good climbing as at Chamonix, and away from the crowd of tourists.

Mr. CARR said that the risk of falling stones from the Grandes Murailles was very great.

Mr. KENNEDY drew attention to the great beauty of the scenery south of Breuil.

The PRESIDENT had always felt an interest in the Valpelline district since reading Forbes's brilliant description of the Col d'Hérens. Little had yet been done to provide accommodation in this district. Dr. Wilson's paper had shown the true spirit of the careful mountaineer in giving exact descriptions of climbs which at first view might not appear to yield the interest they were afterwards found to provide.

A hearty vote of thanks to Dr. Wilson brought the meeting to a close.



Sewan Electric Engineering Co.

KABRU FROM YOKSUN.

Telephotograph by E. J. Garwood.

THE
ALPINE JOURNAL.

AUGUST 1900.

(No. 149.)

ROUND KANCHINJINGA.*

By DOUGLAS W. FRESHFIELD.

(Read before the Alpine Club, June 12, 1900.)

WE are not a nation of geographers. I trust, therefore, that I shall not be thought rude if I impute to my readers some uncertainty as to the details of the orography of the Himalayan chain. It may serve to remove misapprehension and to give some idea of the scale of the Himalaya if I remind them that Kanchinjinga † is a mountain in Sikhim, 28,156 ft. in height, in nearly the same longitude as Calcutta, as far S. of Gilgit and the Karakoram as Etna is of Mont Blanc, and as far E. of K² as the Gross Glockner is of the Pyrenean Mont Perdu. My journey was not, therefore—as some of my friends have supposed—in the same district as Sir Martin Conway's recent explorations. It was at the other end of the Himalaya.

In the map which accompanies Sir Joseph Hooker's 'Himalayan Journals'—a classic which has been familiar to me since childhood, and is, I presume, well known to most readers of travel—a broad blank separates the explorer's routes to the E. from those to the W. of Kanchinjinga. Across it are inscribed the following words:—

'This country is said to present a very elevated, rugged tract of lofty mountains, sparingly snowed, uninhabitable by man or domestic animals.'

* The illustrations, with the exception of the frontispiece which is from a telephotograph by Mr. Garwood, are from photographs by Signor V. Sella.

† I have adopted, with regret, the latest official spelling of the word. There are, I am told, fourteen ways of writing it.

Maps, if caviare to the British general, are, as Louis Stevenson somewhere insists, stimulating to all persons of proper imagination. This map of Hooker's, at any rate, had retained a hold on my memory, and from time to time I had felt a vague ambition to supply those missing links in the tour of Kanchinjinga. Yet the years and the decades slipped past; half a century had been completed from the date of Sir Joseph's journey, and still my project seemed no nearer being carried out, still no European penetrated to the back of the great mountain, still no even approximately correct map of its glaciers was obtainable by the man of science or the mountaineer. Discovery, it is true, did not altogether stand still. Mr. White, the Political Resident in Independent Sikkim (the district is termed Independent on the *lucus a non lucendo* principle, the Raja being kept in the tightest leading-strings), with Mr. Hoffmann, a Calcutta photographer, found a way over a pass from the S. to the basin of the Zemu Glacier, the north-eastern glacier of Kanchinjinga, which Sir Joseph Hooker had failed to reach, owing to the dense jungle and bridgeless torrents in the lower Zemu valley. In 1882 a more important step had been made. A Bhootia named Rinsing, the headman of a village in the Teesta valley, who had received some instruction in surveying, succeeded in traversing the unknown region. He crossed the ridge that links Kanchinjinga with the Tibetan Highlands by a pass, the height given for which on the Survey maps varies from 21,500 ft. to 22,000 ft. Rinsing lately described himself as having 'come back safely from the jaws of death.' For a native his exploit was, in truth, no slight adventure, since the pass he crossed seems to have been as legendary as the Col du Géant in the eighteenth century. No European followed in his footsteps. Our maps of the Nepalese valleys of Kanchinjinga remain to this day works rather of imagination than of observation; in the various official sheets, from the two-miles-to-the-inch survey downwards, the glaciers are either called 'moraines' or shown as little blue worms crawling obscurely about the hollows of the range, or else omitted altogether. The late Colonel Tanner, one of the most distinguished officers of the Survey, in an official report issued in 1884 declared that there were 'no glaciers worthy of the name' on Kanchinjinga.*

Reasons for this apparent neglect of their opportunities by the visitors to Darjeeling may easily be found. In the first

* See *Alpine Journal*, vol. xii. p. 438, for other extraordinary statements in this report.



LEPCHAS.

place the Anglo-Indian cares more for sport than for climbing or scenery or science, and Sikhim is not a good shooting-ground. Then the season for travel, owing to the prolonged rainfall, is short; coolie transport is expensive and exceedingly difficult to organise, the men, as more than one party have found, having a way of bolting home at inconvenient moments; and finally Nepalese territory—that is, the western flank of Kanchinjinga—is forbidden ground to officials, and the frontier south of the snows is strictly guarded by the Nepalese authorities.

Thus it was that, in 1899, when I at last saw my way to visiting Sikhim, the Tour of Kanchinjinga was still a voyage of discovery. But let me say here, once for all, that I make no pretence to having led a Scientific Expedition—with capital letters. My first object was to enjoy 'the glories of the world,' though I will not add, with the poet, that 'laws of nature were my scorn.' I bow with grateful admiration to the real scientific explorer, to a Forbes or a Hooker. Few have had better opportunities than I had, during my thirteen years' Honorary Secretaryship of the Royal Geographical Society, of observing how much knowledge is diminished by the want of training of most young Englishmen in any branch of Natural Science. But the interests of Science are not best consulted by those who put forward exorbitant pretensions in her name. I confess I lose my patience when *soi-disant* scientific persons claim a monopoly of Alpine exploration. And I am sorry when some of my athletic friends humour them by pretending to climb more for science than for scenery or adventure. The proper use of the eyes is the foundation of knowledge, and an honest climber can often add more to it than many self-styled scientists. I may perhaps add here, at the risk of confessing myself altogether out of the fashion, that I did not travel for any newspaper, or even for, or with the aid of, any Society; * unless, indeed—imitating at a respectful distance the example of Tom Coryat, who was proud to profess that he was traveller for the wits who met on the first Friday of every month at the Mermaid Tavern—I may venture to say that I travelled for the benefit of my old friends who meet on the first Tuesday of every month at 23 Savile Row. What I tried to do was

* Dr. Boeck, in his recently published *Indische Gletscherfahrten*, speaks of an expedition planned by the Royal Geographical Society for the ascent of Kanchinjinga, under my leadership. No expedition with this aim has ever been planned by the Society or undertaken by me.

to organise a party of pleasure, which should at the same time be so constituted as to produce results that might afford entertainment and even instruction to a larger circle of the friends of mountains.

Our party was composed as follows: I first secured Mr. E. Garwood, F.G.S., known as an Alpine climber, a Spitsbergen explorer, a geologist, and a photographer; and also, as events proved, an entomologist, whose ardour in the pursuit of moths and butterflies was not abated even when twenty leeches were swarming up each of his gaiters.

I next invited Signor Vittorio Sella, widely celebrated as a most successful photographer of the High Alps and Caucasus, and as the companion of H.R.H. the Duke of the Abruzzi in his recent ascent of Mount St. Elias in Alaska, to join the party. At his request I extended the invitation to his brother Emilio and a photographic assistant. I also engaged the young guide Angelo Maquignaz, of Val Touranche. Signor E. Sella was subsequently of great service in looking after and treating the wounded feet of our coolies, and he further exerted himself to collect seeds of Alpine plants. We had every reason, so far as we tested his powers, to be content with Maquignaz.

This was the company that started from Europe. Arrived in India we met with the kindest welcome from Mr. Earle, the Assistant Commissioner at Darjeeling, and from Captain Le Mesurier, the acting Political Officer in Independent Sikkim. To both these gentlemen and their wives I owe my best thanks, not only for every help that officials could give but also for every kindness that friends could offer. Their hospitality knew no limit short of the snow level. It was through Mr. Earle that the Bhootia surveyor Rinsing was attached to my party. It was through Captain Le Mesurier that Mr. Dover, the Road Inspector in Independent Sikkim, obtained leave to join us. He undertook the entire management of our unwieldy and very mixed troop, thus relieving me of a burden beyond the powers of any one not conversant with native tongues and habits.

Our coolies, who numbered at different times from forty to fifty, were collected partly at Darjeeling and partly at Gangtok, the capital of Independent Sikkim. They were all volunteers, and were of very different types, effeminate-looking Lepchas, Nepalese, and sturdy Bhotias—that is, Tibetans dwelling on the southern slope of the great chain. In addition to these carriers we had an escort of six Goorkhas, belonging to the military police, or pioneers, of Independent Sikkim,



Michigan & Georgia

WILD HYDRANGEAS.

who helped to manage the coolies, and made them less nervous of any possible meeting with Tibetan or Nepalese outposts. These men made no pretence to be mountaineers, like Major Bruce's trained climbing Company.

Enough of preliminary. Life is short, and the tour of Kanchinjinga is long. I have got to pack into a few pages the experiences of seven weeks' travel. Selection is no easy matter: I must be brief; my readers must pardon me if I become obscure.

Our journey may conveniently be divided into stages. The first, on horseback, will take us up the Tibetan pony road, eleven marches, about eight days' ride, 140 miles, to Lachen, where the Zemu joins the Teesta. Look at any large map: from the snows of Kanchinjinga the Singalelah spur sweeps down S. like the tail of a comet, curving in its lower portion to the E. Darjeeling stands on a short northern offshoot of this tail, 7,000 ft. above the sea. The space enclosed between the spur and the snows is occupied by a ridge and furrow country, in which the ridges average 6,000 to 8,000 ft., and the valleys 700 to 2,000 ft. The Tibet road descends over 6,000 ft. to the bridge of the Teesta (700 ft.), then climbs again to 7,000 ft. behind Kalimpong, and goes on, up and down, from glen to glen, until beyond Tumlong it crosses back into the main gorge of the Teesta, and traverses its slopes, where heavy landslips often interrupt traffic for weeks.

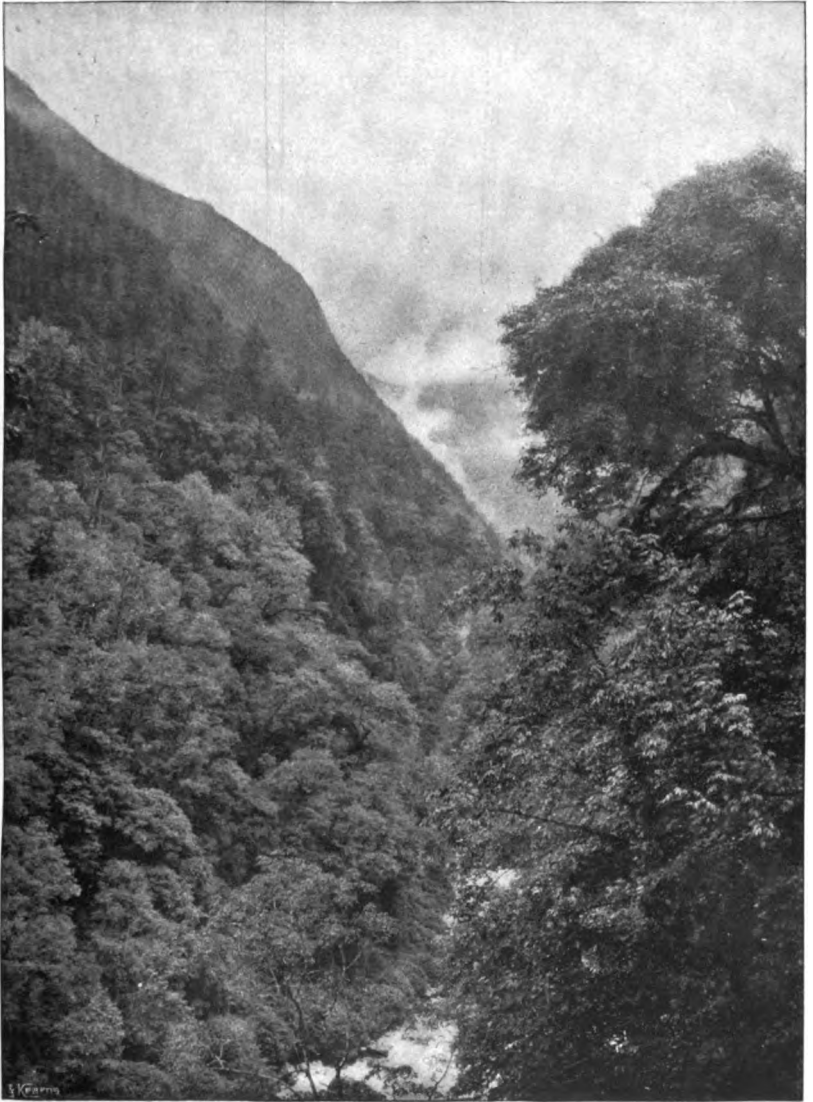
Words of mine must fail to give any adequate idea of the beauty and variety of the forest paths in Sikkim; perhaps Signor Sella's photographs may serve better. I must confess to having felt on this ride the same sort of delight a child feels on its first visit to the pantomime. I waited breathlessly for what would come next, and what came was always beyond my expectation. In the open clusters of thatched cottages rose among green terraced ricefields, or nestled between orange trees, plantains, and feathery clumps of gigantic bamboos. But it was on entering the forest that the true enchantment began. We rode through an endless colonnade of tall trunks—oaks, chestnuts, magnolias, their stems and branches fringed with parasitic ferns and festooned with orchids and creepers. Tree ferns raised their crowns over the carpet of greenery and blossom that covered every inch of ground. Hydrangeas were common, and a yellow convolvulus romped over everything. Down each ravine sparkled a full torrent, making the flowers and ferns nod as it rushed past them. Magnificent butterflies, some black and blue, others gorgeous flashes of colour, fluttered across the sunlight.

Through this enchanted forest we travelled day after day, up hill and down dale, till on the fourth day we saw on the opposite slope a European building. A collie dog ran down to greet us; the men of a native regiment were playing football on an artificially levelled bit of ground. An English villa, surrounded by lawns, stood on the edge of the forest; a square box of a monastery and a massive unfinished pile were conspicuous on a dominating spur. This was Gangtok, the residence of the Raja since an earthquake destroyed his 'palace' at Tumlong, a march further in the interior.

Here, while our goods were repacked and our transport was organised, we spent four happy and luxurious days as the guests of Captain and Mrs. Le Mesurier. We chattered with pedlars straight from Lhasa for Tibetan curios; we helped to entertain the Raja and his pretty little Tibetan wife at afternoon tea. She arrived in a palanquin borne by servants in striped kilts and scarlet tunics, wearing conical straw hats decorated with peacocks' feathers, and herself wore a most barbaric and effective tiara of coral, pearls, and turquoises. Her children followed her, carried pickaback by more red-coated retainers. When this procession trotted across the landscape in front of the snows of Kanchinjinga and Siniolchum I felt that even the late Mr. Augustus Harris had something to learn in scenic effects.

From Gangtok it is still four days' ride to Lachen. We halted one day in a Buddhist monastery at Choontang, and Garwood and I made an excursion up the romantic Lachung valley to within sight of the village that gives it its name. Choontang was Tibetan in the days when Great Britain was not behind 'Independent Sikhim,' and still bears the Tibetan stamp. The peasants on the road broke into broad smiles, and lolled out their tongues in hearty greeting to the Le Mesuriers, while they presented us with the token of peace—in the shape, I am bound to say, not of a silk scarf, but of a paltry rag.

In the long stage above Choontang the traveller passes from the forms and vegetation of the foot-hills to those of the High Himalaya. The forest, if it loses little in richness, changes in character; it ceases to be sub-tropical. Bamboos, plantains, magnolias, and hydrangeas gradually give place to red-stemmed tree-rhododendrons, pines, and larches. The Teesta flows in a narrow ravine, which, until the present bridges were made, was often impassable for weeks. The path climbs up and down between high cliffs and scarcely less steep walls of forest, until, some twelve miles above Choontang, it scales a great step in the valley, and emerges



RAVINE OF THE TEESTA BELOW LACHIEN.

from the long gorge on to virgin meadows gay with an alpine flora, where for the first time the mountaineer feels at home and near his work. The impression is strengthened when the scattered cottages of Lachen come in view; at a short distance they are hardly distinguishable from Swiss chalets.

At Lachen (8,800 ft.) civilisation is represented by a shed, or 'godown,' the last Government building towards Tibet. Here we left our kind hosts, Captain and Mrs. Le Mesurier, who remained camped for ten days at Lachen, keeping us in touch with the outer world, and forming an efficient barrier to any wholesale desertion on the part of our coolies.

We had now to plunge on foot into the wilderness N.E. of Kanchinjinga, a region without inhabitants. One track alone traverses it, running N. and S. over a series of grass passes, a few miles W. of the Teesta, and roughly parallel to its valley. We proposed to strike at a right angle across this track (which was once taken by Mr. White) at the foot of the Zemu Glacier, the stream from which joins the Teesta two miles above Lachen. The jungle in its defiles had repulsed Hooker, and very contradictory reports were up to the last moment brought us as to our chance of success in penetrating them. We sent on, therefore, our Goorkha pioneers to hew a track through the rhododendrons.

After two days' fine weather the rain poured pitilessly during our night at Lachen. We had hardly started before our way was blocked by a torrent, rolling down stones and mud, and making the passage difficult for laden men. This was before we left the Tibetan road, which we did at the Zemu Bridge. From this point it is two marches to Gyagong, 15,700 ft., the Tibetan frontier, guarded by a wall behind which a Mongol outpost is condemned to shiver. It is some distance this side of the watershed.

We spent three days in reaching the Zemu Glacier. During the first we clambered up and down sticky and almost vertical banks, we waded in slush and stumbled between the twisted roots and arms of the giant rhododendrons. On the second day the ground became more broken, the track more difficult to recognise, and the ascents and descents, if possible, more vertical and vexatious. Regular path there was none, but here and there we came on the tracks of natives, who collect and bury lily roots, which they afterwards dig up and use for food.

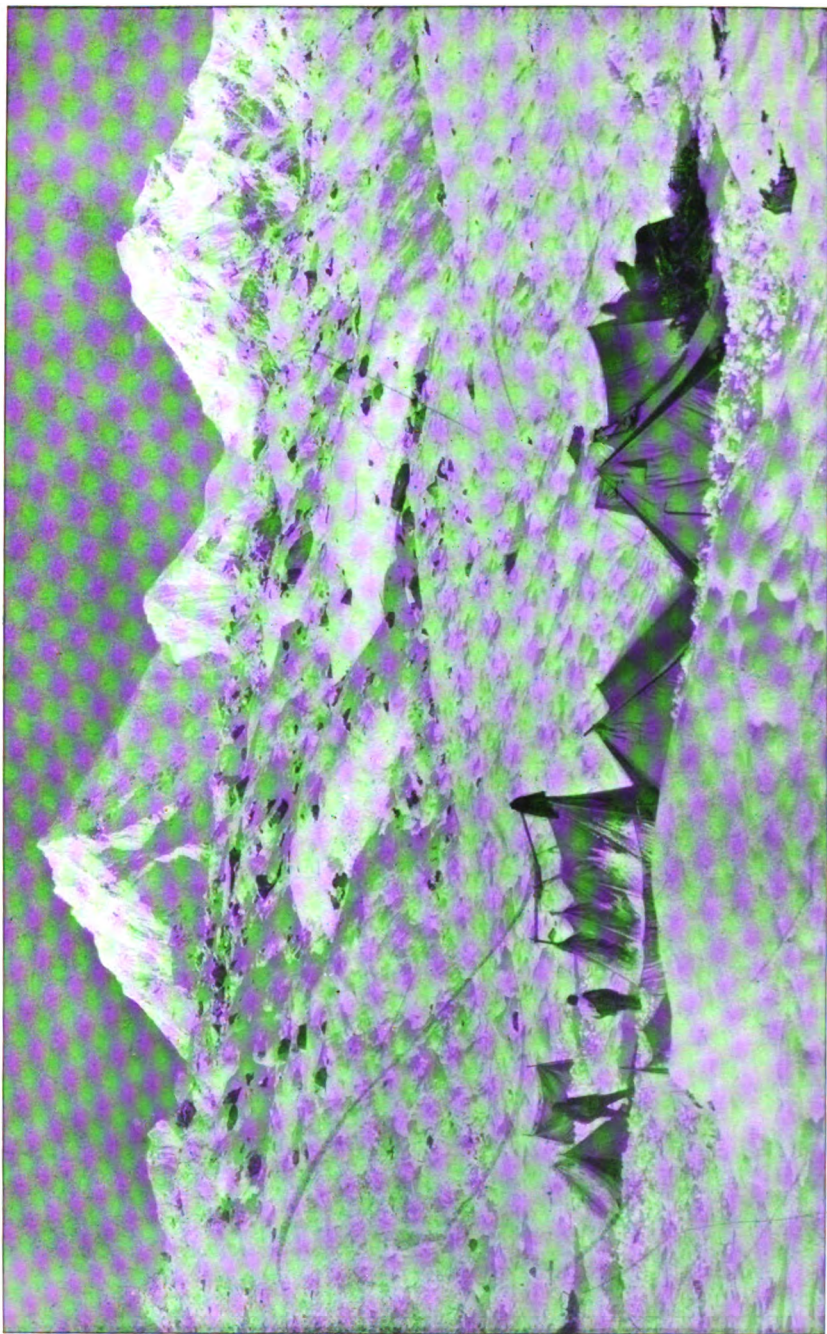
When we got to the foot of the glacier we found ourselves, owing to a mistake of our guide's, on the wrong side of the torrent. It was necessary to cross to the right bank, and we

thought ourselves lucky in finding two huge boulders which by a little engineering were made into a bridge practicable for the coolies. On the third night we slept on a moraine (14,800 ft.) high above the tongue of the glacier. On the next day we pursued a rocky dell beside the ice, and then crossed to its left bank. On the fifth day from Lachen (the journey takes half the time for a well-girt and unladen messenger) we reached a wide open pasture sloping gently from the N. We pitched our camp at about 16,000 ft., under the shelter of the moraine, twenty minutes below a small green tarn. The basin of the glacier here bent to the S., and the cliffs of Kanchinjunga were seen at its head, flanked by Simvoo on our left and nameless peaks of 24,000 ft. on our right.

Next day, leaving my companions to their photography, geology, botany, and sport, I went for a walk to reconnoitre the neighbourhood. At the lake I entered on the rough glacier and crossed a broad affluent flowing out of the range to the W. Beyond this tributary, between the mountain slope and the main glacier, lay a series of empty lake basins connected by steep funnels. The walking was bad; we had to go up and down, or tread on the sides of our boots across steep slopes, so that we gained height slowly. Still we approached steadily the great cliffs of Kanchinjunga. The broad easy tributary flowing from the saddle between Simvoo and a spur of Siniolchum was left behind, and we began to see right into the long trough that leads to the 19,300-ft. gap under Kanchinjunga. The Cloud Gap, I should like to call it, for every afternoon the vapours flock through it from the lower valleys to the south in long-drawn streamers.

We halted when we came to a point (4 hrs. from camp) where another side glacier poured down from the N. ridge of Kanchinjunga. The air was close and oppressive, despite the altitude, over 17,000 ft., and after lunch Maquignaz, who was with me, fell asleep. I left him on the moraine and pursued my solitary way over the icy waves for a short distance. My object was to ascertain if there were any means of gaining the lower end of a prodigious snow buttress which fell from a point near the highest peak of Kanchinjunga. What I saw was not encouraging, but climbers may judge for themselves from the telephotograph Signor Sella afterwards secured of this face of the mountain. For the rest my reconnaissance resulted in several conclusions.

The ascent up the deep corridor to the 19,300-ft. gap would be easy but unprofitable, inasmuch as the impending heights must limit the view. The broad saddle between Simvoo and



LOWER CAMP BY THE ZEMU GLACIER.

Siniolchum was more tempting, and it seemed as if Simvoo* (22,300 ft.) might be taken with it. From that peak a full insight would be obtained into the topography of the crest N. of Kanchinjinga, forming the Nepalese frontier, and the most practicable gap in it could be selected. This would doubtless be found at the head of the tributary glacier I had crossed in the morning. The next step would be to move our light camp to a higher point.

Man proposes, but in mountain exploration the great disposer is the weather—in Sikhim, perhaps, we may say the demon of the snows. That portentous monster the genius of Kanchinjinga, whose image decorates the Buddhist temples of the lower hills, awoke to the fact that his fastnesses were invaded, and prepared for defence. While I was plotting he was acting.

The sky, which had been deep blue, turned pale, then grey, then almost yellow; thin, ugly vapours gathered upon the great crest. The sun grew sickly, and was surrounded by a lurid ring. The air was perfectly still and very close and warm. Recognising all the usual signs of bad weather, I returned and roused Maquignaz, and we set out for camp. When halfway across the tributary glacier we saw dense mists racing up the valley, and were met by a keen blast. We raced too, and got off the moraine as the first flakes fell. In a few moments the storm was on us, everything was blotted out, and we were guided into camp by the shouts of our Darjeeling Sirdar, who had hurried out in search of us. I tumbled into my tent and panted speechlessly for some minutes. I had forgotten that it is inexpedient to run, even downhill, when above the level of the top of Mont Blanc.

The history of the next twenty-four hours was a blank—a white page in our diaries. The snow fell heavily all Saturday night and Sunday. In the evening some coolies came up from the lower camp and told us that the men we had sent down the evening before had not turned up, and must be lost. The Sellas proposed that a relief party should set out at once in the darkness. I discouraged such action, feeling convinced that the men, following the fashion of the country, had taken shelter under rocks. There had been nothing like a *tourmente*, and the nature of the ground made it almost impossible for them to have missed the true direction. I proved to be right.

At dawn on Monday it was snowing as hard as ever. We measured exactly a mètre (3 ft. 3 in.) round our tent where it had

* 'Siimvovonchim' appears to be its official name.

not drifted. The snow had to be cleared off the roof every half-hour to prevent a collapse. There seemed no reason why the storm should stop, and good reason that we should not. One of the smaller tents was completely buried. The coolies with us were naturally frightened, and even Maquignaz indulged in references to avalanches. These, however, did not form a real danger, for our line of retreat was nowhere exposed to them, nor did any of any consequence fall.

At first the snow was so deep and soft that it seemed hardly possible for us to move more than a few yards. Unladen men were sent ahead to beat a path; we and the light luggage followed. It was very laborious work, and our progress was extremely slow. Suddenly the sky lightened, and in a few minutes the sun came out. Such a sun: blazing, blinding, dazzling, scorching! Every facet of the new snow gave back its rays. The heat was intense. The unhappy Garwood had set out in a fur cap and black tarpaulin jacket, a costume planned—and, doubtless, admirably suited for—Spitsbergen. We conducted him under the shadow of a great rock, where we waited till shifting vapours tempered somewhat the first fury of the solar rays. But the whole walk was a severe penance, and our night at the lower camp was naturally more or less feverish.

Next morning we woke to 'set fair.' The world was all white. The smoke of our camp fires alone sullied the blue heavens. The fine weather which, with one break of forty-eight hours, was to last for the remainder of our journey had set in.

But the conditions were altogether changed. The Easy had become Difficult; the snow-level had been lowered 3,000 ft. We had hoped to make some high ascent, to force a pass into Nepal from the head of the Zemu Glacier. All such projects had now to be abandoned; to get round Kanchinjinga somehow was all we could hope, or reasonably attempt. We halted for two days, observing and photographing. We gazed with ceaseless delight on the peak immediately opposite our camp—Siniolchum, 22,570 ft.—the most beautiful snow mountain I have ever seen, perhaps the most beautiful in the world. Its icy sides are exquisitely fluted by avalanches; the snow upon its edges is blown up into fantastic fringes, so thin as to be transparent to the Indian sunshine. It is the embodiment of the Inaccessible, a fitting throne for the Spirit of the Summits.

On the third day we set out on our tour, but Garwood was so unwell that we soon had to halt. He had felt the combination of heat and altitude. Twenty-four hours' rest, however,



SINJOLCHUM.

set him up. The two 17,000-ft. passes, which we had now to cross—the Tangchung La and the Thé La—ought in September to be no more difficult than the Wengern Alp at the same season. There is a yak track over them, made by parties taking timber into Tibet. They were now in the condition of the Wengern Alp in February. We wallowed; the coolies rolled in somersaults down their endless slopes. The only vegetable objects visible were the stems of the giant rhubarb, which I at first mistook for sign-posts. After the first pass the coolies struck for a day's rest. They had not profited by the spectacles with which they had been provided, and many of them were snow-blind, while others pretended to be so. Those who had really anything the matter were doctored, and a few sent back to the valley.

From the second pass, the Thé La, we found a gentle descent into Lhonakh. This desolate valley, or rather group of valleys, lies from 15,000 ft. to 17,000 ft. above the sea, and contains the westernmost sources of the Teesta. Its streams flow sluggishly through a broad bare basin; the gentle outlines of the lower slopes are obviously due to their long protection by ice from the destructive agencies of air and water, and the rapid alternations of frost and heat that have been at work on the highest ridges and in the deeper valleys. The ancient beds of extinct glaciers lie just as they were left by the ice; their shrunken descendants cling round the base of ranges 19,000 to 24,000 ft. in height, yet hardly more impressive than the peaks of the Engadine. There are no trees, no shrubs bigger than stunted junipers, grass grows sparsely, the surface of the earth is mostly brown and yellow, except where the larger gentian, Eton instead of, as in the Alps, Harrow blue, makes little patches of colour, or scattered pools of water reflect the deeper tones of a Tibetan sky.

This district is cut off from the lower valleys by the well-nigh impassable gorges of the Zemu. It is more easily reached by two passes, one leading directly into Tibet proper, the other to the S. side of the Kongra Lama Pass. In our treaties with the Chinese Government it is recognised as part of Sikhim; but its scanty herbage attracts a few herds of yaks from Tibet, and claims have lately been put forward to it by the rulers of Lhasa.

I must cut short our adventures in this inhospitable region. Our hopes of meeting and routing a Tibetan outpost were disappointed. We found nothing more formidable than a solitary yak. It was said to be wild, but it died tamely before our native hunters. The better theory seemed to be that it

had been left as an offering to the mountain spirits by the Tibetan herdsmen.

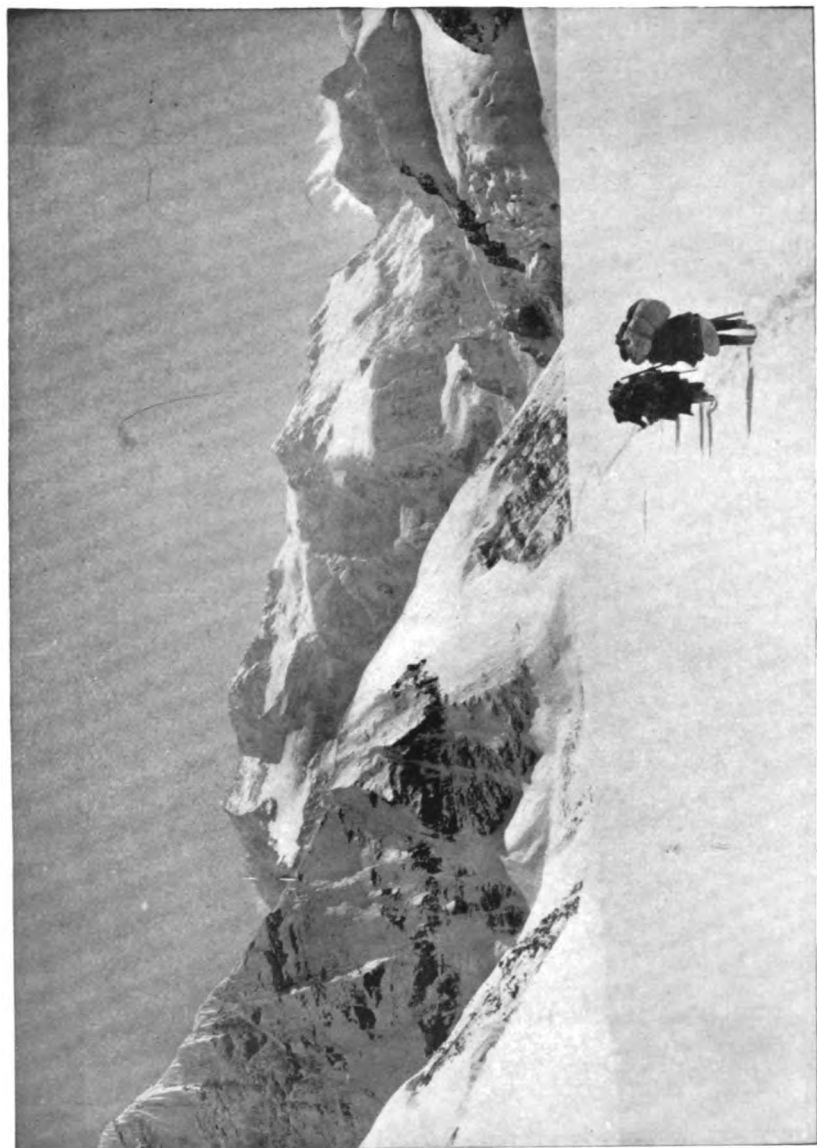
Emilio Sella, Rinsing, and I climbed one of the ridges to the N., said to be the Chortenima La (19,000 ft.), which leads into Tibet proper. It was a 10 hrs.' walk there and back, half the time severe gymnastics among immense boulders, the rest more or less bad snow. Our pace, I think, was fair, though never fast, and we felt no unusual exhaustion. From the top we had a glorious panorama. Kanchinjinga and Siniolchum showed far to the S. We were surrounded by a maze of noble but nameless peaks. No human habitation, no signs of man were visible in any direction.

Next morning we found ourselves confronted by an unexpected dilemma. From the Chortenima La Rinsing had pointed out without any apparent hesitation the lowest point in a high curtain of snow which connected the two most prominent peaks S. of the Lungma Chu as the Jonsong La, the pass he had previously traversed. This pass was not at all, as shown in most maps, at the head of the valley. The basin of the Lungma Chu stretched several miles further W.; it was filled by a glacier closed by several snowy gaps leading—nobody knows where.

To my dismay I found Rinsing was now telling my companions that our pass lay in this direction. There was great difficulty in pinning him to any precise statement, and I cannot pretend to explain his conduct, or want of conduct, at this juncture. I imagine that he lost his head and made guesses. I was inclined to believe his first indication to be correct, and he reverted to it partly, I think, under my pressure.

Anyhow, after having been led up to the moraine overhanging the main glacial source of the Lungma Chu, we turned to execute a most laborious traverse of its torrent and of the tottering, trackless stone-heaps of its front. We then struck up the course of a stream that flowed from the south-western range. The snow was so deep all round that to wade in the water or to jump from stone to stone in its course proved to be the least unpleasant mode of progression. During that day we did not cover more than five miles or make more than 1,500 ft. in height. We camped in deep snow.

Next day the snow was still soft. Loads had to be shifted, lightened; the march became more broken; our stragglers multiplied. Now and again for a few moments one skimmed the surface, and then the old business began again—crunch, lunge, plunge. We got to the top of the screes, into a region of



KANCHINJINGA AND JANNU FROM THE JONSONG LA.

glacier and moraine; under the new snow it was difficult to tell when we left *terra firma*. We passed an exquisite grotto, a cleft dome of ice some 50 ft. high, presenting to the morning sunshine a cliff glittering from top to base with icicles and overhanging a frozen tarn. I have seldom seen so fantastic and fairy-like a spectacle. Slowly we drew near and rounded the base of the golden rocks of the 24,000-ft. peak, and surmounting a long slope looked into the deep recess in the centre of which lay, or rather rose, the ridge of the pass. It was obvious that the crest could not be gained and crossed before dark, although we were already almost at 20,000 ft. and looking over all the intervening ridges far into Tibet. It was an Arctic site for a camp, but camp we must.

The night was cold, yet next morning the coolies seemed unwilling to start early. They were urged along with difficulty across a wide glacial plateau intersected by medial moraines. At last we collected for lunch at the base of the high wall or curtain of the pass. It was not steep enough to be difficult, though the loose, backsliding snow made it laborious. The ascent for the last 200 ft. was over bare screes.

My dismay may be imagined when, as I came close to the top, a wave of snow overhanging an incipient crevasse, Rinsing called down to me, 'We must go back; this is not the pass.' I recommended him somewhat curtly to hold his tongue; for should the report get abroad a stampede of the coolies was bound to be the consequence. The Sellas had already caught the news, and were suggesting, with much show of reason, that we ought not to risk our own or our coolies' lives by going against the advice of our only guide.

As soon as I had heaved myself up through the gap in the cornice I understood the cause of Rinsing's panic. The snowy cirque we looked down upon was enclosed on all sides by lofty ridges. To the S. mighty Kanchinjinga rose like a wall. Close against it the turreted cliffs of Jannu continued the line of battlements. To all appearance it ran on without a break up to the range that hid from us the western horizon. No gap through which the snows in front of us could find their way was visible. Rinsing, stubborn in his pessimism, insisted that they flowed to the Zemu. To any person of orographical instinct or experience it was clear that this was impossible, that whether or not we were on Rinsing's Jonsong La the snow below us drained into Nepal and not into Sikkim, into the Tambur and the Ganges and not into the Teesta and the Brahmaputra. The plane-table was called

into use by Garwood and supported my argument. I intimated that the debate was closed and that the party would seek a bivouac beyond the ridge. The Sellas acquiesced in my decision.

During the discussion and before descending we enjoyed once more the superb view we had had behind us all the way up towards Chomiomo and the Donkia peaks. The day was divine, the temperature perfect, except on the crest, where there was a chilly breeze. Most of us felt slack, but no one seemed ill or seriously indisposed.

The afternoon was advancing when we set out to descend. The snow-slope immediately below the pass was steep, but we turned it by easy rocks which led us down to a névé plain. The snow, as usual, was bad. Maquignaz, who had led much of the day, now became exhausted. Garwood found three-quarters of an hour of leadership quite enough, and I was not equal to relieving him. The Sellas were busy photographing. Many of the coolies were very much in the rear. The first rocks seemed a long way ahead and not very inviting, and it was doubtful if we could bring our party to them before nightfall. We came on a fantastic group of névé séracs; there seemed some shelter amongst them, and, anxious to collect our stragglers and loiterers, we determined to pitch a camp. Rinsing described it afterwards as 'a village in the snows.' The height was just over 20,000 ft. I do not know that any other party—at any rate so large a party (we numbered over fifty)—has camped so high. Our porters all had tents, rugs, and oil for cooking. The night was cloudless; the thermometer registered 27 degrees of frost inside our tent. Dawn is late so near the tropics, and I hoped that our men would be glad to get off. Not at all. The Sikhim coolie has two rules—first, not to uncurl from inside his rug till the sun strikes him; next, not to start until he has cooked his rice. With much oburgation we got most of our troop into motion; but after I had gone a hundred yards Vittorio Sella called me back, saying there were some half-dozen men apparently unable to move. We looked them over. They were suffering, doubtless, to some extent from the apathy induced by altitude; some were slightly frost-bitten, but others were playing a game with the object of being put in the invalid squad and relieved of their burdens. At every fresh start there was the same struggle for the lightest loads, and the ruses resorted to were sometimes amusing.

The rearguard, who had halted behind the pass, were not in sight. A Goorkha went back to bring them on. I watched

him up to the top. He went briskly and without a halt, and this at over 21,000 ft. He rejoined us the same evening, having crossed the pass twice in the day.

Our way now lay down a deep, narrow trench filled from side to side by a broken glacier, into which tributaries poured from the splintered ranges above our heads in long curling streams or gleaming cataracts. The vast white curtain of Kanchinjinga was always in front. The door of escape remained still entirely concealed. Its first indication was a wisp of vapour which floated up between two apparently continuous cliffs.

When the *névé* turned to ice we had to take to the right-hand mountain-side. I saw all our company, except the missing rearguard, off the ice. For several hours we scrambled over broken boulders. A sure foot and good eyes were needed to step from jag to jag and avoid the pitfalls between them. At one point stones bounded across our track from a gully in the impending cliffs. The icefall passed we again entered on the glacier, the surface of which was modelled into mounds, ridges and hollows, like monstrous sand dunes. We pitched our camp on the ice in one of these hollows, and the porters slowly straggled in.

I had no reason to believe that all our men had not rejoined us. It was not till two days later that I was told that a coolie had been left behind on the rocks in a dying state by his companions. The missing man was not one of the rearguard or of the malingerers at the highest camp. As far as I could elicit the facts they were as follows: The man, who had been previously relieved of his load, told his comrades that he was weary of life, and asked them to leave him. Having received his directions as to the disposition of his property—a cow and some pigs—they covered him with a blanket and left beside him a vessel of water and some biscuits from a tin, which they opened for the purpose—and bade him farewell.

There was, from a European point of view, no excuse for the conduct of these men. They had provisions and coverings; they might have halted with their comrade; they might have informed us within a couple of hours of his condition. They did none of these things. As far as I could make out they felt no remorse; on the contrary they held that it would have been officious on their part to interfere with the poor fellow's desire to proceed to another incarnation.

One more day's march remained before we could hope to reach wood or grass. This, the fifth day on the snows of the

pass, proved the most exhausting. The travelling over the rough ice was very bad and very monotonous; the delays caused by the wearied and disheartened coolies were interminable; we seemed to climb as much as we went down, to go round as much as forward. But the scenery was superb; splintered glaciers tumbled in on all sides, and the lower we sank the loftier rose the snow cliffs of Kanchinjunga in front.

At last we left the ice for the right-hand moraine, and crossing it found grass, snow-streaked, but bare in most places. The coolies cheered up and stepped out, until at an angle of the mountain-side, just above the meeting of the glaciers from Kanchinjunga with that we had descended, we came on a tiny level, round which grew dwarf juniper bushes fit for fire-wood.

The advance guard of coolies halted, and expressed their feelings in a British hurrah. We were quite ready to camp. A message came from the rear that Vittorio Sella was indisposed and needed help. He soon came in, however; his indisposition had proved temporary.

The spot we had now attained was an ideal site for a mountaineer's camp. The world can have few better. At our feet, at a level of about 17,000 ft., five separate ice streams met to form a great trunk glacier. First came that we had descended, flowing south from behind us in a narrow trough; the next, to the N.E., issued from under the 24,000-ft. crest N. of Kanchinjunga on the frontier ridge; the third came from the gap of 21,000 ft. leading to the eastern tributary of the Zemu Glacier; separated from it by a massive spur was a cataract of ice pouring down from a snow plateau under the highest crest of Kanchinjunga; the fifth glacier filled a basin below the western spurs of Kanchinjunga and the ridge connecting them with Jannu, the top of which was invisible. A more magnificent arrangement of snow and ice could hardly be imagined. One of Signor V. Sella's panoramas fortunately gives a fair idea of its grandeur.

We spent the greater part of the following day at our camp opposite Kanchinjunga, proceeding in the afternoon over the grass slopes beside the great moraine-laden glacier to a point a little way above the opening of a valley that trends N. to another pass, the Chathang La, which apparently leads to Lhonakh, and was once taken by Chandra Das,* another

* Chandra Das in his report issued in 1881 calls his pass the Chathang La. But in reprinting in 1890 this report he identifies it with the Jonsong La. Either, however, his descriptions are



JANNU FROM NEAR KAMBACHEN.

native surveyor. Some stone huts, resembling Italian chalets, stand at the junction. They are also called Lhonakh; at least the Survey maps attribute to them the name. We found them deserted.

Our path lay along grassy slopes and over flowery mounds, the deposits of ancient glaciers. The dirty ice from Kanchinjinga still flowed in the centre of the valley; on its further side rose precipices like those of the Wetterhorn, crowned by icy spires and pinnacles; a large glacier poured down from between them. We missed a bridge and had a tussle with a torrent. In the evening we reached Kambachen, the summer village of the district, a picturesque group of stone cottages, surmounted by Buddhist Chortens and flagstaves, at the junction of two valleys. It was entirely deserted. Here we found the first stunted timber. Next morning we woke to discover Jannu and two appalling attendant giants throwing their cold shadows over us—a superb spectacle. But I must not linger. We passed the huge dyke of the Jannu Glacier, which bars the valley; we roamed through a most romantic juniper and pine forest. Presently we saw, beyond the stream, meadows dotted with long-haired and gaily betasselled yaks, and then some brown farm-houses. A rustic deputation met us by the roadside. The farmers wore a broad hearty smile; the women, forewarned by some woodcutters of the strange arrivals, had put on all their jewellery, their amber, coral, and turquoise ornaments; what was more to the purpose they had brought milk and potatoes. They were the first inhabitants we had met since leaving Lachen twenty-five days before.

At the village of Ghunza, where we fell once more into Sir J. Hooker's tracks, our reception was at first equally friendly. After an interval, however, a Nepalese Government servant who called himself a Customs Official turned up. He was a little Brahmin from the lowlands, shivering in thin and dirty clothes. He was inclined to hinder us from getting provisions; but by a mixture of firmness and persuasion, culminating in a present of medicine for his cold in the shape of whiskey, we got over his scruples.

gravely at fault or he did not cross the same pass as we did. It seems to me highly probable that he traversed the pass indicated on the Survey maps as the Chabok La, which lies W. of the Jonsong La, and is approached by a glen which joins the valley of the Kambachen torrent at the Nepalese Lhonakh, which he calls Lhonagthang. This pass is not marked at all on Chandra Das's map.

So ended the political difficulty which had loomed large in our coolies' and Rinsing's minds. In fact there was no excuse for one; a party of Englishmen driven down by an unprecedented snowfall took the shortest way they could find back to their own frontier. But our followers had been full of dire forebodings; that we might be marched as prisoners to Katmandu was among their day dreams. It would have been too great good luck, for we should have passed through the unknown region at the foot of the so-called Mount Everest.

Considering that only one Englishman had ever visited Ghunza, and that half a century before, we excited very little curiosity. The people cross to Darjeeling to sell butterflies, so that Europeans were no novelty to them.

We next traversed three passes of about 15,000 ft. on the spur of Jannu, described by Hooker as the Choonjerma. From one of these we had a noble view over Nepal; the blue sky was ringed with wintry snows; round us the upper slopes and valleys were rich in the faded reds and browns of autumn; below these again spread the eternal green of the zone of tropical summer, and beyond again we could see the pale shimmer of the plains of Bengal. But the centre of the scene (to us at any rate) was the highest measured peak in the world, the Mount Everest of the Survey, rising over the northern shoulder of the splendid dome of Makalu. In shape Everest is not imposing; it looks an 'easy mountain.' Its outline reminded me of that of the Dôme and Aiguille du Gôûter, Mont Blanc being suppressed. Behind it rose a gigantic rock peak which, if seen at all by surveyors, has hitherto only been seen from the plains. It appears, however, in Major Waddell's illustration of the view from near the Kang La.* I regret that I cannot throw any fresh light

* Owing, no doubt, to his absence from England when his book passed through the press, Major Waddell's map is inexact, and there are some mistaken identifications in his illustrations. Thus the plate on p. 235 represents the 19,300-ft. gap E. of Kanchinjinga, *not* the ridge N. of the mountain, and on p. 421 No. 2 is Mount Everest and No. 3 the unidentified rock peak well shown in Signor Sella's telephotograph from the Choonjerma Pass. Major Waddell's comments (p. 421) on Mr. Graham's narrative are unluckily founded on a misreading of the text. The 'saddle glacier' of the Kang La and the 'glacier which flows in a beautiful stream S.W. from Kanchinjinga' are not identical, as Major Waddell has assumed. Mr. Graham is habitually careless in expression, but knowledge of the localities often makes him intelligible. Thus in the same passage, when he writes of 'a noble view of the north-west of Kanchin,' 'country' must be understood before 'north-west.'

on the question whether there are—as several natives and Mr. Graham have suggested—higher summits N. of Everest. We did not recognise any, but we were 3,000 ft. lower than the Kang La peak, whence Mr. Graham thought he saw them. All we could see in this direction were the tips of distant ranges rising over the nearer snows.

Clouds and a snowfall hindered us from climbing the Kang La peak and prevented any exploration of the glacier between Junnoo and Kabru. We had, however, momentary glimpses of the precipices of the latter mountain, which, contrary to the opinion expressed by some travellers, is well seen from the Yalung valley.

We arrived at Jongri (13,000 ft.), the future Riffel Alp of Sikkim, in driving sleet. Despite broken bridges Mr. Earle's kindness had sent up our letters and fresh stores by the Singalilah route. The fine weather soon returned, but it became much colder. The smaller streams down to 12,000 ft. remained frozen all day. We tramped N. a three days' march, there and back, to the Giucha La, a 16,400-ft. pass under Pandim, which has been visited by quite a number of tourists from Darjeeling. We climbed Kabur, the local Riffelhorn, 100 ft. higher than Mont Blanc.

We enjoyed sunrises and sunsets, the rose of dawn on Kanchinjinga, the last flush of evening on Kabru, radiant noons and still more rare and radiant full moons; we watched the clouds rising in pillars, like our childhood's friends the genii of the 'Arabian Nights,' from the depths of the valleys; beyond the varied greens of the forest foreground we saw the marvellous sapphire waves of the more distant foothills; we recognised in the golden haze of the faraway plains the silver ribbon of the Teesta, 80 miles off. At sunset we could almost count the houses at Darjeeling, 35 miles off as the crow flies.

We debated earnestly whether we should attempt Kabru. The steep slopes on the route described by Mr. Graham, from the Akluthang valley on the east, it would not have been prudent to attack in the existing conditions; however, from the W. there is apparently, if the top of the lower icefalls can be turned, an alternative way. But with the experience I had had on the Giucha La of the state of the snow Garwood and I thought our party was not strong enough to force a way up the loose upper snow slopes, and that the risk of frost-bite would be great. The Signori Sella, to whom I offered provisions and the use of our guide, reluctantly came to the same conclusion.

I consider the decision was a right one in the circumstances.

At the same time I believe that had we gone first to Jongri, and not encountered the great snowstorm, we might have got up Kabru. It is obviously the most accessible of the great peaks.

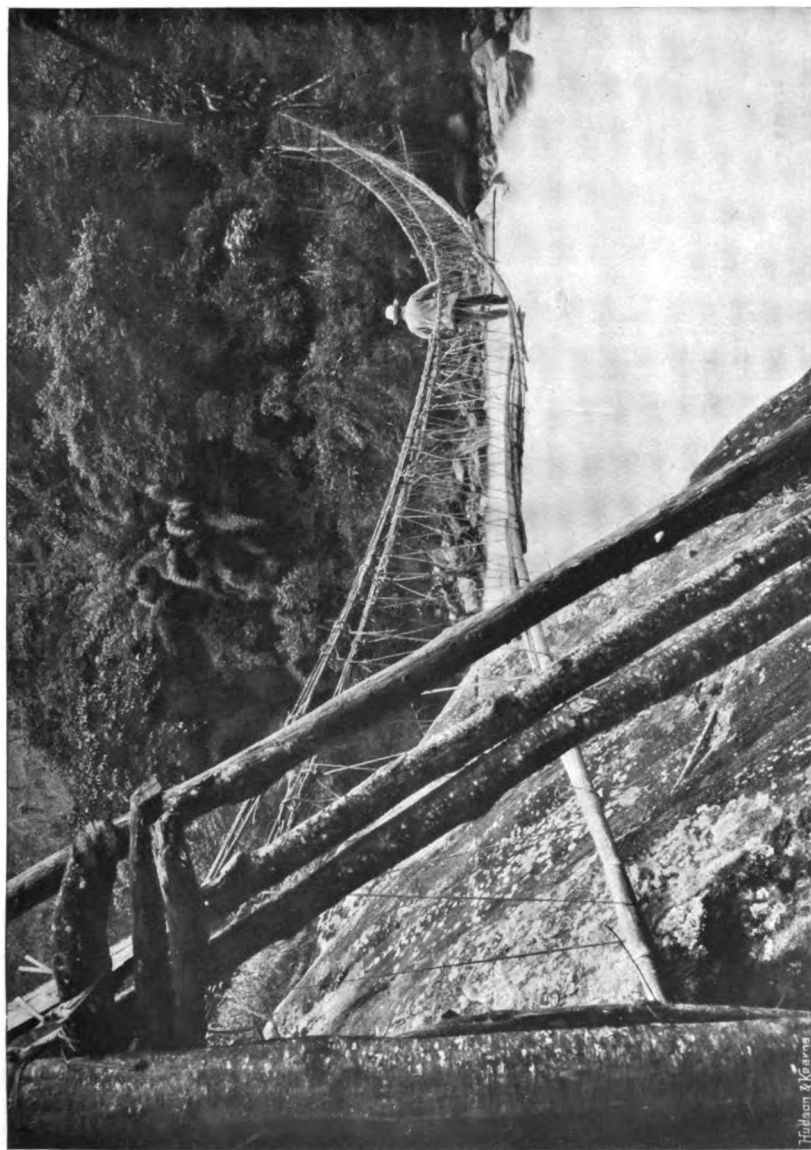
We now turned our backs on the snows. We plunged 6,000 ft. in a few hours through a wild tangle of rhododendrons and bamboos; we spent a long afternoon in tripping delicately across the face of cliffs on frail and ruinous bamboo balconies, or climbing up and down rock staircases and ladders of roots. Such is an aboriginal path, neither difficult nor dangerous in the climber's sense of those words, but singularly vexatious to a weary traveller. We accomplished a two-days' journey in one, and in the gloaming we emerged from the forest, and leaving behind us the screeches of the parrots and the chatter of the monkeys, who had seemed to mock our slow steps, we were greeted by the horns and kettle-drums of a band of yellow-coated Buddhist Lamas from the Dubdi monastery, who played us into camp at Yoksun.

We had returned to the land of men, of temples and villages. Our march became a progress. At every few miles we found a roadside arbour garlanded with yellow flowers, and a table spread with bananas and oranges, and bamboo mugs full of murwa, or native beer. Garwood counted up to his seventh bamboo, and then he gave up counting.

At the monastery of Pamionchi, perched on an exquisite hill-top in a natural park, a devil dance was performed in our honour—for a handsome fee—by a party of young Lamas who were going up to Akluthang to offer a week's service to the Demon of Kanchinjinga.

On the fifth day from Jongri, including one of rest at Pamionchi—good marching, had not half of it been riding—we exchanged Lamas for English ladies as hosts; narrow tents or dak bungalows, in which the rain came through the roof and our feet went through the rotten floor, for European houses; dry biscuits for bread-and-butter. In a word, we returned to civilisation; we put on dress clothes and dined with generals and lieutenant-governors; we took a lingering, fond farewell of Kanchinjinga, seen from Observatory Hill between the flags that had been raised during the Pooja, or Day of Humiliation, held to expiate (according to some accounts) our intrusion upon its sacred solitudes.

In conclusion I shall venture to offer some general remarks: and first as to the possibility of ascending Kanchinjinga. After seeing all its faces I am inclined to agree with Mr.



H. H. K. K.

THE BRIDGE BELOW YOKSUN.

Graham and Emil Boss that there is no hope for assailants by any of the ridges or faces visible from Darjeeling. There remain the N. ridge and the N.W. and N.E. faces, overlooking respectively the Kanchinjinga and the Zemu Glaciers. From the Zemu Glacier the only access to the northern ridge is by a snowy spur or buttress, of excessive length, narrowness, and steepness. Taken in bits it is probably not inaccessible; as a whole I fancy it will prove so, at any rate for a long time to come. The chances certainly are better on the Nepal side, though the dangers are also greater. Here the climber has first to run the gauntlet of possible avalanches at a spot where crevasses may prevent rapid progress.* This critical spot passed the long steep névé stream flowing from under the ridges of the final peak is broken only by two shelves of rock, neither of which looks from a distance very formidable. Above these is a snow plateau, where the last camp might be made. The final ridge, as far as can be seen with the aid of powerful glasses, does not seem likely to offer any insuperable obstacles. The point I should feel most anxiety about in planning an assault would be the transport to the final camp. It is very doubtful whether any local coolies would go so high in the most favourable circumstances. The best men to take, in default of Alpine porters, would, doubtless, be half a dozen of Major Bruce's trained Goorkhas.

Now as to the season for such an attempt. I believe the end of September to be as good as any. It was our ill-luck that we had a snowstorm of altogether exceptional violence a month before it was due. But any one who goes with the highest ambitions would, I believe, give himself the best chance by starting boldly in the rains, taking advantage of the short fine spells that intervene in them, and being on the spot the moment they ceased. In this I agree with Mr. White, who has more experience as a pedestrian in Sikkim than any other European. The rains, it must be noted, are not nearly so bad N. of Kanchinjinga as they are at Darjeeling. We constantly saw Darjeeling wrapt in vapour when the snows were clear.

* Garwood believes that this danger may be avoided by striking the ridge connecting Kanchinjinga with a cluster of low summits, the footstool of the great mountain, that project between the Kanchin Glacier and the Zemu Pass Glacier; turning, that is, the lower ice-fall of the former by its true right, or N.W., flank. Having before me Signor Sella's enlarged photograph (No. 98 of catalogue), which shows this ridge, I am unable to agree in this opinion.

The name Kanchinjunga is said to signify *the five reservoirs of snow*, and, in fact, there are five enormous trunk glaciers which fill the hollows between its ridges. These glaciers, owing, no doubt, to the steepness of the range and to the rapid disintegration caused by the extremes of heat and cold, bring down very large moraines, and the chief blot on the mountain scenery is that the lower ice streams too often remind one of the Zmutt Glacier. Their surface swells and falls in vast undulations; pools fill the hollows; crevasses are comparatively rare; and a rope is seldom requisite. The higher névés are rent and splintered, as in the Alps; but, speaking generally, the Sikkim glaciers are less split by deep crevasses and more broken by surface inequalities than those of the Alps. The upper icefalls are perfect mazes of blocks and towers; the trunk ice-streams are a confusion of stony, mud-cloaked heights and hollows, often filled with water. On the peaks themselves the steep snow surfaces are fluted by tiny avalanches, as in the Caucasus; the ridges are heavily corniced. There is abundant evidence of a retreat of the glaciers. The Kanchinjunga Glacier once extended beyond Ghunza, some 15 miles below its present end; the Jongri pastures were once entirely covered by glaciers. In Lhonakh we noticed an enormous bed of an extinct glacier. Its feeding ground was comparatively low (19,000–20,000), and it consequently perished, when the climate improved. As in the Caucasus the ice is much in the habit of leaving long grassy alleys enclosed between the moraines and the mountain-side, which are a great convenience to the explorer. I saw no trace of lake basins excavated by ice, but a great many formidable embankments elevated by that agency (those of the Jannu Glacier are the most remarkable) and a certain number of morainic lakes.

I cannot here enter at any length into the vexed question generally, if inaccurately, implied in the phrase 'rarity of the air;' I will only point out what bearing our journey had on it. It would have been easier and more satisfactory to give the results had we not had to encounter heavy fresh snow from the outset. I will speak first for myself. We were, I believe, the first travellers to take a party of over fifty men, most of them carrying loads varying from 15 to 40 lbs., over a pass of above 21,000 ft., sleeping twice at close upon 20,000 ft. I felt intermittently slack while we were above 15,000 ft., and on reaching the foot of the final ascent (21,000 ft.), after wading over a long plain of snow followed by a short gentle slope, was completely out

of breath. After a meal I found the ascent of some 500 ft. to the pass, partly over rock, less fatiguing; and on the top, in the excitement of the discussion that ensued, I lost the sense of exhaustion and it did not return.

Mr. Garwood suffered most during the first few days we were above 15,000 ft. and least on the 21,000-ft. pass. Mr. Dover ran about as if he had been at sea-level. The only effect of altitude on him was to make him eat an extra meal, and consequently gain 6 lbs. in weight during the journey.

Some of our men—I should say about 20 per cent.—showed manifest signs of distress, first by dawdling behind, secondly by halting perpetually; but the remainder came with their loads up the last ascent very steadily. The crest itself was a snow-wave—with an incipient crevasse at its base, which, even after it had been broken through, called for a long step to surmount it. I watched the men over this, and they did not show any signs of weakness or fail to make easily the requisite extra exertion.

At lesser heights—*e.g.* on the 17,000 and the 19,000 ft. passes—we walked, I think, pretty much as we should have in the Alps, 4,000 ft. lower. At the end of our tour on a rock the height of Mont Blanc there was no perceptible slackening of energy. I do not mean to suggest that scientific tests might not have shown some. I walked up some 3,500 ft. to the Giucha La (16,400 ft.), not fast, but practically without a halt or a meal. On the whole my conclusion is the same as Sir J. Hooker's,* that, for a considerable proportion of mankind, there will prove to be no impossibility in the attainment of heights up to 22,000 ft., so long as attention is paid to diet, the attitude when in repose, and if the march is regulated and not hurried. I must add that there seems to me to be no sufficient reason for thinking that climbers may not attain 29,000 ft.

As regards general health our party suffered neither from local fevers nor from the minor pests, leeches and insects, that have harassed many travellers. I wore no gaiters and had only one leech-bite; Garwood was attacked, it is true, but it was when chasing butterflies in a swamp. To sunburn blisters both Vittorio Sella and I were victims; for this the new snow was largely responsible, but mountaineers should take masks. The route map given herewith is only

* 'An elevation of 20,000, and perhaps 22,000, ft. might, I should think, easily be obtained by practice in Tibet, north of Sikhim.'

a preliminary sketch showing roughly our tour and the extent of the glaciers of the Kanchinjinga group.

Garwood brought home a collection of rocks; but I must leave the geology of the region in his more competent hands. He will doubtless in due season communicate the results of his observations to the Geological Society, of whose Council he is a member. Garwood also collected some lovely moths and butterflies and some grotesque beetles, some of which were unluckily thrown into the water in the London Docks, and subsequently 'overhauled and dried in a laundry' by the agents of the Peninsular and Oriental Company.

We carried a good many instruments. I need only note here that the Watkins aneroid barometer worked remarkably well, tested against a mercurial barometer. We improved, I think, on the ordinary Whymper tent by making the sides upright instead of sloping for the first two feet. Our model can be seen at Edgington's.

THE DENT D'HÉRENS FROM BREUIL TO PRARAYÉ (WITH
NOTES ON THE VALTOURNANCHE-VALPELLINE RIDGE).

BY CLAUDE WILSON.

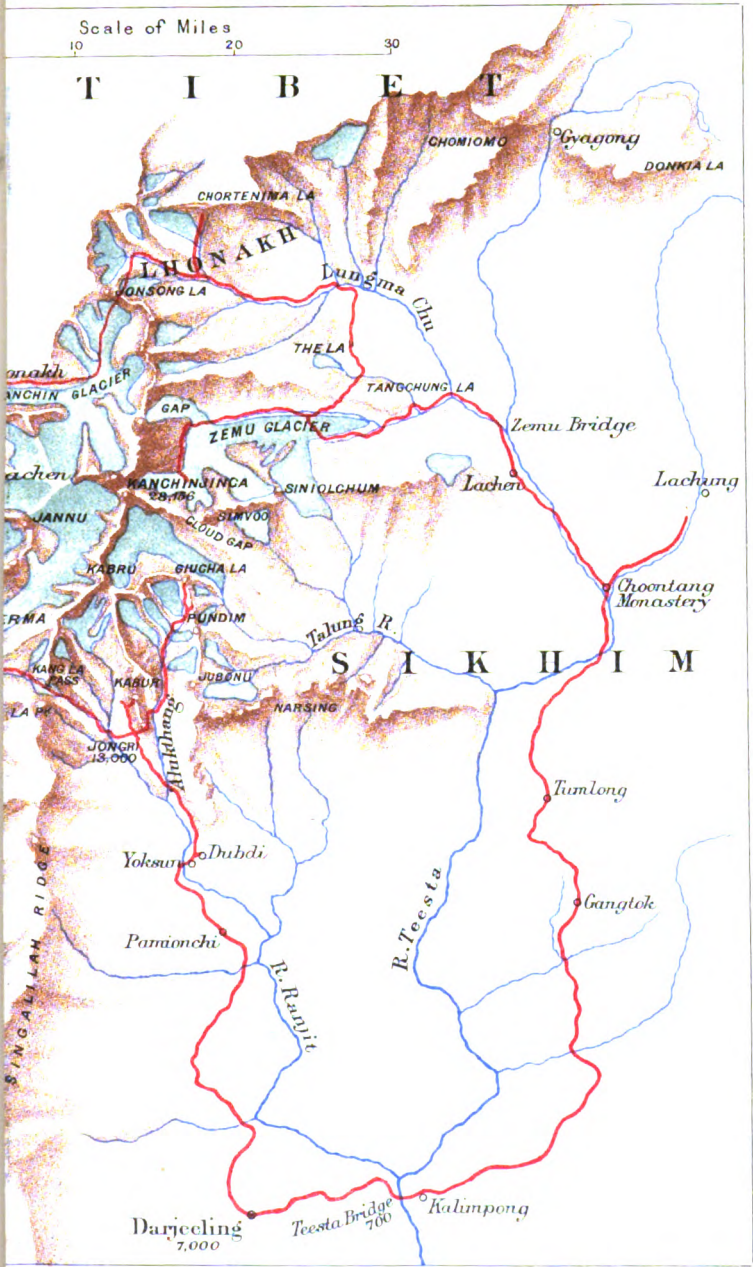
(Read before the Alpine Club, April 3, 1900.)

THE expedition which gives the title to this paper is one which was first made many years ago. It has, however, been but seldom repeated, and has been only very briefly referred to in the pages of the 'Alpine Journal.' The climb is, so far as I know, one of the finest in the Alps, presenting work of interest on rock and snow and ice, amidst scenery not easily surpassed.

As I am able, through the kindness of Prof. Kennedy, of Mr. A. G. Topham, and of Signor Guido Rey, to show a series of lantern slides illustrating the sadly mismapped ridge which separates the upper stretch of the Valpelline from that of the Valtournanche, I propose to offer some preliminary observations on the topography and nomenclature of these attractive but much neglected peaks, and to briefly refer to some of the climbs which they afford.

The ridge takes its origin in a point high up on the great eastern arête of the Dent d'Hérens, and runs in a southerly direction as far as the Château des Dames. The names of the various peaks and cols are clearly settled now, and are correctly marked on the panorama which illustrates Mr. Topham's topographical and historical notes published

MAP OF MR FRESHFIELD'S ROUTE.



Stanford's Geog. Estab. London.



Alex. B. W. Kennedy, photo.

Swan Electric Engraving Co.

**DENT D'HÉRENS AND JUMEAUX RIDGE,
From the Furggen Joch.**



Alex. B. W. Kennedy, photo.

Swan Electric Engraving Co.

DENT D'HÉRENS FROM THE COL D'HÉRENS.

in 1895.* But all existing maps are insufficient or inaccurate, and their inaccuracies do not agree; so that much uncertainty and confusion has existed. From N. to S. the named points run as follows:—

Cols des Grandes Murailles,†
Grandes Murailles,
Punta des Cors, or Punta Gastaldi,
Cols des Cors,
Punta Lioy
Jumeaux de Valtournanche (Punta Giordano,
Becca de Guin, (Punta Sella,
Col Budden,
Punta Budden, or Becca de Créton,
Tour de Créton,
Col de Créton,
Mont Blanc de Créton,
Col du Château des Dames,
Château des Dames.

On the western side these peaks, for the most part, rise steeply from a high plateau of snow; while on the side of Valtournanche they shoot up, even more precipitously, from the upper scree and pasture, in a wall of almost unbroken precipice, which can be confidently recommended to the attention, though to the *discriminating* attention, of all lovers of rock-climbing, as danger from falling stones must be ever kept in mind, and, so far as possible, guarded against by careful choice of route.

Two summer holidays I have spent, in part, at the head of the Valtournanche. In 1894 Messrs. Wicks and Carr were my companions, while in 1897 Mr. Bradby completed the trio. During these two seasons Wicks and I have visited a majority of the points upon this ridge; and, so far as the eastern side is concerned, I suppose we may be said to know it fairly well. Some short remarks upon these climbs may be of use to others; and if, in offering these, I work from S. to N. the Dent d'Hérens will be appropriately left to the place of honour at the end.

* *Alpine Journal*, vol. xvii. p. 551.

† These points, as far as the Col Budden, can be readily identified on Prof. Kennedy's photograph taken from the Breuil Joch. This plate also gives a good general view of the Mont Tabel Glacier. Both plates clearly show the point on the E. arête (probably that marked 4,078 m. on the Italian map), below the great rock tower, from which the Grandes Murailles ridge branches to the south.

The Château des Dames is an eminence up which any child may go: it is a view-point and a training walk. But its summit may also be scaled as a preliminary to the ascent of the next main point upon the ridge—the Tour de Créton—by traversing behind on snow or ice, as the case may be, or by passing over the summit of, the snow hump now called Mont Blanc de Créton. The 'Tour,' as seen from the south, looks sufficiently formidable; and, but for the existence of a very neat rock traverse at its base, I do not know if it is scalable. Possibly one might get up by passing round on to the eastern side, but the traverse to the west is obvious and interesting. The peak can doubtless be climbed along the ridge from the north, and the fine cliff visible from Prarayé will probably receive attention when that primitive centre offers somewhat improved accommodation. As to the Breuil face, Wicks and I once visited it, but were at a very early period warned against any serious onslaught by a very heavy shower of falling stones.

The Becca de Créton, or Punta Budden, may be ascended from the Valpelline side, or from Breuil by following the N. arête from the Col Budden, a very direct pass between the valleys, and interesting, though but seldom used.

The Becca de Guin is well known, and its ascent is a very pleasant expedition, chiefly notable for the long traverse below the final peak. From a point well north of the summit one passes to another on its south, along a gallery rarely wide enough for two to pass in comfort, and often only just permitting *one* to scrape along. On reaching the southern end of the ledge it is best to take to the rocks almost at once. They are easier than they look, and the more tempting way up the snow is not always free from danger.

Next upon the ridge come the twin peaks, the Jumeaux de Valtournanche. They may be climbed, probably, without much difficulty when the snow is good, or with much labour and some danger when all is ice, from the Valpelline side. The orthodox route from Breuil lies over the top of the Becca de Guin, along the arête all the way. To reach the Col direct, which separates the Jumeaux from this peak, would involve risk, both from falling stones and from cornice, even if the rocks are climbable, of which I am not quite sure. The E. face of the Jumeaux was first climbed in 1877, by Lord Wentworth, with Rey as leading guide.* Starting

* *Alpine Journal*, vol. ix. p. 4.

quite near the buttress of the Becca de Guin, they made their way diagonally upwards until about 500 feet below, and vertically underneath, the summit of the southern twin. Here, turning up a couloir, which proved to be full of danger, the S. arête was reached about twenty minutes below the top. In 1897 Wicks, Bradby, and I made a new route up the face,* climbing, as near as may be, directly up the cliff the entire way. It was after a fall of new snow that we descried what we hoped was a possible route up this great precipice, which all of us had hitherto pronounced impossible. In the course of a long day devoted to reconnoitring we made out the favourite routes chosen by falling stones, and thought we could avoid them on our climb; but we were wrong, and were more than once in danger from this cause. The expedition itself was a long one, and it was not until midday that we struck the point, about 500 feet below the top, where Rey's and our routes met. Stones were flying down the couloir briskly, so we avoided it; and, under the belief, inspired by a perusal of our 'Conway,' that the gap between the twins was easily attainable from here, made for it, and in three hours we reached it. This latter portion of the climb is quite splendid, and is free from danger. The lower part of the ascent is interesting, and in many places difficult, but by no means free from risk. Leaving Breuil at 2.30 in the morning we did not reach the top of the Punta Sella (the S. twin) till nearly 5 P.M., after one of the longest and one of the hardest rock climbs that any of us know. In view of our experience on these rocks we are compelled to accept with some reserve the statement, freely copied from one source to another, that in the year 1877 Signor Corona reached the gap in five hours from Breuil. Such an achievement would indeed be phenomenal; and it would appear to us that some mistake of time or place exists. It took us five hours to reach the *foot* of the final cliff, and eight more hours to climb it to the col—that is, twelve hours in all, exclusive of halts—and if we had to repeat the expedition I do not think that we could find an easier way, or that we should be able to save more than an hour or two.

Of the Punta Liroy and the Col des Cors I know but little, except that the Col has been crossed and the point ascended. The pass is probably best reached by climbing to some height upon the Punta des Cors and then traversing to the left; and the Punta Liroy appears to be quite climbable from

* *Alpine Journal*, vol. xix. p. 60.

the Col. The next peak on the ridge is the Punta des Cors, and the ascent of this mountain by its east arête is one of the finest and one of the safest expeditions in the district. North of this rise the Grandes Murailles—easily scaled from the col of the same name, or from the west—and north of the col the ridge sweeps gently upwards to join the east arête of the Dent d'Hérens, in the point which from Breuil appears to be the summit of that mountain, though really about a thousand feet below the actual top.

The Dent d'Hérens is most frequently ascended either from the Stockje or from Prarayé—by the west or by the south-west arête. The north-west arête has also been climbed, and the upper part of the east arête, above the point where the Grandes Murailles ridge joins it. Attempts have been made to climb the east arête throughout, and Mr. Evan Mackenzie, who knows this district very well indeed, has, at great sacrifice of time and labour, reached one or more of the great rock steps or teeth, which form conspicuous landmarks on this ridge.

The ascent from Breuil by way of the Col des Grandes Murailles has long been regarded as an exceptionally fine expedition, though it would appear to be but very seldom made. The descent must almost of necessity be into the Valpelline or to Zermatt, as to return to Breuil would, in the latter part of the day, involve considerable danger. The ascent may be divided into three stages, the upper plateau of snow at the foot of the Grandes Murailles marking the completion of the first. Mr. Topham has reached this point by ascending the rocks on the northern bank of the glacier of Mont Tabel, the séracs of which may also be turned by climbing to some height upon the Punta des Cors, and then descending.

But the route up the great icefall is likely to attract the generality of mountaineers, and, though not quite free from risk, is, if taken in the early morning, probably less dangerous than either of the alternatives.

The second stage of the ascent ends when the Col des Grandes Murailles is reached, whence the final peak may be attacked either by the S.W. or by the E. arête, or possibly an intermediate route can be made up the face, though this has not yet been done.

On the occasion of the first ascent from Breuil Mr. A. G. Puller, with J. J. and P. Maquignaz as guides, and Louis Carrel as porter,* started on July 17, 1873, at 3.15 A.M., and

* *Alpine Journal*, vol. vi. p. 294.

climbing the icefall reached the plateau at three in the afternoon ; and here they camped. Next morning (the 18th) they started at 4 A.M. and completed the second stage by arriving on the Col at half-past eight. How they managed to occupy so much time over the third stage is not quite clear. Commencing the ascent of the final peak by the S.W. arête, they traversed higher to the true west ridge, but did not reach the top till four o'clock in the afternoon, having taken more than seven hours over the thousand feet ; and it was not till twelve hours later (4 A.M. on the morning of the 19th, the third day of the expedition) that the party arrived at Prarayé.

This history was unknown to us when we made our ascent, and we thought that the twenty-two hours which we spent was probably a record performance as the greatest length of time. We had made friends with a member of the great Carrel contingent, of lengthy limb and swarthy complexion. He had traversed the Dent d'Hérens more than once, he said, and he assured us that we would certainly arrive at Prarayé by seven in the evening at latest, though, as it subsequently transpired, he had never himself been so fortunate as to reach this goal on the same day as that on which he started. Our friend was very agreeable, and very communicative, and if the information he imparted was of dubious value it was certainly tendered in a truly cheerful spirit.

On July 24, 1894, I entered at 1.15 A.M. the *salle à manger* of Peraldo's hotel at Giomein. Being the last of the three to appear, I found Wicks and Carr engaged over the sacks in an altercation as to what was to be taken and what left behind. We were to be our own guides, and we had provisions for a long day to carry, as well as such change of raiment as was deemed essential to a night at Prarayé. Carr wished to take slippers for the night, and less drink for the day: *he* was never thirsty, he said. Wicks considered slippers quite superfluous, but thought a liberal supply of beverage essential. The discussion waxed extremely warm and was carried on with much wealth of invective. In due course it terminated ; and when I had caught the others up in the matter of consuming what food one can at this unpleasing hour, we turned out into the night at 2 o'clock, Wicks leading, lantern in hand. It is our custom on our annual holiday to let the guiding go the round ; each man has his day ; and I do not think that I shall overshoot the mark when I say that the early stages of Wicks's day are looked forward to by his companions with feelings of apprehension—if not of dread.

A little respite there was for us this morning, as the road lies first of all downwards and then across the flat. In an incredibly short time, however, we arrived at the opposite side of the valley, where the ground rises sharply towards the chalets of Cors. Wicks knew exactly where the narrow path left the meadow, and without a moment's delay he proceeded to lead up it at that pace for which he is so justly admired and so greatly feared. Expostulation is useless or worse: it produces no rejoinder; but seems to stimulate our leader to still greater effort; and we suffer less if we bear it silently. Later in the day Wicks is, as to pace, much as other men; but in the early morning hours it is terrible to find oneself behind his lantern. Perhaps I have said enough upon this painful theme; and our agony this day was brief if it was sharp, for at 3.30 we found ourselves upon the glacier's edge, and before long were glad to find that our leader's energies had perforce to be directed into another channel; for the ice was hard, and many were the steps he had to cut. Here Carr and I could puff and pant in peace, with feelings of much thankfulness that an hour of trial had come upon our energetic friend.

The icefall of the glacier of Mont Tabel is intricate; in some seasons it is probably impossible to scale: in the afternoon it must be always dangerous. We fed from half-past five o'clock to six, about half-way up the fall, but much hard work had Wicks to do before, soon after eight, we emerged upon the snow field at the top. Here stones fall from the rocks above, and have to be looked for. So silently do they come sliding or bowling down the snow that one may easily be hit unless a careful watch is always kept. At nine o'clock we reached the rocks on the south bank of the great couloir which marks the Col des Grandes Murailles. Some little difficulty was found upon these rocks, and in traversing the couloir itself; so that it was a quarter to ten before we prepared to make our second meal upon the northern buttress.

The climb to the Col occupied just two hours. Whether there was danger from stones quite near the couloir I cannot say; I do not recollect: there may have been, or the rocks may have been rotten, and consequently more or less unsafe. Be this as it may, I know that Wicks found some excuse for working to the right. Now to the right were slabs, and Wicks loves slabs. Holds can't give way if there are none to give. More and more to the right we went; slabbier and slabbier got the slabs; happier and happier grew Wicks. Misery and consternation were depicted on my face and on

that of Carr, intensified as each attempt to deflect our leader's course resulted not only in failure, but in a fixed determination on his part to lead us into positions of still greater insecurity. Our first attempts were crude, and justly doomed to fail, for such remarks as, 'Why can't you go to the left, where it's easy?' were hardly calculated to attain their end. As, however, our position became more and more alarming our accents changed to more persuasive tones, and perhaps we vainly flattered ourselves that such remarks as, 'I say, Wicks, old man, don't you think it's rather better to the left?' might produce the effect that we so ardently desired. Wicks saw through the subterfuge at once, and, without speaking, moved along a ledge still further to the right; and so we made our minds up to the worst, consoling ourselves with the reflection that we were, after all, really approaching the top of the great rock wall. At half-past twelve we stepped on to the snow, and, as the saying is, we breathed again; and here a bitter blow awaited us. That we were not on the top of our peak of course we knew, but that the extra ten or twelve hundred feet should present so formidable an appearance was not what we had counted on at all. From Valtournanche village the bit above the Col does not look much, and we had somehow conceived the idea that once the Col was reached our work was mainly done. We now saw our mistake; for, at a distance of perhaps half a mile, the peak rose steeply from its bed of snow. It was over this last piece that Mr. Puller's party took between seven and eight hours, and though we did not know this it was obvious that much hard work and considerable difficulty lay between us and the top.

Our intention was to *traverse* the peak, ascending by the east arête, descending by the west, and so to reach the Tiefenmattenjoch. An hour took us to the foot of the great gendarme, the well-known landmark on the east arête, and at 3.10 we stood upon the top, having with much difficulty, on account of ice, turned the great tower on its south, and subsequently scrambled with delight up the excellent rock ridge which leads from this point to the summit.

I cannot say I recollect the view. The way was long, the wind was cold, the hour was late; and little was the time we halted there prior to starting down the west arête. Our intention had been, as previously stated, to descend this ridge throughout, but unfortunately the snow, at first fairly good, was replaced, as we got lower, by watery slush, lying on slippery ice. To have cut so many steps would have pro-

vided too protracted occupation, and we looked for an alternative route down. On our left was a rock cliff only a few hundred feet in height, and at the foot of this the glacier of Za de Zan stretched south and east. Clearly the first step was to descend these rocks. Fortunately they presented no difficulties of a formidable nature, and just before leaving them to cross the bergschrund we snatched, at five o'clock, a hasty meal, and discussed the question of our future course.

To have ascended over the névé, and so joined the route which descends from the Col des Grandes Murailles in the Valpelline to the south of the Tête de Roëse, would probably have been our quickest way; but to commence ascending at 5.30 in the evening is repugnant to well-constituted minds. We had already come too far down for that; and the idea, if ever entertained at all, was never really seriously considered. Two alternatives remained; for to go right down the middle of the icefall would apparently be a matter of some weeks. To the right, close to the rock wall, we might be able to effect a descent and join the Tiefenmattenjoch route, but this seemed dubious. The only other course was to proceed obliquely downwards and across the glacier, and so reach the upper level of the Tête de Roëse. This route, which involved much winding among séracs and crevasses, we elected to pursue, though in one or two places it necessitated our passing beneath toppling towers which looked far from secure. The distance was considerable, and the route intricate, so that both the choice of way and its carrying out demanded thought and plenty of hard work; and it was not till eight o'clock that we reached this haven of safety; and here in this lonely spot a great surprise awaited us, for it was here first that Satan assaulted the party in the innocent guise of Carr, who was prompted to suggest that the shades of night were already falling fast, that here one might lie in comfort and security, that lower down we should become benighted on a narrow ledge of rock or on the chilly ice: Why not lay down our weary forms and end the day in merited repose? The Devil retained possession of Carr, inciting him to make a like suggestion on more than one occasion later on, and once or twice his counsels seemed in danger of prevailing. However now, as later, a majority deciding against him, on we went, down the rocks, and lucky indeed we were in that dim light to find a way. At 9.15 we reached the foot, and sat down on the left bank of the flat glacier to light our lantern and consume another short and chilly meal.

Not knowing that our proper course would have been to

keep to the left of the ice and the left of the stream, we decided to go more as the crow flies, and, having packed the remnants of the food, were proceeding to cross the easy glacier towards its right moraine, when a startling ejaculation from Wicks informed us that something was amiss; something 'serious,' I had almost written down, but the vigorous life which Wicks imparts to simple and short words when the match with which he hoped to light his pipe suddenly goes out, or when he unexpectedly finds his gloves are wet, is so well known to his associates that his loudest exclamation generally fails to excite much apprehension; and this is what was troubling him now: On starting after supper in the dark he had picked up Carr's sack, and Carr had his. Both sacks are made of old green Willesden canvas, and both were just alike as to their weight. Few men would notice any difference, and personally I confess the one is as the other one to me; and yet to Wicks and Carr the substitution was detected instantly, in the dark; and if Wicks's shout came first, it was followed a moment later by one from Carr, and the sacks were quickly changed. The choice between leather and webbing shoulder-bands may afford some of us matter for weighty thought and argument; to my two friends it presents no difficulty at all: they, however, adopt opposite views; and keen is the pleasure given to their friends each time this classic argument recurs.

For some distance we proceeded down, and diagonally across, the flat and easy glacier; and by-and-by we came to the moraine, where undreamed-of tribulation awaited us. To follow our course through the mazes of these miserable stone heaps, and on the steep side of the valley which succeeded them, would supply a theme too painful to discuss. It seemed interminable; yet, like all other things, it had an end, for, just as Carr was proceeding to make his bed on something like a newly metalled road, lying at an angle of forty-five degrees, with a gorge and torrent yawning just below, some one suddenly shouted, 'Here's the path,' and on we went once more. Perhaps it was not really very far: it seemed a long, long way. The path led over slopes of scree, through scrubby vegetation mixed with stones, then zigzagged down through a little wood, very tempting with its bed of moss and leaves, then among pastures, over a bridge or two, into another wood and out again, and then, ten minutes before midnight, whilst crossing a soft meadow by a stream—quite suddenly—our light went out; and a halt was made to light another candle. While Wicks was working with the

lantern Carr and I looked around at the vague and shadowy hills on either side; and, for the last time that day, the evil one again assaulted Carr. He was the only one of us who had ever been in the head of the Valpelline before, and several times we had vainly appealed to him to ask if he identified our whereabouts. Here, at last, he seemed to have got his bearings. 'Look here,' he said: 'I vote we lie down here; I recollect this place, and Praraye is a good two hours further down the valley.' But five minutes later we had the laugh of him. Our lantern was again upon the path; we crossed a bridge and walked perhaps a hundred yards or so, and turned a corner, and—there was the inn. Truly an unpretentious place it was, as we had been given to expect; but we were hardly prepared to find that two boxes of sardines and a very small tin of salted beef constituted its sole resources that night. No soup, no bread, no wine, no anything. Hungry we went to bed at half-past twelve, but slept the sleep of weary, well-worked men.

Next morning, getting up again at nine, we learned to our relief that the scanty commissariat included eggs. Would we like an omelette; our hostess asked, and if so how many eggs should she put into it? We ordered an omelette of twenty-seven eggs, and on this filling meal started towards the Col de Val Cournera, an interesting walk, very bare and wild in the region of the two half-frozen lakes near the top, and very beautiful as one passes, lower down, through the meadows of the Fontenella Alp, and over the little Col de Dza, into the Valtournanche below Mont Rousse. At six in the evening we trailed slowly up the steep little bit of hill which separates Breuil from Giomein, and reached our hotel thirty-eight hours after leaving it. A hot bath, a good dinner, a comfortable bed, and a long night succeeded each other in rapid and appropriate rotation, and thus ended an expedition the memories of which remain to brighten our declining years.

My task at last is done: my tale is told. I feel that some apology is due for having dwelt so much upon the topographical details of our route. The glacier of Za de Zan and its surroundings are badly mapped; that is my excuse; and our hope is that those who follow may gain a hint or two, and possibly save an hour or two of ill-spended time, by that little knowledge which, though proverbially dangerous, is, if accurate, better than none at all. As a rule nowadays the writer of a paper on any portion of the central Alps can hardly hope to instruct his readers; for have we not got our

'Conway' ever with us? Unfortunately in this unhappy region 'our Conway' has been sadly misinformed, and with only existing documents and maps at his disposal, it is hardly possible that it could be otherwise. Consequently I have done those things which I ought not to have done, and have introduced dry detail to an extent scarcely tolerable save to those few who may be stimulated to further explore this region. Not less evident to myself is my failure in having left undone those things which I ought to have done. For, if to *instruct* is optional to a writer of a paper in these pages, to *amuse* has always been very properly considered quite incumbent, and the latter is perhaps a fitter end to which a modest member may aspire. And yet it would appear that my regard for veracity must ever stand in the way of success in this particular; for, as I heard a lady say the other day, 'no one who is very accurate can be amusing,' an aphorism, perhaps hardly open to dispute, so far as things in general are concerned. And yet it came as a rude shock to me to be suddenly informed, as I was some years ago, that the readability of the earlier records of mountaineering had been insured by a proper appreciation of this fundamental fact. A little while prior to the first occasion on which I had the honour of addressing the Alpine Club, I sent my paper to a trusted friend, at that time a regular attender of the meetings, and asked for criticism; and this is what I got: 'It's all right in the main,' he wrote, 'but to make a paper really go down at the A. C. you want a few good lies.' 'Everybody does it,' he continued; 'half of those amusing old accounts are full of them; and you can easily shove one in just here and there, whenever you think you are getting a bit prosy.' I confess that it took some little time to accustom myself to the idea so clearly and so ably placed before me; yet, since it really sank into my mind, it has ever been my wish to comply with a custom which has yielded such admirable results. Unfortunately my endeavours in this direction are so hampered by a lively fear of detection, and consequent exposure, that I have frankly to confess my achievements in the realms of prevarication to be most meagre, and quite out of keeping with what might have been reasonably expected of one who yields to none in his admiration of the doings and the methods of those bold spirits of the early days.

Two duties, sanctified by ancient custom, I have yet to discharge, duties which can never be altogether neglected. Firstly, while carefully concealing my own failings, I must hold up to ridicule the weaknesses of my friends; and

secondly, I must not omit to eulogise the conduct of my guides. As to the first, possibly some extracts from the foregoing pages may be held to sufficiently, if inadequately, discharge the obligation. To the second, in conclusion, I now address myself. But as, in the present case, the two are one, the companions and the guides—or, rather, let us say the four are two (which is absurd—the two are only two)—I trust that no confusion will arise. How Wicks started off that morning nineteen to the dozen I shall not very readily forget; nor how Carr shouted after him and asked why he wanted to go so fast; nor how, later on, when Wicks, after an arduous assault upon the ice, wished to admire the view, Carr mildly asked what we were waiting for, and suggested that we should never get to the top at that rate. How they cut steps in cliffs of ice, and pulled or pushed each other up and down, are matters which remain almost as vivid in my memory as how they jumped about upon my head and said, ‘Now duck,’ and, when I did, sent showers of ice chips down upon my neck, which rattled down my back inside my clothes. These and many other memories of the doings of my guides—such as a dreadful, unexpected jerk, which took my wind and interfered with my digestion, and landed me beside them on what the soldiers speak of as the ‘ground gained,’ now crowd upon my somewhat muddled brain. *How* all these things, and many others, happened, or did not happen, as the case may be, I do not know, nor is it perhaps needful to inquire. My guides behaved with valour and with intrepidity; to them my admiration and forgiveness are ungrudgingly conceded; and to them, in conclusion, I would say, ‘Let bygones be bygones; let’s cry quits; and may we live to have another climb as good all round as this.’

AT THE BACK OF THE TITLIS, AND OTHER PLACES.

By W. C. COMPTON.

II.

THE following pages are a belated continuation of an article in the February number * of this Journal, and are concerned with some other expeditions about Stein (of which it may be said that the rolling it has had in this year’s Journal ought to have kept it from gathering moss), and one

* Vol. xx. p. 20 *sqq.*

at the back of the St. Gotthard and Furka. The reader is promised that there shall be no further allusion to the Fünffingerstöcke, of which he may now fairly say, *Ohe! iam satis.*

A very easy and short expedition to begin upon is the ascent (or traverse rather) of the Vorder-Thierberg, which lies S. of the Steinlimmi. The morning of August 15 last year was not promising, and an attack intended for the Hinter-Thierberg was abandoned. Yet, as it was not hopelessly bad, something must be done. And so at 7.15 the party already named set out with a very open mind towards the Steinlimmi Glacier. To our left rises the Thierbergli, which supports the upper névé of the Stein Glacier, behind it the Gwächtenhorn, and further to the right the Thierberge and the Steinlimmi, which leads to the Trift Glacier. Quite to our right is the Giglistock. The first and last of these are voted out of court as uninteresting, and we proceed along the Steinlimmi Glacier, and soon form an idea of trying our fortune with the N.E. arête of the Vorder-Thierberg. On nearer inspection, however, we observe an ominous streak of detritus at the foot of this ridge, and decide to push on to the N.W. arête, which rises from the Steinlimmi. The weather was improving, and bearing upwards over fairly steep ice, with two *Bergschründe* to negotiate, we struck the arête some 300 to 400 ft. above the col. A halt of 35 min. sufficed for a second breakfast, and by 11.15 we were following the arête on tolerably sound rock, till it reaches a considerable eminence from which it bends to the E. This point we avoided by a traverse on the N. face, which is not sound, rejoining the arête for a short distance, till an *enjambée* forced us down again to the N. face. A short but fairly good scramble brought us on to the ridge again, and then we varied our route by a long traverse on the S. side. Here basking in sunshine were patches in some profusion of the lovely blue *Eritrichium nanum*, one of the sweetest of Alpine flowers, which is to be found high up on the most out of the way rocks of this part. In colour it vies with the gentian, and in growth it resembles a tiny forget-me-not. We found bright little patches of it even on the bare crags of the F—; but no, they shall not be named again. We were soon once more on the rock ridge and then on the snow arête which makes the corniced cap of the peak, as seen from near Stein, look like a slice of wedding-cake. We had reached the summit (3,091 m.) in 65 min. from our last halt. Here we lingered 45 min. prospecting and getting photographs. Below

us to the S. was the Zwischen-Thierbergenlimmi, behind which rises very precipitously the N. face of the Hinter-Thierberg. Descending by the E. arête over easy snow, we skirted some fine séracs from the Gwächtenhorn, and soon reached the Thierbergli, which 'rises out of a motionless sea (of ice), a level space and a friendly resting-place for sun-loving cormorants.' Plainly the Mantuan had hungry climbers in his mind when he thus speaks of the bird so famed for its appetite. This spot may be commended as a view-point to those who would study the topography of a certain group recently discussed in these pages. To another class it presents attractions also. For whence may such a glissade be made as that which leads from the plateau of the Thierbergli to the Steinlimmi Glacier, lying more than a thousand feet below, almost in one unbroken slide?

A careful perusal of the visitors' book at Stein enabled us to place this climb to the credit of Mr. and Mrs. Baker-Gabb.* The whole route can be followed easily on the photograph, by Mr. Hope, facing p. 30 of the present volume.

The expedition we had set our hearts on from the day we crossed the Susten pass from Wasen was an ascent of the Hinter-Sustenhorn (3,320 m.) from the Stein Glacier, of which we knew of no record. The peak is imposing as seen from the Meienthal (N.E.), and presents a rock face to the W., as shown in the photograph by Mr. Hope facing p. 118 of the last number, which invited a further acquaintance. We therefore took every opportunity to reconnoitre this W. face and the approaches thereto. And a bad day (August 16) had afforded a suitable occasion for a reconnaissance in force to the lower slopes of the Bockberg,† whence we could trace the route followed by Herr G. Studer, who made the first ascent of the Sustenhorn proper from this side, and one or two subsequent parties, the last of which (Mr. Kirkpatrick's) had left a record showing that a snow couloir facing the Bockberg had been used as an approach to the rocks which are marked higher up by three curved bands of snow, to be recognised in Mr. Hope's picture. These parties had crossed the snow bands and borne away to the right (S.) till they reached the dip in the ridge between Sustenhorn and Hinter Sustenhorn. Our route would lie to the left, straight up to the summit of the latter.

* *Alpine Journal*, vol. xix. p. 252.

† This is the mass of rock near the left side of the picture, by Mr. Hope, facing p. 30.

The weather on Sunday (August 20) began to clear, and at 2 A.M. on Monday a bright moonlight showed us our goal sparkling with that exquisite shadowy grace which only the mountains can reveal at night. Soon after 3.30 we were on the march, accompanied by the St. Bernard dog who makes every ascent he is allowed to. This was to be a new venture ; so we thought he would be better at home, and homewards he had to trace his steps as we turned the corner leaving the Inn out of sight. Skirting the rocks of the Bockberg by the route we had made and marked by stone-men, we were on the glacier we had to cross to our couloir as daylight outshone the moon.

Encountering no difficulties in crossing the crevasses of this branch of the Stein Glacier, we soon reached the further (S.) of the two snow couloirs, up which steps had to be cut all the way, for the snow was hardened by the frosty night. At the top of the couloir a short rock chimney leads into the greater couloir on our left. This we traversed to its right bank, and ascended the easy rocks on that side, out of the way of possible stones, to a breakfast-place. Thence we recrossed the snow patch on the couloir and climbed over good rocks to the first and second snow band, still cutting steps whenever we came to snow. Crossing the second band straight up towards our goal, we took to a rib of rock to the left (N.) of the third snow patch. Here the rocks were interesting and very firm, affording pleasant alternations of climbing and walking on terraces where loose stones caused no inconvenience. Finally we took to the stone couloir leading to a gap just south of the peak. Here, and generally near the ridge, the rock is very loose. Everything we dislodged went bounding down into the great couloir we had ascended earlier in the morning. We kept close to the rocks on the N. side, to avoid the stones as far as possible. On gaining the gap (9 A.M.) our ascent was accomplished ; for the summit was reached over an easy slope from here at 9.10 A.M.

A capital climb of 3 hrs. was rewarded by an excellent view, the point standing out as a spur of a long range, and so commanding an extensive panorama, only limited towards the S. by the Sustenhorn, which rises 600 to 700 ft. higher. A bottle contained the two records mentioned in Studer, one by Dr. Gröbli, who climbed from the Voralpthal by the E. face, descending the same way (August 6, 1891), the other of an ascent (July 22, 1894) from the Sustenjoch by Herren Fynn and Eckengren.

Our intention was to return by the Sustenhorn (3,512 m.)

and the usual route thence to Stein. But how to reach the summit, which was separated from us by a very formidable arête bristling with teeth? To the left the E. face appeared impracticable, owing to the rotten nature of the rocks. To follow the edge of the arête would, even if possible, be a matter probably of several hours' hard work. We decided to retrace our steps to the gap and then traverse on the W. face. This we found feasible, though it involved a gradual descent over very bad rocks, quite devoid of attraction, and across several snow couloirs, where the axe had to be used again, till at last we reached the arête at its lowest point and thence followed the easy route to the highest peak, which had been taken first by Herr Studer, and followed quite recently by Mr. Kirkpatrick's party.* It was 1.30 when we reached our second peak, with its stack of bottles and other tokens of popularity. The snow storm of a few days previously had decorated the rocks near the summit with white lace in the most fantastic designs, and so gave us something to admire in the absence of view, which the mists now completely excluded.

It remains to mention the very interesting account in the S.A.C. 'Jahrbuch' † of a solitary climb by Herr Helbling, who had the year before, unknown to us, followed the ridge almost the whole way in the reverse direction, only turning a few of the last teeth near the Hinter Sustenhorn by a traverse to the W. He speaks of the climb as a very fine one, and made his descent to the Voralp by the E. slopes of the mountain.

It would probably make a very fine expedition to cross the Hinter Sustenhorn by the W. face and N.E. ridge; the latter is pronounced by Herren Fynn and Eckengren a climb to be strongly recommended.‡ The traverse of the W. face of the S. arête cannot be spoken of with very much enthusiasm.

We left Stein two days later by a traverse of the Stücklistock from the Sustenjoch, recorded as a new expedition on p. 599 of vol. xix. It is perhaps hardly worth repeating, though the position of the Stücklistock makes it even a better view-point than the Sustenhorn. The rocks, however, are very suggestive of the name, and of that kind of thing one finds it possible to know what a satiety may mean. When a mountain fires occasional volleys at its would-be conquerors it is only the fair fortune of war. But when the climber has to hold his mountain together as he climbs it, and knows that no one can climb the same mountain after

* Vol. xx. p. 82.

† Vol. xxxiv. pp. 114-119.

‡ *Alpina*, ii. 17.

him, because it will not be there, it is doubtful whether the form of sport is as exhilarating as that of dealing with really permanent works of nature.

It must be confessed that something of the same kind may be said of the climb with which this paper must close. But there is something specially attractive about the surroundings of the Pizzo Rotondo, which will not be altered by the fact that the Pizzo of 1900 cannot be that of 1899.

The Stücklistock led us to Göschenen by a lovely walk from the Voralp hut, where we partook of 'afternoon tea' and a welcome rest after weary moraines. The lower part of this valley and the Göschener Alp deserve a better acquaintance than has been accorded them by most English tourists, who, it may be added, are seldom found E. of the Grimsel.

From Göschenen it is now a very simple process to reach Airolo, to lay in there a stock of provisions, fruits, &c., to view the landslide and the operations still going on to render the village safe from a similar disaster, and to take the road that leads westward up the Val Bedretto to All' Acqua, one of the sweetest spots in the southern valleys of Switzerland. All' Acqua. Well may it be so named. Was there anywhere such an abundant supply of water, and water too of a purity rarely to be found in the Alps? The streams here are all as clear as crystal. No snow-fed whiteness laden with mineral from the glaciers sullies the matchless virginity of those waters. No icy chill forbids a bath in the pools the river forms as it winds down the valley. And then the little *albergo*—once the curé's house, now the headquarters of the *dogana* of the valley. If you would know how a really rustic inn can charm the wayfaring man, try All' Acqua.

Whilst waiting for our supper we descried a familiar figure coming up the valley alone, but evidently intending to spend the night at our *auberge*—our old friend of two years ago, Herr Gustav Euringer. He too was bound for the Pizzo Rotondo; so we should probably meet at the summit, as we had on the Herbetet, of which he has courteously left a record in the 'Jahrbuch' of the Swiss Alpine Club.

The simple hospitality of mine host of the *dogana* was followed by no disturbance to the sleep of the just, and renewed at a reasonable hour (3 A.M.) for breaking the short fast, and before it was light our two parties were ascending the wooded slopes above the chapel towards the S. buttress of the Pizzo Rotondo.

This mountain has attracted very little attention from

English climbers ; and not much information is to be gained from the visitors' book at All Acqua. Two or three Italians or Swiss have given some account of it ; a few others have recorded their intention of attacking it, but have not returned to report the result. For the most part what may be found is suggestive of reasons for leaving it alone. But though our experience points to the fact that the peak is perishing as rapidly as any, it may be climbed without either difficulty or danger.

After reaching the snows of the Passo Rotondo we may strike the S. arête by one or more of the couloirs at or near the gap separating the Pizzo from the Poncione di Ruino, and follow it without difficulty till the last tower presents a face which may be turned on the W. side, the actual summit being reached from the W. or N.W. This arête was first climbed by Mr. Coolidge, July 17, 1888, but he gained it by a couloir much further N. than the one now usually followed. Or the Rotondo glacier may be followed further N. until a rib is reached which runs straight up to the northern summit, which is separated from the highest point by a rather difficult ridge. This is the route followed in August 1869 on the occasion of the second ascent.* This party descended on the N.E. side, by a snow slope marked by falling stones, below the ridge connecting the two summits. This snow slope is clearly seen from the N., and was observed by our party as a possible route that would have saved a long *détour* round the N.W. foot of the peak in the descent towards the Furka. Herr Euringer and his local guide, the son of mine host of All' Acqua, made for a couloir running down from the S. ridge ; and as we watched them attack it we observed the mountain's resentment, indicated by showers of stones. We therefore determined to try further on where a snow couloir divides the W. face between the two summits. Being in the shade this appeared likely to be safe for an ascent ; and so it proved. Nothing came down, and we cut steps up to within 100 ft. or so of the gap without difficulty. The safest route would probably have been to follow the couloir all the way to the gap, and then climb the ridge as from the N. to the S. peak. Not knowing that this had been found practicable, nor being acquainted with the eccentricities of the mountain, we bore up a side chimney to the right, towards the highest point. The loose rocks were mostly large blocks, and the question was not one of falling

* S.A.C. *Jahrbuch*, vol. vii. pp. 173 sqq.

stones, but rather of falling masses or boulders. Every now and then Abraham Müller, who was leading, called to us to beware of this or that block ; and, when all the difficulties were surmounted without any mishap, he evinced a very well-marked determination to descend by a different route. As was expected, we found Herr Euringer regaling himself among the delights of the prospect from the top. As the Pizzo Rotondo enjoys the distinction of being the highest peak of the Gotthard group the panorama is naturally extensive—indeed, wonderfully so—though the great ranges are all fairly distant. The ascent, with all its faults, is a capital climb, and the excursion as a whole worthy of being better known.

We decided to descend by the usual route, along the S. ridge ; and though the couloir, whose manners we had objected to earlier, was not exactly fascinating, we found no serious difficulty about leaving most of it as we found it. Herr Euringer had kept on the arête to a point lower down, whence it is easy to descend on the E. side to the Pesciora Glacier, and so down to the Val Bedretto, without revisiting All' Acqua. Our route to the Furka lay in the opposite direction, and crossing the Passo Rotondo, and descending a few hundred feet to turn the great rocky N.W. spur of the northern peak, we found ourselves on the curious semi-circular shelf of snow which lies high above the Geren Glacier, and round which rise the craggy summits of the highest points of the Gotthard Group. Passing under these nearly on a level we gained the Muttén Pass in an hour and a half after leaving the Rotondo Pass. The descent of the Muttén Glacier is easy enough ; but, unfortunately for those who are bound for the Furka, nature has decreed that its outlet should flow down to Realp and the Reuss, so on reaching the foot of the ice we had to reascend to a third pass lying between the Blauberg and the Thierberg. A wearisome climb was rewarded by the sight of some wondrous clumps of gentian, and a fine view of the Galenstock with its great cornice ; but what was the dismay of the party to find themselves still separated from the Furka by a steep descent more than 1,000 ft. over villainous slopes of boulders and scree, only broken by occasional low precipices. At this point I fear the organiser of the expedition did not meet with the gratitude he might have expected ; but even stone slopes have an end, and in due course the party, which had split up in the attempt to find the best (or least exasperating) route, reunited on a grassy sward, and by four o'clock descended to the civilisation, crowds, and dust which appertain to the Furka Pass.

BETWEEN FUSIO AND VEGLIA.

BY A. CUST.

A SUCCESSFUL season in 1898 enables me to sum up some remaining notes on my old district. At Fusio, where I made a lengthy preliminary stay, the hotel is one of those smaller mountain inns where you are quiet, comfortable, and without the noise and pretension of larger establishments. You are waited on by one of the family, and receive individual interest and attention. It is open early and late, and early in the season the walks through the meadows are charming with a profusion of flowers. Those who come up the valley should drive as far as Cevio or Bignasco* and then walk. The bridge at the latter is the only valley spot whence both the Basodino and Campo Tencia can be seen at once. For an hour above this the scenery is attractive, the stream itself charming with its delightfully clear emerald water, surpassed only by that of Verzasca,† tinting the light-coloured rocks in its bed, and cascades tumbling into still pools like champagne froth.

An interesting excursion is over a pass to the head of Val Prato (Passo di Fornale, 2,315 m.),‡ which is closed in by the bold crags of the Campo Tencia; the descent to Prato commences with a gorge down which a remarkably constructed track is carried along the cliff face,§ and, with the usual contrast of these side valleys, ends mid luxurious chestnut scenery as it winds round to Prato.||

To the climber I commend from its appearance the Pizzo del Piatto di Rodi. Ladies—and to those who like to enjoy Nature in tranquillity this place is well adapted—would have no difficulty in picnicking on the Pizzo Scheggia (2,589 m., pronounced Skedjia), which commands one of the best views in the neighbourhood. I went there (1898) in search of an intermediate pass between the Campolungo and Sassello, afterwards completing the exploration

* I found the hotel here closed, but it reopened in 1899 under fresh management.

† See *Italian Alps*, page 6, the first two chapters of which should be read by intending visitors to the valley, and *Alpine Journal*, vol. x. page 148. I have noticed in one of these valleys this tint commencing even in small rivulets across the path in pools you can step across.

‡ The names in brackets in this paper are now proposed, the more important ones having been submitted, along with other details of the paper, to authorities abroad, for whose kind aid I here express my indebtedness. In going from Fusio to Val Verzasca it would be better, instead of the Redorta, to combine this pass with the Passo di Piodajo (2,319 m.), by which and the Passo di Cabione in 1880 I reached Peccia from Chironico. (These were local names for passes not named on the map, *Alpine Journal*, vol. x. page 149.) It is better taken this way, it being a long pull up on the other side. There is only one passage in a belt of rocks guarding the pass E., a steep bit of grass and rock for a few feet, with some steps. I think, hit off by keeping well down to their lower end next the gorge.

§ See *Italian Alps*, page 25.

|| At the bridge here is a shop-restaurant with a pleasant upstairs sitting-room.

from Airolo (September 13), when I discovered on the W. side of the summit a pass (Passo Scheggia) marked by a conspicuous cairn, and quite easy, being, in fact, traversed by a path.* Of the four passes between Fusio and Airolo best available for ordinary travellers, Campolungo, Scheggia, Sassello, and Naret, the Sassello is shortest and least attractive, that past the fine Lago di Naret † the longest, but most interesting. ‡

* The way from Fusio is by the Massari Alp (that by the Scheggia Alp being bad to find), so that the mountain top can be traversed on the passage with only a few minutes' détour, a superior view being thus obtained than from either of the other passes. A pleasant way is by Fontanalba, whence a track crossing the stream from the spring mounts to a brow, and goes round at some height along a steep wooded declivity into the Massari ravine, after which the way keeps up round its head to about 2,373 m. Ambri is directly reached from the pass. To Airolo there is a continuous descent, commencing round to the left, without too much fall, to the N. ridge of Ponc. Sambuco (2,586 m.), then down it to two huts on a conspicuous brow near an artificial watercourse, visible from the mountain. Hence is a track round to a hut at the foot of Alpe Prato on the further side, or a shorter way to the Calcaocia bridge near the watercourse. From Nante paths descend by the ruined Lombard tower ('Murray,' page 121) to a seemingly recently made bridge $\frac{1}{2}$ mile below Airolo. Before the hamlet is reached more direct paths through the wood to the ruin can be found, care being taken, on account of the railway cutting below, to keep along the top till the obvious track down is encountered. It is singular that this pass should have remained unnoticed, as appears, by any authority. It is unmarked on the map, and Herr Wäber tells me he can discover nothing relating to it. I learnt from Jori that it was in use, but not by travellers.

† Lavizzari (*Escursioni nel Cantone Ticino*, a mine of information) marvels at the flowers by the 'deliziosi laghetti di Naret.'

‡ The true Passo dei Sassi is the passage intermediate between the Mezzodi and Vespero, connecting the Alps Piscium and Campo la Torba, noticed in the *Climbers' Guide*, page 79, as that meant in *Italian Alps*, page 349. It is the pass known at Airolo, to which the latter alp belongs, and in 1898 I found Jori, a chasseur and guide of that village, ignorant of the Mezzodi passage, and indeed incredulous of my having made it. The latter (Bocchetta di Mezzodi), called Sassi by mistake on the first Siegfried map (*Alpine Journal*, vol. x. page 157), is suitable only for climbers as it now is, and probably liable to deterioration from the wear of the mountain-side. The final ascent is from Ravina, not Piscium. The surveyor for a new Siegfried map, whom I met mapping the other as the correct pass (1898), seemingly also first learnt from myself that a passage really existed under the Mezzodi as marked: he afterwards proceeded to it. The first map must have followed the original survey, the position on it of the Sassi Pass not having proceeded from local information for the revision. There seems to be nothing known of any passage of the Mezzodi Pass; but, curiously, Herr Wäber and party in 1867 or 1868, missing the Sassello Pass, crossed a pass to Alpe Ravina, which most likely was this. My own exploration (from Airolo in 1880) commenced in the angle between the Mezzodi and the ridge E. The upper part was by a chimney in the rocks, whence I emerged like a marmot from its hole. I then discovered the right passage from the ridge-top W. Some herdsmen the same year warned me against the other pass out of Alpe Ravina (Passo Ravina, *ib.* p. 156; *Climbers' Guide*, page 79) as a *via cattiva* needing spiked boots; relying on my ice axe I disregarded the advice, but it was properly given. I found a cairn on the top. From Garzonera a level track goes E., and, descending after passing the cliffs, bends back to Casone; from the bend is a pathless way to Fusio. I understood there was also a direct way down to Casone.

The Cristallina (2,910 m.), forming a centre point among the curving valleyheads of Val Maggia, whose stream rises in the tarns at its foot, well deserves a visit, and may be conveniently traversed on the way between various points. I once (September 25, 1880) spent 7 hrs. on the top in enjoyment of a delightful view on the way from Robiei to Airolo by the Mezzodi Pass.*

In leaving Tosa Falls for Airolo, September 10, 1898, I tried to reach the Valeggia Pass from Val Bavona, but not finding it the walkover which I expected, and it being too late to take another route, I retreated down the valley. The track, however, proved much less easy to follow by starlight than I expected, and, after losing and refinding it, I saw it at length disappear down a cliff over the torrent opposite Robiei, when further pursuit was out of the question. The only *gite* available was a large stone near, with a recess next the ground, under which I lay partly covered, turning round at intervals as the unprotected side got cold. Tiring at length of the cold and discomfort in this and another cavity, which I tried for a time, I picked my way with difficulty back, aided by an attenuated morning moon.

I now made for a summit (2,827 m.) overlooking the Valeggia Glacier above Lake Sciundrau (2,353 m.), which was still mostly frozen over (the outlet no doubt is in the cliffs over Lago Bianco; see 'Ball,' page 313). As I turned up from the lower ridge of the Cristallina Pass (2,506 m.) I reached the welcome sunshine, which I had been watching creep down the hill slopes with eager eyes, and all thought of the uncomfortable night vanished in the delightful September weather of this exceptional season. Congratulating myself on so early a start, I entered a pleasant upland vale with a pretty tarn, and then easy slopes led to the summit, where I had the satisfaction at once of an enjoyable view and of building a cairn (Cima di Lago). Gaining the Cavagnolo ravine I reached Ossasco by my old Bavona Pass route.†

* There was no cairn on the top, but Jori told me travellers had previously been taken there. It is better to go not by Lago Nero (*Climbers' Guide*, page 77. In *Alpine Journal*, vol. x. page 155, for 'precipitous' read 'steep'), but by Lago Sciundrau, in ascending from which the arête from the W. and slightly lower summit must be crossed, and then the gully between the two summits ascended. Now that there is a small inn for travellers at S. Carlo it is easy to make this expedition from Fusio, and the next day either see Val Bavona or cross the Basodino to Tosa Falls.

† The Valeggia Glacier is easily reached from either summit of the Cristallina Pass by low gaps N.E. of the Cima di Lago (E. Valeggia Pass), to the nearest of which I descended, and being also connected with the Bedretto Cavagnolo Glacier by a low gap (Cavagnolo-Valeggia Pass, c. 2,720 m.), affords a good passage from Fusio to All' Acqua. I found this year (1898) that I had been mistaken as to the connection of the Cristallina Pass with the Bavona Cavagnoli Glacier (*Alpine Journal*, vol. x. pages 99, 100, where for '2,867' read '2,864'; compare *Climbers' Guide*, page 75), both it and the Valeggia Pass being cut off by rocks from the highest plateau of Val Bavona, from which only the Grandinagia, Bavona, and W. Valeggia Passes are reached. This plateau is accessible from the glacier by an ascent over the shoulder of

At Tosa Falls—where I again made a prolonged stay (1898), in course of which I had the pleasure of meeting Signori Casati and Gerla, fellow-explorers of this district—owing to the extraordinary accumulation of snow that marked the early part of this season, even in the middle of July the mountain slopes were gay with a profusion of flowers, freshly blooming as the snow retired. The way to the Hohsand Glacier, by the left bank especially, was charming, with brilliant colour such as I never remember seeing before. The low parallel walls of rock that are a feature of this spot were covered with varied rock plants for hundreds of yards, while the intervening hollows were so many flower gardens.*

I reached (July 24) the towering rock point conspicuous at the head of Lebendunthal or Val Vannino (Torre di Vannino, 2,980 m., I. map). Beyond it on the Ofenhorn side is a rather higher point on the ridge, to which I went on, overlooking an upper outlet of the névé into the valley.† The ice did not seem now to flow continuously over the cliff, there being no icefall, but that there is a movement is plain from the apparently recent moraine-like litter at the edge, which can only have come from the rocks of the Ofenhorn. In former days there must have been a magnificent icefall over this ridge broken by these rock towers; the old glacier bed below is an interesting spot where blocks of rock, great and small, some still poised on others, rest just as they were left, with short green herbage between.

My friend Parish and I enjoyed a perfect view from the Blindenhorn. Mt. Blanc and its attendant aiguilles were more prominent than I expected, also the whole village of Reckingen was, to my surprise, well clear of the second or middle summit.‡ Much, however, as we lauded the view, I am still convinced that for artistic effect the Oberland mountains gain as witnessed from peaks at the other side of Val Formazza over the depressed portion

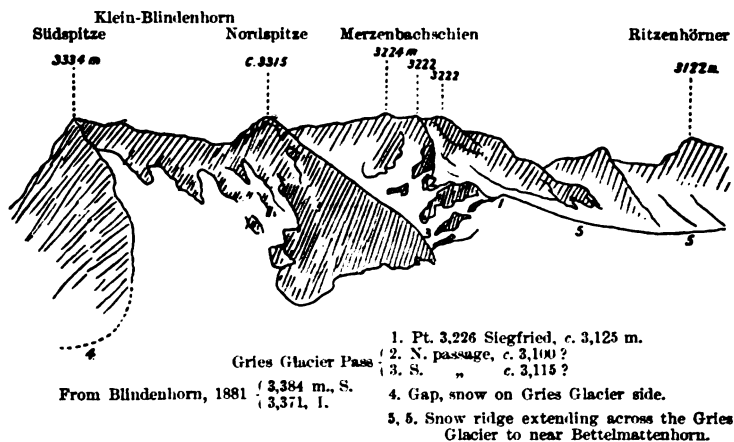
Pt. 2,831 to head a precipitous rock gully intercepting a more level traverse. The ridge S. of this glacier (Fiorina Pass, *ib.* vol. ii. page 410) may be reached by a gap immediately S. of the Fiorina (2,926 m.), which I crossed this year, but the way is rough.

* Visitors do not seem aware of a walk along the glacier side to high pastures where, with unusual facility, the inner glacier region is viewed. I find that the old goat-path to the Ban ravine with its *mauvais pas* remains, having been mistaken as to the existence of a new one (*Alpine Journal*, vol. xix. page 151). There is a practicable way at the N. corner, which in the descent keeps down to the lowest point next the torrent, when, a little below springs of water, it traverses right and then makes directly down.

† Higher and smaller than the two noticed, *Alpine Journal*, vol. xix. page 149 (footnote). From the Lebendun Pass I since tried to ascertain the watershed between this flow of the névé and the main stream into the Hohsand ravine. From 2,710, where it is decided, it seems to go towards 2,980, as far as a great bank extending from foot of 2,781 to the rocks north of the middle outlet (Torre Inferiore), which holds up a comparatively level snowfield, and afterwards up the middle of the upper slopes south of the N.-E. ridge of the Ofenhorn to the summit ridge.

‡ *Ibid.* vol. xix. page 150, where for 'Blinden Joch' read depression at head of Blindenthal.

of the main chain along the Gries Glacier.* Of the double-peaked lower mountain (Klein-Blindenhorn; see 'Alpine Journal,' vol. xix. p. 150, 2nd note) there seems to be no mention apart from the passages from 'Jahrbuch S.A.C.' (xiv. 605, xx. 170, xxi. 106) ad-duced in the 'Climbers' Guide,' pp. 53, 54. The point on this more than once (mehrmals) reached by Herr Kamlah, described as a *Schneekuppe*, from which, on ascent by way of the Hohstellibach,



the true Blindenhorn is first seen (xx. 169, 170), is unmistakably the N. summit and no other. From his express identification of it with the point marked 3,382 m. on Imfeld's panorama, *i.e.* that afterwards marked 3,334 m. on Siegfried (Wäber), it appears that in writing this descriptive account he had this one point in view as the only or principal summit after the Blindenhorn itself,

* I was afterwards favoured with a similar view from the Merzenbachschien (Sept. 2) The summit appears to be not as on S. map, but about 30 yards W. of a decided corner point where the ridge leaves the Gries Glacier; the latter, however, and a point N.E. of it, being each nearly as high. The village of Geschenen is seen down the Merzenthal. Both this and the Blindenthal are said to be traversed by smugglers in winter, and the Distelgrat (2,660 m.) would give access to the Sulzgrätli (2,730 m.), a low and easy gap N.E. of the Ritzenhörner, the top of which I reached from the S., the only practicable pass apparent in the ridge from the Merzenbachschien to the Faulhorn. Grat, Grätli, often denote the col as well as ridge, as Schwarzgrätli (Wäber). There seemed to be no direct way from the Merzenthal to the Gries Glacier except over the summit of the Merzenbachschien, approached by its W. ridge. All this upper region N. of this ridge, which I now first saw, seemed barren and uninviting. Pt. 3,226, S. map, a rock point (snow on the Gries Glacier side), at the head of the Hohstelli ravine, is considerably lower than the Merzenbachschien (3,224 m.), though higher than the Ritzenhörner. It divides two passages which may be made of the Gries Glacier Pass, and seemed when I was on it to be halfway between the Merzenbachschien and the nearer of the two lower summits of the Blindenhorn. The highest point is visible from the N. (and best) passage, and it is only from the other that the nearer point could be ascended by mistake.

referring to it again, when speaking of its local name, as the 'inferior northern summit' (xxi. 106). It may be inferred that his attention when he was on the spot had not been particularly directed to the further point, some 200 m. distant (the S. summit), which is in reality the summit pre-eminent among the Blindenhörner in the Reckingen view,* and which certainly he cannot be supposed to have visited. It would seem, therefore, that in these passages there is no certainty of an ascent of 3,334 m., except what can be based on the first (xiv. 605), which contains no description, nor any notice clearly distinguishing the two summits. 'The name,' writes Herr Wäber, 'is very well chosen. As all three summits—the Blindenhorn and the two points of the Klein-Blindenhorn—were formerly comprised by the name of Blindenhorn, the two lower points must take their name from the old general term.'

We went by Devero to Veglia.† The way before reaching the Valtendra Pass becomes a small path, traversing a steep declivity at some height, which might easily be missed in the reverse way, people being prone to go down the valley to Goglio. I stayed over a week at Veglia, which I now first saw. Both picturesque spots suffer from insufficient hotel accommodation; were they at the other side of the Alps they would be favourite resorts. Some may prefer Devero; but Veglia, with its broad expanse of pasture dotted with trees, struck me most. It has a mineral spring, which curiously issues under a glacier torrent, where it is walled up to prevent its being obliterated (the spot is marked 'sorgente' on the map). The easy ascent, past Lago d'Avino, of Pizzo Valgrande or Monte Carnera, well standing for a view in the angle between the Cairasca and Simplon Valleys, especially of the Fletschhorn range, is to be recommended.‡ Of interest is a high plateau, strewn with splintered slabs or planks of rock, that precipitously overhangs Lago Bianco. Summit follows summit till at last you look straight down to Binn. A gap in the terminal crags facing Veglia gives easy access to it, though the *débris* below requires phenomenal patience. (See also 'Climbers' Guide,' p. 20.)

From Devero on a later occasion I crossed a pass by the upper

* Referring to a sketch which I sent him, in which the aspect of this summit and the Blindenhorn from the N. summit is shown, Herr Wäber allows that 'it makes it quite clear' that a man ascending the N. summit by the above route 'may easily overlook the S. summit.'

† See Mr. Beachcroft's article, *Alpine Journal*, vol. xi. p. 395; also vol. xv. p. 266. On the way I crossed the S. Curzalma Pass, as recommended *ib.* vol. xix. p. 149, to the snow-tarn (Laghetto Nevoso). The level traverse is rough and best made along or near the crest. The Vannino side admits of a rapid descent when snow slopes take the place of a wilderness of large *débris*. In the note *ib.* p. 148 is a mistake: for 'Also the higher gap S.E. of' read 'From it I ascended.'

‡ I found an easy way by the N.E. ridge from nearly its lowest point. From the summit, an easy descent by the S. ridge to the huts above Alpien was apparent (joining the route from Passo Loccia Carnera to Gondo, *Climbers' Guide*, page 2).

Lakes of Busin, called Bocchetta della Valle* (about 2,600 m.), which is an interesting variation on the ordinary way to Tosa Falls, the scenery being superior. A useful track with good views over the lake, leaving the valley track where it begins to descend to the S. end of the latter, gradually mounts to Valle,† the principal of the many rifts in the upper part of the prairie-like plateau, whose green undulating expanse affords a pleasant foreground to the bold mountain shapes across the valley. A summit with a conspicuous cairn (Piccola Punta della Valle, 2,647 m.), which I reached a little above the pass on the S., offers a pleasant halting-place.‡ On the other side is a corresponding lofty prairie shelf supported by high cliffs over the valley of S. Antonio; from the N.E. extremity of which the route of the Busin Pass is easily reached.§

The walk from Veglia down to Varzo is uninteresting, and ends in irritating paved ways. From here I crossed the Colmaine—a vexatious pass, as the view from the top is obscured by the woods which cover the ridge. Passing the night at the village inn of Crodo—where the landlord followed me up to my room to make sure that I got a bed which was *più fino* than the other—I descended the road some way to a bridge at Pontemaglio, and followed an ascending track which brought me to a hamlet (Veglio), where, after some parley through an upstairs window, I obtained some welcome refreshment from an old couple in the last house, who, once set at their ease respecting the mysterious stranger, proved friendly and hospitable. They were much astonished when

* *Guida alle Alpi Centrali Italiane*, Brusoni, vol. i. page 175. Described also *Alpine Journal*, vol. xvii. page 50.

† From the first huts the upper path may be taken past a spring of water literally emerging from a rock to the open ground, where a way may be selected at pleasure to the col, seen right of three rocky points. From this point is also an agreeable way to Scatta Minojo or Passo del Vannino (in the reverse way a solitary hut near is a good landmark), across the middle part of the plateau, and by a good-sized lake in a secluded hollow, shortly before reaching the ordinary route, where there would be a capital site for a desirable hotel.

‡ Beyond was a second practicable gap, which Signor R. Gerla proposes to call Bocchetta della Valle Sud.

§ A steep path also was apparent from the S.W. end to the huts of Alta, which would be nearer, especially for Salecchio, whence is an upper track on this side, and avoid a tiresome cattle-way down from Alpe Giove. S. Antonio is reached by a good track from above the gorge of Foppiano, and travellers might well vary the ordinary route from Andermatten by taking this interesting high route to S. Rocco. It is a pleasing walk by Lago Antillone through picturesque scenery; at every turn is a pretty bit of foreground or a fresh view of the deep valley below, with beautiful beech-groves, graceful pines, luxurious ferns, and fine glacier-worn rocks, or bold cliffs. Below Salecchio the track abruptly descends at a conspicuous shrine in a staircase down a chasm, reaching the road beside some vertical rocks a little above S. Rocco. Lago Antillone (also Antillone) is noted for its aquatic flora (Brusoni, p. 178). The German name Punzingen is discontinued on Siegfried, and Signor Brusoni, who himself heard Boneylen at Foppiano, tells me that it is erroneous. That given me on the spot was pronounced Pünägen.

|| Or Pontemaglio, with remains of Roman bridge ('Brusoni,' p. 165).

I tendered them 2 francs, and, though evidently of the poorest, proceeded to add up the items, which came to less than half, but I left the honest souls rejoicing in the difference. My aim was the Passo di Larone, and from here a track gradually ascends past different groups of chalets; but rain coming on, I paused for shelter at the first set, which were deserted, and, tempted by a comfortable hay-loft, remained for the afternoon and night. The track, without quite ascending to the highest huts, passes under them and along the base of the upper rocks of Monte Larone. The existence of this remarkable and apparently undescribed passage, which has a formidable look, but in reality is a good track in constant use for cattle, would never be conjectured on looking up at these lofty cliffs from the bridge at Baceno.* After its airy traverse of terraces, steeply overlooking Val Antigorio, the track crosses Passo di Larone (1,977 m.) to the E. side of the ridge, and continues at a high level over a side col, with a refuge on it, Passo Colma Piana, 2,184 m., to pastures below Lago di Matogno, and thence over a low gap called Forcola (2,264 m.), to Cimalmotto, where I found the sleeping accommodation improved.

For my return to Val Antigorio I selected the Groppo Pass (2,498 m.), though the Croselli (2,454 m.), said to be traversed by cattle, seemed better known as a pass to S. Rocco. After an hour's walk by the stream-side a track across the frontier line mounts steeply up on the right to the pastures of Cravairola; a pleasant ascent follows, with gentle grass slopes and plentiful springs of water. There is a good view from the pass. The lower part of the way down to S. Rocco proved to be of that tiresome staircase kind which one prefers avoiding in a descent.†

On a later occasion (September 7) I ascended from Foppiano the

* The way from Crevola is by Montecrestese (hence at Cimalmotto I found the passage to Crevola called Montecrestesio), past the chapel of Madonna di S. Luca, with a good view of Monte Rosa over the Vale of Ossola, above which the track left is to be taken, the best probably being a small upper one starting where the rocks begin. (That right, however, is the regular and shorter way to Passo Colma Piana.) One of the finest mountain-walks in this district is by Montecrestese and a remarkable lofty bridge spanning the narrow gorge of the Isorno to Passo di Larecchio (2,035 m.). The views are varied and grand of the distant mountains, as the Monte Rosa and Fletschhorn ranges, set in a picturesque framework with the wooded crests of the ridge, along which the track ascends, over the wild Isorno ravine. Opposite are the bold, craggy summits of Pizzo la Scheggia (2,468 m.), and the foreground is of continual interest. Time, Bagni di Craveggia to Montecrestese (Altoggio), 7 hrs.; to Crevola, say 1½ hr. more, or to Bagni di Crodo, under 2 hrs. A pleasant terrace walk from Montecrestese also goes up Val Isorno to a pretty spot (Agarina) at the entrance to the upper ravines, with fine cliffs richly wooded at their base. A herdsman told me a cattle-path led from here to Cimalmotto in 5 hrs. See an unusually full account of this locality in *Guida dell' Ossola*, rewritten in Brusoni's above work.

† The way is directly down to the central huts (2,020 m.) seen on a curious projecting spur under the pass. Then either left to other huts across the ravine, from which the descent to S. Rocco is straight down the steep ridge bounding the ravine, or down to the huts seen on the right below, whence is a way down by bridge at Passo to Foppiano.

Cramek ravine. As, temporarily missing the track, I was making up a grass gully, I met with one of those mishaps which show how impossible it is, whatever care one takes, to guard against accidents. A large block of rock on which I rested my hand to help myself up with came instantly down. I believe I instinctively slipped aside, but in brushing past me it knocked me backwards over, and had it caught me fair it must have been a serious matter. There was nothing to lead me to expect such a dislodgment; the inclination was little, and the rock fragments long imbedded in the surface. Above the lake at the head of the ravine I reached a gap N.E. of the Sonnenhorn (S. Cramek Pass, 2,547 m., I., 2,537, S. map),* which plainly was easily accessible from Cimalmotto. This offers a preferable and more direct passage thence to Foppiano, the Cramek ravine not being unpleasant to traverse. A few feet below the top was unaccountably a small spring of water.

THE ALPINE CLUB PHOTOGRAPHIC EXHIBITION OF MAY 1900.

THE annual exhibition held in the Club Rooms last May contained a fine collection of photographs, and although perhaps the general standard was not so high as last year, there was much good individual work.

We must first mention the two lady exhibitors. Mrs. Maine, the

* Unnoticed on both maps, but known at Foppiano. The *Guida dell' Ossola* (p. 108) only notices the Passo di Cramek, 2,549 m. (Crameggpass, 2,518 m., S. map), near the Rizoberg, to Bosco (Gurin). There is no track from Cramek to the S. Furka ravine, but a rough way may be found, as it has been reached from Andermatten. I was told (1880) that the S. Furka was known at Bosco as Stalden Furka, Unterimstalde being German (patois) for Foppiano, and used by natives going with horses in preference to the N. Furka, which is littered with *débris* (cf. *Climbers' Guide*, page 63). Herr Wäber informs me that Stalden is an old German word meaning a slope on a road, applied to streets at Bern leading down to bridges; Unter dem Stalden (patois. Unterimstalde, in Ebel's *Guide*, 1810, Unter-Stalde), below such a slope. I learn from Signor Brusoni, who in his *Guida* has Unterstalden (so, too, 'Murray'), that Unterwald for Foppiano is wrong. As to other passes over this range, the Cazoli Pass is preferable to the Forcolaccia, which is uninviting, with a dreary ascent of over 5 hours from Bignasco. It may be easily reached from the N. Furka route. Bleak desolation marks the lower Calneggia ravine, but a delightful spot above the fine waterfall, where the stream glides to its one great leap in a polished channel of grooved marble-like rock, is worth a visit from Bignasco. The Halbhoren (so in patois Ofenhoren, &c.) or Sciolti has the best view of any of these passes, the Antigorio vista with Mte. Rosa beyond being very fine. The pleasantest way down to Formazza from this or the Tamier Pass is by the brow marked 2,169 m., which has an unrivalled view of the valley. From Tosa Falls the most interesting passage to Val Bavona is over the Tamierhorn, which is easy on both sides, except, of course, that of the Basodino itself. This word is pronounced Basodino, or simply Basodin, on the Formazza side, Basodino on the Maggia side (Wäber); cf. Colle di Vanin (Vannino). In Val Maggia words like Bignasco are commonly clipped, so Bignasc', Cev', Busc', &c. There is no direct way under the Tamierhorn to the Tamier Pass worth trying; there seems to be a way near the Schwarzsee, but with descent into an intermediate gorge.

champion lady mountaineer, whose photographs of the Alps are familiar to so many, had one of the Sörfjord, Norway, which, in spite of the enormous size of the enlargement, possessed considerable merit. Many others about equally large showed clouded mountains, also in Norway. There were also some nice little photographs of the Matterhorn by the Hon. Mrs. Fitzgerald.

This brings us to Sir William Abney, whose profound theoretical knowledge, united to great technical skill, has excited the admiration of generations of climbers. One of the most striking of his pictures represented a glacier on the Matterhorn.

The work of Mr. Alfred Holmes was about as good as usual, and members of the Club will know that this is praise. The technique was unexceptionable, and the half-plate views of Dauphiné showed Mr. Holmes's usual skill in the representation of atmospheric effect.

Hitherto in our photographic exhibitions we have had few photographs by natives of Switzerland. This year M. Paul Montandon had some capital views of Dauphiné, as well as of the Matterhorn and Mont Blanc groups.

Mr. Sydney Spencer showed a large selection of good work. His pictures always possess particular artistic merit, besides containing all that is looked for in technical and natural qualities. The enlargement of Mont Blanc and the Aig. du Plan from the Blaitière was perhaps his best picture, and his skill in composition, effect of light and shade, and choice of point of view are here well exemplified. There are many others, but one cannot help mentioning specially a distant view of the Bernese Oberland from the Mittaghorn, with a splendid sea of cloud stretching across the valleys. The lighting of these was not too pronounced, and the result was very pleasing.

Undoubtedly some of the very best photographs of the exhibition were those by Dr. Norman Collie, who, we believe, has only recently taken up photography. His work this year, especially a picture entitled 'A Stormy Sunset from the Italian Hut of the Matterhorn,' is rich both in light and shade and in grace of composition. We do not, in fact, remember to have seen a finer sky effect represented in a photograph. Horizontal bands of dark cloud stretch across an illuminated sky. The colours are easily imagined, and the effect is wonderful in monochrome. The brown colouring of the print seems very suitable for this warm sunset subject. The study of a crevasse on Mont Blanc also showed that artistic sense of the proper construction of a picture which can lend so great a charm to so simple a subject. The three views from the Charmoz with stormy skies and jagged arêtes of rock were also good.

There were three excellent pictures of the Himalayas by Mr. E. J. Garwood, evidently enlargements. These, we believe, were all telephoto views, and they were some of the best we have ever seen. One was a picture of Kabru, standing up from the middle distance in a way that could not be represented except with the aid of magnification from a distant point. The half-tones in the foreground

show great skill in manipulation and exposure. Another was a magnificent view of part of D², showing a mass of snow and ice on a summit such as is scarcely to be found in the Alps. A third was a view of Kanchinjanga, with a beautiful valley in the foreground. Clouds cross the valley, cutting the mountain, and the effect was very charming.

Mr. H. Woolley showed a beautiful enlargement of the 'Little Ushba,' in the Caucasus, which we thought one of the best in the show. Mr. Woolley is able to produce an interesting photograph without focussing or exposing the subject incorrectly. A second picture was a pleasant view in the Lofoten Islands, which gave a very good idea of a hot, sunny day in these latitudes. The colour of the mount may have somewhat detracted from the merit of the picture.

Dr. A. B. W. Kennedy, whose usual good work we missed last year, had some excellent views this time. The 'Aig. Verte from the Des Montets' showed true colour values and admirable aerial tones. A view in the Maritime Alps showed the result of correct exposure and skill in development. Dark fir trees in the immediate foreground cut some distant mountains which formed the horizon. In spite of the technical difficulties in obtaining such a photograph we had here a picture in which both foreground and distance are full of detail, and at the same time possessed their correct tone. Another excellent piece of work of Dr. Kennedy's was a view of the Meije from La Grave, which had a good atmospheric quality and a very pleasing sky.

We noted again with pleasure the work of Mr. Francis W. Ellis, whose view of the Trient Glacier was specially meritorious. It was picturesque, and showed an original treatment which quite counter-balanced a slight incorrectness of exposure. Another brown enlargement of the 'Aig. du Dru' was also interesting.

Mr. S. Donkin was this time only represented by a conventional view of the Mt. Collon and a Georgic study, which was, no doubt, none the less interesting to lovers of picturesque peasant life because they may happen to be mountaineers.

We are all greatly indebted to Dr. F. P. Moreno (of La Plata) for the enlargements and splendid panorama taken in the Cordillera Andes, which he has kindly presented to the Alpine Club. The panorama was especially interesting; it measured about 8 ft. long and will doubtless be of the greatest topographical value to future climbers in South America.

There were four platinotype photographs of the Canadian Rockies by Mr. Wilcox, and, although perhaps a little strong in the contrasts of light and shade, they represented very truly the splendid scenery of this portion of our Empire. The view of Mount Assiniboine resembled the unique Matterhorn more than anything we have before seen in the Rockies. Another photograph of a sunset was, perhaps, the most picturesque of the group.

Mr. H. J. Mackinder exhibited six huge photographs, taken by Mr. C. B. Hausburg, illustrating with great clearness the beautiful

country round Mount Kenya, which was so ably described by Mr. Mackinder in his paper read before the Alpine Club in March last. The enlargements showing the vegetation of the district are specially interesting, and they all possessed the quality of showing careful and good photographic work.

Mr. J. P. Somers showed several good enlargements, a characteristic view into Italy from the Portiengrat being, perhaps, particularly noteworthy. The clouds were rather chalky, but this is probably a defect in enlargement. Two other views, one of Saas Fee and the other of Evolena in winter, were also very able compositions, the one of Saas Fee being a particularly pleasing example of correct exposure.

Among the younger generation of Alpine photographers the work of Mr. W. G. Adams commanded attention, if only in so much as it showed what a skilful photographer can do with a pocket kodak.

Mr. Speyer's photograph of a flash of lightning over the Zermatt valley was very remarkable, and is so realistic as almost to lead one to expect a thunderclap. Mr. Speyer certainly knows the right moment to expose his plates. Another of a clouded sunset from Monte Rosa was rich in half-tones, and possessed considerable technical excellence.

Mr. Leatham's evening view from the Italian Matterhorn hut was very fine. His work showed originality of composition and effect. Another picture of a portion of the S. arête of the Dent Blanche was also a capital piece of work.

A new exhibitor, whose work has for some years been well known in Scotland, was Dr. W. Inglis Clark. One of his pictures was of the Morchenschied, in the Zillerthal; another was a subject of the kind in which we know him best, a splendid view of the Blaven, in Skye, taken from Scuir Nan Gillean. It was a fine representation of typical Scotch weather, with clever rendering of dark clouds. These views were in every sense worthy of careful attention, but the mounts, and especially the frames, seemed somewhat unsuitable.

Mr. W. R. Rickmers, Mr. G. Hastings, and Mr. C. E. Shea all showed interesting work. Mr. Withers's view of the Meije, and an exhibit by Dr. Brushfield of a photograph by Mr. J. J. Western of the Schreckhorn, were also good.

THE EXHIBITION OF HIMALAYAN PHOTOGRAPHS.

DURING the month of June an extensive collection of photographs—340 exhibits in all—taken by Signor V. Sella and Mr. E. J. Garwood during Mr. Douglas Freshfield's recent tour of Kanchinjanga, were on view in the hall of the club.

Signor Sella's work filled the greater part of the walls, Mr. Garwood showing some thirty views. As usual in Signor Sella's work, the large panoramas were particularly noticeable, and these included scenes previously unknown to Europeans. The view of the N.W. face of Kanchinjanga was perhaps the most

striking, though that looking over Nepal from Hooker's Choonjerma Pass was of interest from its inclusion of the Everest group. The telephotographs of Kanchinjanga and Siniolchum were most successful. Among the enlargements were some beautiful forest views. One of the most perfect pictures was 'Kabru and Kanchinjanga from near Pamionchi.' The full-plate views, of which there were 120, illustrated not only the mountains, but Sikhim as a whole—the forests and Alpine flowers, the temples and people. There were besides a large collection of stereoscopic views of incidents of travel and other subjects.

Mr. Garwood's small collection included a fine telephotograph of Kabru and a good picture of Pandim. 'A Sikhim Torrent' was an admirable representation of moving waters. Mr. Garwood also showed some wonderful butterflies and beetles.

Signor Sella's photographs can be bought at Spooner's in the Strand, but the right of reproduction is reserved.

ALPINE NOTES.

'THE ALPINE GUIDE.'—Copies of Vol. I. of the new edition of this work, price 12s. net, and of 'Hints and Notes, Practical and Scientific, for Travellers in the Alps' (being a new edition of the General Introduction), price 3s., can be obtained from all booksellers, or from Messrs. Stanford, Charing Cross.

THE LIBRARY CATALOGUE is now printed and may be obtained, bound in cloth, on application to the Assistant Secretary, 23 Savile Row. Price 3s.; postage, 3d.

ACCIDENT ON THE WEISSHORN.—We deeply regret to learn that in an accident on the Weisshorn Mr. J. G. Cockin lost his life. We read with sorrow in the daily papers that a considerable number of other accidents have taken place, including a fatal one on the Matterhorn. The snow, we hear from correspondents in various parts of the Alps, is in an exceptionally unsatisfactory state, owing to the great heat and numerous thunder-storms.

PHOTOGRAPHY IN THE WESTERN ITALIAN ALPS.—We owe to the kindness of our fellow Clubman Signor E. J. Mazucchi a notice as to the prohibition of photography in these districts. He was also good enough to send a map showing exactly where photography is absolutely forbidden and where telephotography is forbidden. The map may be seen at the Club Rooms, 23 Savile Row, W., and should be consulted by all who propose to take photographs in the parts above mentioned.

If a line be drawn from Mt. Vélan to the Col de Rhème through Gignod and St. Pierre, it will be found that in the district to the W. of it photography is absolutely forbidden, as it is also in the district enclosed by a line drawn from Ivrea to the Roisebanque, thence to the Tour St. Pierre, thence through Cogne to St. Pierre in the Aosta Valley, thence to Brussonne, thence to Issime, Port St. Martin, and Ivrea; and in the Cottian Alps from the Roccia

Melone to Monte Granero as far E. as the Punta Lunella, Bussoleno, and Torre Pellice. These definitions will be found approximately correct. For further information members are referred to the map above mentioned.

HOSPICE OF THE GREAT ST. BERNARD.—It is proposed to erect a statue of St. Bernard at the Hospice, and the Prior has written to the Committee of the Alpine Club asking for a subscription. The Committee are not, of course, able to use the Club funds for such a purpose, but the Honorary Secretary will be glad to receive and forward to the Prior subscriptions from any members who may desire to contribute towards the cost of the proposed statue.

ALPINE CLIMBERS AT THE FRONT IN SOUTH AFRICA.—We learn from the 'Westminster Gazette' of July 9 that Mr. E. A. FitzGerald, who, with Mr. Stuart Vines, on the Government's call for volunteers immediately offered himself for the Imperial Yeomanry, has been given a commission in the 5th Dragoon Guards by Lord Roberts. Mr. Vines has been promoted from a corporal to a sergeant.

MOUNTAINEERING IN FORMOSA.—The Rev. Walter Weston kindly sends us the following:—

'In December (1898) Mr. Stoeber, a German banker and explorer, ascended Mt. Morrison (Niiitaka Yama), in Formosa, with native guides. After enjoying a lonely Christmas dinner at Tampa they scaled the summit at the height of 12,600 ft. on that day. This is higher than the Patagoanomen Peak, which Dr. Honda, Professor of the Imperial University, deemed the highest point in his last mountaineering. Mr. Stoeber recommends the construction of cable cars to cross the mountain from east to west.—"The Orient" (late "Hansei Zasshi"), February 1899.'

CLUB HUT ON GENNARGENTU, SARDINIA.—The Sardinian Alpine Club have erected on Gennargentu, the highest mountain in Sardinia, a hut which will serve both as a refuge and for those making scientific observations. As the committee of management would be glad to obtain assistance towards the expense of erection from any members of the Alpine Club who may be interested in the project, the Honorary Secretary will be pleased to receive and forward subscriptions for this purpose.

THE ACCIDENT TO RUDOLPH LOCHMATTER.—Mr. Arthur B. Thorold sends us the following note:—

'In response to the appeal issued by Mr. S. Spencer and myself on behalf of Rudolf Lochmatter subscriptions to the amount of 147l. 10s. 6d. have been received. I expect to be in Switzerland shortly, and hope to see Lochmatter, as after a personal interview it will be easier to decide how to deal with the money which is at present on deposit at the London and County Bank. We desire, through the medium of the "Journal," to thank those who have so kindly contributed to the fund.—ARTHUR B. THOROLD.'

AN ADVENTURE ON THE CRODA GRANDE.—The following graphic account given by a guide of Primiero of the narrow escape of himself and his employer in a winter ascent has been sent to us, with a

request that any sums which the liberality of members may induce them to subscribe for the unfortunate sufferer may be sent to Leslie Stephen, Esq., 22 Hyde Park Gate, S.W. Dr. Carlo Ben, President of the Primiero Section of the Austrian Alpine Club, states that his employer paid all Zecchini's expenses at the hospital, and made an allowance to his family during his absence, and that 'a German Society' has made him a grant of 700 marks. But he adds that 'this is very insufficient compensation for his loss, as he is unable to follow his occupation, which was that of a carpenter and joiner.' Zecchini's narrative is as follows:—

'On March 16 last I went over from Primiero to Gosaldo, being summoned there by a telegram from M. Oscar Schuster, of Dresden, who wished to ascend and traverse the Croda Grande.

'On the 17th we started from Gosaldo at 5.10 A.M., taking the direction of the Col di Luna, which lies at the foot of the rocks. Having arrived there we had a little meal. Observing the weather I foresaw that it might be impossible to accomplish our ascent, and I decided to take another route—that is, to proceed to the Passo delle Mughe [between the Sasso Ortiga and Pala della Madonna], and thence to the Canali Hut. We marched for 1 hr., in the course of which the sky became clear again.

'My employer noticed this and asked me why I had adopted that direction, so after his words I resolved to begin the ascent. Finding the snow pretty firm, in 2½ hrs. we reached the beginning of the south-eastern ridge of the peak we meant to ascend. At this point begins the difficult and dangerous climb. The weather still remained calm.

'We had been climbing for 3 hrs., and were within about $\frac{3}{4}$ hr. of the summit, when suddenly a furious wind arose; the temperature dropped so as to freeze the blood in one's veins, besides which, owing to a heavy fall of snow which came on in great flakes, it was impossible to see where we were going. In such an emergency, and seeing that it began to get dusk, I was obliged to toil with all my might to lose no time in reaching the summit of our ambition. This continuous toil in the snow made me lose my gloves—the only protection for my unfortunate hands, which began to congeal—and I left part, and too great a part, of the skin of my fingers on those rocks. At last we touched the so much desired summit. Meanwhile night was advancing, and no other course remained for us but to descend on the northern slope, to find, as soon as possible, some rock under which to put ourselves in shelter from avalanches. In effect 500 metres [about 1,650 ft.] below the top we perceived a little projection of rock, under which we took refuge—excavating a hole in the snow. It was 8 in the evening and dark night. There we were obliged to stay for the night of the 17th and the whole day and night of the 18th, till our departure on the 19th at 8 in the morning. During all this time the snow that had been falling exceeded 1 metre 60 [5 ft.] in depth. The weather was still uncertain, and consequently our departure dangerous; but we could not postpone it, as we had

fasted for 48 hrs., not having taken with us food for a single day. Our idea was to return by the way we had come—that is, to ascend once more the peak and descend again the south-eastern ridge—but it now showed itself covered with a wall of snow. We only got half down when we thought it necessary to turn to the left, in order to gain a little time. But, behold! at the bottom of the couloir there met our eyes a wall of over 150 metres [500 ft.] in height, which belted half the mountain. So we were forced to pass another night in the snow.

‘At last through great dangers on March 20, about 6 in the evening, we reached Gosaldo. We had escaped from almost certain death, but alas for my hands! they were all frost-bitten. From Gosaldo I went to Primiero for 8 days, and then to Bozen for 2 months and 10 days (under treatment by Professor Rainer).

‘My right hand has suffered most—having lost three fingers, the middle, the annular, and the little finger. On my left hand I lost almost the whole little finger, whilst the annular finger remained only a little mutilated at the tip.

‘My cure has not yet been completed. I am actually under medical treatment, which will last still for a long time, because in several fingers the bare bone is still exposed.

‘Your humble servant,

GIUSEPPE ZECCHINI,

‘Alpine Guide of Primiero, Süd-Tirol.’

ALPINE CLUB LIBRARY.—The following additions were made during May and June:—

Recent Books.

- Abba, G. C. *Le Alpi nostre, e il Monferrato.*
 — e il Piemonte.
 — e la Lombardia montana tra la Sesia e l'Adda.
 — e la Lombardia montana tra l'Adda e il Mincio.
 — e il Veneto montano.
 5 vols. of about 170 pp. each, pp. 1-100 being the same in each. 8vo, maps, ill. Bergamo, Istit. ital. d'arti grafiche, 1899
 (Presented by the Publishers.)
- Arnaud, F. *La Vallée de Barcelonnette—l'Ubaye.* 8vo, pp. 121; ill. Grenoble, Gratié, 1900
- (Castelli, G.). *Guida-itinerario alle Prealpi Bergamasche compresa la Valsassina ed i passi alla Valtellina ed alla Valcamonica.* Colla prefazione del A. Stoppani e cenni geologici del T. Taramelli. 3za edizione rifatta per cura della Sez. di Bergamo. 8vo, pp. xlviii, 241; ill., and vol. of maps. [Earlier editions 1877, 1888.] Milano, Hoepli, 1900
 (Two copies; one presented by the Publisher and one by the Section Bergamo.)
- Dent, C. T., and others. *Mountaineering.* (Badminton series.) 3rd edition. 8vo, pp. xx, 464; ill. London, &c., Longmans, 1900
 (Presented by the Publishers.)
- Durand, Col. A. *The making of a frontier: five years' experiences and adventures in Gilgit, Hunza, Nagar, Chitral, and the Eastern Hindu-Kush.* 8vo, pp. xvi, 298; ill. London, Murray, 1900
 (Presented by the Publisher.)
- Filippi, F. de. *The Ascent of Mount St. Elias, Alaska, by H.R.H. Prince Luigi Amedeo di Savoia, Duke of the Abruzzi . . .* Translated by Signora L. Villari. . . . Roy. 8vo, pp. xv, 241; maps, plates. Westminster, Constable, 1900
 (Presented by the Publishers.)

- Forbes, J. D. Travels through the Alps. New edition revised and annotated by W. A. B. Coolidge. Med. 8vo, pp. xxxvii, 572, maps, ill.
London, A. and C. Black, 1900
(Contains annotated reprints of:—'Travels through the Alps of Savoy,' 'Journals of Excursions in the High Alps of Dauphiné, &c.,' 'Pedestrianism in Switzerland,' 'Topography of the chain of Mont Blanc.')
- (Presented by the Publishers.)
- Kilian, W., sous la direction de. Observations sur les variations des glaciers dans les Alpes Dauphinoises. organisées par la Soc. des Touristes du Dauphiné. 4to, pp. 231; plates. Grenoble, Allier, 1900
(Presented by the Society.)
- Martel, E. A. La Spéléologie. 8vo, pp. 120; ill.
(Carré et Naud, Paris) Mars, 1900
(Collection 'Scientia'—Série Biologique, no. 8.)
(Presented by the Author.)
- Scacchi, D. Scanno e la Valle del Sagittario, Abruzzo. 8vo, pp. 82; map, ill. Roma, Loescher [1900]
(Presented by the Publishers.)
- Schröter, L. and C. Coloured vade-mecum to the Alpine Flora. Text in English, French, and German. 7th edition. 8vo, 26 coloured plates. Zürich, Raustein; London, Nutt, 1900
(Presented by Mr. Nutt.)
- Terschak, Emil. Die Photographie im Hochgebirg. Praktische Winke in Wort und Bild. 8vo, pp. 83; ill. Berlin, G. Schmidt, 1900
(Presented by the Publishers.)
- Whymper, E. Chamonix and the range of Mont Blanc. 5th edition. 8vo, pp. xiv, 206; map, ill. London, &c., Murray, &c., 1900
— The valley of Zermatt and the Matterhorn. 4th edition. 8vo, pp. xiv, 224; map, ill. London and Geneva, Murray, &c., 1900
(The above two presented by the Author.)

Older Books.

- Arbanère [E.G.] Tableau des Pyrénées françaises, contenant une description complète de cette chaîne de montagnes et de ses principaux vallées.
2 vols. 8vo, pp. 359, 308. Paris, &c., Treuttel et Würtz, 1828
(Describes ascents.)
- Bartol. C. A. Pictures of Europe. 2nd edition. 8vo, pp. 407. Boston, Crosby Nichols, 1856
Chap. iv. 'The Mountains.' Pp. 375-407, 'The Ascent of Mont Blanc,' written by J. T. Talbot, M.D.
[1st edition, 1855.]
- Bruun-Neergaard, T. C. Journal du dernier voyage du C^{rn} Dolomieu dans les Alpes. 8vo, pp. 154. Paris, Solvet, &c., An X, 1802
- Cooper, J. F. Excursions d'une famille américaine en Suisse. Traduit par A. J. B. Defauconpret. 2 vols. 12mo. Bruxelles, Soc. Typog., 1837
- Hervieu, S. Souvenirs d'un Touriste. 8vo, pp. iv, 236. Bayeux, Nicolle, 1841
(Chamouni, Col du Bon Homme, Courmayeur, &c.)
- Manget, J. L. Chamounix, le Mont-Blanc et les deux St.-Bernard. Nouvel itinéraire. 12mo, pp. 110; map. Genève, Combe, 1839
(Murray, John.) A handbook for travellers in Switzerland. . . . A new edition. 12mo, pp. lxxvii, 407; sketch map, 2 plates.
Paris, Maison [successors to Audin], 1850
(This is a reprint of Richard's [i.e. Audin] Paris edition of Murray of 1844, which was also printed in Paris.)
- N***, Le C. de. Essais sur les montagnes. 2 vols. 8vo, pp. 509, 632. Amsterdam, 1785
- Nichols, S. H. Monte Rosa. The epic of an alp. 8vo, pp. 148. Boston, &c., Houghton, Mifflin, 1883

- (Siegfried, J. J., Verfasst von.) Die Gletscher der Schweiz nach Gebieten und Gruppen geordnet . . . für die Mitglieder des S. A. C. 8vo, pp. 99.
Zürich, Zurcher, 1874
- Talbot, Dr. J. T. Ascent of Mont Blanc (August 1854); see C. A. Bartol's 'Pictures of Europe.'
- (Vaccaroni, L.) Il Gruppo del Gran Paradiso. Obl. 8vo, pp. 30; map, panoramas.
Torino, Bona, 1894

Club Publications (presented by the Clubs).

- C.A.I. Belluno. XXV. Congresso Alpino. 1893
— Bergamo. Relazioni del segretario. 1893
1881-1888, 1890, 1891, 1894, 1897, 1898, 1899
- XXIX. Congresso Alpino Italiano (Guida-Itinerario). 1897
— ——. Elenco degli iscritti. 1897
— ——. see (Castelli, G.)
- Florence. History and list of members; reprinted from 'La Nazione.' 1897
— Milan. Panorama dalla Vetta della Grigna. 1898
— ——. Annuario, xii. 1900
- D. u. Oe. Zeitschrift, xxx. 1899
— ——. Wissenschaftliche Ergänzungshefte, Bd. 1, Hft. 2. Untersuchungen am Hintereisferner. 4to, pp. 87; plans, &c. München, 1899
— Austria. Nachrichten, v.-vii. 1896-1898
— Berlin. Mittheilungen (monthly), from No. 1. January, 1900
— Dresden. Rifugi nella Val di Canali e Val di Pravitale. Panorama. 1897
— Karlsruhe. Festspiel. 1895
— ——. Nix für Ungut! A lustig's G'schreibsel von allerhand G'schichtl'n die in den 25 Jahr'n passirt san. [1895]
— Küstenland. Chronik, 1873-1892. 8vo, pp. 372; ill. Triest, 1893
— Voralberg. Rundschau von der Scesaplana. Gezeichnet v. A. Baumgartner. Panorama. (1896)
- Akadem. Section Wien. Bericht. 1888, 1889, 1892, 1894.
— ——. Mittheilungen (continuation of 'Bericht'). 1896-1900
- Innsbruck, Akad. Alpenclub. Jahres-Bericht, iv. 1897
— ——. Jahres-Bericht, vii. 1900
(Contains 84 pp. on 'Die Kühltäler Berge.')
- Sonnblick-Verein, Wien. Achter Jahres-Bericht, 4to, pp. 74; plates. 1900
(Contains F. Machaček, Zur Klimatologie der Gletscherregion der Sonnblickgruppe; A. v. Obermeyer, Von den Höhenobservatorien in d. Alpen; &c.)
- Svenska Turistfor. Årsskrift, 1900.

Pamphlets and Magazine Articles.

- Alpine Travel, The Art of. 8vo, pp. 206-216. In 'The Cornhill Mag.' August, 1862
- Berger, F. Note sur les Aiguilles Rouges. 4to, pp. 277-280. In 'Journal de Physique,' 57, an 12. [1804]
- Buhrer, C. L'homme aux grandes altitudes. 8vo, pp. 32. In 'Biblioth. Universelle,' xvii, nos. 50-1. Lausanne, Février-Mars, 1900
(A review of Mosso, Conway, Güssfeldt.)
- Bullock, H. S. The Peaks of the Flowery Alps. 8vo, pp. 244-277; ill. In 'The Fireside Magazine.' London, June, 1900
- Conway, Sir W. M. Aconcagua and the Volcanic Andes: Mont Sarmiento. 8vo; ill.; pp. 109-124, 223-224; in 'Harper's Monthly Magazine,' Nos. 595-6. December, 1899; January, 1900
- Desor, E. Journal d'une course faite (1839) aux glaciers du Mont Rose et du Mont Cervin . . . renfermant une notice sur les glaciers, par M. Agassiz (extrait du 'Bull. Soc. Géol. de France'). 8vo, pp. 63; panorama. Reprinted from 'Biblioth. Universelle.' Genève, 1840

- Desor, E. Excursions et séjour de M. Agassiz sur la Mer de Glace du Lauteraar et du Finsteraar. 8vo, pp. 120; ill. Reprinted from 'Biblioth. Universelle.' Genève, Mars et Avril, 1841
- L'ascension du Jungfrau . . . par MM. Agassiz, Forbes . . . Précédée du récit de leur traversée . . . du Grimsel à Viesch. 8vo, pp. 50; map, ill. Reprinted from 'Biblioth. Universelle.' Genève, Nov. 1841
- Récit d'une course faite aux glaciers (Aar) en hiver. 8vo, pp. 36. Reprinted from 'Biblioth. Universelle.' Genève, Avril, 1842
(The above occur in Desor's 'Excursions et Séjours dans les Alpes,' 1844.)
- Downer, Rev. A. C. Mountains I know. 8vo; ill. In 'The Fireside Magazine.' Jan.-Feb., 1900
- Eckenstein, Oscar. Hints to young climbers. 8vo, pp. 394-402; ill. In 'Sandow's Magazine.' May, 1900
- Favre, A. (Œuvres de Godeffroy, Agassiz et Rendu). 8vo, pp. 42. Reprinted from 'Bibl. Univ.' Genève, Février, 1841
- Ferrand, Henri. Le Col de la Fraîche et la neige rouge. 8vo, pp. 20. Grenoble, Maisonville, 1879
- La frontière franco-italienne entre le Mont Thabor et le petit Saint-Bernard. Etude orographique. 8vo, pp. 205; ill. Reprinted from 'Ann. du C. A. F.' and 'Ann. Soc. Tour. Dauph.' Grenoble, Gratier, 1894
- La Dent du Midi. 8vo, pp. 27; ill. Lyon, Imp. du salut public, 1897
- L'alpinisme. 8vo, pp. 20; ill. Reprinted from 'Acad. delphinale,' xii. Grenoble, Allier, 1899
- Les Routes des Alpes du Dauphiné-Loire, Isère, Drôme, Hautes-Alpes. Obl. 8vo, pp. 92; routes ill. Grenoble, Gratier, 1899
- Publications de. 8vo, pp. 20; portrait. n.p., 1900
(The above, together with many reprints from Alpine Club publications, presented by the Author.)
- FitzGerald, E. A. Dans les Alpes de la Nouvelle-Zélande. 8vo, pp. 557-577; map. In 'La Revue de Paris.' Octobre, 1896
- [Forbes, J. D.] Pedestrianism in Switzerland. 8vo, pp. 285-323. In 'The Quarterly Review,' vol. 101. April, 1857
- Freshfield, D. W. Catalogue of a collection of photographs by Signor V. Sella and Mr. E. Garwood, taken during the tour of Kanchinjanga, made in 1899 by Mr. Douglas W. Freshfield. With a preface. 8vo, pp. 24. Privately printed, London, Spottiswoode, 1900
- Goode, R. U. The height of Mt. Rainier. 8vo, pp. 97-8. In 'National Geographic Mag.' Washington. March, 1898
- Hellmann, G. Der südlichste Gletscher Europa's (Sierra Nevada). 8vo, pp. 362-7. In 'Verh. d. Gesel. f. Erdk. Berlin,' viii. December, 1881
(Presented by the Society.)
- Hellwald, F. v. Die Besteigung von Mont Blanc. 8vo, pp. 635-641; ill. In 'Vom Fels zum Meer', Hft. 7, 1890-1.
(Short account of history of ascents.)
- Hess, H. Ueber die Grenze zwischen Schmelz- und Sammelgebiet der Gletscher. 8vo, pp. 2. Reprinted from 'Verhand. d. Ges. deutsch. Natrf. u. Aerzte.' Nürnberg. 1893
- Krollick, Dr. H. Grenzen und Gliederung der Alpen. 4to, pp. 33. Wissensch. Beilage zum d. Fünften Realschule. Berlin, Gaertner, 1893
(Presented by the Author.)
- Mallet, Mrs. Chas. Women and the High Alps. 8vo, pp. 322-330; ill. In 'Womanhood,' iii, no. 17; London. April, 1900
- Mountaineering, Dangers of Alpine. 8vo, pp. 213-224. In 'Temple Bar.' February, 1878
- Reid, H. F. Variations of glaciers, v. 8vo, pp. 154-9; in 'Journal of Geology,' viii, no. 2, 1900.
(A summary of 'Rapport de la Commission Internat.,' iv. Presented by the Author.)

- Rein, Dr. Johannes. Beiträge zur Kenntniss der Spanischen Sierra Nevada. 4to, pp. 183-336; two maps. Reprinted from 'Abhandl. d. k. k. Geog. Ges.' Wien, Lechner, 1899
(Presented by the Society. Ascents of Mulhacen, Picacho de Valeta, Cerro de Caballo.)
- St.-Bernard, Les merveilles de l'histoire du. 8vo, pp. 675-686; ill. In 'Lecture pour tous,' Paris. Mai, 1900
- Savory, Isabel. A Lady's Adventures in Unknown India (Kashmir, &c.). 8vo; ill. 6 articles in 'The Lady's Realm.' 1899-1900
- Semeria, P. G. L' alpinismo. 8vo, pp. 27. Genova, Tip. d. Gioventù, 1899.
(Presented by the Author.)
- Whymper, E. The first ascent of Aconcagua. 8vo, pp. 607-615; ill. In 'The Leisure Hour,' London. May, 1900
(A review of E. A. FitzGerald's 'Highest Andes.')

REVIEWS AND NOTICES.

The Ascent of Mount St. Elias. By Filippo de Filippi. Westminster: Archibald Constable & Co. 1900. Imperial 8vo. 31s. 6d. net.

Larger and larger grow the volumes on mountaineering, more and more beautiful and numerous the illustrations, till we begin to anticipate the day when the account of some great exploring or mountaineering expedition will consist merely of a few very excellent maps and a large number of even more excellent pictures, with possibly a word or two of descriptive letterpress to each, much in the way that an A.C. 'paper' has been known to consist of a series of delightful lantern slides, the 'reader' of the 'paper' adding a remark or two as each is thrown on the screen. At the same time the bulk of the modern Alpine book is becoming a serious matter to the collector of such works; from Whymper's 9 inches odd we grew to Conway's and Sinigaglia's 10, and now Signor de Filippi, in his account of the first ascent of Mount St. Elias, runs it up to 11, which is beyond the compass of the ordinary bookshelf.

But, the disadvantage of bulk and weight put aside, there can be nothing but admiration for the beautiful way in which this volume has been prepared for the public; print, paper, pictures, all are perfect of their kind, though it is a little curious that there should be no index, and the sketch map might well have been on a larger scale. After reading the book in which Signor de Filippi sets forth clearly and in detail the daily, almost the hourly, movements of the Duke of the Abruzzi's expedition, the impression left on the mind is that H.R.H. would make a first-class general in modern warfare. No precaution was neglected, no labour of preparation shirked, nothing left to chance, and in that lay the secret of success. See how he spent his time in San Francisco.

'During the railway journey H.R.H. had made his plans, and arranged every detail with us. Soon our rooms were filled with samples of biscuits, tinned meats, preserved soups and vegetables, condensed milk, chocolate, &c. &c. With the restricted commissariat before us everything had to be tasted, in order to choose

what would be least likely to pall. Then, our purchases completed, H.R.H. worked with us a whole day and late into the night, making up fifty rations, each ration containing one day's supply of everything required to provision ten persons—*i.e.* ourselves and the guides. Next these fifty rations were packed in as many tin cases, hermetically closed; and fifty small bags were filled with tinned provisions, requiring no extra protection from damp.'

With a leader in such a mood the work of his followers became simple, and though it may be a subject of regret that Italy should have succeeded where England and America failed, yet the Alpine Club, rising above national sentiment, may be proud to remember that of the five amateurs who stood on the summit of Mount St. Elias three were then, and another has since become, members of the Club. And no one can deny that the success was well deserved. Each member of the expedition had been most carefully selected, while there seems to have been none of the trouble which has so often arisen from taking guides into a far-off foreign land. This may have been due partly to their number, which would act as some preventive against home-sickness, but possibly more to that question of race referred to by Mr. Freshfield in the Badminton volume when he advises climbers choosing a guide for distant countries to 'look for him rather in the Italian than the Northern Alps.' And, with regard to the equipment and conduct of the expedition, money can do much, and no doubt money was lavishly expended; an outfit which includes rubber waders and iron bedsteads shows that; but money will not provide the calm courage and constant forethought which were able to triumph over all obstacles. 'H.R.H. always left camp with a small party several hours in advance of the rest of the caravan, in order to prospect the way ahead, and daily pushed on to the furthest possible point' (p. 100). 'H.R.H. slackens the pace of his caravan, and sometimes calls a halt, to wait for those who have fallen in the rear. He is determined to keep us all together, knowing the sense of discouragement felt by any one left behind by the rest of the party' (p. 153). 'H.R.H., with wise forethought, had made the porters deposit stores of provisions at certain points along the route, carefully chosen so as to correspond with the length of each day's march' (p. 162). Such brief sentences will explain the ease with which so formidable a peak was overcome.

But at the same time this very completeness of preparation tends to somewhat diminish our interest in reading the account of the expedition. Everything went so smoothly, and without hitch of any kind, that the final success is seen from the first to be almost inevitable. A comparison might fairly be made with the recent progress of events in South Africa. The flying expedition of Seton-Karr and Schwatka in 1886 might be likened to the Jameson Raid; Topham's, in 1888, to Lord Methuen's advance as far as Magersfontein, and those of Professor Russell in 1890 and 1891 to Buller's attempts to relieve Ladysmith, the repulse of the solitary climber on the final ridge after all difficulties had been

overcome being not unlike the retreat from Spion Kop. But H.R.H.'s advance from the sea to the summit resembles the steady, inexorable progress of Lord Roberts's march to Pretoria. Slight checks might arise here and there, but the concluding success seems obvious all the time. Just as only foreign intervention could give the Boer Republics any hope, so nothing but prolonged bad weather could possibly save the mountain, and even in that case we gather that the expedition was prepared to 'mark time' for an indefinite period. With Signor de Filippi's paper fresh in the recollection of the Club it would be unnecessary to refer in detail to the movements of the expedition, but the way in which all possible difficulties had been carefully considered is well shown in the selection of a landing-place. Icy Bay, where Schwatka's, Topham's, Russell's second, and Bryant's expeditions all landed, is far nearer to the Newton Glacier than the mouth of the Osar; but it is so unprotected that even in fine weather there is always a certain amount of risk in landing through the surf, and the Duke wisely considered that time was of little object to so well equipped a force, whereas a capsized or two in the Pacific rollers might mean the loss of valuable material, or even, as has happened before, of still more valuable lives. He therefore deliberately selected the longer route, and justified the choice by his complete success.

It may be permitted to one of the members of the 1888 expedition to feel a pang of regret at the thought that they were within ten miles of the safe and easy way by the Newton Glacier when they turned back from the Libbey Glacier to circumnavigate the Chaix Hills in a westerly direction; but after all our sympathy goes out far more to Professor Russell, whose indomitable courage under the most adverse circumstances not only succeeded in tracing out the correct route, but actually overcame all the obstacles, and who was only compelled finally to turn back after the 'sticking-point' had been conquered and the goal practically won. Not that we wish to imply that everything was made easy for the Italian expedition, who so generously acknowledge their debt to those who preceded them. On the contrary, the actual physical labour was very severe, and though the greater part of this may have fallen on the guides and porters, there remained for the amateurs that constant strain of responsibility and anxiety which tells so much even on the strongest. How great that strain was may be gauged from the fact that no other ascent was attempted, and by the almost reckless haste with which the party hurried back to the coast. See how Signor de Filippi describes part of the descent.

'We did not dream of unloading the sledges, for no obstacles were now allowed to check our course. In a few minutes a sort of track was made across the moraine, by shovelling aside the bigger blocks for some distance ahead, and we got the sledges along by dint of all tugging together. Then we pushed on in frantic haste, leaping crevasses, and wading all the rivulets and streams in the way, never losing time to look out the easiest passage, never once turning back. The porter's sledge was capsized, but we righted it

on its runners in a flash and sped down all the slopes without pausing, barely halting now and then to draw breath before a hard bit. The sledges were half smashed, the loads disordered and all awry; but if things tumbled out they were hastily pitched in again, without stopping the vehicles.

'A second tongue of moraine was soon reached and traversed, then another, and we rapidly neared the site of our third camp, at the top of the marginal moraine. We passed it without stopping, and continued our course along a tongue of ice ending in a steep descent towards the nook between the last "penniform" strip and the hem of the marginal moraine. The sledges were borne down the slope by their own impetus, rapidly at first, still held back by the men, but soon to be let go at a headlong speed, and scarcely steered, until they were finally brought to a stop by crashing into the big boulders at the edge of the main frontal moraine. It was lucky their work was done, for they were utterly wrecked.'

The work of translation has been well and carefully carried out, though such words as 'repercussion' and 'Alpinist' have an unfamiliar flavour. On p. 34 a word seems to have slipped out in describing the movement of the Muir Glacier. 'An average of 40 ft.' should surely read 'a *daily* average,' and we are more used to calling moraines 'lateral' and 'terminal' than, as in the extract above, 'marginal' and 'frontal.' In making the ptarmigan a 'partridge' the language of the American porters may have been followed, though our men were more apt to call them 'pheasants;' but the word 'roebucks' on p. 22 is more puzzling, especially as it is coupled with 'deer,' and so presumably does not stand for the small Virginian deer of the islands of the archipelago. The 'silver' or 'blue' bear is, as I can testify from personal observation, *not* a large bear (p. 74), but considerably smaller than the Alaskan brown bear, and almost certainly a variety of the black bear. Mount Edgecumbe (spelt 'Edgecumbe' on p. 39) is described as being 8,000 ft. high; I can only say it must have grown enormously since we climbed it in 1888, but probably the 8 is a misprint for a 3. A similar, though reversed, misprint occurs in the foot note of p. 157, where the date of our expedition is given as 1838. On p. 52 '55 miles east of Port Mulgrave' should be '55 miles west,' while Professor Israel Russell's first initial is given as J. on at least three occasions.

But after all these are but microscopic defects in a magnificent volume, in which is described from start to return one of the most perfectly equipped and most completely successful expeditions which ever set out for the conquest of one of the great mountain giants of the world. It must not be forgotten that Mount St. Elias and its neighbours are in a way unique, combining prodigious height with Arctic or semi-Arctic conditions in such a way as to require very special treatment. Want of means, or want of leisure, is only too likely to debar the majority of our members from attempting further ascents in such inhospitable regions, but possibly we may dare to hope that H.R.H., on his return from even more Arctic

surroundings, may feel disposed to revisit those distant shores. The Fairweather group is a magnificent mountain mass, and in some ways far more accessible, since the peaks lie nearer the sea, while Lituya Bay offers a safe landing-place and secure anchorage, for even a man-of-war.

G. B.

Scrambles in the Eastern Graians, 1878-1897. By George Yeld, Editor of the 'Alpine Journal.' With a map and many full-page illustrations. (London: Fisher Unwin. 1900. 7s. 6d.)

This book contains, with considerable additions, the author's contributions to the 'Alpine Journal' on the Eastern Graians from 1878 to 1897. In addition to those illustrations which appeared with the papers in this Journal there are twelve new ones, four from photographs by Alfred Holmes, including the Ciamarella from the S., the Tour St. Pierre group from the Grand Paradis, and the Levannas from Ceresole, and eight by Tempest Anderson, including the Grand Nomenon, the Becca di Gay from the S.W., and the Grivola from the Arpisson chalets. The author's references to the high Alpine flora have been enlarged. The sketch map of the Eastern Graians which originally appeared in the 'Alpine Journal' has been improved by the correction of one or two errors and the addition of several names, though the name Valletta in the ridge which runs northwards from the Tour St. Pierre was unfortunately overlooked; it should have been changed to Cisetta, under which it now appears in the text. It is hoped that the new map of the whole district which the Italian Alpine Club now have in hand will provide a final and satisfactory map of the whole district. The book is furnished with a complete index.

The following misprints may here be corrected: On p. xii of Preface, three lines from the bottom, for *Requiescat* read *Requiescant*. On p. xiii of Preface, line 14, for *Boll's* read *Ball's*; on p. 29, line 7, for *Ranunculas* read *Ranunculus*, and on p. 109, line 5, for *Gaidini* read *Gaudini*.

Travels through the Alps. By the late James D. Forbes, F.R.S., &c. Second edition, revised and annotated by W. A. B. Coolidge, Fellow of Magdalen College, Oxford, and formerly Editor of the 'Alpine Journal.' With portrait, new map, and many illustrations and diagrams. (London: Adam & Charles Black. 1900. Price 20s. net.)

This book will be heartily welcomed by all lovers of the mountains. 'In 1859,' as we learn from the preface to the present edition, 'Professor Forbes collected his scattered essays and notes relating to his scientific observations on glaciers in a volume entitled "Occasional Papers on the Theory of Glaciers, now first collected and chronologically arranged."'* Forbes, however, never seems to have thought of similarly collecting his writings which describe his travels in the Alps. The present volume is an attempt to fill this gap, and is thus a companion to that of 1859, the one being purely scientific and the other purely

* Edinburgh: A. & C. Black.

narrative.' The book contains four of Forbes's chief writings relating to his Alpine travels :—

1. 'Travels through the Alps of Savoy and other Parts of the Pennine Chain.'

2. 'Journals of Excursions in the High Alps of Dauphiné, Berne, and Savoy.'

'These journals,' says the editor, 'were printed at the end of Forbes's "Norway and its Glaciers Visited in 1851," * and so are little known to the Alpine reading public. Yet they are of extreme importance and interest, for they narrate some very early explorations in the snowy ranges of Dauphiné, the first British ascent of the Jungfrau, and the first visit by a traveller to the great glaciers of Tour and Saleinaz, in the chain of Mont Blanc.'

3. 'Pedestrianism in Switzerland.'

'This is an article originally printed in the "Quarterly Review" for April 1857, and is a most interesting review by one of the early pioneers of the principal new works relating to the Alps. It has also considerable historical importance, as it appeared nine months before the foundation of the English Alpine Club.'

4. 'Topography of the Chain of Mont Blanc.'

'This is an article published in the "North British Review" for March 1865, and is here reproduced by the kind permission of Mr. Douglas.'

The book has to the full the charm of a sincere love and keen and sympathetic observation of Nature, a full enjoyment of the beauties of scenery, and of perfect truthfulness. Of Forbes's achievements as a man of science it is not necessary to speak here. This volume assures his position as a traveller, and is of special interest to all who concern themselves with the history of travel in the Alps, as well as to mountain-lovers in general. It has been ably and carefully edited by Mr. Coolidge, who acknowledges gratefully the help he has received from M. Louis Kurz, of Neuchâtel. It is beautifully printed and got up, and we can only wish that others may derive as much pleasure and instruction from its pages as we have ourselves.

Rock-Climbing in the English Lake District. By Owen Glynne Jones, B.Sc. London, Member of the Alpine Club. Second edition. With a memoir of the author, thirty-one full-page illustrations in collocation, nine outline plates of the chief routes, and an Appendix by George and Ashley Abraham. (Kewick : G. P. Abraham & Sons. 1900. Price 20s. net.)

This sumptuous second edition of the late Mr. O. G. Jones's book, the first edition of which was reviewed in these pages in February 1899,† will no doubt be heartily welcomed, as the first edition was soon exhausted.

As the work was noticed so recently it is not necessary for us to

* Edinburgh : A. & C. Black. 1853.

† *Alpine Journal*, vol. xix. pp. 385-7.

review it at length. The favourable opinion then expressed has been confirmed on a reperusal. This edition contains a photogravure of the late Mr. O. G. Jones, and a memoir of him written by Mr. W. M. Crook. The book has been brought up to date by the addition of several new climbs, the accounts of which appear as they left Mr. G. Jones's pen, also by the further addition of an appendix, pp. 295-316. Herein are given accounts of Walker's Gully, Pillar Rock : Iron Crag Chimney : Engineer's Chimney, Gable Crag : West Wall Climb, Deep Ghyll : the Ling Chimney, Eagle's Nest Arête (why arête in Cumberland ?) : and the West Jordan Gully, Pillar Rock. As an illustration of what may be met with after heavy rain we quote the following account (pp. 307-309) from a narrative by one of the Messrs. Abraham of an ascent of Iron Crag Chimney :—

The pitch we had just climbed was composed of most excellent rock, but up above, where we now were, everything was changed, and the upper rocks, which had been rotten enough before, were now, as a result of the heavy rain, of the worst description imaginable. Great pieces as large as one's head came away at once, and every step had to be most carefully tested before we could proceed. Now was the time for us to appreciate our leader, for a less careful man would have 'pounded' us severely before we had made any progress worth mentioning. As it was several big pieces had to be removed, and some came whizzing past in much too close proximity to be pleasant.

After the second pitch the chimney continues straight up, and is fairly wide for 200 ft. or so; but there is no good anchorage until the level sky-line is reached. Towards the top it narrows down to a thin, rotten, and very steep crack. By slow and very careful progress we reached this crack, which had been climbed straight up on the first ascent; but after Jones had tried it a few times he evidently thought it hopeless, for he shouted down to us, 'It won't go to-day. The rain has made everything too rotten. We shall have to go back.' It was 4 o'clock, raining heavily, and nearly dark, and to go back meant, in all probability, sleeping on the top of the second pitch, an idea which none of us relished. So my brother climbed up to Jones, and, after consulting for a while, they decided to climb out of the crack on the right-hand side. To do this a shoulder would have to be given, from a small shelving ledge, to enable the leader to reach the firmer and less steep rock up above. This was the most obvious route of ascent, but the ledge looked very unstable and rotten, and vibrated a little on being tested. However Jones thought it might hold if stepped on in the right way; so my brother climbed up on to it and Jones followed. By utilising the side of the crack they were able to put very little pressure on the ledge. Jones climbed on to his companion's shoulders, and, when he had cleared away a few of the loose rocks, was, after an anxious moment or two, able to draw himself up on to the sky-line and disappear from our sight. After a few seconds he gave a cheer and called to my brother to follow him. This he had just begun to do, and had left the ledge about 5 ft., when I heard a dull, ominous crack, and, on looking up, saw the whole thing coming down. There was no time to do anything but squeeze into the chimney and warn my father. I succeeded in getting far enough inside to escape serious damage, but the heel of my left boot, which projected a little, was torn entirely away. My father's escape was more marvellous, for it

seemed that nothing could save him; but on looking down I saw the great rock strike a projecting piece of the chimney only a few inches above his head, and spread out like a fan into a thousand splinters, which shot far out into the air, falling again near the foot of the chimney; and thus we escaped with only a few slight bruises. One shudders to think what would have happened if the ledge had fallen when Jones and my brother were on it. It may be of interest to say here that, during the whole of our climbs with Jones, this was the only approach to an accident we had, and under his leadership the possibility of anything going wrong seemed, and always was, very remote indeed.

Les Pyrénées : Développement de la Connaissance Géographique de la Chaîne.
Par P. Camena d'Almeida. 8vo, pp. 328. (Paris: Armand Colin et Cie. [1893.])

This is a very thorough historical statement of the growth of knowledge with regard to the Pyrenees from the times of Herodotus and Aristotle to the present day. Early travels and ascents are fully described, and the various geological theories which have been held in regard to the formation of the chain. Among other subjects described are 'An Ascent in the Sixteenth Century,' 'Programme of Research Formulated by De Saussure,' 'Ramond's Discoveries, Hypotheses, and Adversaries,' 'Measurement of Heights,' 'The Work of M. Schrader.'

La Photographie en Montagne. Par E. Trutat. Bibliothèque Photographique. 8vo, pp. 137. (Paris: Gautier-Villars. 1894.)
Die Photographie im Hochgebirg. Von Emil Terschak. 8vo, pp. 83; ill. (Berlin: G. Schmidt. 1900. 3m.)

Two very useful handbooks for photographers. M. Trutat's book gives a very thorough account of all the materials required (including receipts for solutions, &c.), and of the methods of using them, while Herr Terschak confines himself rather to hints for the practised photographer as to points specially to be noted in mountain work. The illustrations in Herr Terschak's book are fair, but much inferior to those of his beautiful work on the Grodener Dolomites.

Le Alpi Nostri. Da G. C. Abba. 5 vols. 8vo; ill. (Bergamo, Istit. Ital. d'Arti Graphiche. 1899.)

These volumes are published by the Minister for Public Instruction as reading books for the higher elementary schools. For purposes of description the Alps of the North of Italy are divided into five geographical districts, and 70 pages of each volume are devoted to one of those districts, while the remaining 100 pages are given to a general description of the Alps, which is the same in each volume. The text and the illustrations are full of interest, and the price is only 60c. per volume.

Nivoline: Poeme Alpestre. Par Virgile Rossell. Illustré par Mlle. Achinard. 8vo, pp. 92. (Neuchâtel: Attinger. [1898.])

There are many pleasing little bits of description in this poem, recalling impressions of alpine meadow, snow, and glacier. Its 2,000 verses describe the rival affections of a Genevese student and a guide for a servant in the Zinal Hotel. An ascent from Zinal is described in the second canto.

Innermost Asia: Travel and Sport in the Pamirs. By Ralph P. Cobbold. 8vo, pp. xviii, 354; maps, ill. (London: Heinemann. 1900.)

This describes a trip taken for sport and exploration through Gilgit by the Kilik Pass to Kashgar, Vierny, Balkash, Tashkurgan, Kala-i-Wamar, and Hunza. The narrative is illustrated from photographs of the scenery of the district, most of them being, of course, of mountaineering interest, and is accompanied by Lord Curzon's map of the Pamirs.

Wild Norway; with Chapters on Spitsbergen, &c. By Abel Chapman. 8vo, pp. xiii, 358; ill. (London, &c.: Edward Arnold. 1897.)

Mr. Chapman describes the mountains of Northern Norway from the point of view of the sportsman and naturalist, but the book will be read with interest by the mountaineer. A short chapter at the end of the volume contains the diary of Mr. Arnold Pike, who spent a winter in Northern Spitsbergen, but unfortunately gives no topographical description to fill up the blank which exists in our knowledge of the region.

The Making of a Frontier: Five Years' Experiences and Adventures in Gilgit, Hunza, &c. By Colonel Algernon Durand. 8vo, pp. 298; map, ill. (London: Murray. 1900. 16s.)

This book gives an interesting record of frontier travel, war, sport, and politics. There are many good illustrations of mountain scenery, and the author has much of the spirit of the true mountaineer, for he writes, 'It always seems to me that it is only in the heart of the great mountains, thousands of feet above the last trace of human habitations, when you lie by some time-worn rock, lulled by a silence which can be felt, and gazing at the eternal snows, that the real voice of nature speaks to you . . . for a moment the mysterious veil which falls between us and the light wavers and half fades away.'

Guida-itinerario alle Prealpi Bergamesche . . . colla prefazione del A. Stoppani e cenni geologici del T. Taramelli. Da G. Castelli. 3za edizione per cura della Sez. di Bergamo. 8vo, pp. xlvi, 241; ill., and vol. of maps. (Milano: Hoepli. 1900.)

This handy little guide-book (forming one of the 'Manuali Hoepli') has been entirely rewritten, and is thus really a new work and not a 'third edition.' A full description of the history,

geology, mountaineering, &c., of the district is given, and the bibliography of 14 pages, though imperfect, is of use. The illustrations derived from Mr. E. T. Compton's sketches in the 'Zeitsch. des D. u. Oe.,' 1897, and from original photographs, are excellent. In a separate volume from the text are two maps of the district, both taken from the map of the 'Istit. Geog. Milit.,' corrected and added to, one being as illegible as the Government map, but the other (scale $\frac{1}{300,000}$) having the names clearly printed on a pale background of mountains. The price of the two volumes in a case is L. 6.50.

PROCEEDINGS OF THE ALPINE CLUB.

A GENERAL MEETING was held in the Hall of the Club on Tuesday evening, May 1, at 8.30, the Right Hon. James Bryce, *President*, in the chair.

Messrs. W. H. Gover, H. J. Mackinder, E. S. Tattersall, E. L. Vail, and W. J. Whelpdale were balloted for and elected members of the Club.

The PRESIDENT stated that Dr. Moreno, Director of the Museum of La Plata, had presented four photographs of the Southern Andes to the Club.

On the motion of the PRESIDENT a hearty vote of thanks was accorded to Mr. Sydney Spencer for the trouble he had taken in the arrangement of the exhibition of photographs.

Mr. H. E. M. STUTFIELD read a paper on 'Mountain Sport,' which was illustrated by lantern slides.

Mr. WINTRINGHAM STABLE said he had had some experience in the Pyrenees. There the bouquetin, though very rare, was found at a much lower level than the chamois, in the forests of the deep valleys. He had found it very difficult for the first year or two to get accustomed to climb unroped, as one must do on a shooting expedition; and also to remember that a bullet fired when the muzzle of the rifle was either resting on or too close to a rock would be deflected, so that at a near distance, to be successful, one had to aim below the quarry. In France there was no difficulty about obtaining a shooting licence, but on the Spanish side there was delay and trouble in obtaining a licence, and without one there was apt to be interference by the authorities.

Mr. YELD had seen bouquetin perform marvellous jumping and climbing feats. It had been said that

The chamois is the beast to hunt,
He's fleetier than the wind;
And when the chamois is in front
The hunter is behind.

But at Cogne the position is often reversed when the Royal party return from the chase. He had in 1899 seen seven chamois on the

glacier between the Olmenhorn and the second peak of the Dreieckhörner.

Mr. HASKETT-SMITH had never seen bouquetin in the Pyrenees except in the forests, but further south in Spain they occurred much higher up the mountains. With regard to the objections the hunters usually made to going on snow, it was to be remembered that solitary climbing was unsafe on snow, and that boots wetted by snow made walking on rocks unsafe.

Mr. BAILLIE-GROHMAN had been much interested in the paper, and thanked Mr. Stutfield for his kind reference to himself.

Sir GEORGE ROBERTSON, who was present as a guest, was surprised to hear that in northern Spain the ibex was found in the low valleys, for it always lived in the Himalayas at a great altitude. In Kafristan the ibex was not found, but flocks of goats were there hunted with the help of dogs, who drove the selected goat into a corner, so that the hunter might fire at him from about twenty yards away. That was not so easy as might appear, for the goat was very ready to take alarm at the sight of man and escape through the dogs. In Chitral he had hunted ibex at 13,000 ft. on horses that were exceedingly sure-footed, so that they could safely reach places where he had on dismounting to climb on hands and knees.

Sir MARTIN CONWAY had been much interested in the slides taken from engravings. At one time he had begun making a collection of engravings, but those he had got together were unfortunately burned. Some curious hunting incidents were to be noted in the background of pictures in such galleries as that at Munich, and in the pictures in seventeenth-century German books. The old method of chamois-hunting appeared to be that the huntsman had the chamois chased to the summit of one peak, while he climbed another from which he shot his arrow. He had himself never shot a chamois, but had once seen an ice avalanche kill four bouquetin. In South America there were no wild goats, but a deer somewhat resembling the llama; it could not climb, and was therefore easily killed.

Dr. CLAUDE WILSON had always wondered how hunters could know where to look for chamois. He had never seen one in the Breuil district, where Mr. Stutfield had found them.

Mr. A. BUTLER said that in the Tyrol one saw chamois every day.

Mr. STALLARD wondered if any observations had been made on the temperature of the chamois. Hunters often said it was very high, but he had found it to be about 101° F. This, however, was in animals that had been running for their lives and had been either wounded or killed.

Rev. G. BROKE also spoke.

The PRESIDENT had seen very few chamois in the Tyrol, but once in the Engadine he had seen a large herd. In the Tâtra there were a great number. He would recommend members to read Mr. Buxton's 'Short Stalks,' which was a most interesting book. Alpine climbing probably began in hunting. In the opening scene

of Schiller's 'William Tell' songs were sung by various people representing the different elements of Alpine life, and among them a hunter who had come down from the rocks above. If the play had been written at the present day a member of the Alpine Club would probably have taken the hunter's place. There was no end to the variety of ways in which the mountains might be viewed, and sport often showed new aspects of their topography. Mr. Stutfield had laid before them one of the aspects of the mountain's infinite variety.

Mr. STUTFIELD said that he had taken his information at second hand with reference to the height at which bouquetin were found, as he had seen few himself. With regard to finding chamois, 'spying' was a most difficult art, and required years of training to acquire.

A hearty vote of thanks to Mr. Stutfield concluded the proceedings.

A GENERAL MEETING was held in the Hall of the Club on Tuesday evening, June 12, the Right Hon. James Bryce, *President*, in the chair.

Messrs. F. W. Bourdillon and J. M. A. Thomson were balloted for and elected members of the Club.

The PRESIDENT announced that the monks of the Hospice of the Great St. Bernard proposed to erect a statue to their founder on the pass, and that the Prior had written asking the Club to subscribe; but, as this was not within the province of the Committee, they had replied that though unable officially to subscribe they would be willing to receive and forward subscriptions from individual members of the Club.

Mr. DOUGLAS W. FRESHFIELD read a paper entitled 'Round Kanchinjanga,' which was illustrated by lantern slides.

Sir MARTIN CONWAY thought that the mountains appeared to be entirely similar to those in the neighbourhood of K². Siniolchum appeared very much to resemble a mountain that he had seen by the side of the Orafu Glacier. On the other hand, he noticed marked differences in the vegetation of the lower levels, and flowers appeared abundant at high altitudes. In the Karakoram flowers were scarce above 15,000 ft., and only a few, such as some varieties of the potentilla and saxifrage, existed at 18,000 ft. He was inclined, therefore, to think that there must be a considerable difference in the humidity of the atmosphere, as might be expected in a district that was on the edge of the mountain region, and which therefore caught the warm southern winds as they first came across the plains. The greater humidity might also produce much effect on man. Mr. Freshfield said that at 19,000 ft. they had walked up cols with ease. In the Karakorams he had had a caravan as large as Mr. Freshfield's—about fifty men of different races and types, Major Bruce and Zurbriggen coolies and Goorkhas—and at 16,000 ft. they were all powerfully affected by the diminished pressure, and above that height there was no question but that their natural

forces were much abated. There must, therefore, when one caravan was so much affected and the other far less so, be some difference in the quality of the atmosphere; perhaps that quality was the greater dampness. The district seemed to offer great attractions from its accessibility, which he trusted would lead other parties to go to it.

Dr. COLLIE had not found much bad effect from being at 18,000 ft. The coolies of their party had several times crossed the Mazeno Pass at that height, with heavy loads, without being seriously affected. The first time that he had crossed he had been himself attacked by mountain sickness, but not subsequently. His companions, Messrs. Mummery and Hastings, had gone to a height of 21,000 ft., and though they had climbed continuously 8,000 ft., starting at twelve midnight and ascending till five the next afternoon, they were unaffected by mountain sickness. They were, however, affected by lassitude at about 20,000 ft. This under the circumstances was not to be wondered at. If the food was good and the travellers in good health and condition no ill effects were felt up to 20,000 ft. The north-west side of Kanchinjunga reminded him of the north-west side of Nanga Parbat. Of all snow peaks Siniolchum was probably the most beautiful snow peak in the world.

Mr. GARWOOD said that at 16,000 ft. on the Zemu Glacier during the great storm he was probably the member of the party who suffered most, while afterwards when crossing the high pass at 21,500 ft. he felt much less inconvenience from the rarefied air. He would like to point out that on the former occasion the temperature was high and the atmosphere was saturated with humidity, while on the Nepal side of the watershed both the temperature and the relative humidity were exceedingly low.

He was sorry that at that late hour he could not respond to the President's kind invitation to describe the geology of the region visited, which he hoped to do fully in another place; he would like, however, to call the attention of the members to the collections exhibited, and to point out that the Kanchinjunga range was composed of a foliated granite intruded into metamorphic schists and intersected in its turn by veins of pegmatite; at either end of the range—namely, at Pandim and the Chortenima Pass—metamorphic limestones occurred, which in the northern exposure contained recognisable crinoid stems. The whole northern extremity of the range where it enters Thibet is apparently composed of sedimentary rocks, and to this fact is due the markedly different aspect of the scenery after crossing the Thè La Pass, the junction being roughly indicated by the valley of the Lungma Chu.

Among the insects shown he would like to call attention to the numerous imitative forms, as exemplified by the leaf-like moths and butterflies, the stick insect, and the bamboo beetles.

Mr. CHEETHAM'S experience as to the effect of altitude agreed with Mr. Garwood's. His climbing in the Himalayas took place

some twenty years ago, and chiefly in the western part of the range.

The PRESIDENT thought that all members must be proud that so good a piece of exploration work had been carried out by one of themselves.

He proposed a vote of thanks to Mr. Freshfield for his most interesting paper, which was heartily accorded.

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MOUNTAIN SPORT.

By HUGH E. M. STUTFIELD.

(Read before the Alpine Club, May 1, 1900.)

THE papers read before the Club have lately shown a growing tendency to depart from the older forms. The simple narrative of a day's climb up an Alpine peak grows rarer and rarer; our dear old valued friends, the stone in the *gîte*, the kettle that won't boil, the jam-pot that won't open, the impassable bergschrund, the insurmountable rock chimney—which are both, nevertheless, passed and surmounted—these and other hardy annuals of mountaineering literature appear to be gradually dying out. I only hope they will not be allowed to perish utterly, for, though they may lack the charm of novelty, they yet have a perennial freshness of their own in that they recall to all of us pleasant memories. From Alpine climbing pure and simple we have been drifting, by some apparently inevitable process, into mountain topography and exploration. Our papers, however, have hitherto always dealt with mountaineering proper in one form or another, and in asking you to-night to listen to a dissertation on so comparatively frivolous a theme as mountain sport I feel I am doing a rather daring thing; and I embark on these waters of innovation with somewhat of the trepidation with which the Horatian mariner doubtless first put to sea in his open boat.

Another consideration is present to my mind. The members of our Club are a humane body of men—by which I mean that few of them have been, like myself, addicted from their youth up to those forms of sport which consist in the pursuit and slaying of wild birds and beasts. I shall,

therefore, subordinate in my paper the mere gunning part of the business to what, for want of a better word, I may call its æsthetic aspect, and, to tell the truth, this is what in the main I do in practice. I have always regarded chamois-hunting less as a sport, in the limited sense of the word, than as a sort of fringe or embroidery to a comparatively mild but none the less delightful kind of mountaineering. To me the stalk is more important than the shot, and watching the chamois on a fine day is perhaps better than either. There are few things more absolutely delightful than sitting out on a hill-top in the sunshine with a pipe and a good appetite, watching the face of the landscape change with the change in Nature's moods, the great glaciers and snows around you, while over you the tall peaks thrust their heads up into the deep blue sky. These are joys that all of us have experienced, but they are greatly enhanced when in addition your instincts as a sportsman are appealed to by the sight of chamois or other mountain game, such as bouquetin or bighorn, in their craggy fastnesses. The young ones gambol about on the rocks or chase each other over the snow, while their dams look gravely on. In the autumn a couple of bucks may be seen engaged in deadly combat for the favours of the fair. High above, on some jutting pinnacle of crag, the lady sentinel of the band keeps watch and ward. If, as is very probable, your glass has failed to spy her out, her shrill warning whistle soon tells you that your stalk is a failure and your labour vain. If, on the other hand, you see that a stalk is out of the question you can sit still and look at the scenery. Not the least of the charms of mountain sport is that it gives you so much time to admire the view. In climbing big mountains one's æsthetic faculties, like one's legs, are apt to be a trifle jaded. I am not merely speaking of those distressing but not unknown occasions when the hardy Alpinist is taken ill on the top of his peak, but I think that even on ordinary occasions one is apt to be too much on the stretch, and time is too pressing, to enable one to appreciate properly one's surroundings. Again, in hunting hill game one is left a good deal to oneself, and, though I am of a fairly gregarious disposition, I am one of those who think that to commune with Nature in her grandest moods, to drink in, as it were, the spirit of her noblest scenes, one ought to be alone. It is then that is borne in upon you the utter loneliness of a Canadian backwoods, the silence and the immensity of an African desert, or the solemnity of the great mountain peaks. I do not say it

is more agreeable to be alone, but simply that the impressions created are deeper and more enduring.

In dwelling thus on the picturesque side of mountain sport I would not be taken as unduly depreciating what I called just now the gunning part of the business. The actual shot is, of course, the supreme moment, when perhaps a day's work is crowned with success, or ends in humiliating failure. It is something like holing out at golf, only fifty times more exciting. My worthy hunter and friend Perruquet thinks it far the most important part of the business. I can never get him to appreciate the artistic side of my favourite pastime. He is always athirst for blood. In vain I tell him when I make a bad shot that it amuses me and doesn't hurt the chamois much. It causes him keen mental anguish when I miss; and I am afraid I sometimes make him suffer a good deal.

Of the making of books on Alpine climbing there is no end, but I have never ceased to marvel at the scantiness of the English literature on chamois-hunting. There are only two books in our language dealing at any length with the subject—Charles Boner's 'Chamois-Hunting in Bavaria' and Mr. Baillie Grohman's delightful 'Sport in the Alps,' which is likely to remain the standard work on the subject for many a long day to come. Not the least interesting part of his book is that which deals with the sport in olden days. You know the romantic glamour which has always hung round the chase of the chamois, and what a desperate person was the conventional *Jäger* of the past. His very countenance told the beholder that he was a man who daily faced death in its most grisly shapes. Gnomes and pixies lurked in the mountains, and hurled stones at him from their recesses, or else inspired him with a mad desire to throw himself over the cliffs. Avalanches of ice and rocks threatened to overwhelm him, or else shot chamois falling from above nearly squashed him flat. All this, with much quaint legendary lore concerning the habits of the game, may be found in the pages of Mr. Baillie Grohman's book. By the way I have often been struck by the universality of that venerable yarn about mountain game jumping off precipices on to their heads. Not only does it prevail concerning the Rocky Mountain bighorn and ibex and other animals, but the same story is told by the Moors of the Great Atlas concerning the aoudad, or Barbary sheep.

Chamois-hunting in these days may be divided roughly into three kinds. First, there is the driving or battue system. I have never tried it, but it does not strike me as a very high class of sport, not greatly superior to roe-deer shooting in the

Highlands. At least I read in a newspaper the other day that the Princess of Naples, who is devoted to the chase and a good shot, brought down sixteen chamois to her own gun on the closing day of the hunt. It takes a mere man and a commoner like me the best part of a week sometimes to circumvent one old buck! Only think of it. Eight brace of chamois to a lady's gun in one day—more than half my total bag in several years' hunting! Most of us would think it a



A GOOD BUCK IN HIS WINTER COAT.

(From a Picture by Pausing, &c.)

fair bag of snipe. But let us pass on from this painful topic to that of stalking in the lower mountains of the Tyrol and Bavaria, a much nobler branch of Alpine venery, though inferior, in my humble opinion, to hunting the little rock antelope in peasant shoots in the High Alps. Here you are amid the grandest scenery; the game is scarcer and much warier; the climbing is more interesting, and one often gets diverting bits of ice work. This in itself is enough to differentiate hunting above the snow line from other branches

of the sport ; and, as one has to spend a good deal of time on glaciers without a rope, some knowledge of ice and snow is indispensable.

My earliest experiences were some eighteen years ago. It was my first season in the Alps, and the tourists had gone home or to the lakes, when early in October I borrowed a musket from a peasant and, full of sporting ardour, plunged into the wilds of the Val de Bagne. Our head-quarters were Mauvoisin, and you may guess my hunter, S. Bessard, and I had it all to ourselves. There were a good many chamois in those times in the valley, but for several days we were unsuccessful. I remember we were reinforced by an elderly peasant armed with a fearful-looking bell-mouthed weapon, more suited for shooting Irish landlords than chamois ; and the reckless way in which he climbed steep rocks with the hammer of his gun down on the percussion cap brought home to my mind in the most vivid way the manifold perils of the chase. My first stalk was on a mountain above the chalets of Chanrion. I had spied a chamois on the peak of Oyas, and began to try to circumvent him by myself. When I got within five hundred yards of him, being anxious to approach as noiselessly as possible, I took off my boots. The stalk was a failure, as, after a longish tramp over unpleasantly rough ground, I found the chamois had winded me and made off, and I had to creep in my stockinged feet down the hill again. And then naturally the question arose, where were the boots ? Up and down, round and round, I spent a most uncomfortable quarter of an hour looking for them, and by the time I found them my stockings were in rags, and my feet in not much better case. However three days later I tried the experiment again. I was stalking a big buck we had spied at the foot of a cliff on an island of rock in a glacier below the summit of Mont Pleureur. Undeterred by my previous misadventure I once more took off my boots, this time leaving them in a conspicuous position on the snow ; but I had not gone many yards down the gentle ice-slope before I came a cropper that nearly resulted in my hunting and climbing days being ended for ever. After that I came to the conclusion that there was after all nothing like leather, and I have stuck to my boots while stalking ever since.

I had two or three more unsuccessful days before I reached the goal of my sporting hopes and ambitions. Bessard and I were out hunting towards La Ruinette, on the E. side of the valley, and I had left him to search the lower slopes of the mountain-side while I had a long climb by myself.

Quite high up, not far below the Col du Mont Rouge, I found a herd of about twenty chamois, and to my huge delight bagged a couple. Never can I forget the almost delirious sense of triumph at that moment. I know it sounds very foolish; but don't be too hard upon me. I was quite young in those days, and full of the callow enthusiasm of youth. Like many other people I imagined that the chamois was a rare and almost extinct animal; and I suppose that, after the manner of collectors and others, I was anxious to help in exterminating the remnants of the species. I had not then had the chance of reading Mr. Baillie Grohman's book, which tells us that about 11,000 head of chamois are killed annually in the Alps; and probably the princess who slays her eight brace in a single day was only just born. We had a long and wearisome tramp home with our chamois and other impedimenta, but I was too happy to be tired, and, though we found nothing to eat in the inn and I had to go supperless to bed, I slept the sleep of the successful *chasseur* for thirteen hours without waking.

My next venture was in the Tarentaise, in that delightful valley of the upper Isère which is known much less than it deserves. My head-quarters were a chalet on the shore of the Lac de Tignes, and I spent a most delightful week there, though the hunting was not a success. Most of the ground being private, there were not many chamois, and I had a rifle that wouldn't shoot straight—at least it wouldn't do so in my hands. I will only trouble you with the details of one stalk. My hunter, Michel Payot, and I were hunting one day on a craggy mountain not far from the lake, where there was a *léchoir*, or salt-lick, in the cliffs which was much frequented by chamois. About noon Michel told me he spied four lying on a grassy ledge a long way below us, and we had a long stalk, in the course of which we traversed some rather ticklish ground. Finally, crawling to the edge of the cliff, we cautiously peered over, and there we saw with some surprise our four chamois descending the hill in leisurely fashion and in charge of an able-bodied peasant. They were four goats that had strayed from the herd! Mistakes, of course, will happen; but I must say that I thought Michel was old enough to know better than that. I wish I could add that I found our game in the evening drinking hot wine in the kitchen, after the fashion of the immortal Tartarin's chamois; but, remembering the remarks made in this room last month on the mendacity of travellers and sportsmen in general, I forbear.



CHAMOIS BUCKS FIGHTING DURING THE RUT.

I must now take you to ground that we travelled over the other day in company with Dr. Wilson—the mountains of Valpelline and Valtournanche. Here the bulk of my best hunting has been done, and I visited them more or less regularly for about fifteen years. In fact Perruquet, who hails from Valtournanche, tells me that I may consider myself a citizen of his native town. The inhabitants cannot pronounce, much less spell, my name, but they call me ‘Monsieur le Chasseur,’ and I fancy they think that chamois-hunting is my chief vocation in life. I have spent many happy days wandering over their mountains, and I trust I may claim to have several good friends in both valleys. Not the least of the many delights of the *Gemsjagd* is the inside view it gives you of peasant life in the course of your week or ten days’ sojourn in a chalet. Very jolly are the evenings as you all sit in a circle round the crackling fire of logs, spinning yarns about beasts and birds, and hunting adventures—of bouquetins, of poachers, of fierce marauding eagles, and perilous stalks of solitary buck chamois of fabulous size.

The big solitary buck, I should explain, is always your *Jäger’s* most coveted prize. Crabbed, unsociable creatures are these old bachelors, living apart in secluded nooks and rocky fastnesses, where they are difficult to spy out or approach. Like the elderly males of other animals—including some members of the human species—the veteran buck has a rooted objection to ladies’ society, and he only joins the herds for a short time in the autumn. All the rest of the year he keeps strictly to himself in places where he is least likely to be disturbed. In spite, however, of his wiliness your old *solitaire* will sometimes display a boldness which approaches temerity, and I am inclined to think that, if you can only find them, they are on the whole less crafty and easier to stalk than those ever-watchful old does.

Ten or twelve years ago the Valpelline contained a good many chamois, and in the autumn I have seen herds of as many as sixty on the mountains round Prarayé. Now, however, there are very few. One of my favourite hunting grounds used to be the lower slopes of the Mont Brulé, whose western face used to give us some interesting rock climbs in the course of our rambles. The E. side, where the chamois chiefly congregated, was quite easy, and from its grassy slopes one had glorious views of the Dent d’Hérens and neighbouring peaks, and the splendid Za de Zan glacier, with its curious tongues of ice descending laterally into the valley. I often think this glacier, with its serpentine wind-

ings, might well have been the original of one of old Scheuzer's dragons. Another very delightful *chasse* was formed by the hills round the Becca di Lusenev, when we sometimes had to sleep out in those abominable cowsheds in the pastures above the commune of St. Barthélemy. For some years, however, the chamois have been so remorselessly hunted as not to be worth going after, and by this time they are probably almost exterminated.

As time is getting on I will now transport you with all convenient speed across the Atlantic to the northern Canadian Rockies. Behold us, then, encamped in a charming valley at the head waters of the Athabasca and Saskatchewan, right under the great snowfields and glaciers where those two mighty rivers take their rise. You heard the details of our journey last year—how it had taken us nineteen days' struggle with river, forest, and marsh to get here; and, how, when we arrived, an inspection of our 'grub-pile' showed that we had only two or three days' provisions left. You may also remember that my two companions refused to take any steps to replenish the larder, but started off by themselves to climb Athabasca Peak, despatching me alone on a mutton-murdering expedition after bighorn.

Well, next morning I saw them off, and, taking my rifle, I and the two head packers started off in the opposite direction. Emerging from the pine woods we mounted some grass slopes on to a level plateau about 8,000 ft. above sea-level. I will try and picture to you the scene. A mile or two of grassy uplands, broken only by knolls and benches of rock, were hemmed in by barren hills of moderate height. Westwards, reminding me somewhat of the Mont Blanc range, rose the great unknown chain of the Northern Rockies, two of whose peaks we then imagined to be those semi-mythical giants Mount Brown and Mount Hooker, and whose mysteries we hoped shortly to explore if only Providence and my Mauser rifle sent us meat. To the south the dazzling glaciers of Athabasca Peak glittered in the noontide sun, and somewhere in that sea of burnished silver I knew were two black specks representing Collie and Woolley, and I only wished I were with them. Altogether it was an ideal hunting-ground for a person of lazy habits and artistic leanings, as the walking was delightfully easy and you could not break your neck if you tried. My only doubt was whether there was anything to hunt, for the Northern Rockies are by no means a sportsman's paradise, and hitherto we had not seen a single head of game.

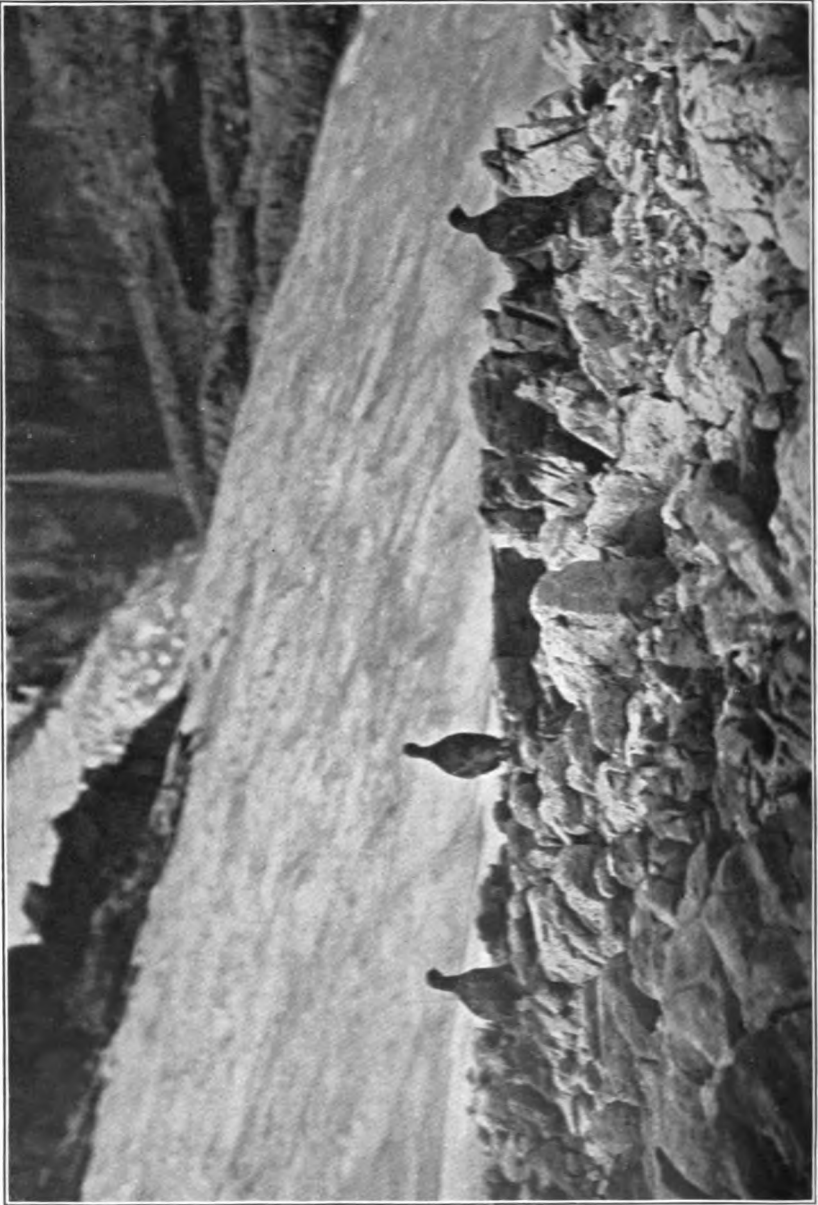


Photo by N. Collie.

PTARMIGAN.

Suwan Electric Engraving Co.

Spying the lower slopes of a rocky hill I saw no trace of bighorn, and Peyto, our head packer, left us here to hunt by himself. Proceeding we came across a covey of ptarmigan, and, as the birds out there are as tame as the country is wild, we spent half an hour in stoning them, a form of mountain sport at which I found I was by no means an adept. My scepticism as to the existence of sheep in the neighbourhood was deepening every minute, until suddenly my unbelief was cured by the sight of perfectly fresh tracks on a muddy bottom. Five minutes later we saw the animals that made them, and grand beasts they looked. The ground was unsuitable for a stalk, so Nigel and I had two hours of my favourite occupation—lying in the sunshine and watching the bighorn as they browsed tranquilly or slept on the rocks. After two hours they began to move, but another hour elapsed before the white stern of the last of the band disappeared over a hillock, and even then I did not venture to stir. Sure enough in about five minutes an old ewe popped up on a rock and had a look round to see if the coast was clear. The others made off slowly up an open valley towards a lake that lay at the foot of a lofty peak, and finally halted to browse on a grassy knoll that sloped down to the water's edge.

It was now past 4 o'clock, so, leaving Nigel to watch the movements of the sheep, I made a long detour, hoping to be able to stalk them from the hill above, but before I could get round they had again moved off along the shore of the lake. At last, after a long stern chase, I found them higher up the valley, and after a crawl over some horribly sharp stones I got within shot of an old ewe. There were two big rams further off, whose heads I longed to secure, but remembering that I was out, not as a sportsman, but simply as 'mutton-murderer' or butcher to the outfit below, I resisted the temptation. Shooting for the pot has an added interest of its own, and knowing how much depended on the shot I felt horribly nervous. I don't suffer from 'buck fever' as a rule, but I am free to admit that the tension of those few seconds was quite painful. It is true Perruquet was not there to chide if I missed, but I well knew that there would be winged words flying round the camp if I returned empty-handed, and, worse than that, a miss meant the failure of our trip. Pulling myself together I hit the ewe with my first shot, and fired my remaining cartridges at the other sheep as they scattered in every direction, bagging three and, I am sorry to say, wounding two others. I much regretted the necessity for this slaughter, but I had no alternative under the circum-

stances. Nigel soon joined me, and after gralloching the three sheep we made our way back to camp. It was 10 o'clock before we arrived, and it was an hour later still when Collie and Woolley returned from Athabasca Peak.

We had a few more days' bighorn-hunting, but never saw another head of game, so I always set down that afternoon's sport as the biggest bit of luck that ever befell me. Judging from my limited experience, I should not say that bighorn-hunting is equal as a sport to stalking chamois in the High Alps. True you have a much grander quarry, but the ground is much easier and your surroundings as a rule are less interesting. However, when both are so delightful, comparisons are, perhaps, out of place.

A few words in conclusion as to the uses of mountain sport. First, it teaches you to use your eyes and quickens your sense of mountain topography. Secondly, it offers abundant opportunity for studying the artistic side of our favourite playgrounds, and in this sense it causes you to know the mountains as you never knew them before. Further, it teaches you self-reliance, for, though the climbing may not be difficult, you have to do it by yourself, and if you slip there is no guide to haul you up with a rope. Lastly—and this is a consideration which I think will weigh with you at the present juncture—the Boers of the Transvaal have taught us on many a stricken field that sport on the mountain or the veldt is the best practical training, not only for rifle-shooting, but also for that art of utilising the best available cover which, in modern warfare, is almost as important as good shooting.

[We are indebted to the courtesy of Messrs. A. and C. Black for the two illustrations of chamois.—ED. A. J.]

A PYRENEAN CENTRE.

BY HENRI BRULLE.

'WHY risk one's bones in the Pyrenees?' a climber once said to me; 'no one speaks of them.' In one way he was grievously wrong, for one can climb for the mere delight of the thing, without thinking of glory; but if he meant that in the 'Alpine' sense of the word the Pyrenees count for little he was right.

Messrs. Harold Spender and Llewellyn Smith have given us a proof of courage and independence in devoting two summers to them. Their book, full as it is of accurate

observation and careful details, is most interesting. Unfortunately, as is always the case with the 'non-initiated' in the Pyrenees, their expeditions were mostly confined to the picturesque points of view; moreover their baggage was too heavy, and this compelled them to give up many important features. Nevertheless they have well understood and clearly shown the importance of the chain as a field for sport, and Mr. Smith has an excellent chapter on this subject. Erroneous information has, however, crept into it, and it is not only fair but perhaps useful also to rectify it. Célestin Passet is not merely a first-rate 'chasseur,' deservedly praised in the 'Short Stalks' of Mr. Buxton; he is also a bold, agile, and experienced guide. He modestly admits himself that before visiting the Alps he did not know what a mountain was. But the lessons he was taught there have not been lost, and since then—already too long ago—we have together faced and conquered many a difficulty, both on ice and rock. To him all those who care to leave the beaten tracks must apply.

If I venture to plead again in favour of a chain more or less forgotten before being sufficiently known I am emboldened to do so by the example Messrs. Spender and Smith have given us, by the encouragement due to the flattering review of their book which appeared in this 'Journal,' and also by the earnest entreaties of Count Russell, 'père du Pyrénéisme,' who has kindly undertaken the translation of this paper.

Sure it is that, speaking in a general way, the Pyrenees are more closely associated with the poetical and picturesque school of mountaineering than with any other—that is, with the old school, in which I began, when I wandered capriciously from peak to peak with my excellent friend M. Bazillac. Those were indeed charming campaigns, although often hard ones. Later on, the Alps having given me a taste for difficulty, and circumstances having transformed me into a 'centrist,' I was led to 'operate' in the Pyrenees in the style of the new school. Why, after all, should they not tempt a true mountaineer? Their jagged crests, their craggy cliffs 'abound in problems of rock-climbing,' as the Editor of this 'Journal' has admitted; and if it be true that their glaciers are 'few and far between' there are yet quite enough of them to supply us now and then with sport of an undeniably orthodox character.

Of all the possible Pyrenean centres the most perfect is Gavarnie. After regularly spending the month of August

there with a few friends for the last twelve years we have not yet exhausted its resources, and few of our best performances have been repeated. On the other hand the immediate environs of the hôtel are full of picturesque corners; and towards evening, when the crowd of vulgar tourists has disappeared, the village recovers its primitive and pastoral aspect, and the mountaineer can enjoy the charming and soothing peace of the lofty mountains.

Numberless and varied are the attractions offered to mountaineers in this privileged little corner. It is the Paradise of rock-climbers. Let them choose as their special object the high frontier ridge from the Port de Boucharo to the Port de Pinède (of which the greater and the best part may be seen from the village), let them deliver a front attack upon it from the French side, and they will be satisfied, no matter how exacting they may be. On the great walls of the Gabiétou and the Taillon, on the 'Finger' of the Fausse Brèche, on the peak 'entre les Brèches,' every taste can be gratified. The Casque, the Tour, and the Epaule, scaled from the foot of the Cirque, are extremely interesting. The lower wall of the Cirque is particularly attractive, very steep, but not really bad in dry weather. It must be attacked from the right corner of the grand waterfall. At about two-thirds of its height one comes to a 'traverse' by no means despicable. At first it is a narrow cornice on which falls a cascade which seems nothing, but when it flows down your neck and at the same time you feel it escaping on your feet you seem to be walking under Niagara. Immediately after comes a steeply inclined 'Platte,' with a great precipice below, and along this you have to worm yourself on your knees, hanging on by the top of your fingers. Now that I have twice crossed this passage without a rope I may confess I wavered each time before risking it.

The French rock cliffs of the Marboré, and of the Grand Astazou, afford splendid climbing; very precipitous also are the French slopes of the Petit Astazou and its north-western arête.

The 'Petit Pic Rouge de Pailla' (2,776 m.), entirely in France, gives one the illusions of the Dolomites; it has their shape and colour, and rivals them in difficulty if attacked from the N. (Arête d'Allanz.) The last bit is one of the hardest I have ever encountered. On a rock wall, to which I only clung precariously, Célestin stood on my head, then on my hand and arm, as on a bridge, and thus supported he managed with great difficulty to haul himself up. A little



LE PIC DE PINÈDE. 2866m.
(Vue prise de l'arête Nord du Pic Rouge de Païlla.)

further on a short couloir was blocked by a great boulder, which only left a narrow gap as a passage. After much worm-like manœuvring Célestin succeeded in slipping through; so did my companion, the Comte René d'Astorg; but my shoulders being too broad, I had, after fruitless attempts at crawling through, to be hauled up from the outside like a vile impedimentum.

After crossing the Brèche d'Allanz one penetrates into the Cirque of Estaubé, less imposing, no doubt, than that of Gavarnie, but with crests which afford very fine and sometimes hard scaling. Its most salient peaks are the Roc d'Estaubé (2,720 m.), the Pointe de la Fenêtre (2,650 m.?), the Pic de Pinède (2,866 m.), and the Cime de Tuquerouye (2,822 m.); although in another valley their ascents can easily be made in one day from Gavarnie.

Another ridge which towers immediately above the village to the N.W., and which seems to attract nobody's attention, is, however, well worth mentioning. It is mainly composed of the Pic Blanc de Sécugnac (2,573 m.) and its prolongation. On both sides the peak is defended by a formidable brèche. After having cleared, from the east, a smooth limestone steeple, followed by a gully with a very 'Cumberland-like'* pitch, we failed in an attempt to descend on the opposite side.

In several of these climbs small glaciers introduce a little variety, and one often stands seriously in need of an ice axe.

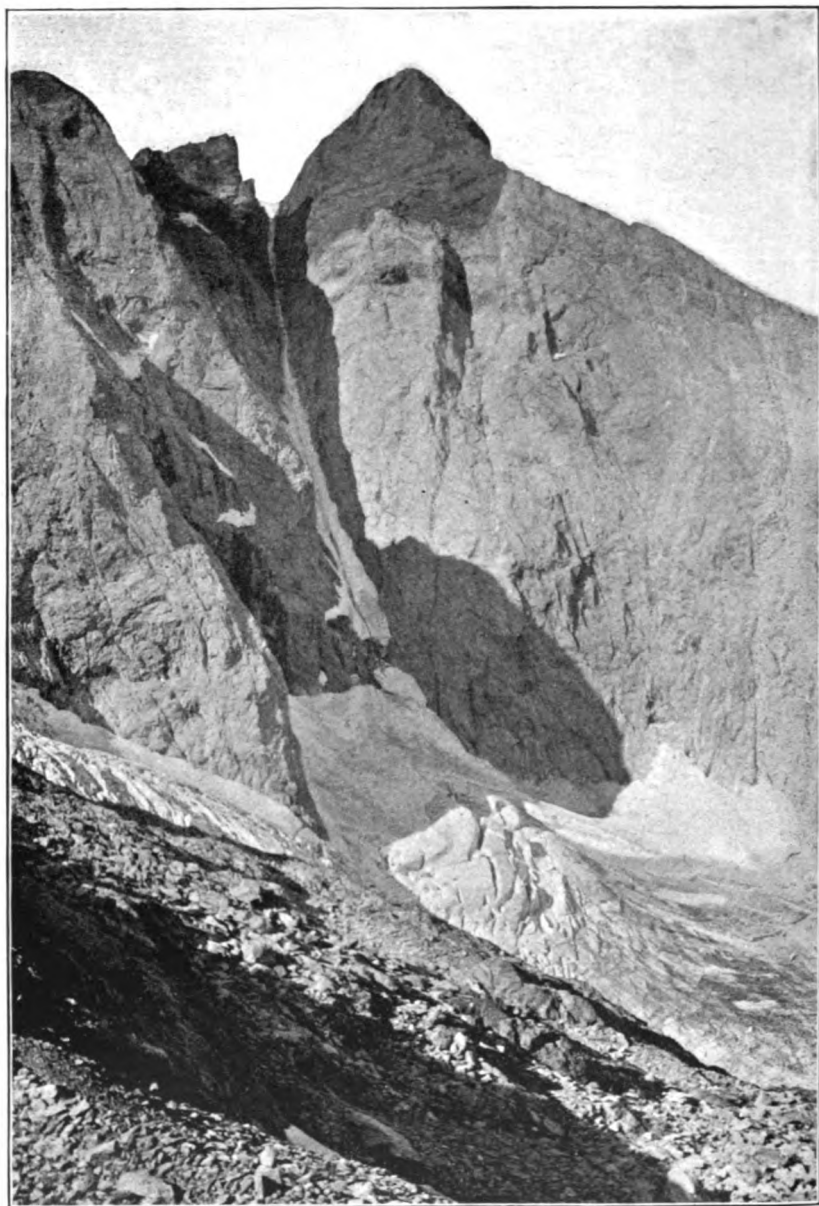
But the two noblest mountains in the neighbourhood are the Vignemale and the Mont Perdu, and they are near enough to Gavarnie—one on each side of it—to have enabled me to climb them both on the same day, without having missed any of the meals at the hôtel. On that day, having reached the summit of the Mont Perdu at sunrise, we witnessed on its névés the opening of several fissures, accompanied by detonations very similar to pistol shots. It is the only time I have ever actually observed such a phenomenon.

The most frequented line of ascent for the Vignemale, the one followed by Cauterets bathers who play at 'heroism,' is by the glacier of Ossoue; it is, however, quite capable of becoming troublesome towards the end of the season. I know

* In two brief visits to Wastdale Head I had the good luck to scale Napes Needle, Steep Ghyll, Moss Ghyll, Deep Ghyll, and the Keswick Brothers' Climb, under the guidance, for the two first, of Mr. E. A. Crowley, and for the others of Mr. A. E. W. Garrett, two gentlemen whom I met by chance and whose extreme kindness I can never forget.

it by experience, having once floundered, when descending along its left bank, into a treacherous crevasse, out of which my two companions, both experienced mountaineers moreover, were unable to extricate me, no matter how strenuously they pulled the rope. Luckily I stopped crosswise inside the crevasse, which was thus unable to swallow me, though it was deep and threatening, and I at last managed to get out after half an hour of extremely laborious 'back and feet' work. Another time I crossed the Vignemale alone, 'en col,' under conditions which made this expedition the pleasantest of my 'souvenirs.' A furious storm was raging. Enveloped in the morning in a dense fog, annoyed in the steep couloirs of the Cerbillonas by vultures which swept over me like avalanches, just grazing me with their long wings, assailed during three hours by hailstones of such size that they bruised and stunned me, deafened by thunder, and so electrified that I was hissing and crepitating, I notwithstanding reached the summit at half-past four in the evening, amidst incessant detonations. In descending the glacier I got lost in a labyrinth of crevasses, and while balancing myself on an ice wave I nearly dropped my ice axe. One of my legs, probably alarmed, began to shake; but a little severe scolding steadied it in the path of duty. As a climax night came on as black as ink, and I had to grope and feel my way down the endless valley of Ossoue. It was 11 o'clock at night when I reached Gavarnie, almost starved and quite exhausted, but having lived the crowning day of my life.

It is from the extremity of the valley of Gaube that the Vignemale looks most defiant. A great ice couloir cleaves its dark and inaccessible ramparts; but it is in itself so fierce-looking and vertiginous that it had been haunting my dreams for a long time. The last bit especially was particularly puzzling. On August 7, 1889, MM. Bazillac, the Comte de Monts, and myself conquered it with the guides Célestin Passet and Salles. It has never been attempted since. The bergschrund gave us much trouble. Beyond we advanced rapidly, in spite of the slope, thanks to the good condition of the snow. But little by little the slope increased alarmingly; ice succeeded snow, and the ascent became very severe. Near the top of the couloir we came upon a really diabolical obstacle. It was a great boulder, hemmed in between the two rock walls, slightly overhanging, about 5 metres high, and covered with a thick coating of ice. We spent there two terrible hours, in an intense cold, and unable either to turn or to force the passage.



LE COULOIR DE GAUBE.
(Versant Nord du Vignemale. 3298m.)

At half-past three o'clock in the evening, as we had to come to a decision, Célestin determined to make a last effort, and this time he won the day, thanks to a very light and well balanced ice axe from Grindelwald which he had luckily borrowed from me. I still remember with what anxiety we were watching his slow progress, whilst stoically receiving the pieces of ice-pavement flung about by the ice axe, which bespattered our heads and hands, at the imminent risk of hurling us down. With what joy did we see him at last reach the top of the wall! Even with the rope I had much difficulty in joining him; and it must have been hard indeed, for the best iceman of our party, who followed me, slipped, and for a few moments was swinging in space—a severe test on our steadiness.

The remainder of the couloir, always very steep, was carpeted with stalactites of ice, where natural steps and hand-holds greatly facilitated our ascent. At last, after seven long hours of obstinate struggle spent in the freezing shade of this dismal gulf, we emerged on the upper *névé* plateau, where we found a dazzling and comforting sunshine, happier than Dante, who, in escaping from hell, had only seen the stars. We speedily scaled the summit, close by, but in descending we loitered and stopped to have tea with the hospitable troglodyte of the Belle Vue caves, so that when we reached Gavarnie after dark the question of organising a relief expedition was already under discussion. The height of the Vignemale is 3,298 mètres.

More majestic and ampler is the Mont Perdu (3,352 mètres). Very easy, though rather long, by the ordinary ways, it is luckily flanked on its northern side by a fine glacier with two stories, which every true iceman will be happy to face. The Comte de Monts was the first who thought of choosing this line of ascent, and after several preliminary explorations he succeeded in this attempt in 1888, with M. Bazillac and the guides Célestin Passet and Salles.

This is a really fine ascent, and worthy of the Alps. It consists of two parts, the first including a grand icefall, followed by a more or less crevassed plateau; and the second, snow slopes and rocks. The upper glacier is unassailable in front, for it only communicates with the 'grand plateau' by an ice cataract of the most imposing aspect, but probably impracticable. Having three times scaled the first part, in 1889, 1894, and 1899, I was able to convince myself that it is becoming more and more arduous. Last August, with Célestin and a porter, we several times found ourselves in

great difficulties. The climb began on such steep slopes of ice that notches for one's hands were quite indispensable, the rope being useless and remaining on Célestin's shoulders; and, as he never cuts large steps, there was plenty of personal labour left for the others. Then came a complicated and dangerous region of séracs and crevasses, where the rope was an absolute necessity. After $2\frac{1}{2}$ hrs. of hard labour we were nearing the plateau, when we found access to it utterly barred by an enormous crevasse, as long and as wide as a boulevard, and impossible to turn. In front of us rose a wall of ice, absolutely disheartening, for it was vertical and its crest overhung. Célestin himself, who, however, never recedes or yields when a problem of this kind has to be solved, was getting cross, and as for myself, I felt very humble, when I heard scarcely disguised allusions to the mania and folly of certain tourists, who only care for mountain *casse-cou*.

But nothing is perfect in this world, not even a wall of ice. After long researches Célestin discovered a kind of pillar, slightly detached from the ice cliff, along its entire height. It was our only chance. So with infinite precautions we crossed a mass of broken blocks which formed inside the crevasse a series of more or less secure bridges, and Célestin, always the 'Deus ex machina' between a dark abyss and a threatening sérac, managed to overcome, with his usual pluck, the thin and perilous crest of ice. As on that day the uncertainty of the weather had made us lose 3 hrs., and as the fact of having saved our bones in such a battle might be considered a sufficient result, we returned to Gavarnie by the best and quickest way.

Once on the 'grand plateau' one must turn to the left, go beyond the snout of the upper glacier, and reach a small rocky spur; the passage then lies to the right of this spur and quite close to it. In 1894, when I made my second ascent, with the Comte René d'Astorg, this passage was difficult. The snow had retired from the smooth and abrupt cliff, forming a deep bergschrund, and a little higher up, sticking to the rock no one knows how, was suspended a great sérac, all honeycombed, through which we had to worm our way.

Beyond this point it is necessary to incline to the right on steep snow slopes, and then one has to storm a high wall of grey limestone. It requires incessant effort to scale this wall, and the ascent ends in a short walk from E. to W., on a névé sprinkled with stones.

I have said nothing of the Soum de Ramond, of the

Cylindre, of the acolytes of the Vignemale, nor of many other summits. Neither have I made any allusion to winter expeditions, although an ascent of Mont Perdu in January, and others, in powdery snow up to one's neck, in freezing hurricanes, or in the calm serenity of the full moon, have left both my friends and myself the most delightful memories. Those expeditions are the speciality of my friend the Comte Roger de Monts. I only developed the most important theses, leaving aside many variations.

And now I am seized with a very natural terror. What will be thought of these pages, if they happen to read them, by those who have conquered the most inaccessible aiguilles and the most inextricable glaciers of the Alps? The least they can do is to smile at my 'naïveté,' and to class me with the zealous but imprudent and awkward friends of the Pyrenees, denounced by Mr. L. Smith. But should they be tempted to be severe let them learn that I am a neighbour of the Garonne, and let 'extenuating circumstances,' in consequence, temper their severity in pronouncing sentence.

IN MEMORIAM.

JOHN GARFORTH COCKIN.

J. G. COCKIN was born at Pendleton, Manchester, in the year 1846. After completing his articles to a leading Halifax solicitor he commenced his study for the Bar, and was called in 1870. He had chambers at first in Lincoln's Inn, but after some years removed to Liverpool. Many years ago he made a lengthened tour in the United States, Mexico, California, &c.; but his intense interest in and devotion to mountaineering commenced somewhat late in life.

Although during the few preceding years the record of his ascents in the Alps had been of an exceptional character he did not become a member of the Alpine Club and known to its members till after his first expedition to the Caucasus in 1888. In that expedition, after the departure of his friends, he made the first ascents of Janga, Shkara, and the northern peak of Ushba. These achievements gave evidence of the indomitable perseverance and resolve which were so characteristic of Cockin. He always spoke of his ascent of Shkara as perhaps the greatest trial of endurance he had ever experienced. To conquer Ushba it was necessary to cross the Zanner Pass late in the season, without the aid of any interpreter to procure and direct porters to convey all his mountaineering equipment, and to make his way through Suanetia to the foot of the mountain he desired to climb. It was not until the third attempt that his efforts were crowned with success. At the time he made little of this ascent. It

was only after renewed visits to the mountain and the discovery of its usually hazardous and difficult conditions that he thoroughly recognised the value of the achievement. He was exceedingly interested in the Caucasus as a mountaineering district, having paid five visits to the country, the grandeur of the peaks and the solitude and complete stillness of the country having for him a wonderful attraction.

After 1892 he ceased to employ guides, and his great delight in Switzerland was, without guides, to repeat the ascents over which he had previously been led. As a climber he was endowed with extraordinary strength, great power of resisting cold and of enduring hardships and fatigue, whilst his sureness of foot and power of climbing in the dark were often the envy of his companions.

Though a good rock-climber he had greater experience in and appreciation of snow and ice work, and used to express regret that so many modern mountaineers devoted themselves so exclusively to rock-climbing. He made few intimate friends, but was loyal and devoted to those with whom he had become acquainted; in case of disagreement he never spoke an unkind word of those from whom he differed.

After his retirement from practice at the Bar he devoted himself to the Latin prose authors, to books on travel and on mountaineering, and to works of general literature, taking every day his 'ten-mile walk,' so as to be in condition when the opportunities occurred for again visiting the mountains. He was not personally known to many members of the Club, but for those who knew him best his loss is the loss of a loyal, true, warm-hearted friend; and many a Swiss guide and Caucasian peasant will regret to hear that they will see his face no more.

ALPINE ACCIDENTS IN 1900.

In 1899 and in the previous year we spoke at length in these pages of the Alpine death roll of those two seasons, and gave tables of the principal accidents, with their causes. This year the list of accidents is again very saddening. We do not, however, propose to offer more than a few brief remarks upon it. But one member of our Club has lost his life, but in Mr. J. G. Cockin, the conqueror of Shkara and U'shba, we mourn one of the most experienced and skilful of climbers. Yet our sorrow finds some consolation in the thought that he lost his life through his courageous determination to save his companions. J. Simond on the Géant was struck by lightning, and FÜRER's death on the Matterhorn was apparently due to the same cause, but the majority of so called accidents seem to have been due to neglect of well recognised rules of climbing. That on the Cima di Rosso involved the neglect of almost all those rules.

Besides the disasters of which longer accounts are given below, and others which we do not mention, in accidents at heights of

over 3,000 m. *two lives* were lost on the Kreilspitze (July 18), on the Ortler (July 27), on the Titlis (August 7), on the Steinkar-spitze (August 27), and on the Morgenhorn (October 3)—a total of ten lives on five mountains. As we read this mournful catalogue we feel inclined to say—

As high as we have mounted in delight,
In our dejection do we sink as low.

We sympathise deeply with all those to whom suffering has come through the disasters of the past summer; but how much might that suffering have been lessened if proper precautions had been taken. If even ordinary prudence had been observed how many hard words would the noblest of sports have escaped! *Quid plura?*

THE ACCIDENT ON THE WEISSHORN.

We are indebted for the following narrative to Messrs. R. Corry and R. W. Brant:—

‘We left Randa on the afternoon of July 25 for the new Club hut, with the intention of ascending the Weisshorn on the following day by the usual route. The weather had been continuously fine since the 9th. Cockin, who had twice been up the mountain, knew the route perfectly and was acting as leader of the party.

‘We left the hut at 2.17 A.M. on the 26th, and reached the commencement of the snow arête at about 8. We made our second halt here, and proceeded at 8.26, having left our rucksacks on the rocks.

‘Although the night had been clear there had only been a slight frost; the snow on the final ridge was already soft, and we found it lighter and less consolidated than might have been expected after so much fine weather. Much step-cutting was required, in ice covered with several inches of snow, and we did not reach the summit till 12.20.

‘As the day was very hot and windless, and the snow was getting into bad condition, Cockin was strongly of opinion that it would be dangerous to retrace our steps, and recommended that we should descend to the rocks on the south side, keeping immediately below the ridge and rejoining it lower down, thus avoiding the steeper part of the snow arête.

‘This course he believed to be possible from observations made during the previous ascent, and we have since ascertained that it has been followed on several occasions, no doubt later in the season.

‘We got on to the south side at 12.40, but seeing no possibility of traversing we soon gave up the idea of getting back to the ridge, and although well aware that there would be a risk of falling stones we continued to descend, making several traverses to the east across rocks and ice couloirs.

‘No special difficulties were encountered, but a good deal of step-

cutting was necessary, and the danger from stone avalanches when crossing the couloirs was extreme.

'After 4 or 5 hrs.' work we reached the snow slopes above the west Schalliberg glacier, but we did not attempt to descend to it, as the bergschrund appeared to be impassable. We therefore remounted the snow and traversed it in an easterly direction till we reached the great buttress which projects from the south face of the Weisshorn and divides the Schalliberg glacier into two parts. After crossing this buttress we descended the rocks of the south face of the mountain for some distance until, at about 9 P.M., the increasing darkness compelled us to halt for the night at a height of from 11,500 to 12,000 ft. The weather was, fortunately, favourable.

'We stayed where we were until 5.30 A.M. on the 27th, as we thought it advisable to wait until the sun's rays should reach us. We soon discovered that a descent to the glacier would be much more difficult than we had anticipated on the previous evening. We accordingly decided to leave the dangerous south face of the mountain and find our way from the long rock buttress on to the east Schalliberg glacier.

'We remounted to gain it and then descended, at first by snow and afterwards by rocks, keeping generally near the crest of the ridge.

'We knew from Conway's "Central Pennine Guide" that a descent had been made from the end of the buttress in 1869 by means of a rock chimney.

'Some way down the buttress divides into two nearly parallel ridges, separated by a deep and wide trough; the western of these can only be reached when descending by making a *détour* on the snow above an ice cliff which overhangs the trough, or by crossing the trough itself below the ice cliff. Having no directions to guide us we naturally followed the eastern or main ridge, and descended it as far as possible, eventually reaching a point very little above the level of the Weisshorn hut. After reconnoitring thoroughly we were unable to find any way down to the glacier, the rocks being smooth and almost perpendicular.

'This result of our third attempt to get on to the Schalliberg glacier naturally caused us much disappointment, as we had confidently expected to find the couloir mentioned in Conway's guide. It did not occur to any of us that the couloir was at the end of the western ridge, which extends a little further into the glacier than the eastern. The west ridge, immediately opposite to where we were, was considerably above our level; near its south end, however, it is on a level with the west Schalliberg glacier, and about 200 ft. above the east glacier. The couloir by which Messrs. Walker and Foster descended to the east glacier is approached by a short slope from the west glacier, and it is from this slope, no doubt, that stones fall down the couloir.

'We rested for an hour, and at about 1.30 commenced to reascend the ridge, intending to look out more thoroughly than we had done

on the descent for a way to the east glacier from some point higher up.

'When we had ascended almost to the place where we subsequently spent the next night, that of July 27 and 28, Cockin, who had been leading, unroped, and, after reconnoitring, proposed a line of descent to the east glacier a little to the south of the route actually taken by the relief party the next day. No attempt was made to descend by this route, as we were unwilling, in our fatigued condition, to undertake what it appeared would be at best a difficult piece of climbing. We have no doubt that an attempt by the line proposed could not have been successful, but a little perseverance in reconnoitring here might have led to the discovery of the right route. Cockin, who had not descended far, returned to us, and it was proposed that, instead of trying to descend to the east glacier, we should cross over to the west ridge, striking it at a point whence we could descend by a short snow slope to the western glacier, that we should then follow what appeared to be a practicable line through this much crevassed glacier, finally getting off its south-west extremity on to the moraine.

'We had never doubted during the morning that it would be possible to get on to the east glacier, and we had not considered the easily accessible west glacier since we had failed to reach it directly from the south face twenty-four hours before.

'Cockin, who was still unroped, had already crossed, and was ascending the rocks on the other side while we were crossing the couloir, traversing some rather smooth rocks under the ice cliff. We found the climbing more difficult than we had anticipated; the rope afforded no security, and we decided to go no further that night. We had latterly been feeling unsafe when climbing rocks, and it had been proposed some time before that we should not run any further risk of an accident, but should wait until the following morning.

'We considered it almost certain that a search party would start for our assistance that evening, and we believed that our safest course would be to await its arrival.

'Cockin was undoubtedly less confident than we were with regard to the search party, and he was still very hopeful that we should extricate ourselves from our difficulties before dark.

'On hearing our decision he descended the rocks a short distance, but did not recross the couloir, and then asked us if we had any objection to his going on alone.

'After some discussion we reluctantly agreed that he should do so, and he commenced to reascend the rocks at about half-past five. As he left we shouted "Good-bye" and "Good luck." He replied, "Not good-bye, but *au revoir*."

'Although we had then been without food for thirty-three hours Cockin had lost none of his pluck and determination, and he seemed to have retained a good deal of strength.

'We believed that after reaching the top of the ridge he would have finished with rock-climbing, and our reluctance to his going

on arose chiefly from anticipation of the risk he would run when crossing the highly crevassed Schalliberg glacier alone. We knew, however, that his skilful icemanship and exceptional experience in solitary climbing would reduce this risk to a minimum.

‘ We watched him until he had almost reached the crest of the western ridge, when we turned back and commenced to retrace our steps to the eastern ridge. A few minutes later we heard his shout announcing that he was up. What occurred between that moment and the time when the accident happened we can only conjecture. Had he followed the route which we had traced across the glacier in a south-west direction towards the base of the Schallihorn we should certainly have seen him. We suppose, therefore, that after reaching the top of the ridge he must have turned sharply S., and have proceeded in that direction either by the rocks or the snow immediately under the ridge, until he reached the rock couloir to which we have already referred.

‘ It was when descending this couloir that Cockin was killed, but when the accident happened, or to what it was due, it is impossible to say. All we know is that his body was found lying near the foot of the couloir, within easy reach of that safety and assistance which he had striven so courageously to gain. One short hour’s walking would have taken him from the spot where his body was found to the hut.

‘ We returned to the crest of our ridge and prepared to spend the night under an overhanging rock within a few steps of a point from which we could easily see the hut. As long as daylight lasted we looked out for the arrival of a party at the hut, and we kept on shouting at intervals during the night.

‘ At 5.15 A.M. on the 28th we heard a shout from the hut, and soon after a party, consisting of Herr Hermann Seiler, with the guides Adolf Schaller and Clemenz Perren, left the hut and proceeded a short distance by the usual Weisshorn route.

‘ By dint of vigorous signalling we soon made ourselves visible, and they crossed the glacier rapidly to the foot of the cliff immediately below us, mounted the rocks without any difficulty, and reached us at 8 A.M. Our first enquiries were as to whether anything had been heard of Cockin; we were told that nothing had been seen or heard of him, and that his rucksack, which had been left at the hut, was still there.

‘ We left at 8.45, and reached the hut at 10.5. The route followed by the rescue party could not easily have been discovered from above, and had not been taken before.

‘ Herr Seiler, while at the hut, had concluded from our shouts that at least one member of the party was injured; he accordingly sent a guide to Randa to bring further assistance.

‘ As it was considered possible that Cockin might have descended to Randa without visiting the hut, we waited there until the arrival of this party, in order to learn if there was any news of him. At about 11.30 Sir Charles Locock with his guides, and a large number of guides and porters from Randa, arrived. A Swiss climber, who

intended to ascend the Weisshorn, also came up with his guides. Two search parties were despatched, one to the moraine of the west Schalliberg glacier, the other, led by Josef Schaller, directly to the foot of the rock couloir where Cockin's body was found at about 2 P.M.

'There being now nothing more for us to do we descended to Randa, followed shortly afterwards by a party bearing the body. We reached Zermatt that night. On Monday an official inquiry into the accident was held, and on the following day we laid the body of our friend in the English churchyard at Zermatt.

'It only remains for us to express our keen sense of the kindness and sympathy displayed by all at Zermatt. The Seiler family once more manifested their unselfish kindness and helpfulness, which we can but imperfectly acknowledge. The arrival of the search parties was due to the initiative of Herr Hermann Seiler, who, though he had been busily engaged at the scene of the Matterhorn accident, as soon as he heard of the reported disaster on the Weisshorn started off with Schaller and Perren, who had volunteered to help him.

'Our belief is that the fatal accident to Cockin occurred on the evening of the 27th, but we should mention that Adolf Schaller thinks it possible that it happened on the morning of the 28th. He told us on the 29th that his shout at 5.15 A.M. was in answer to a call which he believed came from the lower end of the ridge. We replied immediately, and as he heard nothing further from the lower end of the ridge he naturally concluded that he had been mistaken. After Cockin's body was found he recollected his first impression, and now inclines to the opinion that Cockin attempted the descent when help was within sight. Herr Seiler does not share this opinion, and believes that they were misled by echoes as to the direction of the shout.

'(Signed) ROBERT CORRY,
'R. W. BRANT.'

THE ACCIDENT ON THE MATTERHORN.

On July 27 Mr. J. H. Sloggett, an Englishman, aged eighteen, and the guides Alphonse Furrer and A. Gentinetta, in descending the Matterhorn, had just reached the ice couloir which leads on to the Furggen Glacier, when one of a shower of falling stones (following on a thunderclap) struck Furrer, who was leading, on the head, causing death probably instantaneously. His fall dragged the other two with him into the bergschrund at the bottom of the couloir. This fortunately was not deep, and Mr. Sloggett and Gentinetta escaped without being greatly hurt.

THE ACCIDENT ON THE ECRINS.

On August 8 three lives were lost on the Ecrins. MM. Mes-trallet, Thore, and Lambert, with the guides Pierre Estienne and his brother Eugène, started on August 6 for the Refuge Tuckett, where they passed the night. On the 7th they left the Refuge at

1 A.M., and reached the summit at 11.50. The weather was then fine. About 1 o'clock, when some clouds began to show themselves on the horizon, they began the descent 'par le couloir Whympet' in the following order: Eugène Estienne, Mestrallet, Lambert, Thore, and Pierre Estienne. About 3 P.M. a violent snowstorm broke upon them, filled the steps, and prevented them from making straight for the snow bridge over the bergschrund.

Having missed the snow bridge, the caravan reversed itself, and Pierre Estienne took the lead. The steps which he cut were immediately filled with snow, and the work became increasingly difficult for the travellers, wet, as they were, to the skin. M. Mestrallet fell, dragging with him those who followed. Pierre Estienne was also carried off his feet, and fell back with the rest, breaking three ribs on his right side.

Darkness quickly fell; the storm increased in violence, and Pierre Estienne suffered much pain. In face of these difficulties it was decided to await the dawn where they were.

After a pitiable night, in the morning a plucky attempt was made by Eugène Estienne and Lambert to carry Pierre Estienne and Mestrallet (Thore was now at the point of death), but it failed, and eventually Eugène and Lambert descended to seek for help for their unfortunate companions. On the way Lambert fell into a crevasse. When they reached the rocks near the Col des Ecrins, where the provisions had been left, Eugène Estienne reascended, but found his brother, Mestrallet, and Thore already dead. He then went down again, and after several falls into crevasses rejoined Lambert at the Refuge Tuckett. The bodies were afterwards recovered and buried with every possible token of sympathy and respect. A subscription has been organised for the guide Pierre Estienne (see p. 281). We have taken the above account (with abbreviations) from the 'Revue des Alpes Dauphinoises' of August 15, 1900.

ACCIDENT ON CIMA DI ROSSO.

We have to thank Mr. Stuart de la Rue for the following narrative:—

'The two Ways, father and son, and I started for the Forno hut on Wednesday, August 1, and slept there the night, with the intention of carefully examining this face of the Cima di Rosso—which has never yet been ascended—so as to be able to attempt the ascent on a future occasion with reliable guides.

'We started the next morning from the hut at 6.30, and shortly afterwards roped. We had two short ropes with us (both new in 1898), and both were about the same length. The father and son were roped together with the one, and the son and I with the other. I led for the first 2½ hours of the ascent, the son being behind me, and the father behind him. Then we got on to some steep and difficult rock, and as it was necessary to proceed fast, owing to threatened ice avalanches, I invited the father to take the lead,

which he did. Though the climbing was steep it was never really difficult until the accident occurred.

'We arrived at a point where the father, in order to get fixed, found it necessary to go further than the rope between him and his son would allow. He therefore proposed that I should unrope the son and join the two ends together. We two were in fixed positions, and felt safe enough to agree to be unroped. The son was about 18 inches to my right, and when I had untied him I joined the two ends together with a reef knot, at the father's request. There were about 4 inches of rope at each end of the knot. I then undid the rope round my own body, as the son was to be the next person to ascend, and as the father advanced I paid out the rope to him inch by inch. Thereupon the father remarked that the rock was loose and rotten, and I called out to him that if he slipped I should be unable to hold him. He was about 40 feet above us, when suddenly I saw a large rock slip and come crashing down towards us. It passed a few inches to my left. The son was at this time standing to my right, and was unroped. As the rock fell he cried out, "Oh, my God!" and these were the last words he spoke.

'As the large rock fell it started a small avalanche of stones, through the middle of which I passed, some going to my left and some to my right. It must have been one of these stones which dislodged the son.

'The father fell a moment behind the avalanche, with his back to me on my left, amidst a shower of dust and stones; and, realising that I held the rope in my hands, and was responsible for it, I gripped it tightly. It slipped through my hands to a certain point where I held it, when it broke; for a moment I thought I held the father on the rope, and it was terrible to find only a broken end in my hand.

'I went down as nearly as possible the way they had fallen, and found the son propped against a rock, 500 to 800 feet below the place from which he had fallen; he was straddling over a rock, and when I tried to put him in a more secure position he started rolling down, so I quickly placed him back as he had been before. I tried to find his pulse, but could feel no beat. His eyes were half open and had a glassy appearance; blood was flowing from his head, neck, and mouth. I also noticed that the right side of his head was crushed in, and, concluding he was dead, I next turned my attention to the father. I could not see him anywhere, but gave a shout, in case he might hear and answer me. As I got no answer I followed the course the avalanche had taken for a short time, but finding this impracticable I turned a little to my left. On the descent I slipped many times, and lastly rather badly, falling into the Bergschrund at the bottom of the ice slope. Thinking the father must have fallen further to my right, into the Bergschrund, I gave up the search, for I knew he must be dead, having fallen so great a distance.

'I managed to escape out of the Bergschrund, although I had lost my axe, and found considerable difficulty in making my way down

the snowfield and glacier without one. I arrived at Cavaloccio at about 1.30 P.M.; here I met some friends who drove me home to Maloya.

'Search parties were at once despatched, and found the body of Mr. Way, the father, that night.

'The body of the son was found the next morning where I had left it. Both bodies were brought back to Maloya during Friday evening.

'The rope has been recovered, and proves that the knot gave, and did not break, as I imagined. All the strands were separated and in a very mangled condition. The other rope was found intact on the body of Mr. Way. His watch stopped at three minutes to ten, showing the time at which the accident occurred.

'STUART DE LA RUE.'

[We understand that Mr. Way was aged 37, his son 13, and Mr. de la Rue 17.—ED. A. J.]

NEW EXPEDITIONS IN 1900.

Eastern Graians.

PUNTA DEL BROGLIO. TRAVERSE OF RIDGE OF PUNTA DEL BROGLIO (3,455 m. = 11,336 ft., I. map.). August 10, 1900.—Mr. A. W. Andrews and Dr. O. K. Williamson, with Jean Maitre, leaving Pont at 4 A.M., reached the foot of the S.W. ridge of the Punta del Broglio, and so the foot of the S. summit on its E. side. They ascended the S. central summit ('Climber's Guide') from the N. Traversing on the E. side of the N. central summit ('Climber's Guide') they continued along the ridge itself, traversing in places on the E. side. A vertical drop to a deep depression (between the N. and S. heads of the N. summit of the 'Climber's Guide') was avoided by traversing steep rocks on the W. side to that depression. The rocks up to this point were firm, but during the remainder of the climb they were mostly loose. From this point they ascended the ridge directly to the N. head of the N. summit ('Climber's Guide'). Thence they descended at first on the ridge itself, and then by rocks to the W., by a crack and by rocks which were partly iced, and where great care was necessary. From here they descended a short distance to the W. by a steep couloir consisting partly of ice.* The last gendarme was then turned on the W., the ridge crossed, and the Colletto Monciair reached by an easy ledge on the E. side, Pont being reached at 7.15 P.M. The traverse from the foot of the S. peak to the foot of the Colletto Monciair occupied 4¾ hrs., excluding halts. The expedition can be confidently recommended as a fine one.

The existing nomenclature of the points of this ridge is confused. The S. head of the N. summit of Yeld and Coolidge† is, as seen from

* Steep glacier, *Climber's Guide*, p. 159.

† Compared to a sphinx, *ibid.*

Pont, quite distinct from the N. head, being separated from it by a deep gap, and is really the northern point of a ridge on which is a cairn, and which might be called the central summit. The N. central summit, S. central summit, and S. summit of Yeld and Coolidge are all close together, and form the three points on the ridge which appears most to the right in the view of the mountain from Pont.

COL DE L'ABEILLE. DESCENT FROM (3,852 m. = 12,640 ft., P.'s map). August 13, 1900.—The same party, having traversed the Grand Paradis from the Victor Emmanuel Club Hut to the Col de l'Abeille, proceeded to descend to the Noaschetta glacier. Descending snow and ice slopes in a south-easterly direction till immediately below the Cresta Gastaldi they went down easy rocks to a promontory of rock to the E. of the wonderful hanging glacier (Glacier de l'Abeille), and on a level with its base. They then proceeded rapidly down the couloir to the E. of this promontory, keeping on the right-hand side of it. The couloir narrowed before they emerged into sunshine. A few hundred feet from the bottom it was found necessary to cross the couloir and descend by the rocks to the right of and in the actual bed of a smaller couloir further to the E. The rocks to the W. of the lower part of the great couloir were, even supposing they were possible, very steep and difficult, and liable to be raked by falling stones. The height of the great couloir is estimated at from 1,000 to 1,500 ft. The time of descent from the col to the Noaschetta glacier was 2½ hrs., excluding halts. Many falling stones were seen in the couloir, and although these were, owing to the unusual dryness of the rocks last summer, doubtless more frequent than usual, yet the route cannot be recommended. It should be stated, however, that they carefully watched Coolidge and Yeld's great couloir, and that it was this year much more dangerous from falling stones than their own.

Mont Blanc District.

AIGUILLE DU GÉANT. FIRST ASCENT FROM THE N. AND FIRST TRAVERSE.—On July 20 Herren H. Pfanul, of Vienna, T. Maischberger, and F. Zimmer, without guides, effected this splendid climb. We hope to give details later.

Central Pennines.

LA CIARDONNET (10,680 ft.) FROM MAUVOISIN.—On Monday, July 23, a party consisting of the Rev. W. C. Bullock, Mr. H. S. Bullock, and the Rev. A. C. Downer, without guides, left Mauvoisin, and, after a halt at the Chanrion Hut, crossed the Glacier de Hautemma, and proceeded up the right side of the Glacier de Crête Sèche, under the W. face of La Ciardonnet, to a point near the S. extremity of the mountain mass, from which they reached the ridge. Traversing this, the summit was attained without difficulty. Descending, the party went down the E. face to the glacier, which was found to be very broken, necessitating their making their way down between the mountain and the glacier, a

proceeding involving much time and care, and rendering time records futile, but affording excellent sport. The hut, which had been left about 10 A.M., was regained at 7.30 P.M. It is believed that this is a first ascent. A complaint was made by the caretaker that a party of English ladies who had recently visited the hut had obtained lodging there on reduced terms by representing themselves to be members of the Alpine Club!

GRAND TAVÉ.—The same party, on July 25, ascended this peak, (10,848 ft.) by what they believe to be a new route—viz. by a direct ascent from Mauvoisin. A gully, just S.W. of the hôtel, leads to the crest of the remarkable cliff known as the *Pierre à Vire*, from which the Glacier de Botzeresse was crossed, and a long snow couloir, down which stones frequently descend at midday, was reached. The top of this couloir is just S. of the peak, which is attained in about 15 min. from this point. A fine view of the Grand Combin was obtained from the summit, from which also the Cabane de Panossière was seen below. Chamois, marmot, and ptarmigan were observed on the mountain. The time from Mauvoisin to the summit, inclusive of halts, was 7 hrs.

Zermatt District.

SCHALLIHORN (12,986 ft.). FIRST TRAVERSE AND FIRST DESCENT BY N. RIDGE.—On August 14, 1900, Mr. W. E. Davidson, with Christian Klucker and Joseph Imesch as guides, and Hon. Gerald FitzGerald, with Ulrich Almer and Fritz Boss as guides, started from the Trift Inn, and ascended the Schallihorn from the N. Moming Pass (Ober-Schallijoch) by the route followed by Mr. T. Middlemore on the occasion of the first ascent of that mountain on July 20, 1873.* Both parties then descended the northern arête of the Schallihorn to the Schallijoch, the descent of this arête taking a little under 3 hrs. Some towers on the ridge were turned on the eastern side, and in some other places also it was found necessary to keep a little below it on the eastern face of the mountain, owing to a very strong wind blowing from the N.W. The rocks on the eastern face were extremely rotten.

No ascent or descent of the Schallihorn by the northern or Schallijoch side had ever been previously made.

The parties descended from the Schallijoch to Randa over the Schalliberg glacier and the rocks on its right bank. The glacier was this year in an unusually crevassed and difficult condition.

Actual walking: Trift Inn to summit of Schallihorn, 6½ hrs.; Schallihorn to Schallijoch, 2¾ hrs.; Schallijoch to Randa, 4½ hrs.

WEISSHORN FROM THE W. (14,804 ft.).—The routes of Messrs. Passingham and Farrar up this side leave something to be desired under the headings of time and safety. Several examinations of the face gave rise to the idea that the easy way, if anywhere, might be found on the arête descending from the great tower on the N. ridge (4,334 mètres, Siegfried map) and dividing the Weisshorn glacier.

* See *Alpine Journal*, vol. vi. p. 294.

On September 6, after several false-weather starts, Mr. G. W. Young, with Louis and Benoit Theytaz of Zinal, left the highest Arpitetta chalet at 2.50 A.M., and skirting the lower edge of the N. bay of the Weisshorn glacier—and losing time in some big ice—crossed the bergschrund and a small ice-slope on to the back of the arête, reaching the foot of the rocks and the actual peak at 6 (3 hrs.) Ten minutes up easy rocks, followed by fifteen up snow-patches and slabs slightly to the left, gave rise to hopes which a return to the arête soon chilled, the angle steepening and the climbing stiffening with retarding rapidity up to the foot of the great 'step' or wall which cuts the ridge at half its height. This, it had been thought below, might prove insuperable. The telescope had however suggested a possible crack in a deep corner on the left. The traverse to the foot required care and many steps. With the third man firmly secured the first two negotiated the corner, the leader having to be lifted on head and axe up the last bit, and ascending another 40 ft. of iced chimney before finding anchorage for the moral raising of the remainder. During the passage the second man underwent an unpleasant temperance lesson; a rock, loosened by the rope, tearing off his helmet and breaking all the bottles in his sack, fortunately without further injury. Apart from this no independent stones fell throughout the day. Above the climbing continued of a high order, but the rock proved firm and frictional with plenty of hold. Except for an occasional divergence to the left the edge of the arête was kept to, abrupt and at times heavily rock-corniced. The face of the final tower (point 4,334 mètres) seemed unassailable, and a short distance from its foot descent was made by a loose chimney on to the smooth slabs of the great couloir S. of the ridge. The diagonal crossing of these up to a little col just S. of the tower was the only portion of the ascent on which secure anchorage for at least one was not always possible. The col was reached at 10.15 (4½ hrs.). After ten minutes' halt the snow arête was followed to the summit, 11.20 (1 hr., or 8½ hrs., with halts, from the chalet). Returning back along the N. arête the top of the great tower was surmounted at 12.45 (50 min.), and the whole length of the N. arête followed to the Weisshornjoch, the previous bad-weather conditions, which had practically spared the ridge followed on the ascent, somewhat complicating the traverse of the four minor towers. The descent W. from the joch called for much cutting, but the glacier was reached at 4.50 (4 hrs.), and Zinal by the Col de Tracuit at 7.20 (in all 7½ hrs. from the summit). The gendarme arête appears to be free from the dangers of the slab routes previously followed on the W. face and the times are relatively very short, but it is not likely to become over-popular; the rock-climbing is continuously exacting, and at least two fixed ropes—in 'the corner' and on the final slabs—would be necessary to make it safe. (It will be recollected that Herr H. Biehly ascended the N. ridge of the Weisshorn on September 21, 1898, traversing the great gendarme on the way. 'Jahrbuch S. A. C.' vol. xxxiv. pp. 76-90.—ED. A. J.)

Bernese Oberland.

FUSSHÖRNER.—The great *genâarme* just S. of Mr. Yeld's peak is a conspicuous and inaccessible-looking object from most points of view. In 1899, during the first ascent of the next peak to the S., it had been decided that the readiest approach would be from the E. With the intention of crossing the ridge from this side, and possibly attempting the tower, Messrs. G. W. Young and C. K. Clague left Bel Alp on August 5 at 8.30, and passing round the S. end of the ridge, skirted the edge of the Triest glacier and took the second of the big couloirs, which descends from the foot of the *gendarme* itself—from here sufficiently formidable in appearance. After crossing some big crevasses the left-hand (S.) branch was taken, partially ice-filled; higher, where the chimney divides again, the right fork. This proved very rotten and, only 20 ft. from the ridge, impossible. The left fork however was more negotiable, and a short 'back and knee' led on to the col just S. of the tower at 3 P.M. The latter hence presents the side view of a short ridge, running E. and W., with a sharp arête springing out of its W. end. Firm rocks lead up to this 'shoulder,' and the last 40 ft. of sheer rock are divided into two steps, with a halfway anchorage and good holds. On the top were found the cards of a Swiss party, who had secured first honours some three weeks previously, ascending and descending on the Ober-Aletsch side by the couloir N.W. of the tower. To avoid using their route, and to complete the traverse of the ridge, the return was made to the col (5 P.M.), and the couloir S.W. followed to the Ober-Aletsch glacier. This proved more long than difficult, and free from falling stones. Near its foot, where it steepens considerably, the descent was continued by the slopes and slabs immediately on its left to the glacier (7.20), and Bel Alp reached at 8.30.

EIGER HÖRNLI.—On Thursday, July 19, Sir Charles Locock and Rev. H. J. Heard, with the guide Peter Brawand, left Grindelwald at 6.15 A.M. Striking up from the Alpiglen path to the W. of the rocky watercourse marked Schussellauenen, and crossing the next spur and band of avalanche snow, they found a series of chimneys (not easily discovered except when quite close) which brought them above the first rock wall and into a broad gully. At the head of this, by a pitch of about 60 ft. of steep rock, they reached the upper ledges not far below the ridge. Here a heavy hail and thunder storm came on as a forcible reminder of the late hour (3 P.M.) and compelled a retreat.

On Thursday, August 2, Mr. G. A. Solly, Mrs. Solly, Miss Maclean, Rev. H. J. Heard, and the guides Peter Brawand and Hans Brawand left Grindelwald at 2.30 A.M., reaching the foot of the rocks at 6 A.M., and followed the same route as far as the upper ledges, and then, instead of turning up to the ridge, traversed the whole length of the scree-covered slopes to the eastern face of the Hörnli. Then by means of a chimney running diagonally across the face of the eastern point they reached the ridge and a point a little W. of the eastern summit at 2 P.M.

On Wednesday, August 22, Mr. E. B. Rodway and Rev. H. J. Heard, with the guides Peter Brawand and Peter Almer and two porters (with blankets, &c.), after crossing the Alpigen path reached the top of the spur to the W. of the Schussellauenen. Here in place of working across to the right they turned left up steep *gazons*, then traversing still further to the W. until directly above the Schussellauenen they went by easy rocks to the foot of the rock wall. Here a chimney gives access to a large cave above, where the night was spent. It is not, however, recommended. At 6 A.M. (August 23) the cave was left by a letter box in the roof. This disposed of the vertical band of rock, and the remainder of the way, as far as the foot of the eastern point, consisted only of easy rocks, ledges, and scree. Reaching the foot of the final point at 8.30, in place of working to the right they traversed as far as possible E. into a chimney running down to and cut off by the precipitous eastern face. This chimney brought them to the summit at 1 P.M. As all the party were in a straight line great care and much time was required to avoid injuring one another.

All these scrambles can be recommended as extremely interesting and affording excellent views.

Titlis District.

FÜNFINGERSTÖCKE. S. OR LOWER PEAK OF NO. 2 GROUP (c. 2,900 m.) *July 14.*—Messrs. Ellis Carr and H. A. Beeching made the first ascent of this peak. From the gap separating it from the N. or higher summit (2,922 m.) they ascended the N. face and couloir to the right, and reached the sharply cut notch dividing the two final points, both of which were climbed. The peak is well shown in the illustration facing p. 116 of this volume, between 'No. 2' and 'No. 1.'

NORWAY.

Söndmøre.

KVITEGGEN (1,705 m.) BY THE N.E. RIDGE.—The ascent of the monarch of Söndmøre by the direct route, straight up from the cosy mountain inn of Fibelstadhaugen, was planned, and would, no doubt, have been made, in September 1899 by my nephews, Messrs. Aldred and Erik Todd, and myself, but for the fact that an early snow storm put all thoughts of serious climbing out of the question. It was a great disappointment, as the delightful ascent of Slogen by the N.W. face, which we had made a few days earlier, naturally suggested a similar mode of treatment for its loftier neighbour, so we kept our own counsel and reserved it for this year. However, medical examinations prevented one of the Todds from sharing in the fun, whilst his brother responded to the call to arms and is still serving his Queen and country in South Africa.

As the expedition was too good to leave to be snapped up by any chance adventurer who might be prowling about Næbbedal, on July 14 of this year Messrs. G. P. Baker, Howard Priestman, and

I, accompanied by Lars Haugen, set out over the dewy meadows at 7.30, and at 8.40 reached the foot of the rock ridge which was to lead to victory or defeat. We knew that there were three stiff places to be encountered, at any of which we might possibly be stopped. One was below a saddle in the ridge, another just above the saddle, and the third within 200 ft. of the summit.

Lars led us most pluckily over smooth slabs and bosses of rock, up gruesome chimneys where he was glad of a shoulder and we of a pull, along narrow and pleasant ridges, with a wild glacier far down below us on our left, and a bird's-eye view of goats grazing hundreds of feet below on our right. Up and ever upward we went; Lars never faltered. No, not he. Did he not know that his young wife was watching him step by step through a telescope? Ah! there was the spirit of the vikings in him too. He was on his mettle, and it was well for us that we had such a good fellow with us, as we had only left England three and a half days earlier, and were more or less out of training. Steeper and narrower grew the ridge, and down came the mists, cold and clammy, and then the rain.

'Halloa! what's that?' A notch in the ridge 20 ft. deep, and an overhanging wall beyond.

'Now we are beaten.' 'No, not yet.' 'There is another big crag above that. This is not the top wall.' 'Yes, it is; we are not 150 ft. from the top now. Lars, can you climb up that crack if I lift you up?' 'I don't know, but I'll try.'

Ever willing, Lars soon stood on my shoulders and climbed brilliantly round a projecting knob into the crack in the face of the crag. 'It is all loose, and I cannot hold on long.' 'Come down, and run no risks.' Easier said than done. One poor hold for the right hand, and a half-inch ledge for the right foot, are not much to hold on by when the body has to be swung round an aggressive corner projecting a foot beyond the perpendicular, but Lars never faltered; he knew he could do it, and, what is more, he had a happy knack of inspiring us with confidence in his powers, which was most refreshing. Still, we were glad enough when he stood on my shoulders again and nimbly stepped on the rock behind me.

Another route is closely scanned, but it lacks a hold in the one place where a hold is absolutely necessary. On our right, some 50 ft. below the nick in which we stand, is a ledge which runs along the face of a horrid precipice. It can be reached, but will it lead anywhere? The council of war says distinctly 'No.'

'Come, let us be off; the rocks are getting worse every minute with the rain.' 'Which way?' 'Why, down the same way we came.' 'No. Let's have a try to the left; I shouldn't like to descend those horrid rocks.'

A wall of high crags runs across the whole face of the mountain, and terminates at the ridge itself, which, indeed, abuts against the wall.

We followed the line of crags eastwards down steep slabs and hard snow, and tried to pick out in the mist a weak place in the

armour which we had noticed half an hour earlier. At last fortune favoured us. We gave Lars a leg up to a shelf, and were hauled up in turn by him. We had an awkward traverse along a narrow and sloping ledge, with a blank wall above us and another below, and then reached the foot of a chimney. 'Ah! here's the rub. Will it go?' 'Yes; but what beyond, and can we get down again if it wont?' 'You'll see what you'll see,' says one. 'Yes, I expect we shall.' Back and knees, elbows and feet, and up we go, and are well held by Lars the trusty, Lars the bold.

'What's that white thing in the mist up there?' 'The cornice. The Kvit egg—white ridge. We've won. We've won.'

A few bosses of rock are scrambled over and we are under the cornice, and are reminded of Ben Nevis at Easter. An easy way appears, and in five minutes more we are at the cairn on Kvittegg—7 hrs. and 20 min. from the inn, and 4,475 ft. above it, having had 2,600 ft. of first-rate rock-climbing, which occupied us about 6 hrs.

We look over the edge and see, not 80 ft. below us, the top of the crag which had balked and nearly beaten us. We descended by the usual way, and did not take, as we ought to have done, a capital glissade as far as the lowest gap in the wall above the ice-laden tarn in Kvitelvedal, where the rocks can be easily and safely climbed, which is not the case on the route usually followed, where the rocks are loose and dangerous. Vigdal and I found this to be the case when we made our ascent in 1881, and improved our route on descending.

A brace of ptarmigan interested us very much by feigning lameness, as our grouse do at home, to draw our attention away from their chicks, which were dodging the small schist which we could not help sending down the gulley in which they were.

Whilst the photographers improved the shining hour Lars and I hurried down to the inn, and a few minutes later I was rattling down the valley in a carriage, bent on luring some fish out of a lake with my rod. My reward was fifteen trout. I thought it a capital sporting day altogether.

This new route up Kvittegg is one of the best and longest climbs in Söndmøre, and it is remarkable that it has never been attempted before, as it is so much in evidence. Still, I ought to say little about that, as, though I have known Fibelstadhaugen since the year 1876, and have often stayed there, always with the view of climbing, I never noticed the ridge before last year. Söndmøre is not yet exhausted, though during the last twenty years so many climbers have laid siege to its rugged crests and sharp-tapering spires.

WM. CECIL SLINGSBY.

The Justedalsbræ.

THE AABREKKEBRÆ IN OLDENDAL.—On July 18 Fröken Bertheau, Messrs. G. P. Baker and Wm. Cecil Slingsby, with Elias Hogrenning as porter, visited this grand and almost unknown glacier, with the hope of making their way up to the great snow-

field at the north-east corner of the glacier, and then to make a pass over to Sundal, or possibly to Næsdal. This route was soon seen to be too dangerous to be attempted, so the party turned to the main or south-east arm of ice. After turning one icefall they became involved in a chaos of séracs about 1,200 ft. above the foot of the glacier. Though this could probably have been surmounted with six or seven hours of step-cutting, prudence, plus torrents of rain, suggested the retreat which was undertaken at once. There are few places in Norway, and none in the Alps, where the mountains, which rise straight out of the ice, show such grim and high prison walls as is the case with the Aabrekkebræ. A descent has once been made down this glacier, but it is not likely to be repeated.* The heavy rain caused great floods in Oldendal, and a bridge twice crossed by the party above named was seen by them the following day to be floating down the lake.

SANDENIBSKAR (about 5,100 ft.).—On July 20 the same party set off to attempt the ascent of one of the Tinde Fjelde, a fine range of peaks visible from Lake Stryn, one of which had been climbed by Herr Bing a few years ago. The usual route to Skaala was followed for some 5,000 ft.; then the party turned through a gap in dense mist between Skaala and Sandenib on to the Skaalabræ, making a long and tedious traverse of at least a mile over a steep snow-slope, which was more or less trying to the nerves, because the bottom could not be seen through the clouds. At last, presumably near the foot of the wished for peak, a descent was made on to flat glacier down a rib of snow. The ascent of the peak was necessarily abandoned, as it could not be found, so the party agreed that the new glacier pass which had already been made, and an old one which lay before us, which Hogrenning had crossed with a bear hunter, were good enough for the day. A very remarkable round hollow like a tarn dried up was discovered on the Tunge-dalsbræ, the cause of which is not very easy to determine. A descent through a pretty valley and birch forest brought the party to the farm Hogrenning, where the parents and sister of Elias most royally entertained them with cream porridge, home-brewed beer, and other delicacies, and at the same time told of destructive avalanches in bygone years, and many other interesting facts relating to life on the shores of the lovely lake of Loen. The glaciers of Skaala form a portion of the Justedalsbræ, as they are connected with that huge snowfield by a narrow tongue of glacier. This is not generally known to be the case, but there is no doubt about it.

THE TYVESKAR (ROBBER'S PASS) (about 6,200 ft.) AND THE NYGAARDSBRÆ. *July 22.*—The same party, with the addition of Mr. Howard Priestman and two porters, after spending a night in the little restaurant on the pier at the head of Loensvand, started at 5.40 up the Kjændal, and soon began to climb the eastern wall of this remarkable valley. At noon they reached the glacier, far

* *Alpine Journal*, vol. xii. p. 269.

above the snout of the Kronebræ and more than 5,000 ft. above the lake. At 2 the top was reached, and a superb view of the Horingtinder was enjoyed. So far no new ground had been touched, as several parties have climbed up by the same route and have crossed over to Faaberg by way of the buttress of Liakslen. The mountaineer's route, however, must of necessity include the descent of the grand glacier, *the classic ground of the Nygaardsbræ*, an admirable coloured picture of which appeared in Professor Forbes's 'Norway and its Glaciers,' p. 267. This glacier had, indeed, been twice traversed when there was an unusually large amount of snow, but it had never been connected with the Tyveskar.

With the snow in perfect condition, the rocks on Liakslen were reached at 3.25. A search for water, and photography, led the party, unfortunately as it proved, off the ice and along a parallel rock terrace, and they were glad enough to regain the hard ice at 6.35. From this time until 11.15 severe icefalls and much more horrible rocks on the left bank alternately gave more practice in overcoming the difficulties of glacier and rock work than the greediest climber of the party had wished to meet. A glance at Professor Forbes's sketch will show at once the beautiful curves of this serpent-like glacier and the broken character of the convex portions of its sides. The neighbouring Tunsbergsdalsbræ, 9 miles in length, is quite straight, and is an easy highway to traverse. Not so its more beautiful rival the Nygaardsbræ. No! go and see it. Faaberg was reached at 2 A.M.

NÆBBE SKAR (about 7,000 ft.). August 1.—The same party, with the substitution of Herr Eilert Sundt in place of Frøken Bertheau, left Turtegrö in doubtful weather at 12.10 P.M., crossed over Nordre Skagastöltind and Skagastölsnæb, and reached the V at 4.15. Ole and Hogrenning climbed up a short way, and would have gone further had they been pressed to do so, but a dense mist prevailed, and new snow on the rocks plainly suggested prudence, so for that day the project was abandoned. As a steep tongue of glacier—a portion of the Styggedalsbræ—comes up to within a rope's distance of the gap between Nordre Styggedalsbræ and the Næb a new and more sporting route home was naturally suggested. A large bergschrund apparently cut off the steep tongue from the large glacier far below. This was pointed out to the would-be leader, who replied that 'Nature is generally very benevolent, and if one way will not go another will be found.' The choice of ground was certainly limited. Two of the party were prudent and yearned for the flesh pots of Turtegrö, so returned by the way they had come. The remaining four hungered for adventure and not for food.

Easy rocks led to the steep snow. It was thoroughly well tested by throwing stones down it. There was no fear of a snow avalanche; but what an awful jump the stones made either into or over the big schrund! At 5.40 the upper lip of the schrund was reached. It was too wide and deep to jump, and the snow which partly filled it did not offer a substantial floor. The rocks at the side must be taken. Narrow ledges up and down and along schistose rock and

horrid projecting corners led in time to a shallow gully, and there was only such a little to be climbed. What hauling, hitching, and various modes of giving mutual help were indulged in, and how well Hogrenning led, will always be remembered. In 2 hrs. and 12 min. the bergschrund was turned. 2 hrs. and 12 min. for 35 ft., hard work all the time too, mean a good deal.

The great glacier was very intricate, and afforded plenty of scope for practice in the finest branch of the mountaineer's art—that of snowcraft. Turtegrö was reached at 10.15, and though the great problem had not been solved the whole party were well satisfied with the day's work. The gap or pass from which the descent was made may fitly be called the Næbbe Skar.

MELLEMSTE SKAGASTÖLSTIND (7,500 ft.) BY THE NORTH RIDGE FROM THE V GAP. *August 4.*—Messrs. Slingsby and Sundt, with Ole Berge and Hogrenning, got up on the two previous mornings, but were driven back to bed again by unfavourable weather. On this day slight rain fell at 3 A.M. At 5.30 it was again unpromising, but, as it was the last day that the leader could possibly spare, a start was ordered. At 7.7 the party sallied forth, at 10.17 they reached the top of Nordre, and at 11.5 stood in the V gap. As Ole was wishful to lead he was allowed to do so. The side of the V that had been descended, though steep, was easy; the other was very nearly perpendicular and about 250 ft. in height, and the difficulties began at once. Ole was helped by Hogrenning up a slab of rock to a little platform, whilst the others hitched well below. Then came a steep pitch of 12 or 14 ft., which led to a broad ledge directly above where the last man was hitching his rope. One friendly knob a third of the way up the pitch, small though it was, made the place climbable. Without it? Let some one try. Another apparently useful knob is found to be loose, and is eventually thrown down. Great care was needed, and those below were glad enough to have a rope and a strong man above them, whilst Ole was well backed up by the powerful arms of Hogrenning. A shallow chimney then leads to more slabs. Ole makes a very sensational traverse to the left over a snow-covered rock with a long rope, and creeps along a ledge above the others. 'Are you firm?' 'Yes; come on.' Up they go; no hold but the rope, but that is good enough. Another short chimney, a Grépon-like ledge, and the base of the top crag it reached. This had been closely scanned on two days, and was considered to be a very doubtful place and one that might turn the party back, though barely 15 ft. in height. 'Will it go?' is shouted out from below. 'Yes.' 'Hurrah!' An easy crack round the corner leads up to the top of the V, a remarkably flat little rock platform of perhaps 200 square yards. 'We've won! We've won!' is now the cry. From the Dyrhougstinder, a parallel range to the Skagastölstinder West, this platform, with the V below and the peak above, have the appearance of a huge chair. Consequently it was dubbed Ole Berge's Stol, a name which it will doubtless retain for many a long year to come, and will thus speak of the prowess of the genial and skilful

guide who led his party to victory. Only 53 min. had been occupied in climbing from the V, but no time was wasted and all went well.

Some difficult rocks were negotiated above the 'Stol,' where precious little hold presented itself; but an easier way might have been found. Still Ole saw he could go straight up, so up he went, and the top of Mellemste Skagastølstind was reached at 12.14, and descending by the grand west face for the second time the party were welcomed by their many friends at Turtegrö at 4.20.

There was a certain fitness in the fact that the person who made the first ascent of Store Skagastølstind, in 1876, should be one of the party to forge the last link in the chain, and thus connect the northern peak with its own brethren, and with the Gjertvastind far away. The weather was cloudy, and the wind was too cold to think of making this grand traverse over ridge and peak; otherwise it would probably have been done, though perhaps twenty hours would have been consumed in the doing of it, and each one of the party would have been obliged to carry an axe to cut up the icy tongue of the last peak, which they did not on this occasion. Certainly it would be a glorious expedition. Turtegrö, the Riffelberg of Norway, is an admirable base from which to make many expeditions which, if in the Alps, would be called first-rate. The two mountain inns are, considering their position, excellent, and their landlords are really good fellows, always ready to do all in their power to help mountaineers to climb the mountains which they themselves love so well.

W. C. S.

The Oxtinder.

THE OXTINDER (JUST OUTSIDE THE POLAR CIRCLE).—A few years ago at one of the winter A. C. picture exhibitions, some beautiful water-colour sketches of Rös Vand and the Oxtinder, the work of Mrs. A. G. Renshaw, enriched the exhibition. An air of mystery has long existed about this remote range. The frontier between Norway and Sweden was here somewhat obscure. The size of the glaciers on both sides of the border was probably much exaggerated, and the nomad Lapps, whose herds of reindeer grazed on the rugged slopes of the range, peopled the Oxtinder in imagination with terrible and vengeful demons and other evil sprites. For at least twenty years the present writer has intended to devote a summer's holiday to the exploration of this weird range, but the fates have always sent him elsewhere.

The first mountaineer who visited the chain was Monsieur Charles Rabot.* He discovered that it consisted of six principal peaks, of which he climbed one in 1883. Another peak was climbed later the same year by a Norrman. In 1899 Mr. Hastings and Hogrenning spent a considerable time camping at the base of the mountains, but were prevented from making any ascents owing to the persistent bad weather. This year two parties have climbed there at different times, the first under the leadership of Herr K.

* *Au Cap Nord*, par Charles Rabot, p. 92.

Bing, of Bergen, whose ascents are recorded below, the second under the leadership of Mr. Victor H. Gatty, who also records his adventures. To all intents and purposes the Oxtinder have now revealed their most well-preserved secrets, and though their peaks are proved to be less wild than was expected to be the case, the remoteness and isolation of this range have an indefinable charm which has much impressed those who have been fortunate enough to climb their rugged ridges and to set the first foot upon their snowy crowns or highest crags.

WM. CECIL SLINGSBY.

THE OXTINDER—OXKOLLEN (6,272 ft.).—On July 6 Herr K. Bing, with Irgan Fjelddal and Klemmet Krokan (a Lapp) as porters, made the first ascent of this peak, the highest in the range and the highest in the province of Nordland. They left the farm Tveraaen at 9.30 A.M., and, following the north side of the Leirskar River, reached at 1 P.M. the north part of the Oxtindbræ between the peaks 1,591 m. and 1,212 m. Snow and mist assailed them, but they crossed the glacier, which was much crevassed, to the north-west ridge of Oxkollen. This was sheathed more or less in ice and snow, and was not easy. The top was reached at 8.30 P.M. Here they built two cairns, in each of which they left a silver coin. Through breaks in the clouds they saw the other peaks in the range, as well as some lakes in Sweden. They were also rewarded by witnessing the phenomena of the Brocken Geist and mock suns.

The Laplander insisted on boiling coffee in a kettle which he had brought with him. Thus an hour was spent. At midnight they again stepped on the glacier, and, owing to a snow storm (no darkness in that latitude in July), had much difficulty in finding their way. Bing fell into a crevasse, but was soon hauled out. At 4.30 A.M. they were back again at Tveraaen.

THE OXHORN (6,256 ft.) AND TRAVERSE OF THE OXTIND GLACIER.—This, the second highest and finest peak of the range, was climbed on July 13 and 14 by Herr K. Bing and a Swedish Lapp named Anders Bonta. They started at 2 P.M. on the 13th from the farm Hogstaby, in Sweden, following the south bank of the lake Grasvatn, where they were almost devoured by mosquitoes. They slept at a height of about 3,950 ft. on a spur of Oxkollen. At 7 A.M. on the 14th, they attacked a steep glacier east of Oxkollen, to which they rightly gave the name of the Charles Rabot Bræ, after the plucky French scientist who explored the Oxtinder range. Then an easy rock ridge north-west of the Oxhorn led them to the top, which was reached at noon in brilliant weather. Here they built a cairn about 5 ft. high, and then enjoyed the view. Ten other peaks, big and little, rose out of the Oxtindbræ. Nearly the whole of Rös Vand, the second largest lake in Norway, was visible, and south and north, on both sides of the frontier, a multitude of grand snow peaks were seen.

After a stay of 2 hrs. on the top they started down the upper part of the same ridge by which they had ascended; then they glissaded on the west to the Oxtindbræ, a grand glacier. Their course then lay west between the Oxtind (1,808 m.) and a

peak (1,830 m.), both previously climbed. Fog, apparently inevitable sooner or later in this region, came on. They still walked west, and at 11 P.M. reached rocks west of Graafjeld between two wild glacier arms in the north-western part of the Oxtindbræ. They rested till 3 A.M. next day, and finally arrived at 5.30 the same morning at the farm Fjelddal, in Leirdal. W. C. S.

The Oxtinder.

The main features of this group consist of two ranges of peaks running N. and S., the Oskollen range, in which is the highest peak, E., the Oxtinden range, W., enclosing a large Alpine glacier (the E. Oxtindbræ), whilst to the W. of the latter range lies a big snowfield, the W. Oxtindbræ, throwing down glaciers all round.

The previous history of the range has already been related by Mr. Slingsby, and needs no further reference.

Mr. Victor H. Gatty, with Joh. Vigdal and Ed. Haande, made the following expeditions from a camp (2,200 ft.) near the Mörkbeckbræ, 2½ hrs. above the Fjelddal farms in the Leirskar valley:—

W. OXTINDBRÆ (Peak 1,830 m. = 6,002 ft.; Peak 1,724 m. = 5,654 ft.).—The above party left camp at 9.55 A.M. on August 11, ascended the bluff to the S., and then, bearing E. over a mossy plateau, reached the ice at 11.10, and were at once involved in dense mist. Steering E. by compass, an undulating, gradually rising expanse of snow was traversed for 2 hrs. 10 min. At 2 P.M. the mist partially lifted, and disclosed two rocky summits close up; it was determined to ascend the right-hand peak, which was taken to be Oxtinden, but afterwards proved to be the slightly higher summit to the S. marked 1,830 m. Snow led up to a saddle S.W. of the peak, whence steep slopes of *débris* covered with fresh snow led to a short rock arête which brought them to the summit, which was found to be already crowned by a small cairn, at 3.30 P.M. A glimpse of the highest peak, Oskollen, through opening mists sufficed to show the line of ascent.

They left the top at 4 P.M., descended to the saddle, and ascended a second peak rising to the S.W. (1,724 m.). The route ran up a snow ridge bounded on the left by a cornice overhanging a lofty rock wall, and leading to a face of rock and ice, which gave a short but good scramble. The top was reached at 5.20 P.M., a small cairn built, and the descent commenced 15 min. later. On reaching the snow ridge a direct descent was made to the glacier; the upward tracks were followed down in heavy rain, and camp was reached at 7.45 P.M.

MÖRKBECKBRÆ.—On August 12, after a morning spent in drying clothes, Mr. V. Gatty and Vigdal traversed the glacier near camp, the Mörkbeckbræ. This glacier is of some interest, inasmuch as it does not flow down the valley in the orthodox way, but originates in an icefall which comes over the cliff halfway down on the left side of the valley and forces the glacier across it like a dam; a considerable stream from the upper valley forms a small

lake, whose waters escape by a natural tunnel under the ice. The lake had evidently been much larger quite recently, and there were old 'beaches' 30 ft. in height above the present level.

OKKOLLEN* (1,912 m. = 6,271 ft.), E. AND W. OXTINDBRÆEN.—The above party left camp at 6.45 A.M., descended into the valley, and followed the S. side of the Leirskarelven over very broken ground to the apparent col at the head of the valley immediately under the rocks of the peak to the S. in 4½ hrs. from camp. The reverse side proved to be filled up by a slope of snow leading to the upper level of the glacier above the steep snout. From here the route was the same as that followed in Herr Bing's ascent a few weeks before, of which the party were at the time unaware. The glacier (E. Oxtindbræ), which is broken in this part by large and numerous crevasses, was crossed in 65 min., and the summit was reached in 2 hrs. more. On a face of rock the following inscription was found:

P. STORDAL . 16 . 9 . 1883;

and in a crack below were the chisel and two coins. There does not appear to be any more accessible record of this climb—no doubt the first ascent—and nothing was known of the name in the valley. The top was left at 3.30, and the descent made to the glacier by a slightly different route, which afforded some long sitting glissades, in 1 hr. Instead of returning by the valley it was decided to traverse the two main glaciers, crossing a col S. of Oxtinden to the western ice-sheet. Herr Bing, returning from the Oxhorn, had already done much the same thing; his route lay to the N. of Oxtinden, a better way, as it leads directly to the upper level on the W. A course was set by map and compass through the usual fog, and the col (about 4,900 ft.) was reached at 5.10; from there they were forced to descend to the moraine above the lake marked 1,000 m. ('Topografisk Kart'), and to reascend to avoid the broken lower glaciers. They joined the old tracks of two days before at 7.30 P.M., and at the same time the fog cleared and allowed for the first time a clear general view of the glacier. Camp was reached 9.15 P.M.

Sulitelma.

The main feature of the S. side of the range is a big glacier (the Lairo Glacier, or Sala Jækna) running N.W. and S.E., encircled by a ring of peaks; Stortoppen lies to the W. at the head of the glacier, the Swedish peak on the N. side.

The survey of the district for the Norwegian Government map is not yet made, but an excellent map, which includes a large part of the glacier system, has been drawn by Herr Kjellsröm for the mining company whose headquarters are at Furuland, and who kindly placed a copy at the disposal of the party. Stortoppen long

* The name of this peak is spelt 'Oksskolten' in the new Topografisk Kart.

passed as the highest summit—mistakenly, as the Swedish peak is about 150 ft. higher.

Wahlenberg, in the course of a summer spent in scientific investigation in the neighbourhood, ascended the most southerly peak so far back as 1807.* Stortoppen was climbed in 1884, but there seems to be no evidence of any ascent of the highest peak prior to that recorded below.

From a camp on the shores of the Lommijaur (2,340 ft.), just E. of the point where the Tjeurajokk falls into the lake, Mr. Victor H. Gatty, with Joh. Vigdal and Ed. Haande, made the following expeditions:—

STORTOPPEN (1,830 m., Kjellström's map, = 6,002 ft.) FROM THE E. DESCENT BY N. ARÊTE.—The above party left camp at 1.50 P.M., August 21, and climbed the cliff immediately above it to the small lakes the Tjeurajaur. The hollow in which they lie narrows under Stortoppen to a narrow corridor filled with snow, under which runs a stream. This led directly on to the snout of a glacier which slopes up for some distance N.E. and then rises abruptly to the level of the main glacier basin, and forms a kind of side entrance to it. Keeping along the side of the lower glacier under Stortoppen, steep snow broken by a rock patch led to the level of the main glacier under the E. face of the peak; thence a snow wall of about 300 ft. led up to steep rocks, which required care, as they gave little hold, and were wet with melting snow. Traversing to the right, a snow couloir, very steep, but which might have been followed from the snow wall, led to easier ground above. The climb was completed by the E. ridge—a snow-covered rock arête—and the top was reached at 6.5 P.M. During the latter part of the ascent the mist had cleared away, and the party enjoyed, for the first and last time during the season, an uninterrupted view which reached southwards to the Oxtinder, 100 miles away, and eastwards far over the lakes and hills of Sweden, and westwards to the sea. Across the glacier the Swedish peak was proved, by means of an Abney level, to be considerably the higher. At 6.20 P.M. the descent was commenced by the N. arête. A sharp rock ridge, changing lower down to snow, led in $\frac{3}{4}$ hr. to the col connecting the main glacier with the smaller one W. of the peak, whence the homeward route lay down the former glacier. Before leaving the upper level a careful bearing was taken of the side glacier which must be ascended to climb the Swedish peak, and camp was reached at 9.5 P.M.

SWEDISH PEAK (1,878 m. = 6,159 ft., Swedish Government map).—The above party made what is believed to be the first ascent of the culminating point of the range, August 21. Leaving camp at 7.5 A.M., they reached the snow corridor in 1 hr., followed the S.E. side of the lower glacier, and turned the steep rise by the snow-slopes of the Vaknetjokko. Once on the upper glacier they were involved in dense fog, which never for a moment lifted the

* *Alpine Journal*, vol. vii. p. 174.

whole day. It therefore became necessary to trust entirely to the bearing taken the previous evening. Three or four miles of nearly level glacier crossed in this way brought the party to a steep face of snow. It was impossible to be sure that this was the side glacier aimed for, though eventually it proved to be so. Steep snow was followed up for 650 ft., hugging the rocks on the E., the side on which the peak should be. The snow then ran up to the right, and the final snow-slope of 950 ft. was climbed in wet and fog. The top, a jutting crag, was reached at 12.30 P.M., and all doubts as to the identity of the peak were set at rest by the aneroid, which showed a height 150 ft. greater than on Stortoppen. No cairn or other indication of a previous visit was found. After building a small cairn the summit was left at 1 P.M., and the descent of the 1,600 ft. of snow to the glacier was made in 25 min.; 55 min. more hard going along the outward tracks took the party across the upper glacier, and they reached camp, very wet, at 3.30 P.M.

LAIRO GLACIER, OR SALA JÆKNA.—The above party left camp at 11.4 A.M., August 22, and followed the previous day's route across the glacier and up to the col W. of the Swedish peak. Dense fog made further climbing impossible, and a return was made to the glacier, which was reached at 4.37 P.M. They then crossed the glacier diagonally downwards (S.) in 40 min. to a long rock island, on which stands a cairn marking the boundary of the two kingdoms; below it the two wide branches into which it divides the glacier meet again face to face. They left the rock island at 6.10 P.M., and made for the dry glacier below. This proved to be so in appearance only, as it turned out to be coated with 6 in. of snow and water slush. The glacier was left 1 hr. from the rocks, at a height of 3,000 ft., and a descent was made to the head of the Lommijaur, the shores of which were followed back to camp, which was reached at 8.47 P.M.

THE SELKIRKS.

PEAK SWANZY (about 10,200 ft.). *September 6, 1900.*—Prof. Michael and Mr. Sydney Spencer, with E. Fenz and -- Michel, made the first ascent of this snow peak, which stands at the south-east end of Mount Bonney. The ascent was made *via* Mount Abbott and the little glacier by the S. side of the peak, returning by the Asulkan glacier and valley. The ascent presents no difficulty excepting the final rock cap, which has to be turned on the S. side by moderately difficult rocks.

This ascent is strongly recommended for the sake of its magnificent view, which includes the chain of great peaks of the Rockies from Mount Columbia to the Freshfield group.

ALPINE NOTES.

'THE ALPINE GUIDE.'—Copies of Vol. I. of the new edition of this work, price 12s. net, and of 'Hints and Notes, Practical and Scientific, for Travellers in the Alps' (being a new edition of the General Introduction), price 3s., can be obtained from all book-sellers, or from Messrs. Stanford, Charing Cross.

THE LIBRARY CATALOGUE is now printed and may be obtained, bound in cloth, on application to the Assistant Secretary, 23 Savile Row. Price 8s.; postage, 3d.

'ALPINE JOURNAL,' AUGUST, 1900.—Should any member of the Club or subscriber have received smeared copies of the Illustrations to Mr. D. W. Freshfield's paper he may obtain perfect ones on application to Messrs. Spottiswoode & Co., 5 New Street Square, E.C.

PRESENTATIONS TO THE ALPINE CLUB.—The Secretary to the Argentine Legation has presented to the Alpine Club a copy of the four volumes (folio, with numerous plates) of the 'Argentine Evidence,' as laid before the tribunal appointed by her Britannic Majesty's Government to consider and report upon the differences which have arisen in the demarcation of the frontier between the Argentine and Chilian Republics in the Cordillera de los Andes.—Col. A. C. Arkwright has presented to the Club some relics, picked up by Mr. Whymper recently, of the expedition up Mont Blanc in 1866 in which his brother, Captain Arkwright, and others lost their lives. The relics consist of a portion of a pair of trousers, a handkerchief, initialled 'H. A.,' and a woollen comforter.

MOUNTAINS OF CENTRAL ASIA (KHAN-TENGRI).—We learn from the 'Rivista Mensile' (C.A.I.) for October that Prince Scipio Borghese (A.C.), with Professor Brocherel and the guide Matthia Zurbruggen, has conquered several virgin peaks and crossed several passes of from 3,000 to 4,000 mètres in the Khan-Tengri group of the Thian Shan range.

SEGANTINI'S AND VERESCHAGUIN'S MOUNTAIN LANDSCAPES.—Alpine art was not conspicuously represented at the Paris Exhibition. In the building assigned to the French Alpine Club a few pictures and drawings were exhibited without any attempt at systematic arrangement, and so mixed up with photographs, diagrams, life-size female dolls, and other oddities that what was worth notice was in danger of being overlooked. In the Decennial Galleries there was a fine cloud effect on the Puy de Dôme by Millet. In the Swiss Section I noticed nothing remarkable at a hasty glance. But time was short and the Decennial Galleries were long! There were, however, in the Italian Gallery three mountain landscapes, striking in themselves and of a pathetic personal interest. Their painter—Segantini—has been known for a long time to connoisseurs as an artist of original genius, taking his own way, apart from the broad path of clever showiness followed by the mass of his contemporaries in Italy. He painted for some years scenes of peasant life in the Italian Alps in a mood

which recalls Millet, though his technical method was singular and very different from that of the French artist. Latterly his pictures became more imaginative; landscape inspired him with strange visions. To this class belongs 'The Punishment of Luxury,' now in the Liverpool Art Gallery, where female forms are driven along on the thin clouds that sweep across a white winter landscape in the High Alps. Signor Segantini spent of late years several summers in a house he had acquired on the Maloya, and in 1899 set to work to prepare for the Paris Exhibition three gigantic landscapes—an Alpine triptych he called them. While he was residing at the little hut on the Muottas Murail, above Samaden, for the purpose of making studies for one of these, he was suddenly taken ill, and died before medical aid could be procured. The landscapes are, therefore, exhibited as 'unfinished.' But they have been carried very nearly as far as most of the painter's recent work. His aim evidently was not so much to portray any particular scene as to convey an impression created in his own mind. The pictures are primarily subjective. But in two at least of them the source of inspiration is obvious—the view over the lakes of the Engadine and the glaciers of the Bernina from the heights S.E. of Samaden and the aspect of the granite peaks of the Bregaglia seen from the terraces of Soglio. A singular effect is produced by the lowness of the mountains on the horizon—the effect rather of the view from a great peak than of one from the lower standpoint actually adopted. The pictures are singular—to me impressive—and I think would gain on better acquaintance. I trust we may see in London an exhibition of this interesting painter's work. The 'triptych' formed a curious contrast to the three equally gigantic canvases shown at the Grafton Gallery two years ago, in which the Russian painter Vereschaguin brought before our eyes Elbruz, Kasbek, and the Vale of Akluthang, at the southern base of the Kanchinjunga group. Realism could hardly go further than in these remarkably able works. To look at them was like having the Caucasian summits themselves, with every fold of their glaciers and boss of their rocky ridges, brought back before one's eyes. The 'Heart of the Himalaya' gave a wonderfully vivid impression of the region in its winter garb. Vereschaguin ventured too late in the year among the heights, and had a narrow escape, I am told, of perishing in the snows of Sikhim.

D. W. FRESHFIELD.

HONSTOCK (10,416 ft.).—On August 9 Messrs. G. W. Young and C. K. Clague found an interesting variation route up this much-visited Bel Alp peak. In the S. face, somewhat E. of the summit, there is a conspicuous curved chimney, filled at a third of its height by a large mass of white quartz. The climbing starts directly from the scree. Behind the quartz the crack disappears for some 70 ft. into a funnel. The minute upper exit of this was only finally passed by the leader at the cost of almost all but boots and some cuticle, the second man following with difficulty after enlargement. There is another good double-cave pitch close under the summit ridge; which is reached 5 min. E. of the highest point.

The crack takes 2 to 2½ hrs., and, though the rock is not always dependable, it is a pleasanter climb than the ordinary loose-stone couloir. In the funnel were found some very large detached smoked crystals.

THE HORUNGTINDER. NOTES ON THE RANGE OF THE SKAGASTÖLSTINDER.—On July 28 Fröken Bertheau, Messrs. Baker, Priestman, and Slingsby, with Ole Berge as guide and Hogrenning as porter, climbed Store Skagastölstind by Heftye's route, made the traverse of Vesle and Mellemste Skagastölstind, and descended the latter by the west face, one of the most delightful, interesting, and beautiful mountain expeditions which can be imagined. For the first time the present writer realised to the full the character of the grand mountaineering exploits which have been undertaken with great patience and persistency by Herr Carl Hall, who, during several years, unravelled the innermost secrets of this the finest range of mountains north of the Alps, and thus well sustained the credit of the Alpine Club, of which he has been for many years a member. The writer is absolutely certain that where Mohns Skar now abuts against Skagastölstind a crag has fallen away, which has made the lower portion of the final ascent to be much easier than it was in 1876. The chimney originally climbed still exists, but the present and comparatively easy ridge which leads above this chimney is so obviously the best route that it would undoubtedly have been followed on the occasion of the first ascent had it been in existence.

One portion of the main ridge of the chain, and one only, still remained untraversed, a deep V-shaped notch between Mellemste and the two northern peaks. This was, of course, reputed to be impassable. Ole Berge and another of the party reconnoitred it well from the northern ridge of Mellemste, and ascertained that if the V could be climbed the rest was also feasible. This dictated the Næbbe Skar expedition (p. 271).

THE ACCIDENT ON THE ECRINS (see p. 259).—All climbers who are acquainted with the Dauphiné will hear with great regret of the death of the well known Vallouise guide Pierre Estienne in this lamentable accident. Being caught by bad weather on the descent, Monsieur Mestrallet slipped on a steep slope and dragged the whole party down, across, and into a crevasse at the bottom of a steep slope. Pierre Estienne had three ribs broken, and in consequence of this and the exhaustion of some of the party it was found necessary to pass the night high up. They had left their food lower down, on the ascent, and the storm continued through the night; consequently by the morning two of the party were almost moribund. Pierre Estienne's brother therefore descended with one traveller in search of the food, and on his return he found the two remaining travellers and his brother Pierre dead.

Monsieur Roux, the President of the Société des Alpinistes Dauphinois and editor of the 'Revue des Alpes Dauphinoises,' has written to the Honorary Secretary stating that a subscription has been opened by the 'Revue' on behalf of Pierre Estienne's widow

and four children, the eldest of whom is 15 years of age. He states that the family is very ill-provided for, and begs that English climbers will join in helping the widow and children. It is satisfactory to add that the money subscribed to this fund will be invested by the Société des Alpinistes, and strictly reserved to the children, the widow being given the interest for the maintenance and education of the children, while in the event of her remarriage the administration of the children's money would be taken entirely out of her hands.

Subscriptions should be sent to Monsieur C. Robert, Rue St. Jacques 13, Grenoble.

CRISTALLINA.—As a note on Mr. Cust's paper in the August No. of the 'Alpine Journal' it may be worth mentioning that this mountain is a convenient connecting link between Tosa Falls and Fusio. The time from point to point is about 9 or 10 hrs., not including halts. The route from Tosa Falls lies over the Bochetta di Val Maggia to the Robiei Alp, and thence either by the Lago Sciundran and up from the W., as described by Mr. Cust, or over the Passo di Lago Nero, making the final ascent from the S. The latter route has the advantage of avoiding the loose stones and broken rocks on the W. side of the mountain. A. A. BOOTH.

CAMPO TENCIA.—When crossing this mountain from Fusio to Faido, instead of going straight down from the N. peak over the Crozolina Glacier, as described in the 'Climber's Guide,' it is well worth while to follow the ridge over the central peak to the gap '2,957 mètres,' between the central and eastern peaks. From here a direct descent can be made to the stream below the Crozolina Alp.

A. A. BOOTH.

ALPINE CLUB LIBRARY.—The following additions have been made since June :—

Recent Guide-Books (presented by the Publishers).

- Baedeker, K. Süd-Bayern, Tirol und Salzburg, Ober- und Nieder-Österreich, Steiermark, Kärnten und Krain. 29te Auflage. 8vo, pp. 607; maps. Leipzig, Baedeker, 1900. M. 6
- Bähler, Dr. A. Der Sustenpass und seine Thäler. 8vo, pp. 92; ill. Bern, Schmidt & Francke, 1899. fr. 2
(Historical and topographical. No map or index.)
- Brentari, O. Guida del Trentino. Trentino occidentale; Valli del Sarca e del Chiese. Soc. d. Alpinisti Trident., Annuario, xxi. Bassano, 1900
- (Casanova, F.) Guida illustrata della Valle d'Aosta. 4ta edizione. Parte I, Valle inferiore. 8vo, pp. x, 247; map, ill. Torino, Casanova, 1899. L. 3
- Caviezel, M. The Upper Engadine. A Guide. . . . 5th, enlarged . . . edition. 8vo, pp. xii, 236; map, etc. Samaden, Tanner, 1891
- Hess, H., see Trautwein, Th.
- Meurer, Julius. Illust. Führer auf der Brennerbahn durch die Zillerthaler und Stubai Alpen und durch die östl. bayerisch-tirolischen Kalkalpen (München-Bozen). 8vo, pp. viii, 200; maps, ill. (Hartleben's Ill. Führer, 53.) Wien, etc., Hartleben, 1900. M. 5
- Padovani, Pia, and Gallo, E. Illustrated Guide to the Valleys of the Biellese Region. 8vo, pp. 88; sketch-map, ill. Turin, Casanova; London, etc. (1900). 1s.
- Pertusi, L., e Ratti, C. Guida illustrata pel villeggiante nel Biellese. 8vo, pp. 14; map, ill. Torino, Casanova, 1900

- Schwaiger, H. Führer durch die Rofan-Gruppe—Achensee-Gebirge. 8vo, pp. 116; map, ill. München, Lindauer, 1900. M. 2.50
(Clear map, 1/50,000, contoured for 100 m. D.u.Oe.A.V., Section Erfurt, have erected a hut for this rock district.)
- Trautwein, Th. Das Bayrische Hochland . . . Tirol und Salzburg . . . 9te Aufl. bearbeitet von H. Hess. 8vo, pp. xii, 321; maps. Innsbruck, Edlinger, 1900. M. 5

Recent Books.

- Angeloni, I. M. Le Nevi. (Poetry.) 8vo, pp. 83. Torino, Roux e C., 1900
(Presented by the Publishers.)
- Argentine-Chilian Boundary. Report presented to the Tribunal appointed by her Britannic Majesty's Government. . . . 4 vols, folio; pp. L, 1181; numerous maps and plates.
London, printed for the Government of the Argentine Republic by Wm. Clowes, 1900
(Presented by the Secretary of the Legation.)
- Beraldi, H. Cent ans aux Pyrénées. Vol. 3. 8vo, pp. 185. Paris, 1900
(Presented by the Author.)
- *Boeck, Dr. K. Indische Gletscherfahrten. Reisen und Erlebnisse im Himalaja. Imp. 8vo, pp. 470; maps, plates, etc. Stuttgart, Deutsch. Verlags-Anstalt, 1900
(Presented by the Publishers.)
- Coolidge, Rev. W. A. B. Walks and Excursions in the Valley of Grindelwald. With the Government map and several illustrations. 8vo, pp. 64. Grindelwald, Luf, 1900
- *Daullia, E. [ps.] Le Tour du Mont-Blanc. 8vo, pp. vii, 307; ill. Paris, Mendel, 1899
(Presented by the Publisher.)
- **Filippi, F. De. The Ascent of Mount St. Elias. Westminster, Constable, 1900
(One of 100 copies on hand-made paper, presented by the Publishers.)
- Meyer, Hans. Der Kilimandjaro. Reisen und Studien. Imp. 8vo, pp. xvi, 436; maps, ill. Berlin, Reimer, 1900
(Presented by the Publisher.)
- New Zealand. Department of Lands and Survey Report, 1900.
- d'Orléans, Louis. Dans les Alpes, 1896-1898. Mont-Blanc—Aiguille du Midi—Mont-Rose—Mont Cervin. 8vo, pp. 94; ill. Paris, Plon-Nourrit, 1900
- Stratz, R. Montblanc. Roman. 8vo, pp. 304. Stuttgart, Cotta, 1899
— Der weisse Tod. Roman aus der Gletscherwelt. 5te Aufl. 8vo, pp. 250. Stuttgart, Cotta, 1899
(Presented by the Publisher.)
- *Vallot, J. et H. Chemin de fer des Houches au sommet du Mont Blanc. Projet Saturnin Fabre. Etudes préliminaires. 4to, pp. 71; plans, etc. Paris, Steinheil, 1899
(Presented by the Publisher.)
- Whymper, E. Scrambles amongst the Alps. 5th (revised) edition. 8vo, pp. xviii, 468; maps, ill. London, Murray, 1900
(Presented by the Author.)
(1st and 2nd editions, 1871; 3rd, 'Ascent of the Matterhorn,' 1880; 4th, 1893.)
- *Workman, Mrs. F. B., and Dr. W. H. In the ice world of Himálaya, among the peaks and passes of Ladakh, Nubra, Suru, and Balkistan. 8vo, pp. xvi, 204; map, ill. London, Unwin, 1900
(Presented by the Publisher.)

* See 'Reviews and Notices' in the present No.

** Reviewed in *Alpine Journal* for August 1900.

- **Yeld, G. Scrambles in the Eastern Graians, 1878-1897. 8vo, pp. xx, 279; map, ill. London, Unwin, MCM

Older Books.

- [Adams, W. H. D.] Alpine Climbing. . . . By the author of 'The Mediterranean Illustrated,' &c. 8vo, pp. viii, 237; ill. London, etc., Nelson, 1881
[A revised edition of 'Alpine Adventure,' 1878.]
Montémont, Albert. Tour over the Alps and in Italy. Translated from the French ['Voyage aux Alpes;'] Paris, 1821]. 8vo, pp. 78. London, Phillips, 1823
(Chamonix, Valais, St. Bernard, Gde Chartreuse.)
(Presented by G. W. H. Ellis, Esq.)
Orell, Fussli et Cie; Catalogue des meilleurs ouvrages, voyages pittoresques, estampes et costumes sur la Suisse qu'on trouve chez. 8vo, pp. 16. (Zurich) 1825
Wallace, Cornelia. Mountain Monarchs. (Poem.) 8vo, pp. 23. London, Sonneschein, 1887

Club Publications (presented by the Clubs).

- C.A.F. Annuaire, 26. 1900
C.A.I. Vade-mecum dell' alpinista. 8vo, pp. 161; ill. Torino, etc., Paravia, 1900
(List of Clubs with addresses, of Guide-books and of Guides, Equipment, etc.)
— Milan. Annuarii, 1895, 1896, 1897-8, 1899-1900.
— Naples. Calendario alpino per l' anno 1900. V. Campanile. 8vo, pp. 115. Napoli, d' Auria, 1900
(Daily Calendar of ascents. List of peaks of Alps and (with heights) of Apennines. List of women mountaineers, Mont Blanc and La Meije.)
— Verona, Attività, ecc. 8vo, pp. 15. 1900
C.A.S. Jahrbuch, xxxv. 1900
— La partie suisse de la chaîne du Mont-Blanc. Itinéraire pour 1900 et 1901. L. Kurz et E. Colomb. 8vo, pp. 231. Neuchâtel, 1900
— Section Chaux-de-Fonds (1879; founded 1877 as subsection under Neuchâtel). Bulletin annuel, 1-8. 1892-1900
— Section Zofingen. Festschrift. 1899
— Wiggerthal u. Sempachersee. Ill. Führer. 1900
D.u.Oe. Verzeichniss d. Schutzhütten u. Unterkunfthäuser in d. Alpen. 8vo, pp. 79. München, 1900
— Ampezzo. Bergführer-Tarif. 1898
— Bozen. Erinnerung an das 25 Jahr. Bestehen. 8vo, pp. 40. 1895
— — Bergführer-Tarif—Tiers, Welschnosen, Fassathal, Bozen. n.d.
— Regensburg. Festschrift. 8vo, pp. 69; ill. 1895
— Strassburg. Fest-Karte d. 27 General-Versammlung. [1900]
— Villach. Jahres-Bericht, xxx. 8vo, pp. 31. 1900
— Würzburg. Jahres-Bericht. 1895, 1898, 1899
Hungarian Club. Jahrbuch, xxvii. 1900
Norske Turistfor. Aarbog. 1900
Soc. d. Alpinisti Trident., see Brentari, O., under 'Recent Guide Books.'
Soc. des Touristes du Dauphiné. Annuaire 25. 1899
— Tarif: La Grave, Villard d'Arène. 1898

Pamphlets and Magazine Articles.

- Berger, F. Notes sur les Aig' Rouges. 4to, pp. 277-280. In 'Journal de Physique,' an 12.

** Reviewed in *Alpine Journal* for August 1900.

- Bullock, H. S. Above the snow line. 8vo, pp. 169-170; ill. In 'Hand and Heart.'
September, 1900
- Cora, G. Sur la route de Chamonix au (sommets du) Mont-Blanc. 8vo,
pp. 17-31. In 'Annales de Géographie,' Colin et Cie, Paris, no. 43.
15 Janvier, 1900
(A topographical study. Presented by the Publishers.)
- Danneberg, R. Über d. festen Aggregatzustände des Wassers unter besond.
Berücksichtigung d. Gletschertheorie. 8vo, pp. 1-55. In 'Jahresber.
d. Vereins f. Naturkunde zu Zwickau,' 1898. Zwickau, Zuckler, 1900
(Presented by the Society.)
- Dupont, A. Literaturführer d. d. gesamte Alpengebiet. 2te Aufl. 8vo, pp. 63.
München, Riedel, 1899
(A list of books and maps; presented by the Publisher.)
- Hepburn, Dr. M. L. Mal des montagnes; or, so-called mountain-sickness.
8vo, pp. 191-219. Reprinted from 'St. Bartholomew's Hospital Reports,'
xxxi. 1895
(Presented by the Author.)
- Hunn, D. Fra bræer og hoifjeld. 8vo, pp. 9-31; ill. In 'Turist. f. Bergens,'
Aarbog. 1900
(Presented by the Society.)
- Illustrierte Zeitung. Folio. J. J. Weber, Leipzig.
no. 2828. Sep. 1897. Montblanc-Nummer. M. 1.50
no. 2917. Mai, 1899. Rosengarten-Nummer. M. 1.20
no. 2982. Aug. 1900. Grossglockner-Nummer. M. 1
(Numerous full-page and other illustrations by E. T. Compton, etc. The text
of the latter two by Th. Christomannos.)
(Presented by the Publisher.)
- Monckton, H. W. Glaciers and fjords of the Bergen District. 4to, pp. 4. In
'Journ. of the Camera Club,' London. May, 1899
- Marson, L. Sui ghiacciai del massiccio del M. Disgrazia o Pizzo Bello.
pp. 24 (171-192); ill.
——— pp. 20 (63-80); ill.
—— Sui ghiacciai italiani del Gruppo del Pizzo Bernina. pp. 37 (143-177); ill.
(The above are reprinted from 'Mem. d. Soc. Geog. Ital.' vols. vi., vii.,
& ix., 8vo, Rome, 1896-99.)
(Presented by the Society.)
- Spender, H. Mountaineering in the Pyrenees. 4to, pp. 4. In 'Journ. of the
Camera Club.' London, May 1899
- Vaux, G. and W. Glaciers. 8vo, pp. 16; ill. n.p. [1900]
(Canadian Rockies.)
- Velain, C. Neige et Glaciers. Bibl. scient. d. Ecoles. 8vo, pp. 36.
Paris, Gautier, n.d.
- Weston, Rev. W. An ascent of Yari-ga-take, the Matterhorn of Japan. 8vo,
pp. 560-3. In 'The Fireside Mag.' September, 1900
- Wundt, Th. Die Jungfrau. 8vo, pp. 183-201; ill. In 'Westermanns Illust.
deutsche Monatshefte.' Nov. 1897
(Presented by G. W. H. Ellis, Esq.)

Other Items

- Albums of Swiss scenery (7). Obl. 4to. Lucerne, 1900
(Presented by the Publishers, 'Illustrato Lucerne.' Each part, 2s.)
- Leuzinger, R. Relief-Reisekarte von Tirol und Salzburg, 1/500,000. 1900
(Presented by Herr Edlinger, Innsbruck.)
- Post-cards of Swiss scenery (24).

REVIEWS AND NOTICES.

Indische Gletscherfahrten, Reisen und Erlebnisse im Himalaya. Von Dr. Kurt Boeck. Stuttgart: Deutsche Verlagsanstalt.

SOME years ago Dr. Boeck contributed to a German magazine some papers on a tour in the Caucasus. In the Himalaya, as in the less distant range, he shows himself rather as a pioneer of travel than as a climber or an explorer. As an author he has considerable recommendations, with, for English readers, some obvious defects. His narrative is lively and picturesque, but its merit is impaired by frequent self-glorification, by, as far as I can test it, habitual exaggeration of the difficulties of the road, and by occasional lapses from what is held in this country at least to be good taste. Dr. Boeck, I understand, began life as an actor. At any rate, he seizes on the situations of travel with dramatic instinct. He has not quite the imagination of a Landor, he does not rack us with tales of certificated tortures, or excite our envy by the narration of unprecedented pedestrian performances at high altitudes. His talent lies rather in comedy, which at times verges on farce. His countrymen compliment him on his 'true German humour.' It is occasionally very German, as, for example, when he tells us how he and his Tyrolese guide repulsed at the point of their alpenstocks a native messenger sent to warn them against entering Independent Sikhim without a permit, and then drank under the table a British official despatched on the same errand. Whence Dr. Boeck got, at Sandakphu, 'the Hungarian wine' by aid of which he won his second victory, he has omitted to inform his readers. Dr. Boeck's 'humour' knows no bounds. It is difficult to understand a gentleman of any nation repeating in print the hearsay story he tells on p. 410 of a lady traveller. Dr. Boeck's personal tales need not, however, be taken very seriously. He has, I find, entirely misrepresented what passed between him and myself when he called on me during my secretaryship of the Geographical Society.

In his Sikhim tour Dr. Boeck went up to Jongri and Akluthang, the pasturages at the southern base of Kabru, by the Singalillah ridge, returning by Pamionchi to Darjeeling. In order to estimate the traveller's 'subjective' standpoint fairly, I have compared his experiences with my own and those of other recent travellers on the same not unusual route. It must be premised that Dr. Boeck travelled at the time of year that is best for the region below 14,000 ft. - late autumn. Yet he seems to have been uniformly unlucky. His pages abound in 'break-neck leaps among thundering waterfalls,' 'unspeakably dangerous and difficult hours.' They swarm with snakes and leeches, fevers and venomous insects; he quite outdoes M. de Déchy or myself, and almost rivals the Apostle Paul in the variety of his perils and misadventures. On my own experience I should recommend no one in good health, man or woman, to be dissuaded by his narrative from taking the enjoyable and, with the exception of one afternoon's march, by no

means difficult tour here described. A small party of Darjeeling police carried large tents and ample provisions last autumn along the whole round; it can obviously be accomplished without any serious hardship. It is to be hoped that the Indian Government may be induced to carry out the project attributed to it by Dr. Boeck, and to make the path practicable throughout for four-footed beasts between Pamionchi and Jongri. Dr. Boeck is mistaken in thinking that it has been already done.

It would be easy, were it my purpose, to accumulate slips in detail from Dr. Boeck's pages. Jubonu is always mistaken for Nursing. It is quite clear from his narrative that he did not cross the Guicha La, as his map indicates, or in fact go far beyond Akluthang. The top of Kanchinjunga is more nearly 15,000 ft. than 12,000 ft. above the point from which the illustrations opposite pp. 406 and 408 were taken. He criticises a passage where Sir M. Conway is talking of drawings as if it referred to photographs. Captain Harman was frost-bitten not near Jongri but on the Donkia Pass. The march along the Singalilah spur is by no means the novel feat here suggested. In a portly volume, published some years ago, a lady gave an account of a trip to the snows made along it in the depth of winter.

The second excursion recounted in this volume is a tour of Nanda Devi by passes of (for the Himalaya) moderate elevation. That this considerable undertaking was successfully accomplished, despite all difficulties of transport, speaks well for Dr. Boeck's patience and perseverance. He has himself to thank if we give him less credit for it than he deserves.

The volume is lavishly illustrated from photographs by the author. To those of the inhabitants of the mountains it is possible to give unrestricted praise: they are lifelike and effective. The landscapes are less successful; many of them have been so much doctored that the peaks lose their characteristic outlines and the views their topographical value.

The two district maps share the defects of the Government Surveys from which they are taken. Indian draughtsmen have not yet learnt what constitutes a glacier or how to depict one.

D. W. F.

Chemin de Fer des Houches au Sommet du Mont-Blanc: Projet Saturnin Fabre; Etudes Préliminaires et Avant-projet. Par Joseph Vallot et Henri Vallot. (Paris. G. Steinheil. 1899.)

In recent years we have heard a good deal about various projects for a railway up Mont Blanc, and this elaborately illustrated book shows that some people consider it a practicable scheme.

The Alpine Club can hardly be expected to sympathise deeply with Monsieur Vallot's idea; it remains to be seen whether the investing public will back his project with their money. Fortunately for mountain lovers, apart from mountain trippers, summit railways are not rewarding the enterprising investor very liberally, and the extremely slow, not to say halting, progress of the piercing

of the Eiger for the Jungfrau railway can hardly prove an encouragement to the promoters of the Mont Blanc scheme. For the Jungfrau railway had the advantage of starting from the Scheidegg at a height of 6,788 ft. to reach a height of only 13,670 ft., whereas the Mont Blanc railway would have to rise from 3,252 ft. to 15,785 ft., approximately double the height. The expense must be enormous, and though the number of tourists visiting Chamonix is shown by Monsieur Vallot to be increasing very rapidly, from 10,000 in 1882 (before there was any railway) to 39,000 in 1899 (railway to Le Fayet), yet it would require a very large percentage of these visitors to undertake the journey up Mont Blanc, if the scheme is to be remunerative.*

There is no doubt that the Alpine tourist will put up with much discomfort in the faithful carrying out of the instructions given him by Messrs. Baedeker & Cook; but will they submit to the dreadful dullness of these long tunnel journeys, which are involved in these mountain-top schemes? At Monsieur Vallot's hopeful estimate of '80 metres a second train-speed the 11,380 metres of line would involve a four hours' journey, and this without making any allowance for stops. Quite three-quarters of this time would be spent in a tunnel, which it is stated will have peep-holes at some half-dozen points; but seeing the time required for the actual journey, it is obvious that only a few minutes could be spared for the unfortunate traveller to take in the beauties of the mountain, to which the author so eloquently refers.

Dwellers in cities may be broken in to subterranean electric railways by the time the Mont Blanc line is finished, but they will have so much of them in their working life that they will hardly wish to renew their experiences during the holidays.

It appears to us an entire fallacy on the part of the promoters of these tunnel railways to compare them for the purpose of estimating traffic with open-air rack-railways, from which there is a beautiful view and where there is plenty of fresh air to be obtained. They may, however, know the weaknesses of their tourist better

* Monsieur Vallot's figures are --

Total cost of construction of line to summit of Mont Blanc : 21,000,000 frs.
Estimated receipts on travellers carried to the stations of --

	Frns.
Gros Bèchar, 20,000 at 20 frs. each	400,000
Aiguille du Goûter, 4,000 at 50 frs. each	200,000
Dôme du Goûter, 2,000 at 60 frs. each	120,000
Les Bosses, 1,000 at 80 frs. each	80,000
Petits Rochers Rouges and Mont Blanc, 20,000 at 100 frs. each	2,000,000
Receipts on merchandise	50,000
Rent of terminus hotel and station restaurants	150,000
	3,000,000

A total of 47,000 travellers per annum, of whom nearly half must be prepared to pay a lump-sum of 4*l.* The traffic to Chamonix has indeed need to increase if these figures are to be realised.

than we do. That remains to be seen. Monsieur Vallot speaks of the continuation of the railway from Chamonix to the Rhône Valley as an event that is at hand. Such does not appear to be the opinion of the inhabitants, from inquiries made this summer; for the concession, which has been already renewed some six times, will very shortly again lapse, owing to the work on the line not having been even commenced.

We need hardly point out that until this line is completed Chamonix is a *cul-de-sac* as far as railway travel is concerned; a fact which must tend to restrict the number of visitors considerably, and on a great increase in the number of visitors it is clear that the financial success of the undertaking would depend.

M. Vallot throws out the usual sop to the mountaineers, just as Herr Guyer-Zeller did in respect of the Jungfrau railway. He suggests that the stations will be convenient points of departure for mountain expeditions, and that the love of mountains induced by going up Mont Blanc in the 100-fr. tube will result in many fresh recruits to Alpine-climbing. The Alpine Club will have to protect itself by giving out publicly, 'No ascent of Mont Blanc by the tunnel may be entered on a candidate's qualification paper.'

M. Vallot treats of the physiological aspect of the question in an equally optimistic way. We believe the real difficulty in this direction to lie in the effect of the greater altitudes upon the *workmen*—not the travellers. M. Vallot makes light of the difficulties which were experienced in getting the labourers to work for any length of time on the Jausen Observatory, owing to the exhaustion produced by any prolonged effort, but there is no doubt that they were considerable, and it is reasonable to expect a somewhat similar difficulty in the construction of the tunnel. M. Vallot considers that the use of compressed air for blasting will supply the men with such abundance of oxygen that they will suffer no discomfort. But this is a point as yet undecided, and the success or failure of the project, as far as mere labour is concerned, appears to depend largely upon the ability of the men to work continuously. On the other hand there is no doubt that the labourers would be mainly Italians, and it is well known that they will work under conditions which would be insupportable to men of other nationalities.

If, indeed, this scheme never gets any further than the *avant-projet* it will have resulted in an interesting survey of a portion of this great mountain, and for that we may thank M. Vallot, even if we do not sympathise with him in his endeavour to plant a series of restaurants on the rocky prominences of the north-west slopes of Mont Blanc, and to provide the unathletic tourist with a means of easily getting up to them.

W. A. W.

In the Ice World of Himalaya : among the Peaks and Passes of Ladakh, Nubra, Suru, and Baltistan. By Fanny Bullock Workman and W. Hunter Workman. With 3 maps and 67 illustrations. London: Fisher Unwin, 1900.

Thanks to the kindness of Mrs. Bullock Workman readers of the 'Alpine Journal' are already acquainted with three* of the chief ascents effected in her campaign of 1899, when 'by the ascent of the Siegfriedhorn, Mount Bullock Workman, and Koser Gunge three successive world-mountaineering records for women—viz. of 18,600 ft., 19,450 ft., and 21,000 ft.—were made.' We heartily congratulate Mrs. Bullock Workman on her well-earned triumphs, though we must own that we wish she had, when branding her two first conquests, given them names like her happily chosen 'White Fates,' rather than those which she actually bestowed upon them.

Though we have, on the principle 'place aux dames,' given Mrs. Workman the place of honour, her husband, Dr. Hunter Workman, shared the whole of her campaigns, and the book is written in the plural throughout. They were accompanied by the famous Matthias Zurbriggen as guide. The mountaineering story of the book will commend itself to climbers. The authors do not indulge in any sensational extravagance of style, and difficulties are never exaggerated, though there is no lack of liveliness in the narrative. The coolie is the *crux*, if we may so say, of Himalayan travel. He is like—we need not quote the full description—the 'commissariat camuel' of Mr. Rudyard Kipling; and will, we anticipate, in future 'bulk largely' (is not that the modern phrase?) in Himalayan mountain story. We can sympathise heartily with the authors in their disappointment at having to give up their visit to the glaciers of the Kanchinjanga, owing to the trouble with their 'valiant hirelings.'

The scene of the authors' best work was round Askole, in the Karakorams, but for the details we must refer our readers to the book itself.

If hardships from cold and wind, to say nothing of the difficulties of the ground and trouble with coolies, be necessary to give a proper flavour to mountaineering recollections the authors will have many a pleasant hour in what they themselves term 'memory's reminiscent halls.'

The numerous illustrations from photographs add largely to the value of the book, and the maps are very good. We miss an index, but find a glossary of Anglo-Indian terms. The chapter (xii. pp. 182-198) on 'Personal Experiences with Rarefied Air, and some Deductions, for which the Authors are separately responsible,' gives particulars of their physical sensations at over 15,000 ft., and will be found of interest and value.

* See *Alpine Journal*, vol. xx. pp. 3-17.

Alpine Plants. By W. A. Clark, F.R.H.S. London: Upcott Gill. 3s. 6d.
With eight illustrations by Clarence Elliott.

If the poet speaks truth when he tells us what the scent of violets poured back into his soul, we may conceive what happy memories a bed of *Gentiana verna* or a tuft of *Myosotis rupicola* is likely to awaken in the breast of the mountaineer, and we may further conjecture what an overflowing measure of gratitude will be won from us by the man who enables us to grow these Alpine gems in our own gardens. This unpretentious little book teaches the secret how to attain so desirable an end. The author, who has for many years had charge of probably by far the largest and choicest collection of Alpine plants in England, at the famous York Nurseries, gives directions, suggested by his own experience, for growing those Alpine plants which are rarest, as well as those which, though not rare, are yet often found difficult to manage in English gardens.

Success with many of them depends upon giving the plant the special soil and aspect which it loves, and upon a careful attention to such points as drainage and top-dressing in spring or autumn or in both. One point to which the author directs attention which he emphasises by *italics* is that '*every Alpine should be planted firmly*,' and our own experience agrees thoroughly with his statement. 'Error is a hardy plant; it flourishes in every soil,' wrote the clever parodist, if we remember rightly. It is curious how persistently one comes across the statement that Edelweiss (*Gnaphalium Leontopodium*) cannot live in English gardens. The author demolishes this fable by saying: 'I have seen it used for edging beds in the way anyone would use *Alyssum* or *Arabis*. It likes a nice light sandy soil in a dry sunny position, and can be raised freely from seed.'

The author's thorough acquaintance with his subject may be inferred from such remarks as the following (with reference to *Saxifraga oppositifolia*): 'Nearly all the *Oppositifolia* section die away in the course of a year or two: they should be taken up and pulled to pieces as soon as decay commences, which it does generally in the centre of a large clump. It is no use leaving it in the hope of preventing the spread of the decay by top-dressing, for the plant will grow worse each season, and will gradually die away. The clump should at once be taken up and replanted in fresh compost or on some other portion of the rockery (pull into small bits before replanting), where it will soon take hold and grow as vigorously as before; this should be done directly it ceases flowering. A little grit and leaf-mould may be used as a top-dressing, working it well amongst the shoots. If this cannot be done directly the flowering is over, it should be left until the end of August, which is a very good time. River sand must not be used for top-dressing, as it will cause a rust to come on the foliage.'

Full information is given as to the management of that most beautiful though most difficult plant, *Eritrichium nanum*, though

the directions are too long for reproduction here. It is some compensation to be told that the *Soldanella*—the ‘slender, pensive, fragile flower’ so lovingly described by Ruskin *—is ‘of quite easy culture’ if the needful precautions be taken.

We have found this little book full of interest, and can recommend it warmly to all lovers of the Alpine garden.

It should be added that the author gives full lists of plants suitable for ‘sandstone or gritstone rockeries facing full south,’ for ‘limestone rockeries facing full south,’ and for ‘north-west and south-east aspects.’ Mr. Clarence Elliott’s illustrations deserve a word of praise.

Le Tour du Mont-Blanc. Par Emile Daullia. 8vo, pp. vii, 307; ill.
(Paris: C. Mendel. 1899. Fr. 7.50.)

This pleasant, appreciative, and humorous account of a tour round the range of Mont Blanc is the very book that one would wish to have at hand by the fire-side on a winter’s night, to provide a gentle stimulus to the imaginative memory in recalling the charms of scenery, the smaller pleasures and annoyances of peaceful travel over well known ground. The tour was new to the writer, and he is able to convey to the reader the freshness of his own impressions. The photographs by the author add to one’s pleasure, representing as they do old scenes from new points of view.

CORRESPONDENCE.

ACCIDENTS.

To the Editor of the ALPINE JOURNAL.

SIR,—Owing presumably to the terrible increase of late in these fatalities, it has not been the custom for the ‘Alpine Journal’ during the last two or three years to give much space to accounts of accidents in which no English climber has been concerned. I venture, however, to send a few remarks on the disaster which occurred on the Königsjoch on July 18, when I was staying at Sulden, since it seems to me to forcibly illustrate a local custom of the Tyrol guides, and the dangers of which that custom may be the cause.

Somewhere about 1893 † complaints began about the custom of the Ortler guides (though not confined to that district of Tyrol) of roping in parties of two, even on crevassed névé. It was then stated ‡ that the D. u. Oe. A. V. ‘expressly recommends guides not to go alone with a single traveller on to névé.’ Nevertheless in 1896 § we find Mrs. Dickinson Berry writing to complain of the same

* *Froudes Agrestes*, 6th edition, 1882, p. 129.

† *Alpine Journal*, vol. xvii. p. 452.

‡ *Ibid.* p. 510.

§ *Ibid.* vol. xviii. p. 135.

pernicious practice, which still remains in full force, even at this moment.

This summer two acquaintances of mine were taken up the Ortler. Their guide, who had his son with him as second, has a name well known in Switzerland, has travelled for years through and through the Alps, and has occupied the position of head guide (Obmann) of the district. Nevertheless, they were separated into two parties of two, both for the ascent and the descent.

Now, Sir, I have nothing to add to the excellent and forcible comments of your editorial note to Mrs. Berry's letter with regard to going on *névé* in pairs, but it seems to me that this custom involves a second, and at times more serious, danger, which has not been touched upon, and which, in my opinion, was the cause of the disaster in which Herr Weigand and Moser lost their lives.

The point is this. Given the customary party of one guide and one traveller, *who comes down first?* From what I saw, and from what I heard, the *guide almost invariably leads, even in the descent.* Twice I saw guides of good reputation going down snow and rock, on easy ground be it admitted, leading their employers behind them. In one case the employer afterwards told me that he always insisted in difficult places on descending first, but he allowed that he did not always find it easy to get his way. On a third occasion on which I was present, the traveller did so insist, and the guide was miserable—as miserable as a coachman put inside a brougham and expected to drive out of the window. He kept coming up to the side of his Herr and being ordered back. If some question about a bridged crevasse arose, instead of offering advice from behind with a tight rope, he came up alongside, as if to practically test the bridge by giving it two bodies to bear instead of one. Under these circumstances the surprising thing is not that there are so many, but that there are so few accidents in the Eastern Alps. Most of the Tyrol mountains are small enough and easy enough to be quite fairly climbed by a party of two with due precaution, *but* the weaker man *must* lead down.

Take now the Königsjoch accident in the light of this knowledge. Herr Weigand and his guide had crossed the Suldenspitze, Schrötterhorn, and Kreilspitze. The snow was very bad, and that, or fatigue, or both together, made them abandon their contemplated ascent of the Königsspitze. There is a difference of opinion among the guides as to the exact spot from which they fell, some holding that they fell from the ridge itself. This seems unlikely, as Herr Weigand was a fairly experienced climber and the ridge is easy. The opinion of the majority is probably correct, that they fell while cutting steps on the slope leading down, not from the Königsjoch proper, but from the notch just to the east of it, and divided from it by the curious pinnacle known as the Königsmandl. They may have begun to descend at this point, with the idea that they would save time by not going on round the Königsmandl to the regular col, or because they feared that stones might fall from the Königsspitze on the ordinary route.

Then comes the point, Who cut the steps? The guides unani- mously declared that the Herr was not sufficiently experienced, and therefore Moser must have done so. Immediately the danger of being only two is obvious; the slip which could have been instantly checked from 15 ft. above becomes a fall of 30 ft., and a jerk which would tear anyone from his hold on a steep ice-slope.

I have, I hope, made it sufficiently clear where the danger lies: it is not so easy at first sight to find a satisfactory remedy. But I have little hesitation in asserting that the rule lately promulgated by the D. u. Oe. A. V. is a step in the wrong direction. This rule, which has been conspicuously posted all over Sulden, forbids a single guide to take two travellers up Cevedale. (It has been suggested that this may have encouraged the two and two system by making the guides think that no guide must ever find himself on the same rope as two travellers, even though other guides be on it too!) The rule, I am informed, also applies to the Ortler and the Königsspitze. All these mountains are very easy in the ordi- nary sense of the word, and the absurdity of a rule is obvious which would compel, say, Mr. Walker and Mr. Pilkington to take two guides, when a hopeless duffer who has never seen the Alps before need only take one.

At the same time, as I have pointed out, there are so many easy expeditions which may fairly be taken by a party of two, that to say one guide shall *never* go alone with one traveller would seem nearly as absurd. I venture therefore to think that a remedy may be found by laying down as an absolute rule that 'the guide in charge of the party shall in all cases descend last.' Switzerland (and England) learnt the lesson once for all when Croz and the others perished on the Matterhorn in 1865. Tyrol is still ap- parently fifty years behind. Look at the accidents on the Zugspitze,* or on the Eisjoch!† In each case only two on the rope, with apparently the guide leading down, and so unable to stop in one case a slip, in the other a premeditated but dangerous glissade. Cannot the D. u. Oe. A. V. be induced to put a stop to a state of things which by the guides' own admission is universal? From every guide came the same surprised answer when I criticised the custom of coming down in front of the Herr. 'We all do it, always.' Some of the more experienced amateurs know enough to remonstrate, but the poor beginners, for whom the rule is most needed, know nothing. 'If the blind lead the blind . . .'

The effect of such a rule, if passed, will be to throw the re- sponsibility on the guide, which is exactly what is wanted. Then if an unknown traveller asks a guide to take him alone on a difficult expedition, the guide will either ask for a trial trip on some easy mountain, to see whether his Herr can be trusted to lead down, or will insist on a second guide.—Very faithfully yours,

GEORGE BROKE.

* *Alpine Journal*, vol. xvii. p. 565.

† *Ibid.* p. 566.

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THE FUTURE OF THE ALPINE CLUB.

BY SIR MARTIN CONWAY AND DOUGLAS W. FRESHFIELD.

(Read at the Winter Meeting, December 17, 1900.)

THOUGH the Alpine Club arose during the struggle for the conquest of the Alps, and took its name from the great European range, there is evidence enough that, in the mind of its founders, mountains in general, and not only the peaks of Central Europe, were objects of interest. The title page of the 'Alpine Journal' and many of the papers in its early volumes are proof sufficient of this statement, if proof be needed.* It was only as the minute exploration of the Alps proceeded, and the proximate exhaustion of unclimbed peaks within holiday range of England concentrated attention on the details of what are known as 'Mountain Form' and 'Records,' that the Club as a corporate body became so thoroughly Alpine as it for many years remained. Thereupon the idea seems to have taken root in the minds of certain of its leading members that, with the completion of Alpine exploration, the *raison d'être* of the Club would cease, and the supply of materials for papers and a magazine would dry up. It was held that if the Club continued to exist, it would be only as a meeting-place for men interested in a common sport, who would find pleasure in occasionally dining together, but the practice of whose sport would produce nothing worthy of continuous record. Even when the Caucasus was revealed as a possible substitute for the Alps as a place of holiday resort, it was still maintained that the number of Caucasian climbers must always be few, and the record of their achievements interesting only to themselves.

* See also early Club Circular, cited *infra* by Mr. D. Freshfield.

One thing these prophets of evil failed to foresee, the growth of photography and the development of the magic lantern, and this failure has vitiated their calculations. They were right enough in foretelling that the large majority of the members of our Club would be unable, at all events within the time of the present generation, to take their holiday in the remoter mountain ranges of the earth. What they did not conceive was that, if the Club could not go to the Himalayas or the Rockies, the Himalayas and the Rockies would come to the Club. It happens that snowy mountains are the most photographable things in the world. It happens also that all snowy mountains, whether in the Arctic regions, in the tropics, or in Europe, possess the same general features in common, so that a man familiar with any one range, and acquainted with glacier phenomena in any place, finds himself able to realise the meaning, and even in his own mind to reproduce the scale, of any photographically depicted snow mountain in any part of the earth.

The Alps themselves are so extensive that few amongst us can possibly know more than a small part of them. If a paper were to be read on the Levanna or the Rheinwaldhorn, for instance, it is probable that to nine out of ten of the Club audience the aspect of the mountain in question would be as unknown as that of Ruwenzori or the Mustagh Ata. In either case, therefore, the interest of the paper must depend upon a basis of maps and photographs. When by such means the Club audience has been made to realise the nature and aspect of a peak, they can follow the story of its ascent or exploration with exactly the same kind of interest, whether the peak in question be within or outside Europe. Photography has thus enlarged the horizon of the Alpine Club, and correspondingly magnified the scope of the 'Alpine Journal.'

The exploration of the Alps is nearly complete. It is doubtful whether an institution, in many respects characteristically English alike in its weaknesses and in its strength, an institution moreover essentially non-local in contrast with the foreign Alpine Clubs, which are essentially local and concerned each with a special area—it is doubtful, I say, whether such an institution is suited for the minute, accurate, and perhaps (in a literary sense) somewhat dull work of completing the last stage of Alpine exploration. The co-ordination of the scattered records of multitudinous expeditions, often varying very slightly from one another, is matter for Climbers' Guides and learned monographs rather than for the pages of a Journal whose primary subject is 'Mountain Adventure.' If

the proposition which I made to the Alpine Club some fifteen years ago had been accepted, that I should present to it the copyright of such Climbers' Guides as had then been issued, and should continue to edit the series for it, the pages of those little volumes (since slaughtered by the new edition of Ball) would have relieved the 'Journal' from the need to record a mass of small new expeditions, and would at the same time have preserved them from oblivion. As it is, the proper place for such not unimportant topographical minutiae is, in my opinion, the pages of the Journal of that particular foreign Alpine Club within whose domain the area in question falls.

As a matter of fact the exploration, above the snow-level, of the mountain ranges of the world outside the Alps has thus far been made chiefly by our members. By accident, not by design, the Exploration of the Mountains of the World has become a characteristic work of our Club, and the first record of such explorations is the noteworthy feature of our 'Journal.' I maintain that the time has now come when this spontaneous development should be adopted as the Club policy, when the Club should frankly look beyond the Alps, and constitute itself the centre and chief home of mountain exploration in general. In the nature of things, for the Royal Geographical Society, to which mountain explorers owe so much, mountain exploration must always be and remain matter of secondary interest. The bulk of its Fellows are not, and never will be, mountaineers, and the broad interests of geographic science in general must be matter of prime importance to that powerful body.

Here, then, is the Alpine Club's chance, and now is its time. If we fail to assume the rôle thus open to us the Geographical Society will, of course, do its best to take up the work which the Alpine Club might do much better, and of which the Geographical Society would gladly be relieved. Every year the mass of the material with which the editor of the 'Geographical Journal' has to deal increases in amount. He would be happy enough to find the whole subject of mountain exploration taken over and properly handled in our 'Journal.' If, however, this is to be done it must be made the main subject of the 'Journal' and the chief business of the Club. I do not think that this is possible with the staff now at our disposal, or by merely voluntary effort. The income of the Alpine Club is increasing, and if we chose to open our doors a little wider it might be further increased. I am not familiar with the details of our finance, but it can-

not be doubtful that if money were required to enable us to fulfil the important function I suggest it would be forthcoming; and money would be required.

It is not necessary for a learned society to consist of learned members. The essential thing is that it should possess at least one permanent paid official, who should devote all his time to the study of the subject with which the Society is concerned. Such an official must be sought amongst and must remain a member of the Club. In our case he would edit the 'Alpine Journal,' and it would be his business to make himself acquainted with everything connected with mountain exploration occurring in the world. To take a concrete case: On the day when I was preparing this paper I received the four great and richly illustrated volumes containing the case of the Argentine Government in its frontier dispute with Chile. These volumes describe with great minuteness the southern part of the Andes ranges. From them I learn that during a long series of years exploring expeditions have been visiting those ranges, and gradually revealing their structure. Yet of these explorations, which we ought to have known of from year to year, no mention has been made in the 'Alpine Journal.' There will, I suppose, be a corresponding publication issued by Chile, containing the record of similar Chilean expeditions, of which likewise we know nothing. Our paid permanent official, if we had one, watching the serial publications of the very active South American Geographical Societies, would have been fully informed of such expeditions. Moreover on the appearance of these important works it would be his duty, and he would have the time, to read them through and present to us at all events an abstract of the account they give of one of the most remarkable mountain regions in the world.

Such a man, devoting his time year after year to these studies, would very soon become the acknowledged expert in his subject. He would probably become attached as an authoritative reviewer of new mountain literature to some of the principal Journals. He would find materials for interesting and useful books growing upon his hands. He would thus be enabled not merely to obtain a position of authority and distinction, which the Club would share, but to add materially to the salary which we should be able to offer him. His position would be as honourable to himself as to us.

I must guard myself against the misapprehension which might arise in the mind of a careless listener that I am

desirous of transforming the ordinary member of the Club into a man of science or a topographical expert. All I suggest is that we should select a single member and transform him. The rest of us would remain the simple amateurs that we now are ; some loving the mountains as a field for sport, others loving them for the beauty of their wild recesses ; all of us, as far as our powers admit, climbers, and only admitted to membership as climbers, except, as now, under the occasional artistic and literary qualification. In my own opinion the present climbing qualification is unnecessarily high. It has been relaxed in the case of men who have explored remote mountains, and it might with advantage be relaxed nearer home. The guarantee that we really require of our members is that they should be mountain lovers, who, by repeated visits to mountains and ascents made while amongst them, have proved the reality of their devotion. I hold that it is of no importance whether the mountains climbed be easy or difficult. So long as we have proof of a sufficient number of ascents made in a series of not less than three seasons in the mountains we have proof of a candidate's suitability. The keenest readers of the 'Alpine Journal' and the best lovers of the Alps are by no means the most gymnastic climbers ; but every such person climbs whenever he can. It has been my good fortune to come in contact with several such men, whom lack of means alone prevented from accomplishing our costly qualification. One such individual, who had never left England, was a true mountain explorer at heart. His enthusiasm for our sport was so great that, unable to afford to purchase the first ten volumes of our 'Journal,' he went month after month to a public library and solemnly copied them out. So keen a mountain lover as he, nurtured only on a short annual holiday in Wales, is far better qualified than most of us, with our wider experience, to attend our monthly meetings and listen to our papers.

Just ten years ago, at the annual meeting of 1890, I read a flippant paper * to the Club for the purpose of stirring it up and stimulating discussion, as I hope to do to-night. Many things have happened to us in the last ten years. We have moved into premises suitable to our greater activity, and capable of adaptation to a yet wider usefulness. A much larger proportion of our number has gone a-wandering over the face of the earth. Mountain exploration is now a respectable occupation and is no longer regarded as the wild

* *Alpine Journal*, vol. xv. p. 397.

folly of a crank. If the future of the Alpine Club is to be worthy of its past, and if it is to develop in the next quarter of a century as it has in that which is closing, it must be alive to its opportunities and ready to seize and make the most of them. I plead, therefore, for a somewhat opener door, and for a wider geographical horizon. I have suggested a means whereby that may be obtained. It may not be the best means. The suggestion, however, whether good or bad, is, I hope, good enough to form a basis for discussion, and as such I humbly submit it to this meeting.

[At the conclusion of Sir M. Conway's paper Mr. Douglas Freshfield read the following note.]

In the brief, but suggestive, paper we have just listened to Sir M. Conway has laid down two distinct propositions. No doubt they are connected in his mind by financial considerations. But they are in themselves essentially distinct, and I think it may be as well to consider them separately and on their individual merits.

His first proposal is that it is expedient to make the 'Alpine Journal' a complete record of the progress of mountain exploration in all parts of the globe, and for this purpose to appoint a permanent paid editor.

His second proposal is that it is expedient that the qualifications for the Club should be modified.

With regard to the first I can speak with some experience, inasmuch as it fell to my lot, when Honorary Secretary of the Royal Geographical Society, to carry out a precisely similar alteration in the character of its 'Proceedings.' I made them a Geographical Record while preserving the original character of the publication as a memorial for Fellows of the Proceedings of the Society. Such a conversion can be effected simply and yet successfully. The practical step necessary is to appoint as editor or sub-editor a gentleman who will make it his business to provide in the form of 'Notes' and 'Lists of New Publications' a summary of the work accomplished in the field and the study since the last issue. In our case I should be disposed to retain an amateur Editor and to appoint a Sub-Editor, who might serve also as Assistant Secretary. His function would be to bring out the facts of interest to mountaineers in works of general travel, and to keep an eye on the Proceedings of Geographical Societies and foreign Alpine Clubs with the same object. The cost to the Club would be the increase of his salary beyond our present

Assistant Secretary's, and the additional printer's bill. I calculate it roughly at about 200*l.* per annum.*

There seem to me two arguments which are likely to be adduced against this suggestion. It may be urged that we can well afford to leave the record of the exploration of distant ranges to the 'Geographical Journal.' But the geographer approaches our work from a different point of view, weighs it by a different standard, and sometimes fails to appreciate it accurately, while the Alpine enthusiast has, in the 'Geographical Journal,' to pick out the mountain Notes from an enormous mass of miscellaneous articles on subjects which he naturally looks on as beside his purpose, if not beneath his notice.

Another objection that may perhaps be put forward is that the bulk of our Members have no interests beyond the Alps. If that be true the sooner they learn to have wider interests the better and the happier for them, and we ought, in my opinion, to spare no pains to this end.

I am brought then to the conclusion that this suggestion of Sir M. Conway's is good in itself—if the Club can afford to carry it out.

The second proposition put before us is that it is expedient that the ordinary qualification for the Club should not necessarily involve ascents of an arduous nature, but that in the Alps, as beyond them, the Committee should be at liberty to look at a candidate's claims from a wider point of view.

Before we consider this, which will appear, perhaps, to some of our younger members a startling innovation, I would invite you to a retrospect. Let us look at the first words of the first circular issued on behalf of the Club in 1859. It runs as follows:—

'The Alpine Club invites the membership of all who have explored high mountain regions. It facilitates association

* I am informed that a gentleman ought to be found who for 200*l.* to 220*l.* per annum would give sufficient time to look after the foreign section of the *Journal*, and act both as Assistant Editor and Assistant Secretary. As the Club fixes the present Assistant Secretary's salary at 120*l.*, this would involve an extra 100*l.* A second 100*l.* should be allowed for occasional translation work, extra printing, and cheap lithographed maps. If this expense should seem at present excessive, as it well may, a competent person might be found who for 20*l.* per annum would compile a quarterly summary of current mountain exploration with adequate references. The issue of such a summary would probably increase the sale of the *Journal* sufficiently to pay for the extra printing cost.

among those who in their admiration of natural grandeur possess a similarity of tastes.'*

After reading this sentence we must, I think, admit that what Sir M. Conway asks us is not whether we will set up a new standard, but whether we are prepared to return to the original standard of our founders. This original standard is illustrated by the early Club lists. We shall find there many names (amongst them that of at least one President, the late William Longman) who could not possibly have come in on the present climbing qualification. It is even doubtful whether John Ball would have passed the Committee on it. According to an *obiter dictum* we have heard to-night climbs in the 'Titlis, Tödi, Locarno, and such like districts' might have been ruled out as non-Alpine.

The next stage in the progress of the Club was of the nature of a compromise.

Some of our Members wanted a high climbing qualification; and they obtained it, subject to the concession that not only artistic and literary claims in connection with the Alps should continue to be recognised, but that travel in more distant ranges should also be a ground for admission.† This system has now been in force for many years. Probably nine-tenths of our members have been elected on a climbing qualification, to which, however, the good sense of successive Committees has given a certain limited elasticity. With a proper disregard for formal consistency—generally a stupid thing—they have occasionally made allowances for age or health on the part of the candidate.

Still the Committee have felt bound to maintain—and the books show that they have on the whole maintained—a very high climbing qualification.

Is it expedient that we should authorise them to relax it? I agree, on the whole, with Sir M. Conway, and reply, Yes, for the following reasons:—

First, a high climbing qualification has become, to a great extent, a money qualification. A candidate nowadays cannot, as a rule, go up great peaks without making large payments to guides; unless, indeed, he begins at the wrong end and goes up them without guides, a course only justifiable when he has friends as good as guides ready to teach him the craft of mountaineering.

* This circular was first sent out by the Acting Secretary, Mr. T. W. Hinchliff, in 1858; it was subsequently reissued.

† See *A. J.* vol. xviii. p. 407, vol. xi. p. 435, vol. xii. p. 207. See also Longman's *Modern Mountaineering*, p. 86, in vol. viii. of this *Journal*.

Then, again, any written list of expeditions has become a purely illusory test. A candidate may have a dozen big peaks to his credit, and yet as a mountaineer be a dangerous fraud. What do the guides say? A friend of mine, no mountaineer, was being taken up the Matterhorn. He said to his guide, 'Are you not afraid of going with a novice like me?' My friend's nervousness and pride were simultaneously dissipated by the guide's reply, 'With the mountain in this condition I would take a cow up.'

Lastly, I demur to a purely climbing qualification, because I think it tends in the present condition of things to encourage that rash climbing which has led and is leading to deplorable results. We want here to make mountaineers, not acrobats.

No one can turn over our modern mountaineering literature without noticing a new tendency in it. The old spirit was breathed in Forbes's maxim, 'Freedom from casualty is to be obtained by a conviction of the dangers to be encountered.' The note of the modern climber, on the contrary, is a self-confidence which has unhappily proved to be, in not a few instances, over-confidence. The distinction between the two schools is brought out in the Badminton volume on Mountaineering, which, as a whole, may be taken as a manifesto of the old school. I find in one of the chapters written by its Editor the following sentence:—

'The climber urges, "Go on, because it is possible to do so;" the mountaineer says, "It is possible, but it is unwise and imprudent; therefore we will turn back."' Now this very passage is quoted in the September number of the 'Climbers' Journal,' with the characteristic comment: 'Who after that would be a mere mountaineer?'

Here surely we have the folly of the crude climber in its most naked form. One is little surprised afterwards to read that particulars of three fatal accidents that occurred among British mountains last summer are wanted by the editor of that Journal.

But have we not suffered in this Club also from the Modern Spirit—the spirit that does without, if it does not despise, the rules of our craft, that ignores or depreciates dangers? It has been my business lately to read up the Alpine books of the last ten years. The aim of some of their authors seemed to me not to conquer with the least possible risk, but to run every risk up to the last margin. And what has been the result? The margin has been overstepped. We have lost my friends Mr. Mummery and Mr. Cockin, Mr. Norman

Neruda and Mr. Jones. I might add other names; I have mentioned only authors. Now I do not attribute blame to any individual in any particular instance. I look broadly to the result. And I say that any step on our part that will emphasise the fact that this is no mere Climbers' Club but a Mountaineers' Club will be a good step. Let us leave youths who depict themselves engaged in 'Stable Traverses'* (where, let us hope, a soft and convenient receptacle awaits members of unstable equilibrium) to be reformed by their President, Mr. C. E. Mathews. If any one is capable of the task he is. But let us preserve our primitive tradition and maintain this as a Club of mountain enthusiasts, open to all who have explored and climbed, or haunted, high mountain regions, not to please a publisher or to become a subject for paragraphs in the penny press, but for the love of Nature; let us keep it as a refuge for those who like to meet and talk over their past pleasures with sympathetic acquaintances, amongst whom they may, perchance, make, as most of us have made, life-long friends.

In conclusion I must guard myself against being supposed to argue for the abolition of any qualification to membership of the Alpine Club beyond the subscription, or to wish for the assimilation of our Club in this respect to the foreign Alpine Societies. What I desire is that the Committee should be assured that they are authorised to consider the qualifications of candidates who have not climbed—or let us say more truthfully, been taken to the top of—a series of great central peaks. The inward grace we require is a love of mountains. I hold that the habit of frequenting them should be taken count of among the outward signs of this grace.†

Whether the general knowledge that the Committee are not restricted in their consideration of candidates by any hard and fast climbing test would bring in a sufficient addition to our membership to provide funds for the proposed development of the 'Journal' I do not presume to prophesy. Such a development seems to me a worthy object, but not one worth obtaining at the sacrifice of the Club's original character, and I should, I hope, be the last to propose any step likely to lead to this. The adoption of Sir M. Conway's

* See the *Climbers' Journal* for September 1900.

† Any fears that the Club membership would be thereby increased beyond the capacity of our hall may, I think, be dismissed. So long as the Committee does its duty the increase will, I believe, be gradual, and it could at all times be met by a limit to the membership.

second proposal in the sense I give it ought not to bring about any such result; it would rather confirm the Club in its original character. If the funds for improving the 'Journal' are not found in this way other ways may be devised in which they can be secured. That its condition now is not altogether satisfactory is obvious. The task of Editor is more than can be fairly thrown—without paid aid—on any Member who cannot afford to make it, as Mr. Coolidge in his day did, one of the chief occupations of his leisure.*

MOUNTAINEERING IN THE HIMALAYAS.

BY MAJOR THE HON. C. G. BRUCE.

(Read before the Alpine Club, December 11, 1899.)

I WAS originally asked to read a paper on Military Mountaineering, but I am afraid that mountaineering, as understood by this Club, is for India and its frontiers unnecessary. It must be borne in mind that the Himalayas are not the Alps; that India is not divided by one narrow ridge of high mountains from another civilised Power, as is the case between certain countries of Europe; that it is not necessary to hold high passes by special corps of trained Alpine troops; that what is wanted is not Alpine troops, but very active and highly trained hill troops.

It would be incorrect to describe to this Club the work necessary for the Indian frontiers as mountaineering. What, however, is of value is the educational side of mountaineering. The actual effort of climbing up steep ice or rocks is of little importance, most of the hill men, of whatever race, enlisted into the Indian army being excellent walkers and capable of covering steep, rocky hill-sides and every description of broken ground at a great pace.

It will, however, be allowed that mere activity is not everything in a mountain guide or a hill fighter.

There is probably no training so good as the practice of mountaineering for developing the path-finding instincts, for helping a man to readily pick out the right route or the safest route across a new country.

I do not suppose there are many members of the Alpine

* For the discussion on this subject see the 'Proceedings of the Club,' p. 352.

Club who would back their judgment in point to point leading at night in a new country against that of a first-rate Swiss.

Again, there is no sport, with the possible exception of polo, that teaches a man to keep his head better in an emergency, or to rapidly decide on the right course to be taken.

I expect most people here have suffered at times from being led by a bungler, or have been in positions where loss of nerve or want of decision would have meant serious consequences.

It will be understood from what I have said that I regard the practice of mountaineering as a valuable aid to military training. It is, however, a training which only a few men can obtain, but there is no reason to reject it on that account.

I will now leave the subject of military mountaineering, and very shortly point out the different advantages and disadvantages for climbers of the different districts of the Himalayas.

It should be understood that the most westerly parts of the Himalayas and the ranges of the Hindu Raj and Hindu Kush, Karakoram.s are not very much affected by the Monsoon. The further one goes east the more affected he becomes. This is due to two causes—the first, and most important, that in the west the monsoon itself is very light, and secondly that the high mountains are well defended by high ranges of foot hills, over which the monsoon has first to pass, and in doing so loses much of its moisture.

Of course there is in many districts local bad weather, but not sufficient to prevent work. There is also uniformly better weather on the northern side of the main range than on the southern. One may say, therefore, that from the middle of June until the end of August the weather is uniformly unsatisfactory on the southern slopes of the Himalayas from Kangra to Bhutan, whereas from Chitral to Western Kashmir one can work the whole summer through. I will not say that on the southern (?) slopes the weather will not be occasionally bad during the monsoon months, but it will not be so bad as to stop work for long.

I have climbed mountains in every month from May until November. In fact, my first climbs in 1890 were made in June. I attempted two peaks on the small range which divides the Kaghan valley from Kashmir territory; they both had the same names in common with some *ten* other points—*Ragee*, *Bogee*.

My companions were two capital Kaghans, both Swatis by race, and a Goorkha orderly. We had one ice axe

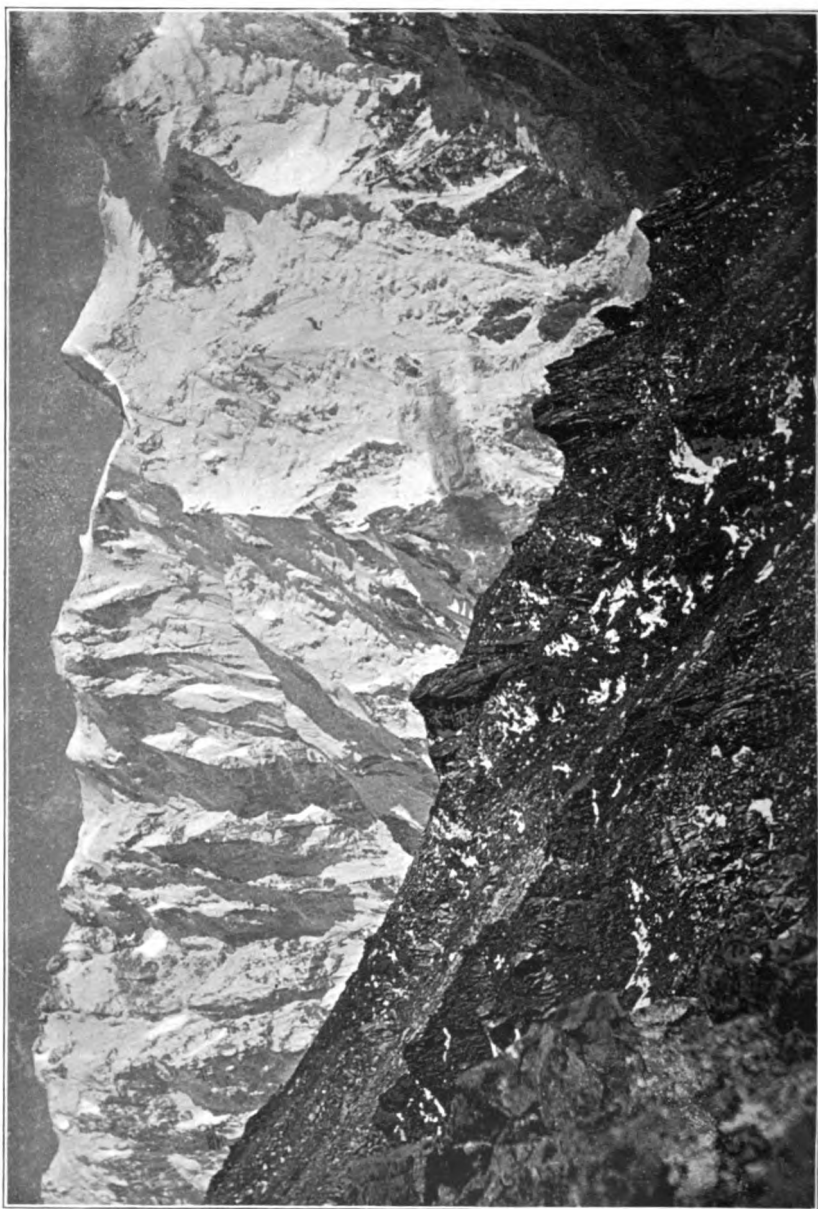


Photo by Dr. J. Norman Collier.

**A MINOR RIDGE IN THE HIMALAYAS,
NANGLA PARHAT.**

Scott Electric Engraving Co.

and about 50 ft. of cotton rope. Many Kaghanis go very well on rocks and snow, but know nothing of hard, steep snow or of ice, and have a quite peculiar terror of anything in the shape of a crevasse. They are capital porters and first-rate walkers. We did very well on both climbs, considering all things, but as nearly as possible slipped into a large bergschrund on the first mountain. We also did everything wrong that it was possible to do.

I think, having got so far, I might say a few words about how I extended my climbing operations. In 1891 I arranged to accompany Sir Martin Conway the following year into the Karakorams, and having been granted six months' leave brought over to England a Goorkha, whom I took to Switzerland, and we both worked with Zurbriggen for a month in the winter of that year.

This man was the first Goorkha to be taught ice and snow work. In 1892, with Sir Martin Conway, I saw for the first time the great mountains, both Hindu Kush, Karakorams, and Himalayas. Also I first went among them at a time of year when respect for them is most easily learnt—in May and June.

In the Bagrot Nullah, where we were for part of May and June, avalanches were continually falling; we could often see four or five falling at the same time.

Four Goorkhas and myself were unlucky enough to get under the direct line of one of these little ordinary avalanches. The solid part of it was caught in seracs 4,000 to 5,000 ft. above us, but the avalanche dust and wind came down on us and caught us; it rolled me over like a shot rabbit, and when I came to I was quite speechless for a minute or two, the Goorkhas being in the same condition. Our subsequent journeys in the Karakorams led us through probably (I prefer to use the name 'Mustagh,' or 'White Mountains,' to 'Karakorams,' or 'Black Gravel') the most gigantic mountains in the world. It is hard to realise how great the size is. Possibly if I say that the mountain scale is as much greater than the Alps as the Alps are greater than the Snowdon range, or that the rock mountains compare with the Chamonix Aiguilles as the Aiguilles do with the Coolin Hills, some idea may be formed of the magnitude of the mountains in Asia.

It is possible to compare the scale of the ice scenery on Mont Blanc, both north and south, with Nanga Parbat—that is to say, that the scale of the icefalls, &c., on Nanga Parbat is not so much greater than Mont Blanc as to be beyond

comparison. Without exaggeration one may say that from a Karakoram standpoint there are no large glaciers on Nanga Parbat.

After the crossing of the Nushik La, in the beginning of July, we descended to Arundu, a village at the foot of the Chogo Lungma Glacier, from which issues the Basha River. At the head of this great glacier lies Mount Kupultung (25,000 ft.) and a great mountain district, which is almost unknown, as I believe; with the exception of the Survey parties years ago only Mr. and Mrs. Bullock Workman have explored it. I can recommend this district to any party intending to visit the Himalayas; it is easier of access than the Baltoro or Hispar Glacier, and probably on as magnificent a scale; a pass could probably be made over to the Bagrote Nullah, leading into the Gilgit valley.

In the winter of 1892 I was lucky enough to get down to Chilas with Sir George Robertson's expedition, which punished the Chilas for much misconduct, and added another district to the Maharajah of Kashmir's dominions. I was then able to see one of the most magnificent sights to be found in the world—a view of Nanga Parbat from across the Indus.

One can stand on the fields of Gor, and look down to the river which is 4,000 ft. below one, and directly up to the summit of Nanga Parbat, nearly 20,000 ft. above one's head! Gor also supplied us with partridges! Partridge-shooting was carried on under some difficulty, we having to post sentries round and shoot the ground between them, all the beaters being also armed.

Food supplies were very short, and especially so at my little post—Darang, below Gor, on the banks of the Indus—and I am sorry to say that, owing to my self-helpful habits, from which both friends and foes suffered, I got the name of the 'Robber of Darang.' But what can one do after a continued diet of canary seed and goat's milk when mail bags containing both bread and plum pudding pass through one's hands?

In January 1893 I was still more fortunate, as I was attached to Sir George Robertson's mission to Chitral, and was able to see that interesting country under native rule, and to do a little shooting and climbing in it.

The people also were most interesting, being very cheerful and apparently friendly, though treacherous to a degree. Colonel Durand called Chitral 'the land of mirth and murder.'

While there in the first week of May 1893 with Captain Younghusband we climbed a small peak above Chitral, called Ispero Zorn, an account of which appeared in the 'Alpine Journal' some years ago. It was only 13,500 ft. high, but gave us a very good scramble. It was, however, an admirable point of view—Tirich Mir to the E., and to the S. and S.E. the high ridge dividing Chitral from Pathan land. The group of Tirich Mir is a ridge running in a southerly direction from the main chain of the Hindu Kush, and is head and shoulders higher than any mountain near it, three points being marked in the Survey maps as over 26,000 ft. in altitude. It is also probably the most westerly of all the great peaks.

The summer of 1893 found me in Hunza. During my stay of three months there I was able to do but little mountaineering, though I had a great deal of scrambling, and on one or two occasions reached points of over 18,000 ft. with one companion, a Goorkha orderly.

Hunza is probably the most extraordinary valley in the world. It lies at an average elevation of about 6,000 ft., and is surrounded on all sides by the most magnificent mountain scenery.

To the N., and directly over the Fort, rises, more steeply than it is possible to conceive, for 18,000 ft. the great peak of Boiyohaghurdoanashur.

I believe every one will allow that no more suitable or elegant name could be found. At least so I am led to believe, because, when I suggested that it should be called Mount John Jones Jenkins, as having more in common with modern nomenclature, Sir Martin Conway got fussy. The great chains of the Himalayas are, however, beyond the range of an ordinary hot weather leave trip, and, although most beautiful to see, are not so pleasant to work in, in my opinion, as the lower and nearer hills. Although one thoroughly enjoys climbs of 22,000 ft. and over, *after* they have been accomplished, I don't think any one will truthfully say that he is quite happy at over 20,000 ft.; at any rate one who has but few weeks in which to climb is obliged to be contented with the nearer ranges.

The nearer ranges are not to be despised, as they run up to 18,000 ft. in height, with a snow line considerably lower than the northern slopes of the Himalayas. They afford excellent rock and fair snow and ice work, though their glaciers are not on a large scale, and climbing can be had in them for at least seven months in the year, and last, but not least, there

is no forest scenery to surpass that which they afford. They would also be an excellent training ground for teaching hill men how to tackle the great peaks.

I myself have done most of my scrambling in the ranges which divide the Kaghan valley from Kashmir territory, and have had most delightful days on both peaks and passes. One of the pleasantest expeditions I had was in 1896, when on a fortnight's leave from Abbottabad; with Karbir leading us we accomplished a peak of about 16,000 feet, one of the innumerable Ragee-Bogees, by a very sporting rock arête, and next day descended into Kashmir territory, returning back again into Kaghan over a couple of passes and an elevated snowfield which took us down into the Narang valley of Kaghan.

On the first of these passes an amusing incident occurred. We had with us a dozen Kaghani, picked men and excellent goers, to carry our luggage. They were very good men, but, as usual, did not like snow or ice. On our arrival on top of the pass the northern side lay at a steep angle, hard frozen snow for about 50 feet down, which then dipped very steeply into the snow field below for another 50 feet, the face frozen almost to the consistency of ice. We saw at once that we should have difficulty with the carriers.

However we hit on a very good plan, which answered admirably; we stretched our only rope from the top down the first steep slope, cutting large steps right up to the edge of the ice slope. At the edge we cut an immense step.

The men had not been allowed to look over all this time, and so were in ignorance of what was before them. One Goorkha was stationed on the top of the rope; one at the big step, and myself and Karbir hardened our hearts and glissaded sitting on to the snow slope below. On the word being given a coolie was passed down with his load, and made to sit down on the big step. A violent push did the rest, and we did the fielding at the bottom. After two or three men had arrived safely the rest thought it great sport, and some wanted to go back and have another slide.

The best piece of climbing accomplished at all in Kaghan was the ascent of the most northern (but one of the different) Ragee-Bogee peaks (16,700 ft., *prox.*), which is close to the Shikara Pass, though separated by one peak from it. This was done by Harkir Thapa alone, about May 20, when the mountain was in a very dangerous condition.

I will now try and describe to you some incidents in an expedition which I undertook into Ladakh and Kashmir in

1898, for the purpose of training Goorkhas on lines which had been found to be successful. I took with me sixteen Goorkhas, from five different battalions—two of them on whom I relied as my guides—Havildar Harkir Thapa and Naick Karbir Barathoki, both mentioned before to-night and having both been with Sir Martin Conway in the Karakorams, and having been climbing fairly steadily ever since that time.

They gave the greatest satisfaction, though they had no easy task, as you will understand, with fourteen new men, all very active, and most of them very careless and given to larking in dangerous places.

We did a little climbing on our way to Ladakh, but our first camp of real interest was at Takba. From there we made a high camp under Peak D 66 (about 18,000 ft.), and had some fine scrambling, the only remarkable climbing being on D 66 by Harkir and Karbir alone.

It was a rock climb—very difficult and very rotten. They got within 300 ft. of the top, but could not continue, as the rottenness of the rocks made it too dangerous.

Finally we made a new pass to Suru, which I ought to have enjoyed, but did not, owing to being very unwell with mountain sickness.

A few days afterwards we moved camp higher up W. of Nun Kun; from here many small climbs, scrambles, and explorations of an educational character were carried out—18,000 ft. second and third times.

After about a fortnight of this we crossed the ridge to the S. side with eight days' food, intending to cross about six high ridges that are marked on the map, and which would finally take us out to the foot of the Bhot Khol or Llama La Pass.

Imagine our astonishment, on arrival at the col, to find no ridges, but a great flat glacier running in a westerly direction, and right through where the ridges ought to have been.

We descended this, and on the second day crossed the Bhot Khol Pass to the northern side again, having had some excellent ice scrambling through a great icefall.

We camped on the northern side of Bhot Khol for some days, and from here two parties—one led by Harkir and the other by Karbir—accomplished two difficult climbs. Harkir, starting very late, climbed a high peak (19,500 ft. approximately) W. of the Bhot Khol Pass, and on the same range, by a very steep rock arête.

He had no lantern, and on his return found himself at

dark with the great icefall that he had crossed in the morning to cross over before getting on the route home.

He told me that he was not keen to sit out a night at that height (over 15,000 ft.), so he determined to take his luck on the icefall without a lantern, and after three hours of uncomfortable work led his party through without mishap. I was not with the party, or I should have sat out, having been carefully trained by Professor Collie to enjoy sitting out at heights of about 19,000 ft. without food and with only the *smell* of some whiskey in a bottle.

Shortly after these climbs we took our whole camp over to the Wardwan side, and had some capital scrambling and climbing on our way down to the main Wardwan valley, an ascent of a peak above Konnag being one of the best and most enjoyable climbs we made in the whole expedition; excellent practice both on rock and ice.

It sounds very easy to say that we moved camp across the Bhot Khol Pass, but, as a matter of fact, it was rather a serious undertaking, as the path is rough, and much of it over glacier, and on this occasion we had to take food for several days with us.

Our party consisted of my wife and myself, sixteen Goorkhas, seven servants, five ponies, two or three yaks, and between fifty and sixty coolies, with our complete camp equipment and one small flock of sheep—a walking larder. More difficult than Théodule.

As soon as we had had enough of the Upper Wardwan we took a sporting route into Kashmir over the tops of the Kohenhar peaks (17,050 ft.), sending a little light baggage, enough for five days, over a high pass N. of the Kohenhar peaks, whilst the heavy luggage went round over the Margan Pass and rejoined us again in Kashmir.

From here I was recalled to go to Darjeeling on recruiting duty, and we finished our expedition by a forced march into Kaghan, where we had one very sporting day, climbing the lesser head of the most easterly of the twelve Ragee-Bogee points directly above the Shikara Pass, but separated by one peak from it.

We had intended to traverse this peak, but our attempt was quite spoilt by bad weather. Long before our arrival on the lesser summit that I have spoken of it had begun to snow.

The weather got thicker and thicker, and on our arrival a violent thunderstorm came on. Five of the men were struck by lightning, without any ill effects, however, with the

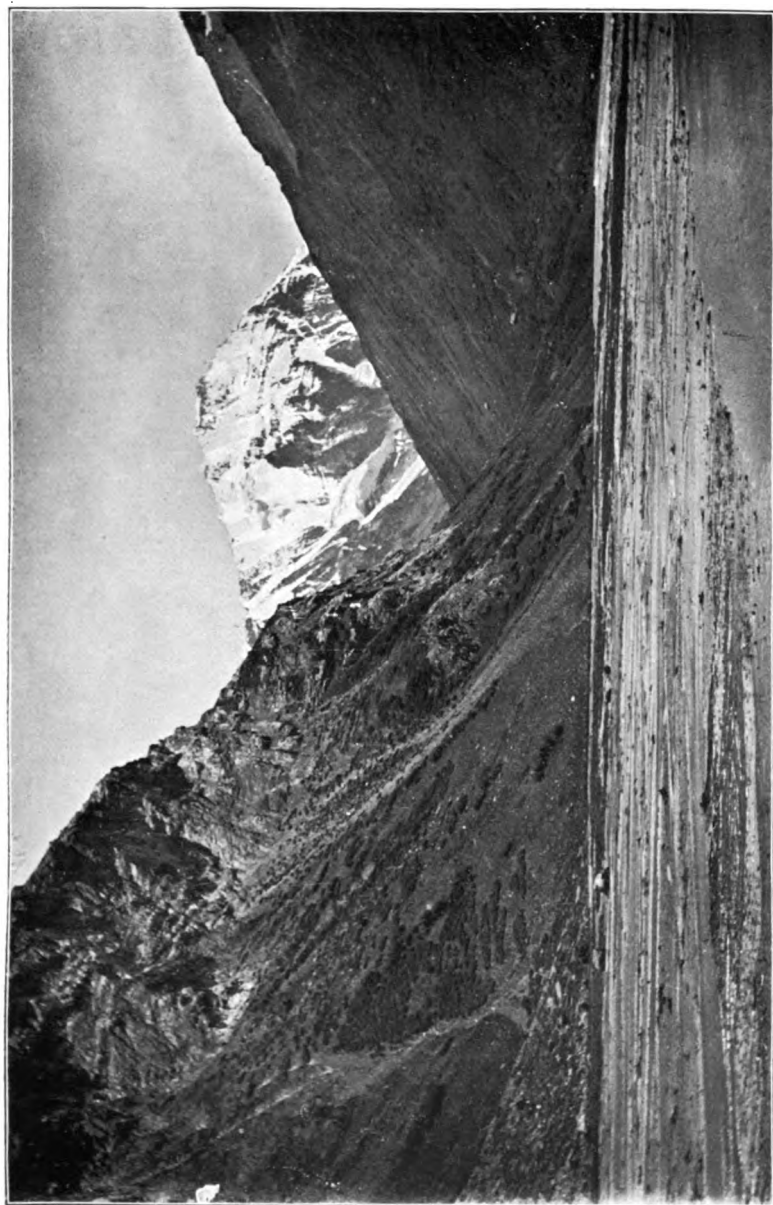


Photo by Mrs. Bruce.

BHOT KHOL LA.

Suan Electric Engraving Co.

exception that one man had a very uncomfortable arm for a couple of hours after.

This was an entirely new sensation for all the Goorkhas, and was much enjoyed. Harkir led us down through the storm at a great pace, by a new route, which he considered and which proved to be a short cut to the little village for which we were aiming.

We found the village empty, with the exception of some women, and spent the night on the roof of a house in the rain, toasting corn cobs for dinner. The weather was very bad the following day, and we were obliged to remain in the village, but left on the second day, and crossing by the Shikara Pass, now deep in fresh snow, rejoined our luggage again, and so home.

I should like to explain that although Goorkhas have up to the present time been almost exclusively used in later climbing in the Himalayas, as a race they are not necessarily the only people fit for the work. In fact there are many races who are more hardy and more active than the average Goorkha. The Goorkha has, however, had the advantage of a military training and of being a disciplined being, and last, and not least, he has acquired the habit of using nailed boots and socks.

EXCURSIONS IN THE GRAIANS.

By ALFRED HOLMES.

THE Ala Valley, on account of its accessibility, is a favourite climbing ground of the Turin section of the Italian Alpine Clubs. The valley itself is very beautiful, and the peaks at its head are mostly easy. The Bessanese, which is the most difficult, appears to be practically unknown to English climbers, for, according to a list of ascents in the May 1899 number of the 'Rivista,' it had never been climbed by an English party. Mr. Coolidge ascended it some years ago, but he is put down in the list as an American. Before knowing this we had arranged to begin our tour in the Graians with the ascent of the Bessanese. J. J. Brigg accompanied me to Turin, where we were joined by E. J. Mazzuchi. On July 3 we went by railway and carriage in about 6½ hrs. to Balme (4,784 ft.), which is very prettily situated on the left bank of the Stura, with a good inn (Albergo Reale) at the lower end of the village. We were met there by a porter named Bricco, recommended to us by

Signor Gonella, a sturdily built man of thirty-five, who proved to be most useful and willing; he was a local chamois-hunter by profession, and had only acted as porter for two or three seasons; he had scarcely ever been on mountains outside his own district. Mazzuchi had been in correspondence with him, but the final arrangements were not made until we saw him. He caused us some amusement by asking if he might inspect our boots, to see if they were properly nailed. After examination he expressed himself satisfied, and that he was willing to accompany us. His principal business was to carry a camera and spare plates, weighing about 15 lbs. We bought some provisions, and then started for the Gastaldi Hut (8,691 ft.), which is situated in a hollow near the foot of the Bessanese, and about 3 hrs.' walk from Balme. On a pleasant green plain, the Piano della Mussa, 50 min. above Balme, a new hotel is being built, which will be open early in 1900. We arrived at the hut about 6 P.M., to find it in the possession of workmen, who were building an additional room. They told us that three days before there had been a severe storm, in which 16 in. of snow had fallen. On inspecting the sleeping-room we found the straw so wet as to be quite unfit for use, owing to the new snow banked up against the side of the hut having melted during the day, and trickled through the wall. We decided to sleep in the eating-room, on four benches placed close together against one side of the room, with a large table on the other to prevent the outside man from falling off; but what with the hardness of the bed and the intense cold sleep was almost impossible. The wind rose in the night, and blew half a gale.

At 4 A.M. when we looked out it was much too strong to start; it settled towards 8 o'clock, and we got away at 8.15. Our intention was to climb the Bessanese (which is described by 'Ball' as the Matterhorn of the district) from the Italian side, but the recent storm had made this impossible, so we crossed the Col d'Arnas (9,889 ft.) in order to see what the French side was like. The Col was reached at 9.40, but everything about 10,000 ft. was covered with cloud. We descended to Avérole, and on to Bessans, arriving at the latter place, after many halts, at 2.20 P.M. Avérole (6,774 ft.) is one of the highest villages in France inhabited all the year round; the women there are quite the prettiest peasant women I have seen anywhere in the Alps. At one of the chalets they very willingly boiled us some milk to make coffee. (We had some of the Military Equipment Stores compressed coffee, which was very good.) When the milk was ready we were invited

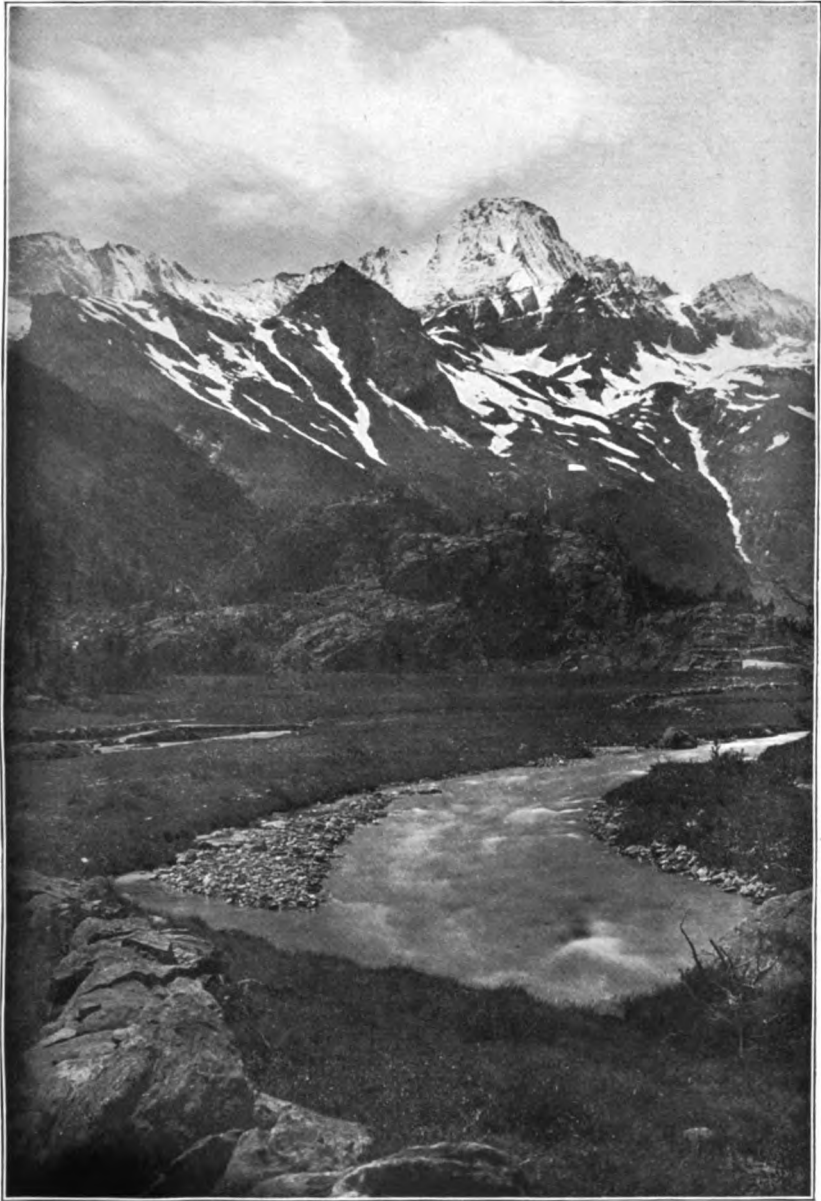


Photo by Alfred Holmes.

**THE BESSANESE,
From the East.**

Swan Electric Engraving Co.

to enter, and found the room exceedingly well furnished and very clean. Before leaving Turin we were warned that we might have trouble with the Custom House officers at Bessans on account of the camera, as the French authorities had recently issued some new regulations about photography near the frontier, or within a certain distance of a fortified place; but we had no trouble either at Bessans or anywhere else. On entering Bessans we thought that one of the Customs officers, who appeared to be in some authority, stared at us in a rather unfriendly manner, but later on, when we got to know him better, we came to the conclusion that it was only his natural expression, and did not mean anything. We put up at the Hôtel Cimarz, where we had good beds and fair food. Close to the hotel is a fine bridge which crosses the Arc and leads down to Lanslebourg and Modane.

We decided to return to the Bessanese, so after a day's rest we left Bessans at 3.10 A.M. on the 6th. On emerging from the hotel into the dark street we nearly fell over two Custom House officers who were sleeping there in sheepskin bags, raised about 6 in. from the ground by means of a light wooden structure; they told us they were on the look-out for smugglers. After apologising and offering them cigarettes, we went on our way, passing through Avérole at 4.50. Continuing along the footpath to the Col d'Arnas for 50 min. we then turned to the left up grass slopes, on the left bank of a small stream, for 15 min., when we went E. and made for what looked like a stone-man (but which later on we found to be a natural pinnacle of rock) placed above some rocky plaques; still going eastwards over stone and grass slopes, we reached snow at 8.10. For the first hour we were mostly on moraine covered with snow of the crusted kind, which made the going slow and laborious. We then aimed for a big couloir which led up to the S. ridge of the Bessanese; taking to the rocks on the left bank of this couloir we reached the ridge at 10.40. A narrow ridge of rocks and snow led us in a few minutes to the rocks of the E. face; 20 min. more on not difficult rocks saw us on the lower summit called the Pointe Tonini, 11.55 A.M. (halts on the way 2 hrs.). 'Ball' says: 'The higher and central summit is attained in 25 min. or less by an awkward traverse on the W. side, and then by the ridge, N. or S. of it.' Unfortunately the rocks on the W. face of the peak were plastered with new snow 5 or 6 in. deep, and the rocks all sloped the wrong way. I climbed up a few feet from the gap which separates the two points, and then traversed along the face for about 20 ft. until stopped by a

patch of ice. As I was in too unstable a position to cut steps I had to return. Another attempt lower down the face met with no success; it was very tantalising to be within 50 or 60 ft. of the top and not be able to get there (five or six weeks later when I returned to the Bessanese with the rocks clear of snow, this last bit offered no difficulty whatever). We began the descent at 1.45 p.m.; the E. face occupied 20 min., and the couloir 15 min. more. We took off the rope at 3.15, and arrived at Bessans at 6.40 p.m., having halted 1 hr. on the way. W. A. Brigg joined us the same night, having driven up from Modane. Next day, July 7, we went to Bonneval, 6 miles higher up the valley. About $\frac{1}{2}$ mile above the village there is a comfortable hotel, surrounded by trees, built by the Lyons section of the French Alpine Club; the tariff is moderate, and everything very clean.

On July 8 we left Bonneval at 1.45 a.m. for the Eastern Levanna and Ceresole. We proceeded along a footpath on the right bank of the river, passing through the Clapier de Fodan, which is covered by the rock avalanche which is believed to have overwhelmed the original village of Bonneval; then through L'Ecot, an hour later (3.45) passing the Chalets of Duis; from here we went in an easterly direction until we reached the right bank of the Source de l'Arc Glacier. After crossing the glacier we made for a big couloir in the S.W. face of the Eastern Levanna, reaching the foot of it at 9.35 a.m. Our progress up to this had been much retarded by the crusted state of the snow, and halts of over 2 hrs. for photography and eating. During one of these halts I had the misfortune to overturn my camera, which resulted in the focussing glass being broken and other serious damage; I however managed to make it workable with pieces of string and an unused plate for focussing. The snow in the couloir was hard and steep, and entailed $2\frac{1}{2}$ hrs.' step-cutting with the exception of $\frac{3}{4}$ hr., when we took to patches of rock on the right bank; these rocks in each case were easy at first but became exceeding difficult higher up, so difficult indeed that the porter said he had never been on rocks before where he had had to be helped with the rope. We gained the arête at 1.55 (halts 50 min.). It then took us nearly 1 hr. along a fairly level but broken ridge of rocks and snow to reach the summit. We believe the route is new, but longer than from the Col Perduto by the W. face. The view from the top was slightly obscured by clouds, but was exceedingly fine. After a stay of 35 min. we left at 3.20 p.m., descending the fairly easy western face to the Col Perduto in 1 hr.; from

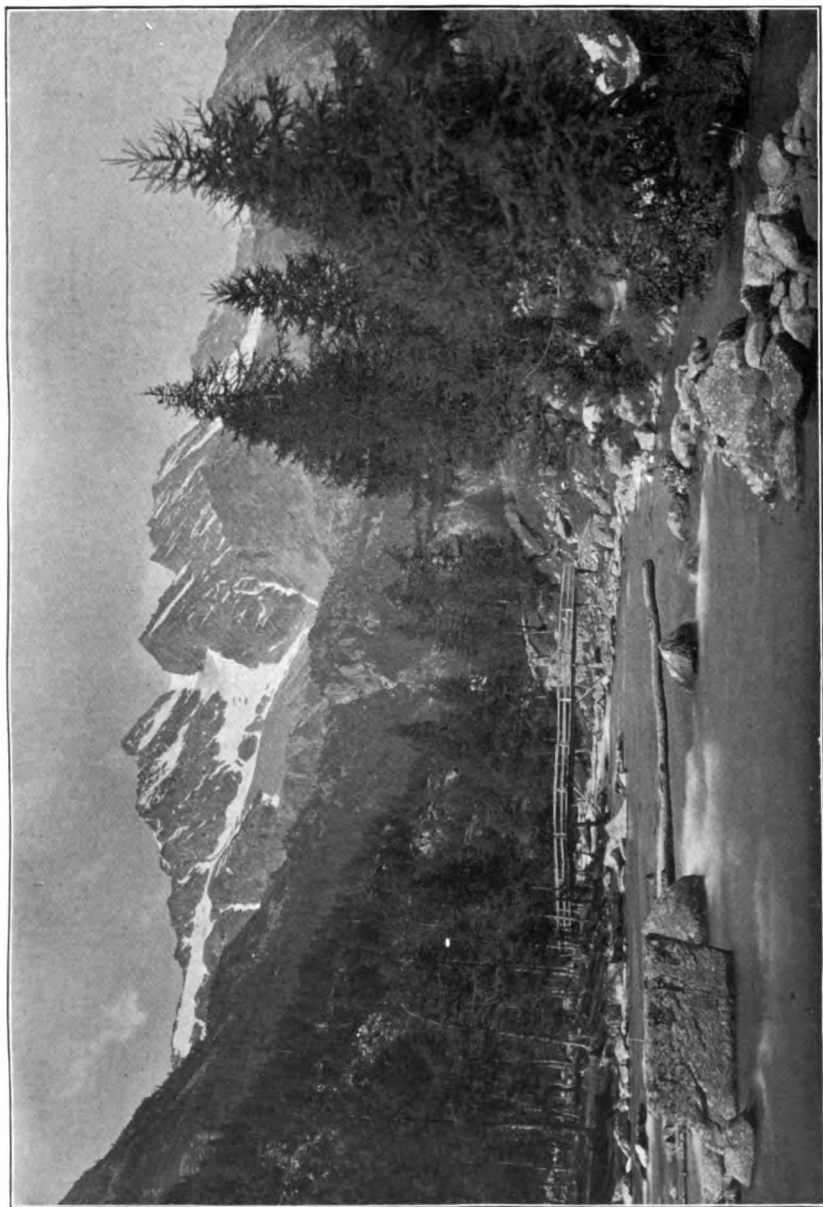


Photo by Alfred Holmes.

THE EASTERN LEVANNA, LEVANNETTA, AND CENTRAL LEVANNA,

From Ceresole.

Suwan Electric Engineering Co.

the Col to the Ceresole took 2 hrs. 40 m. The first 50 or 60 yards of the descent of the Col Perduto was very steep, and in the then condition of the snow required care; afterwards, when the slope eased off, we had a fine sitting glissade for four or five hundred yards; there was an enormous quantity of avalanche snow at the foot of the col. In 1900 the whole of the slope on the Italian side was a sheet of hard ice, and stones fell every few minutes from the Levannetta. Bricco and I found a safe way down by traversing the slopes of the eastern Levanna.

Ceresole (4,905 ft.) is a charming place, with an excellent hotel which 'Ball' says is dear; but this is inaccurate now—we were only charged 9 lire per day. (I was there again in August, when the same prices were charged.) This, I think, cannot fairly be called dear for food quite as good as that supplied by any hotel I know in the Alps. There are many pretty walks above the village, some of them on nearly level ground. On July 10 we went out to find a peak called the Becco dell' Alpetto (9,193 ft.), situated to the N. of Ceresole, and which we supposed to be unclimbed. 'The Mountains of Cogne Climbers' Guide,' which we found very useful, describes it as 'a sharp, rocky summit, which looks as if it would be best attacked from the N.W.' We started in not very promising weather by a footpath some two or three minutes W. of the hotel, which later on joins one of the king's hunting-paths, and leads to the head of the Ciamosseretto glen. After 3½ hrs.' walking the clouds lifted a little, and we got a glimpse of a sharp-pointed peak which we made out to be the Alpetto. From the appearance of the peak we flattered ourselves that we should get some good rock-climbing. Three-quarters of an hour later, when near the King's Hunting-lodge, we met two of the king's keepers, and asked if they could give us any information about the Alpetto. 'Yes,' one of them replied, 'you can climb it from the Colle dell' Alpetto.' 'Has it ever been climbed?' was the next question. 'Yes, frequently,' he replied. 'Is it difficult?' we asked. 'Oh dear, no,' and, after a moment; 'this boy' (a child of about seven) 'occasionally walks up there to get an appetite for his breakfast.' We asked about Mt. Castello (8,549 ft.), which is on the opposite side of the Colle dell' Alpetto, about which the 'Climbers' Guide' says 'No information.' This, they told us, was even easier than the Alpetto; the face overlooking the col could be climbed anywhere. This information was very depressing. We waited two hours in the hope of getting a sight of the peaks, but the clouds never lifted, so we returned much disappointed to

Ceresole. On July 12 we started for the Bellagarda (9,643 ft.), an easy climb, but a very fine view-point. Again the weather was bad, rain commencing to fall heavily when we were about half-way. After sheltering in an unoccupied chalet for two or three hours we returned to Ceresole. Next day the camera, which had been sent to Turin to be repaired, arrived. On July 14 we left Ceresole with some regret at 3.10 A.M. for the Victor Emmanuel hut, *viâ* the W. Col du Grand Etret. The Medico huts were reached at 6.30, where we halted for 25 min. We then went on to the Lillet Lake, when we had another halt of 45 min. to eat, and discuss the route. We began to climb immediately N. of the lake up to the ridge at the E. foot of the Mare Perci at 8.45 A.M., arriving without much difficulty on the ridge in 2½ hrs. The situation on the col was so delightful that we stayed there for nearly three hours, leaving at 1.45, and reaching the Victor Emmanuel hut at 4 P.M.

On the Glacier Monciair we saw a herd of thirty-two chamois. The Victor Emmanuel hut* (8,777 ft.) is built just above a small lake. It is finely situated, and quite deserves the praise that it has received from various writers; there is a room for cooking, another for eating, and two sleeping rooms—in the latter are straw mattresses and pillows. The next day we started rather late, leaving Mazzuchi in the hut drying his luggage, which had come over the Col de Nivolet on a mule and had been upset in a snow-drift; we crossed the Col du Grand Paradis, and ascended the Becca di Noaschetta (11,310 ft.). The summit is an exceedingly fine view-point, especially of the Grand Paradis, which looks more imposing from here than from any other place. The principal object of the expedition, however, was to obtain a view of the S. arête of the Tête de la Tribulation, which had not been climbed, and to take some photographs. The arête looked promising, so we decided to return and try it on another day. Immediately on our arrival at the hut, one of the party, who did not appreciate the luxuries of the 'palace,' expressed a great longing to sleep in a bed, and arranged to go down to Pont for the night; Mazzuchi accompanied him in order to be able to attend the early church service at Dégioz next day. The following morning the porter was sent out for provisions. At Pont, where preparations were being made for opening the hotel

* *Climbers' Guide, Mountains of Cogne, 'Inns and Huts,'* 8,777 ft. Ball says 9,105 ft.

for the season, he could only obtain six mouldy 'petit pang' and four eggs; lower down the valley, at Dégioz, however, there was an abundant supply. (I was at Pont four weeks later, when provisions were plentiful.) The wanderers returned in the afternoon, but, unfortunately, whilst at Dégioz a telegram arrived which compelled Mazzuchi to leave us. On Monday, J. J. and W. A. Brigg, the writer, and the porter left the hut at 5.15 for the Grand Paradis (13,324 ft.), and reached the summit in about 4 hrs.; there was no difficulty whatever near the top—there was a small bergschrund that could be crossed almost anywhere, some easy rocks, and a sharp snow-ridge. The view was magnificent and very extensive; we spent an hour and a half in identifying the surrounding peaks; we glissaded and ran a good part of the way down, reaching the hut in 1 hr. 20 min. from the top. During the evening a party of four came up to sleep in the hut and climb the Grand Paradis next day; these were the only climbers we saw during our stay in the Graians. The next morning (July 18) we left the hut at 2.30 A.M., crossed the Col du Grand Paradis at 4.15, and reached the foot of the depression between the Tête de la Tribulation and the Becca di Noaschetta at 5.30, where we had a halt of twenty minutes; $\frac{3}{4}$ hr. more sufficed to reach the depression; we made a short halt in order to scan our route. The S. arête of the Tribulation was sharp and very much broken with gaps, that in places overhung. We left the depression at 6.30, and traversed a little to the right and then made straight for the summit. At first the rocks were rather rotten, but later on became quite sound, with plenty of good hold, though in places fairly difficult. We kept mostly on the E. side of the arête until near the top; we then went over on the W. side in order to turn a big gendarme; the last 5 min. was on snow. We took 1 hr. 35 min. from the depression. We left the summit at 8.55 A.M., and in 20 min. walking down a rather narrow snow ridge reached the Col de la Lune; from the col it is only a walk of a few feet to the Tribulation Glacier. When we arrived at the lower end of the upper plateau of the glacier we came upon two rocky buttresses; the 'Climbers' Guide to the Mountains of Cogne' specially warns one to take the more southerly one of the two. We hesitated some time whether we should take one of these two or another spur 200 yards further S. separated from us by the glacier; the rocks of the latter one cropped out from the snow like a cock's comb, and lower down it had a very uninviting appearance.

On the sketch-map which accompanies the 'Climbers' Guide,' the buttresses are marked as being close together without any glacier between; this finally decided us to take the southerly one of the two we were on. After descending 300 or 400 ft. difficulties began to show themselves; we had to take to the glacier, and bits of ice began to fall from some séracs above our heads, and the lower we went the more danger we should be in. We then decided to return to the top of the buttress; having arrived there, we had another discussion as to the route we should take, and at last agreed to return some distance on our morning's tracks and cross the glacier higher up (from the Tête de la Tribulation we had seen that it was possible to do so). We met with very little difficulty. After descending some distance down the left side of the glacier we came upon the traces of a party who we afterwards learnt had ascended the Grand Paradis from Cogne a few days before. Following these traces we soon came to the left moraine of the glacier and down to the Valnontey, arriving at Cogne at 6.30 p.m. On July 20 we tried the Grivola by the S.E. face, but the couloirs looked so dangerous from falling stones and ice that we did not get beyond the Trajo Glacier. Next day we went to Aosta, where the party separated. Some weeks later, after spending a few days at Ceresole, I engaged a guide and porter from that place, and walked in about 3½ hrs. to some chalets near the Cerru lake, where we had rough but hospitable entertainment. Next morning, August 10, we were away at 4.30 a.m. for the Pointe de la Galise. We reached the col of the same name at 6.40 a.m. without any difficulty. After a halt of 30 min. we left at 7.10, the guide wanting to ascend a little rocky peak S. of the col, which, he said, he had always understood to be the Pointe de la Galise. I convinced him that he was wrong, and we crossed the Galise Glacier in a northerly direction, and then ascended a loose rocky slope to the Rhêmes Glacier, thus going E. up the gently sloping snow. We gained the top at 8.10, exactly 1 hr. from the col. The peak is higher than any of its near neighbours, and the panorama is very extensive. After a stay of 50 min. we went back to the Col de la Galise in ½ hr. (9.30). From there our object was to cross the Col du Carro to Bonneval. In traversing across the slopes of the Cima d'Oin we kept too high, and had some trouble in crossing two broad gullies which come down from that peak. We crossed the ridge at 2.25, 200 or 300 yards W. of the true Col du Carro, and 200 ft. higher. The guide told me that the route described in 'Ball' is never used by



Photo by Alfred Holmes.

THE POINTE DE CHARBONNEL.

From the Bossinose.

Swiss Electric Engraving Co.

local guides, the route we used being so much easier. There were no difficulties whatever on the French side. We arrived at Bonneval at 5.50 P.M. On August 12 we left Bonneval at 4.10 A.M. for the Pointe d'Audagne and the Pointe du Grand Fond (11,228 ft.) for photographic purposes, reaching the latter peak at 10.45 A.M. (halts 95 min.). The view was magnificent, a very prominent object being the Albaron. After a stay of 2 hrs. we had to make a long descent and re-ascent to the Col du Collerin, arriving at Balme at 6.50. The hotel was full, so we had to be content with a room outside. Next day, August 13, we walked up to the Rifugio Gastaldi in just under 3 hrs., *en route* for the Bessanese. During the evening sixteen other people came up, all bound for the Ciamarella. Next morning, in consequence of so many breakfasts having to be prepared, we did not get away until 5.5; crossed the Col d'Arnas at 6.25. Two hundred yards below the col, on the French side, we left the Arnas Glacier, walked up some rock steps, and traversed along stone slopes in the direction of the couloir, coming down from the S. ridge, halting 25 min. at its foot. We now took to the rocks of the left bank of this couloir, and arrived on the first summit at 9.30. Now that the rocks were clear of snow, the ascent to the highest point was easy, and only occupied 11 min. and the descent 7 min. The view was the finest I saw in the Graians. We left the summit at 11.50, arrived at the Col d'Arnas at 1.50 P.M., having halted 24 min. on the way; Gastaldi hut, 2.25, where we stayed 10 min.; Balme, 4.20 P.M.

On map VI., the Graian Alps, in Ball's 'Guide,' the Levanna Club hut is marked on the French side of the chain. It should be on the Italian side, near the foot of the Col Perduto.

THE DREIECKJOCH.

BY THE EDITOR.

AT much-frequented Alpine centres the guests apparently argue that, as others abide their question, therefore you, lover of the mountains and anxious if possible to stand on some summit, however humble, or cross some pass, however insignificant—

Where no man comes
Or hath come since the making of the world—

you, I say, may be interrogated in the same style as the pseudo-orophilist. Whether the tone be wheedling, 'Where

are you going?' or insinuating, 'How long shall you be away?' or archly suggestive of peril and glory, 'Will it be a very difficult excursion?' you will be expected to answer with readiness, if not with effusion. Should you reply, 'I will tell you when I come back,' aspersions on your courtesy are pretty sure to follow. Not that lasting malice inspires them. No! For on your return you must answer further interrogatories, unless you can by topographical cunning escape to your room by the back-stairs. Should you unguardedly make any admissions as to what you have done, you may expect a charming lady, who is dying to hear of your exploits (exploits, indeed!) to ask you, with the most obvious good faith, 'Here you let down 150 ft. by the rope on a face of blue ice?' But, after all, you do but pay in this way for the creature comforts which you enjoy. You may take your choice between luxury and cross-examination or peace and peasants' fare.

On August 18, 1899, I was awakened at about 2.30 A.M. by the porter at the *Hôtel Jungfrau*, on the *Eggischhorn*. A colloquy ensued something to this effect:—'Is the weather good?' 'No, sir.' 'Is it bad?' 'No, sir; not altogether.' 'What do you think?' A shrug of the shoulders was the only answer. Then, as a sudden thought struck him, 'Come, and I will show you the morning from another side.' So, Balaamwise, in the priest-like garb of night, I followed him. But if he thought that I should curse the weather he was wrong. I did not like it, for the fog was thick; but no malison escaped my lips. We returned to my room. A happy thought struck me: 'Have you looked at the weather-glass?' 'No, sir; but I will do so.' While the porter was away I reflected. Did not the mountain poet write—

Not seldom clad in saffron vest,
Deceitfully goes forth the morn?

Might not success be locked in the leaden mist, as it was in the leaden casket which Bassanio chose? Wherefore I followed Bassanio, and, as it turned out, with equal good luck. When the porter reappeared he said: 'It is going up a little.' 'Very good, I will start!'

At 3.5 Sylvain Pession and I were off; he in front with the lantern, I behind with gloomy doubts as to whether I was a credulous enthusiast or a mere optimistic ass; for the fog was damp, dense, and disheartening. Sylvain, for lack of more solid questions, inquired whether the pace suited. 'Yes,' I answered; after that we plodded on in silence.

By lapse of time we reached the *Märjelen See*. When we

had come to the edge of the Aletsch glacier the light was still dim, so we agreed to wait a little. On the rocks there were one or two logs of wood, brought for fuel for the Concordia Inn. In them I recognised a possible bed, lay down, and went to sleep. The cold was semi-glacial, and I got up nothing loth to quit so unkindly a dormitory. We began to cross the Great Aletsch glacier. When we were about the middle of it a sudden increase in the cold and an occasional gust of eager air made me say to Sylvain, 'There is a north wind getting up.' 'You are right, Monsieur, the north wind will soon be strong.'

By this time there was a distinct tinge of gold on the wild swirl of clouds which shrouded the cliffs of the Olmenhorn. Shadowy arms in loose drapery, despairingly thrown up towards heaven, signified the passionate intercession of the mountain nymphs for fine weather. We supported them with silent orisons. The cold increased. The mists gradually dispersed. We climbed slowly round the cliffs of the Olmenhorn,* and observed with pleasure that the struggle in mid-air was taking a turn in our favour, and that a fine day would probably be assured to us.

After traversing some distance northwards almost at a level, we reached the glacier which fills the great hollow between the Olmenhorn and the second peak of the Dreieckhörner. We now began to go upwards in a north-west direction. After crossing slantwise some slopes where stones evidently fell after sunrise, we reached a safe place. We had once or twice heard solitary stones fall, and, while we indulged in breakfast at this spot, we beheld a great block descend, smite various stones which lay close together, and awaken them to a proper sense of the necessity for warning trespassers off their native cliffs. This heart-scaring demonstration was, however, too late. We were well above the spots where risk must be run, and, after finishing breakfast, went on our way leisurely.

Soon afterwards we saw seven chamois some way above us. The herd was hardly numerous enough to make me fancy I was in the Graians, and besides, in that delightful land we should have found a royal hunting-path to lead us up to where we now were. Still, the beautiful creatures aroused our enthusiasm, and helped one of our party, at any rate, to smother the unworthy suggestions of a too cautious age.

* The edge of the moraine was lettered with flowering plants of *Linaria alpina*.

After pursuing a north-western direction for some time we came to a large crevasse of great loveliness, but it was the loveliness of *la belle dame sans merci*. When this was passed another barred our way, but, as Campion says—

Bold assaults are fit for men
That on strange beauties venture.

We therefore proceeded.

After Sylvain had cut some steps up a little ice slope we gained a ridge* of rocks where progress, if leisurely, was quite easy. So we reached our pass, and then in a few minutes climbed the peak to the north of it by a ridge which sloped like the roof of a house. This little peak afterwards looked very well from the Mittel Aletsch glacier. On Mr. McCormick's illustration from one of Dr. Tempest Anderson's photographs the actual col has a cross above it.

The great feature of the view from the little peak was the Aletschhorn, which rose before us in absolute splendour, as glorious a structure of dark rock, gleaming ice, and dazzling snow as eye could desire. We estimated the height of our pass at 11,000 ft., and our summit was a little higher. We reached it about 11 o'clock, and stayed about 40 min.

Sylvain had doubts about the descent, but I combated them. I had read with much pleasure M. Gallet's account † of his ascent of the second peak of the Dreieckhörner from the Gross Aletsch glacier, and I remembered that his party had gone down to the Mittel Aletsch glacier, and had found the descent much easier than the ascent. But I was wrong in my inference, for M. Gallet's descent was in great part on snow, whereas ours was wholly on rocks. The first part was perfectly easy. I was, according to the most natural arrangement, leader, and had no difficulty in finding a way down the slopes of loose stones immediately below the summit. 'You will go where you please,' said Sylvain; and so I did for perhaps half the distance to the Mittel Aletsch. Then it became less easy to find a way, and Sylvain began to distribute imputations of folly at large. Nor was this astonishing, for it was growing gradually pretty plain that we were not to reach the glacier without a struggle.

This portion of the mountain-side was divided into promontories, so to speak. The one on which we were did not,

* On this ridge we found *Ranunculus glacialis* and *Chrysanthemum alpinum*.

† *Jahrbuch S.A.C.*, vol. xxxiii. p. 183 foll.



THE DREIECKJOCH.

so far as I could judge, offer a very feasible descent to the slopes below us. Eventually Sylvain passed in front of me and examined our chances of escape. He found on the right an impossible cliff, on the left a precipice, while in front the way was quite impracticable. There was, therefore, nothing for it but to go back, turn the hollow between it and the next promontory to the south, and attempt a descent by it. Backwards we went with unwilling feet, and with this unpleasant conviction in our minds, that if we failed in our new effort a return to the col would be necessary, to be followed by an ignominious descent towards the Märjelen See. This was no oil and balm. Besides, carnival would doubtless be going on amidst the rocks and stones on that eastern sun-warmed slope, and we desired no assiduous attentions from any creature, but would fain depart unobtrusively.

Yet why should we be despondent? Might we not adapt Cassius's words, and say of our Joch—

Three parts of him
Is ours already; and the pass entire
Upon the next encounter yields him ours.

Well then we climbed slowly upwards. At last we had turned the head of the hollow between us and the desired promontory. Then a traverse became inevitable. Sylvain effected it and called to me to follow, but I regarded the passage doubtfully. For Sylvain was in such a position that if I made a false step I should swing out, and probably by no means benefit my limbs by sharp contact with the rocks. I shouted once and again that I could not do it, but at the same time I found hold for one hand and foot, and by the time that Sylvain's answering shout had died away I was ready to tempt fate. I gave a spring, my right foot reached a lucky projection, and I had rejoined my companion.

Then more contentedly turned we downwards. In a short time we were nearly level with the spot where we had been repulsed. Sylvain came forward to reconnoitre. He essayed the left side of our promontory. 'Well?' 'If nothing better offers——.' He then tried the right side. 'Is it better there?' 'No, not so good.' Then I once more advanced, and was lowered the whole length of our rope of 80 ft. I had generally hold for one foot or one hand, but I do not think I should have liked to face the position without the rope's support. Then I untied myself, Sylvain fixed the rope round an accommodating protuberance on the face of the cliff, and descended the upper half of the face—the difficult part; he then shook the rope loose and rejoined me.

I had previously lost my axe. Another troublesome bit enabled me to recover it. After one or two more unimportant little difficulties we began to think that we had escaped from our troubles. We turned somewhat northwards, and in a few minutes more reached the Mittel Aletsch glacier, having found several small beds of snow, which gave us a little help, as we were able to glissade. Our final escape was by the side of a little brook that fell over the last cliffs. These cliffs, covered with bright green grass, flowers, and stones, were steep enough. The place recalled Scott's lines—

It was a barren scene and wild,
Where naked cliffs were rudely piled ;
But ever and anon between
Lay velvet tufts of loveliest green.

The Mittel Aletsch glacier gained, I sat down on a big stone, with tingling limbs and torn garments, and rejoiced in the thought that we had escaped a return to the col. Who shall assess the satisfaction with which I regarded those grim tiers of steep cliffs rent by deeply-cut gullies? There was no *Forsan et hæc olim* about it. There was present and genuine gratitude for a glorious day.

It may be useful to future climbers to say that when we got to the end of the Mittel Aletsch glacier, instead of crossing the Great Aletsch and then finding a way to the Jungfrau Hotel over the ridge, we followed the true right moraine of the Great Aletsch glacier for some distance, then climbed a steep cliff-face on the Olmenhorn (Sylvain climbed it, the rope and Sylvain's arms ensured my arrival at the top), and then, traversing pretty much at a level, struck the moraine, crossed the Great Aletsch glacier, and regained the Hôtel Jungfrau by the Märjelen See path. When once we reached the path I began to walk again in respectable style—so much so that Sylvain, doubtless recollecting his distribution of rebukes for folly at large, and deeming it judicious to bury fact in saccharine, remarked quite genially: 'I am pleased with you. I have seen that you have good legs.'

My friend Tempest Anderson's congratulations revived me completely, and so I brought a very pleasant day to a very pleasant close by sitting down to that nourishment which is called supper.

THE WINTER EXHIBITION.

THE Club hall was again well filled in December last with a collection of the recent works of our Alpine artists and amateurs, which attracted an unusual number of visitors. We must repeat what we have said more than once before of previous Exhibitions. It showed a steady growth in the number of those capable of observing with faithful appreciation the features of the mountains, and of recording their impressions in a manner to give pleasure to the members of our Club. But we must admit that if so far we have produced many talents the genius is still to come. No successor of Turner or even of Elijah Walton has yet appeared on our walls, no one with the power of grasping mountain scenery as a whole, of painting its atmosphere as well as its forms, of abstracting, as it were, the characteristics of a region, as well as of reproducing the features of a locality. The painter who has made the nearest approach to this ideal, and from whom, if he would devote more of his time to the Alps, we should expect most—Mr. Albert Goodwin—was, unfortunately, owing to his having at the moment a separate Exhibition elsewhere, not represented on our walls. To Monsieur Loppé, as a veteran and a foreigner, we must give the place of honour. He has never shown any canvas exhibiting more fully his mastery in the representation of snowy ranges seen from a high standpoint than in his 'Sunset on the Summit of the Buet.' But why did he confine himself to this single contribution? We must very seriously beg him next time to give us quantity as well as quality. In his own field he is unrivalled, and his art is ripening.

Mr. E. T. Compton's work is always marked by conspicuous ability in draftsmanship. No one knows better how the rocky ribs fit in under the surface of the earth. 'The Ridge of the Herzogstand' showed this mastery of mountain structure, but was monotonous in colour, a failing—perhaps due to the extent to which the artist has worked in black and white—which Mr. Compton would do well to guard against. We preferred on the whole his 'Bifertenstock from the Tödi.'

One of the most successful works on the walls was Mr. Colin Phillip's 'At the Base of Sgurr na Gillean, Isle of Skye,' a capital piece of Scotch colouring.

Two associates of the Royal Academy honoured the Exhibition, Mr. Alfred Parsons with a charming drawing of 'A Savoy Garden at Aix-les-Bains,' and Mr. East with three pleasant views on the Italian side of the chain. Among the more severely Alpine paintings, representing the world above the snow line, Mr. Adrian Stokes's 'Peak in the Ortler Group' claimed a place of honour. Its rendering of atmospheric effect was sympathetic and effective.

Mr. Alfred Williams, an artist who is constantly making progress, has not yet attained to the complete success his perseverance deserves. A most careful and conscientious draftsman, he fails to give sufficient force to his foregrounds, as, for example, in the

view of the 'Dent Blanche.' At a distance his 'Monte Generoso' gave an admirable impression of the wavelike surface of the Italian hills backed by the snows of Monte Rosa. But nearer approach showed that the snows themselves were flat and inadequately rendered. It is in Scotch scenery, perhaps, that Mr. Williams is most completely successful.

Several of the late Elijah Walton's works, contributed by Mr. W. Mathews, reminded us how much we lost in that imaginative artist. Imagination in another direction was displayed by Mr. A. D. McCormick, who can see more in a sunset than most of us. His visions of the spirits of the summits introduced an agreeable novelty among more realistic reproductions of inanimate nature.

Mr. W. G. Collingwood sent some interesting sketches of Tyrolese scenery.

A Norwegian artist, H. J. Kaulum, contributed several striking oil pictures, and one very large painting, 'The Skagastølsbræen.' His works showed that technical knowledge which is seldom missing in Continental painters, and a very considerable power of treating picturesquely the wilder features of his native country, rocks and glaciers and mountain tarns.

Among many amateurs we must single out for praise Mr. Trevor-Battye's excellent sketches of Spitsbergen coast scenery, admirable in their realisation of the soft low colours of Arctic landscapes, and Mrs. Jardine's very able winter snow scenes in the Engadine. In 'Badrutt's Park' the snowy surfaces and the distant range were as good as possible; the only fault in the drawing was the conventional pine wood in the corner, which can hardly have been drawn on the spot. The Baroness Helga von Cramm sent her usual Alpine flowers, Mr. Russell Clarke some interesting drawings from the Andes, Mr. Howard a bold but rather heavily painted picture of Monte Civetta, Mr. Ellis Carr some studies, mostly of chalets and village scenes, Sir Henry Bergne several views near Saas. Space prevents us from further mention of these and other commendable contributions.

NEW EXPEDITIONS IN 1900—*continued.*

Arolla District.

AIGUILLES ROUGES. CENTRAL PEAK BY THE E. FACE.—On August 25, 1900, Messrs. W. T. Kirkpatrick and R. P. Hope (without guides) from the N.W. corner of the lower Glacier des Aiguilles Rouges climbed on to the ridge dividing it from the upper glacier, and followed this ridge to the point where it ends under the E. face of the peak. There now lay to the S. a large rock slab, from which a snow couloir descends, first in an easterly and then in a southerly direction, to the lower glacier. This slab, usually covered with snow, was quite bare and too smooth to cross at its upper end, where the cliff would have given protection from

falling stones. It had, therefore, to be crossed about 100 ft. lower down to the shoulder whence a S.E. buttress of the peak descends. From the highest point of this shoulder, which is about 100 ft. above the level of the S. gap, they went W. for a few yards along a ledge, and then turned up in a N.W. direction along a steep broad shelf, parallel to the S. arête, which actually overhung it. This was followed to a point a short distance from the N. arête, whence they traversed to the S., and climbed up by a chimney and finally over an overhanging rock to the summit, which was thus reached without touching either the N. or S. arête of the peak. The rocks were steep, but firm.

On August 5, 1897, the same party reached the crest of the S.E. buttress by the S. face of the latter from the lower Glacier des Aiguilles Rouges, but were stopped by bad weather. On neither occasion did any stones fall near the route, and in 1900, except while crossing the rock slab, the route seemed perfectly safe, owing to the overhanging wall of rock.

This ascent apparently differs from that of Messrs. Hughes and Stable,* as they reached the S. arête some distance below the top and were in danger of falling stones.

A perusal of the Arolla MS. guide-book, after the expedition here recorded, showed that in June 1897 Messrs. Larden, Corry, and Brant descended from a notch nearly half-way down the N. arête of the central peak to the great slab, reaching it by a steep chimney. The present party saw a number of stones fall down this chimney in 1897, but none this year.

Saas District.

FLETSCHHORN OR ROSSBODENHORN (4,001 m. = 13,127 ft.).
July 16, 1900.—Messrs. H. V. Reade and L. W. Rolleston, without guides, ascended this peak by a route which does not seem to have been described before, although it is sufficiently obvious. They started from the Hôtel Weissmies for the ordinary route by the N.W. or N. arête (Route 3 in the 'Climbers' Guide), but on reaching the snow above the rock ridge leading from the Jüghörner found it so hard that to cross the W. face to the N.W. arête would probably have meant continuous step-cutting. They therefore went straight up the snow ridge and the snow slopes in which it merges to the steep and, in places, somewhat difficult rocks forming the W. face of the point 3,908 m., and ascended these to the top of that peak in 2½ hrs. from the head of the gully by which the Jüghörner ridge is reached. Thence they followed the easier rocks of the S.W. arête (Route 2 in the 'Guide') for one hour to a snow ridge, by which the summit was attained in 15 min.—5¾ hrs. in all from the hôtel.

In the 'Climbers' Guide,' p. 141, seventh line from bottom, for 'W.' read 'E.'

* *Alpine Journal*, vol. xi. p. 174.

ALPINE NOTES.

'THE ALPINE GUIDE.'—Copies of Vol. I. of the new edition of this work, price 12s. net, and of 'Hints and Notes, Practical and Scientific, for Travellers in the Alps' (being a new edition of the General Introduction), price 3s., can be obtained from all booksellers, or from Messrs. Stanford, Charing Cross.

THE LIBRARY CATALOGUE is now printed and may be obtained, bound in cloth, on application to the Assistant Secretary, 23 Savile Row. Price 3s.; postage, 4d.

THE ALPINE CLUB OBITUARY, 1900.—Dr. W. Marcet (1871), W. Simpson (1872), H. C. S. Norris (1859), J. B. S. Williams (1858), Rev. J. Sanger Davies (1898), J. G. Cockin (1888), T. L. Murray Browne (1865).

ALPINE HONOURS AT THE PARIS EXHIBITION.—We learn from the 'Bulletin' of the Club Alpin Français that the Club has received a Grand Prix for its display at the late Exhibition, and that a similar award has been made to H.R.H. the Duke of the Abruzzi, and that Gold Medals have been awarded to our members, Sir Martin Conway, Mr. Douglas Freshfield, and Signor Vittorio Sella, and also to Signor Mosso and Dr. Moreno.

CAUCASUS CLUB.—A new Club has been formed in Vienna, under the name of the 'Caucasus Club,' into which only such climbers will be admitted as have given sufficient proofs that they can dispense with assistance from guides or amateurs. The number of members is limited to one hundred, and candidates will be balloted for under similar conditions to those observed in the Alpine Club. The President for the first three years will be Dr. A. Hacker, and the Secretary Mr. W. R. Rickmers.

PRESERVATION OF THE ALPINE FLORA.—We read in a leading article in the 'Standard' of January 18, 1901: 'The French authorities have followed the example of the Swiss Government in seeking to protect the Alpine plants from the destructiveness of the tourist. The Prefect of the Isère has published a decree forbidding the uprooting or sale of a number of the more beautiful or interesting kinds.'

LA CIARDONNET (10,680 ft.).—'Alpine Journal,' vol. xx. pp. 263, 264. On p. 264 it is stated, 'This is believed to be a first ascent.' This belief is unfounded. The peak was ascended by Mr. Walter Leaf with Clemenz Zurbriggen on July 11, 1890.* The routes taken in the ascent by Mr. Leaf's party in 1890 and Mr. Downer's party in 1900 were different, but the descents were identical.

GRIVOLA (3,969 m.=13,022 ft.) BY THE N. FACE.—This very fine ascent appears to have been almost entirely neglected since the expedition of the Pendlebury-Spechtenhauser party, July 17, 1876.† The only other ascent I know of is that of Signor Guido Rey, with

* *Alpine Journal*, vol. xv. p. 298.

† Cf. *ibid.* vol. ix. p. 74.

Thérisod and a porter, who, in 1895, from a bivouac on the Col de Belleface, crossed the face and struck the N. arête half-way up, being so delayed, presumably by step-cutting, that they spent a second night on the mountain (see 'Rivista,' 1895, p. 278*). Probably this neglect is due to the mention ('Climbers' Guide,' Mountains of Cogne, p. 138) of more than one thousand steps having been cut by the Pendlebury party, the inference being that the expedition was very long and laborious. The time which Mr. R. Pendlebury gives in the note in the travellers' book at Cogne, 'Reached the summit from thence [Nomenon huts] in 7½ hrs. altogether,' shows that the steps must have been partly in snow, and it will be seen that we, although later in the season, cut very few steps.

It should be remembered that the lower part of the N. face is a rock wall, the upper part being an ice slope, the E. edge of which forms the exquisitely delicate N. arête so remarkable in this view of the mountain. No doubt the slope itself, facing as it does due N., will be nearly always hard ice, as we found it. This, no doubt, delayed the Rey party. I do not think the arête itself will be often worse than we found it in the middle of August of a notoriously fine season, and hence that any similarly equipped party need fear, on account of laboriousness, to undertake the expedition. Of course the earlier in the season such an ascent is made the easier it usually is.

On August 11, 1898, Daniel Maquignaz, Hans Köderbacher, and I left a bivouac in the Nomenon valley (reached from Cogne *via* Col de Trajo in about 5 hrs.) about ½ hr. above the Nomenon huts, at 4.10 A.M. Over *Geröll* and snow slopes we struck the foot of the rock wall directly under the summit, well to the right or W. of the ice fringe of the Grivola Glacier (5 A.M.). This glacier is that contained between the N.E. ridge of the Grivola and the N. arête above alluded to. We mounted without any particular difficulty over slabs, up a chimney, and through a tunnel (5.30), always bearing to our left. Emerging from the tunnel, we had close on our left the séracs of the Grivola Glacier. Some scree and a steep snow slope brought us to the foot of the N. arête (7.5) just where it bends to the E. From this point one looks down into the bay formed by the Grivola Glacier on the left, whilst the N. arête loses much of its formidable aspect and appears far less steep.

Up to this point our route, which is direct, easy and absolutely safe, differs from the Pendleburys', who kept far more to the left under the icefall of the Grivola Glacier. Buckling on our crampons and tying up we took to the arête, which, on the right, barely emerges from the level of the ice slope of which it forms the E. edge, whilst its left slope to the glacier is very steep. A foot away from the arête or edge the slope was hard ice, but the edge itself, well defined and free of cornice, just allowed our irons (specially sharpened at Aosta, so great were my expectations) to bite, and

* Mr. Coolidge very kindly gave me full details of this ascent.

we mounted rapidly, the leader giving only an occasional slash with his axe to relieve the side-strain on the ankles at any particularly steep place. At 8.45 we were forced off the arête and had 20 min. cutting in hard ice, finally reaching at 9.20 the rocks of the W. arête a stone's throw from the summit. After 35 min. for breakfast we followed this W. arête for a few yards till forced off it on to the face on our left—an ice slope sown with rocks—careful moving. We finally struck the N.E. rock ridge just under the summit, which we reached at 10.25 (6 hrs. 15 min. in all, 5 hrs. 40 min. actual going). I hope this note will induce other climbers to try this fine route, which is, objectively, the safest route up the Grivola. The climb was repeated this summer (1900) by Dr. Julius Kugy, with Maquignaz. J. P. FARRAR.

PROFESSOR HUXLEY AND PROFESSOR TYNDALL.—We take the following from letters of Professor Huxley's which are published in his 'Life and Letters' (Macmillan, 1900). In 1898 Mr. Huxley wrote (vol. i. p. 144): 'By the Observations on Glaciers I imagine you refer to a short paper, published in the "Philosophical Magazine," that embodied results of a little bit of work of my own. The Glacier paper in the "Philosophical Transactions" is essentially and in all respects Professor Tyndall's. He took up glacier work in consequence of a conversation at my table, and we went out to Switzerland together, and of course talked over the matter a good deal. However, except for my friend's insistence, I should not have allowed my name to appear as joint author, and I doubt whether I ought to have yielded. But he is a masterful man and over-generous.'

The following is from a letter dated 'Chamounix, August 16, 1857' (vol. i. p. 146): 'It has been raining cats and dogs these two days, so that we have been unable to return to our headquarters at the Montanvert, which we left on Wednesday for the purpose of going up Mont Blanc. Tyndall (who has become one of the most active and daring mountaineers you ever saw—so that we have christened him "Cat;" and our guide said the other day, "Il va plus fort qu'un mouton. Il faut lui mettre une sonnette") had set his heart on the performance of this feat (of course with purely scientific objects), and had equally made up his mind not to pay 25*l.* for the gratification. So we had one guide, and took two porters in addition as far as the Grands Mulets. He is writing to you, and will tell you himself what happened to those who reached the top—to wit, himself, Hirst, and the guide. I found that three days in Switzerland had not given me my Swiss legs, and consequently I remained at the Grands Mulets, all alone in my glory, and for some eight hours in a great state of anxiety, for the three did not return for about that period after they were due.*

'I was there on a pinnacle, like St. Simeon Stylites, and nearly as dirty as that worthy saint must have been, but without any of his

* 'The guide had mistaken the route, and led the party into all sorts of superfluous difficulties.' Article in *Nineteenth Century*, 1894.

other claims to angelic assistance, so that I really did not see, if they had fallen into a crevasse, how I was to help either them or myself. They came back at last, just as it was growing dusk, to my inexpressible relief, and next day we came down here—such a set of dirty, sun-burnt, snow-blind wretches as you never saw.'

In the fuller account of this expedition given in an obituary notice of Professor Tyndall in 'The Nineteenth Century' for January, 1894, Professor Huxley adds: 'We descended in glory, to the great disgust of the orthodox guides of Chamounix, to whom an ascent of Mont Blanc, up to that time, had meant the organisation of a large and profitable expedition.'

ACCIDENTS IN THE EASTERN ALPS.—The list of accidents in the Eastern Alps last summer is again a heavy one, though most of them occurred on mountains below 3,000 m. Excluding such as befell edelweiss seekers, and one or two others the cause of which is uncertain, the total for the five months, June to October, was thirteen, involving the loss of twenty lives. Of these disasters three took place before the melting of the winter snow on what is ordinarily safe and easy ground; seven, with ten victims, occurred during actual climbing on the lower peaks, some of them really difficult; and three only, in each of which two lives were sacrificed, on the higher mountains. These three deserve a fuller notice.

The first, the accident on the Kreilspitze on July 18, has already been referred to by Mr. Broke.* Although it seems clear from a second account,† which states that the two ice-axes were found a week afterwards on the ridge E. of the Königsjoch, that the climbers did fall from the ridge, there appears to be no doubt that the guide was leading down. The same custom prevails in the Stubai and Zillertal districts, and no doubt elsewhere in the Tyrol. For example, last August three parties of two, all close together were seen descending the névé slopes of the Schwarzenstein, and in every case the guide went first, though in this instance there was no shadow of excuse for it.

In the second disaster two Dutch gentlemen, quite inexperienced, left Trafoi with two guides on July 27 to ascend the Ortler by way of the Stickle Pleiss. As usual, they were roped two and two. Near the top of the gully, when there were only a few more steps to be cut, one tourist slipped and dragged his guide down with him. The other two, standing near by, were helpless spectators.

The third accident, that on the Olperer on August 23—the account ‡ of which we owe to one of those who perished in it—is one of the most tragic recorded. Dr. Schäffer, of Bremen, left Steinach (on the Brenner Railway), where he had been celebrating his silver wedding, on August 22, and being joined at St. Jodok by the guide Johann Offerer walked up to the Gera Hut, where the night was spent. Starting at five the next morning, they reached the

* *Alpine Journal*, vol. xx. p. 293.

† *Mittheilungen des D. u. Oc. A. V.* for 1900, p. 180.

‡ *Ibid.* p. 218.

Wildlahner glacier in an hour and a half. The lower and somewhat crevassed portion of this can be avoided by following a ridge of easy rock on the W. But the guide neglected this safer way for a party of two, and after about twenty minutes on the glacier they came to a crevasse which showed an opening of about 20 ft. long and from 4 ft. to 10 ft. wide. The guide crossed safely by a snow-bridge; but Dr. Schäffer, who followed, broke through and pulled the guide, who was a man of sixty and of much lighter build, into the crevasse with him. They fell to 'a depth of 80 ft. to 120 ft.' The guide had an arm and thigh broken, but Dr. Schäffer escaped with a sprained knee. He wrapped the guide in his cloak, and placed wine and food beside him, and then, following the crevasse some 20 ft. to the unbridged part, addressed himself to the task of trying to escape. 'I climbed up,' he wrote, 'with unspeakable labour and pain, but I fell back, owing to my injured knee, twice—fortunately upon my back. From 7.30 to 8 I attempted to save myself; at last my knee gave out completely.' By this time he had reached a shelf of ice about 16 ft. below the surface, and here he sat down to die. But 'before it became too dark in the crevasse' he wrote a farewell to his wife and children, with a full description of the accident, and did not forget to leave to the widow of his companion a sum of 1,000 kronen. It was not until September 5 that after long search the bodies were discovered.

It will be noticed that these three accidents have one common feature. In each case the party consisted of two, and in each case the tourist fell and dragged the guide with him. In the Stickle Pleiss no doubt the slip was due to inexperience, but one cannot help feeling that, with a second guide behind, the consequences might have been averted. It is hardly too much to say that all the accidents in the high Alps of the Tyrol were due ultimately to the pernicious system there prevailing of making glacier expeditions with only two on a rope, with its still more fatal corollary of the guide going down first. There are and always will be many disasters due to sheer recklessness; but it should surely be possible to reduce the number of those which are caused by breach of the recognised rules of mountaineering. The German and Austrian Alpine Club, with its enormous membership and the authority it exercises over the guides, has every opportunity for inculcating sound principles, and it would be a great boon to the many ignorant and inexperienced climbers—who are the sufferers most to be pitied—if it would make use of them. As things are at present, all who have travelled among the snowy ranges of the Tyrol will endorse Mr. Broke's words, viz., 'the surprising thing is not that there are so many, but that there are so few accidents in the Eastern Alps.'—A. V. V. R.

Mr. H. W. Fowler writes, 'There is no question of the correctness of the rule that in a party of two 'the weaker man *must* lead down;' but it is only fair to the Tiroler guides to say that Mr. Broke's account in your last issue, by which it would appear that they all take the opposite course, is at least exaggerated. In

several years at Sulden (and at Cortina, where also two on the rope is the custom) I have never, though employing different guides, known one even to suggest that he should lead down. This experience must, from Mr. Broke's letter, be exceptional; but I give it for what it is worth.'

BLÜMLIS ALP, ROTHORN (3,800 m. = 10,827 ft.).—As no account of this little peak has appeared in English, the only recorded ascent being one made in 1875 by Herr Löhnert, of Bern ('Studer,' 1896, i. 448), it may be worth while giving the details of an ascent made by H. V. Reade and L. W. Rolleston, without guides, on July 28, 1900. Herr Löhnert and his guides, 'failing to see a way up the E. face, climbed, with considerable difficulty, the N. arête of the higher peak, diverging, towards the top, to the glacier between the two peaks, and having visited both descended by the W. face. The 1900 party, who did not at the time know of the previous ascent, reversed the route then taken. From the chalets of Unter Oeschinen they bore off to the right, up a broad grassy gully, which is well shown on the Siegfried map, to the W. face of the peak. Débris and easy rocks led to a snow-slope, above which a steep and narrow snow couloir, followed by more easy rocks and a second snow-slope, brought the party to the W. arête of the peak at a gap between two rock-towers. The arête proved too broken to follow, so they traversed rocks under it on the left (N.), crossing the tops of several small ice couloirs and of the big one which is so conspicuous on the face of the peak as seen from the Oeschinen-Thal. The 1875 party seems to have descended the rocks at the side of the couloir. Finally they took to the arête again, which gave some good scrambling before the top was reached. This proved to be the summit of what the S. map shows as an isolated rock triangle just E. of the figures 3,800. Descending a short gully of loose rocks they reached the saddle between the two peaks, whence a snow arête brought them to the cairn on the true Rothhorn, a few feet higher than the first peak. The only way down, except the steep ice-slope below the saddle, appeared to be the rocks of the N. face or arête, which proved extremely unpleasant—rotten, covered with loose stuff, and seldom affording any satisfactory hold. The descent of about 900 ft. occupied just three hours. Finally it was possible to take to the snow. Twenty minutes brought the party to the glacier basin, and finding the tracks from the Blümlis Alp Horn they reached the hut at five.

Their times were: Oeschinen-See Hôtel to foot of W. face, 1 hr. 40 min.; to W. arête ($\frac{1}{2}$ hr. lost), 2 hrs. 50 min.; to first peak, 1 hr. 10 min.; to Rothhorn, 35 min.: total, 6 $\frac{1}{4}$ hrs. Down to hut, 4 $\frac{1}{2}$ hrs.

WEISSMIES (4,081 m. = 13,225 ft.).—What is called, in the 'Climbers' Guide,' p. 137, the W. arête of this peak is really, as the new 'Ball' has it on p. 566, the S.W. arête, *i.e.* the arête which joins the peak to the Trifhorn. It does not seem to have been noticed that members who start (as is now usual) from the

Hôtel Weissmies, on the Trift Alp, take the true W. arête, *i.e.* the ridge on the other side (N.) of the S. branch of the Trift glacier, which merges in snow-slopes higher up. The S.W. arête, which gives a little more climbing, can, of course, also be reached from the Hôtel Weissmies.—H. V. READE.

THE SUDLENZSPITZE BY THE S.W. FACE.—On August 4, 1900, Mr. G. L. Stewart, with Johann and Ferdinand Summermatter as guides, left the Dom Hut at 12.30 A.M. for the Nadelgrat. They turned off to the left from the Nadeljoch route when they came abreast of the Sudlenzspitze, and arrived at the foot of its S.W. face at 4.30 A.M. On their left, *i.e.* towards the Lenzjoch side of the mountain, they found a good bridge across the bergschrund, and, crossing it by this, commenced the ascent of the face, bearing to their left for about 15 min. They then traversed back to their right, taking a diagonal direction to the summit, and making as straight for it as difficult places would allow. They gained the top at 5.45 A.M. Their route lay up a steep rock slope much broken up by sheets of ice. The rocks were for the most part sound, but often slabby and, as was to be expected at that hour of the morning, glazed with ice. An ascent by this route does not appear to have been recorded, and may be new. On their return the party followed the Nadelgrat to the Hohberghorn, and were back at the Dom Hut by 11.30 A.M. The morning was cloudy and very cold, with a strong wind from the N.W., rendering halts of more than a few minutes impossible, until they regained the friendly shelter of the rocks on the Festijoch.

The party were trying 'Steigeisen' last season, and used them on this expedition. On the S.W. face of the Sudlenzspitze they were not an unmixed advantage, but on the snow arêtes of the Nadelgrat and descent of the Hohberghorn, the snow being particularly good, they were useful, and probably saved time.

ASCENT OF ARARAT.—We take the following from the 'Bulletin of the Society of Geography, Marseilles,' No. 1, 1900:—'Russian papers report a recent ascent of Ararat by a forester named Mlokossevitch, his daughter, aged seventeen, and his son, aged fourteen, with three Kurd guides. When a height of 14,000 ft. was reached the boy gave in, but his father reached 16,750 ft., while the daughter and the three Kurds reached the summit. The intense cold was such that she nearly lost consciousness, and was able to descend only with the assistance of the guides.'

THE AIGUILLE DU GÉANT (4,014 m., 13,170 ft.) FROM N. TO S.W.*—This peak presents to us a gigantic point of rock overhanging towards the S.E.; it rises out of the south-eastern boundary ridge of the Mont Blanc range at the point where this range, after the broad and gentle pass of the Col du Géant, rises to a considerable height, and, crowned by rocks of proudest form, passes over to the Grandes Jorasses. The rock formation which bears the Aiguille

* From 'Touren in der Montblanc Gruppe,' by Dr. Heinrich Pfannl, of Vienna, *Oesterreichische Alpen-Zeitung*, vol. xxii. No. 567.

du Géant sends out to the N.W. a rocky ridge, which, approaching the inner branches of the north-western range, the Dent du Requin only a few kilometres distant from the Aiguille Noire (3,427 m.), forms the great threshold over which the ice of the Géant glacier streams away to the N., and which gives to the southern basin its smooth, plateau-like character.

The Aiguille du Géant itself exhibits a slender form, which in strongly marked buttresses develops greater massiveness towards the S.W. and N. only: Between these buttresses descends towards the N.W. that tremendously steep gorge which has caused the cleft in the rocks between the two points: over the S.W. ridge goes the well defined and safe route hitherto in use.

The northern ridge, almost perpendicular, has two marked shoulders, and lower down another projecting formation connected with the rocks of the main mountain by a snow saddle; from the lower shoulder an ice couloir leads down to this snow saddle, and then, in greater width, to the snow region which is embedded, N.W. of the Aiguille du Géant, between the before-mentioned lowest branch of the N. ridge and the rock arête leading to La Noire.

Starting at 8 h. 30 m. from the Rifugio Torino we first ascended the last-mentioned arête, and crossed over it close to the foot of the mountain, where an easy descent to the snow field was feasible.

Then we traversed below the Aiguille du Géant to the lower end of the ice-slope which runs from the snow saddle and the first shoulder of the N. ridge; over this, and over some easy rocks to the left of it, we reached the first shoulder (8 h. 30 m.—9 h. 30 m.). Owing to a threatened thunder storm we decided to content ourselves for the day with a minute reconnaissance, and to put off the real ascent to the following day. We did not, therefore, climb, as we had first planned, through the ice couloir on the right to the second shoulder, but descended from the first shoulder eastward, with the intention of gaining the crest of the chief ridge between the Géant and Mont Mallet by way of the overhanging walls. We were soon convinced that this would be possible, and that we could thereby avoid our intended tedious climb to the first* shoulder. We now came to an immense gorge, leading down from the N. arête, which tempted us, in spite of the threatening storm, to scale its rocks, and, passing through a rocky couloir to the right, thus attain the second higher shoulder of the N. arête (11 h.—12 h.). There we found two sticks and a bottle with the cards of the guides who had previously reached this point.

The next buttress on the ridge is nearly perpendicular, and about half way up absolutely requires for its passage the assistance of climbing-irons, which means, however, we had wished to avoid, as the ordinary ascent had attracted us to attempt this splendid peak for the very reason that artificial aids were non-existent. At 12 o'clock the first thunder storm cleared off; quickly we crossed by a narrow ledge 20 metres to the right, whence a shallow gully ascends, and

* Qy. 'second.'

allows one, though with difficulty, to reach the notch above the first buttress. Here, for about a rope's length forward, progress is easy, but thereafter always very difficult; partly over overhanging rocks, shallow gullies, smooth ledges, straight up to the edge of the ridge. The critical point is a high, smooth rock-face with little hand or foot hold. After that comes a short chimney glazed with ice; then a traverse 20 metres long on a narrow band towards the right to the lower end of a cleft which leads from the highest part of the gap down between the two points. In this cleft the ascent becomes easier for a rope's length; then a narrow ledge to the right leads into the chief gorge just above its end. The fixed ropes on the nearer point are visible on the right, above. We now ascended in the bottom of the gorge, and on the rocks to the left of it, for about 30 metres, up to the highest ledge of the gap directly to the foot of the chief pinnacle, only a few metres higher, which we reached at 2 h. 30 m.

The approach of a second storm drove us away. In the higher regions the rocks were completely coated with ice, which made the ascent considerably more difficult. The cleft and the last gorge must especially be incomparably easier in a dry condition. The steepness of the rocks, and the exposure, as far as the last cleft and gorge, are very great, yet it is generally possible to ensure the security of those climbing behind.

ALPINE CLUB LIBRARY.—The following additions have been made since November :—

Recent Guide-Books. (Presented by the Publishers.)

- Bosazza, F. *Le Alpi occidentali dalle Valli di Cuneo e Nizza ad Aosta. Breve guida topografica con esposizione di viaggio e particolare illustrazione storica e descrittiva dei monti Viso, Rocciamelone e Gran Paradiso.* 8vo, pp. 207; map. Genova, Borzone, 1900
- Busset, E., et de la Harpe, E. *La Vallée des Ormonts. . . Climatologie. Histoire, Promenades et Ascensions.* 8vo, pp. 152; map, ill. Lausanne, Bridel, 1900
- Chap. III: *Les Diablerets; les noms; première ascension; les accidents.* (Presented by Prof. Busset.)
- *Hare, Augustus J. C. *South-Western France.* 8vo, pp. 664; map, ill. London, Allen, 1890
- * ——— *South-Eastern France.* 8vo, pp. 508; map, ill. London, Allen, 1890
- Hess, Hch. *Special-Führer durch das Gesäuse und durch die Ennsthaler Gebirge.* 8vo, pp. xvi, 211; map, ill. Wien, Artaria, 1895
- *Lechner, Ernst. *Das Oberengadin in der Vergangenheit und Gegenwart. 3te, völlig umgearbeitete Auflage von 'Piz Languard und die Bernina-gruppe' (1858 and 1865).* 8vo, pp. vii, 188; ill. Leipzig, Engelmann, 1900
- Meyer's *Reisebücher. Deutsche Alpen, II.* 6te Aufl. 8vo. Leipzig u. Wien, Bibliog. Institut., 1900
- Schwaiger, H. *Führer durch das Kaiser-Gebirge mit . . Beschreibung sämtliche . . . Hochtouren.* 8vo, xii, 212; map, ill. München, Lindauer, 1898. M. 3.50
- *Führer durch das Karwendel-Gebirge.* 8vo, pp. xvi, 248; map (1:50,000). München, Lindauer, 1896. M. 3.50

* See 'Reviews and Notices' in the present Number.

New Books and New Editions. (Presented by the Publishers.)

- †Clark, W. A. *Alpine Plants. A practical method for growing the rarer and more difficult Alpine flowers.* 8vo, pp. vi, 108; ill.
For the author; London, Upcott Gill; etc., 1901
(Presented by the Author.)
- Donaldson, Florence. *Lepcha Land; or six weeks in the Sikkim Himalayas.* 8vo, pp. xii, 218; map, ill. London, Sampson Low, 1900
- †Jones, O. G. *Rock-climbing in the English Lake District. Second edition. With a Memoir and Portrait of the Author . . . and an appendix by G. and A. Abraham.* 8vo, pp. lxiv, 322; ill. Keswick, Abraham and Sons, 1900
- Schneller, C. *Südtirolische Landschaften. Nons- und Sulzberg; Cevezzano und Piné; Pergine; Valsugana.* 8vo, pp. 342. Innsbruck, Wagner, 1900. M. 4
- *Das Lagerthal.* 8vo, pp. 448. Innsbruck, Wagner, 1900. M. 4
A pleasant account of travel through a sub-alpine region, and of an ascent of the highest peak of Monte Baldo.
- Wilcox, W. D. *The Rockies of Canada. A revised and enlarged edition of 'Camping in the Canadian Rockies.'* Roy. 8vo, pp. viii, 309; map, plates. New York and London, Putnam, 1900

Older Books.

- Ball, John. 'Western Alps,' and 'Central Alps.' 1873
- Berlepsch, H. A. *Die Alpen, in Natur und Lebensbildern . . . 5te, . . . verbesserte Auflage, . . . umgearbeitet . . . von H. E. v. Berlepsch.* 8vo, pp. x, 570; ill. Jena, Costenoble, 1885
(Presented by the Publisher.)
- *Bignami-Sormani, E. e Scolari, C. *Dizionario alpino italiano. Vette e valichi italiani. Valli Lombarde.* C. A. I. sezione di Milano. 8vo, pp. xxi, 309. Milano, Hoepli, 1892
- Bletzacher, J., herausgegeben von. *Lieder-Buch des D. u. Oe. Alpen-Vereines.* 8vo, pp. 259. Hannover, Nagel (1887)
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* See 'Reviews and Notices' in the present Number.

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An ascent by a girl of 17.
(Presented by the Society.)
- Busnelli, G. Voci della scienza e della poesia sulle Alpi. (Dagli Atti del
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literary, and other interests of the mountain lover.
(Presented by the Author.)
- Chevassus, E. Notice sur Lons-le-Saunier-les-Bains . . . notamment: les
Roches et Grottes de Baume. . . 8vo, pp. 53; map, ill.
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A descriptive account of the region from the mountaineering point of
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(Presented by the Author.)
- *Glaciers, Commission internationale de l'étude des. Les variations de longueur
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(Presented by the Publishers.)
- *Wrubel, F. Ein Winter in der Gletscherwelt. Skizzen vom Bau der Jung-
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(Presented by the Publisher.)

CORRIGENDA IN 'ALPINE JOURNAL,' No. 150.—P. 255, line 2, for
'Ortler' read 'Olperer.' P. 263, line 32, the first climber should
be Herr H. Pfannl.

† See p. 336 of the present Number.

* See 'Reviews and Notices' in the present Number.

REVIEWS AND NOTICES.

Swiss Jahrbuch.

THIS volume (xxxv. 1899-1900) is in no way inferior to its predecessors, and exceeds them all in the number of the illustrations, there being no less than nineteen full-page ones, one of which extends to the size of four pages. The editor, however, complains that he cannot from several quarters get photographs suitable for reproduction, whilst his colleague of the 'Zeitschrift' can send a special artist into any district to obtain such. The Club district (Unter Engadine) closes with this year, and the new Club district (the Swiss side of Mont Blanc) begins, and will last till the end of 1901. The ascents, either new or by new routes, which have not appeared in the 'Alpine Journal,' are as follows:—On August 19, 1898, Mr. J. P. Sisley, with the brothers Crétaz, after ascending the Aiguille d'Argentière from the Cabane d'Orny, effected the descent by the rock face overlooking the Gl. de Chardonnet; on July 23, 1898, MM. L. H. and Th. Aubert, with M. Crétaz, ascended the Tour Noir by the N.E. ridge; on July 30 the same ascended the Aiguille du Chardonnet by the E. ridge; in August, 1898, M. J. B. Guyot, with Adolph Rey, ascended the Aiguille du Triolet from the S.E.; in August, 1898, Sig. G. Bobba, with Casimir Thérissod and a porter, ascended the Mont Brouillard (3,966 m. = 13,013 ft.) by a new route from the W.; on August 19, 1898, SS. G. B. Origoni and Ab. J. Bonin, with a porter, ascended the central peak of Mont Rochefort (3,433 m. = 11,263 ft.); on September 6, 1899, the S. peak of the same mountain was ascended by SS. Ad. Hess and Dr. Flavio Santi, with a porter; on August 20, Mr. Schintz, with Jos. Croux and Pollinger, ascended the Aiguille Rochefort from the Italian side; on August 23-27, SS. G. F. and G. B. Guglielmina, with the porter Nic. Motta, crossed the Col Emil Rey from the Gl. du Brouillard to the Gl. du Mont Blanc. They had to bivouac three times on the ascent and once on the descent, chiefly to avoid the danger of falling stones. The New Pass was reached on August 26, and Courmayeur on the 27th, by the Gl. du Miage; in 1899 (no date) the ridge of the Aiguilles Dorées was traversed from E. to W. by M. Achille Escudié, with M. Crétaz. In the traverse, seven peaks were climbed, of which four were new. On August 1, 2, 1898, MM. René and Arnold Corveon climbed the Pointe Allobrogia (3,167 m. = 10,390 ft., part of Mont Dolent); on September 13, M. Gustave Jacot, with P. Delez and C. Bochatay, climbed the Aiguille Verte from the col between that mountain and Les Droites; in the descent the great couloir was avoided by keeping towards Les Droites. They left the Couvercle at 1.30 A.M., reached the top at 11 A.M., the Couvercle at 5 P.M., and Chamonix at 10 P.M. On July 20, Dr. F. L. Fankhauser and Mr. E. J. Perkins climbed the Grand Tavé from the Panossière Hut by the S. ridge; on July 27 Dr. Fankhauser and Herr E. Panchard climbed the Tour de Boussine from the Chanrion Hut

by the S. face (the first ascent since that of the late Herr Weilenmann in '67); on July 31 Dr. Fankhauser climbed the Mont Gélé direct from the Col de Fenêtre, and regained the col by the S. face; on August 4 Dr. Fankhauser and Dr. J. Jacot-Guillarmod ascended the Dents de Bertol (3,556 m.=11,667 ft.) by the S.W. ridge; on August 26 Mr. A. G. Cooke, with Benj. Rouvinaz and Toni Theytaz, climbed the great Gendarme on the N. ridge of the Weisshorn; on August 1 MM. Léon Dufour, A. Vinthier, and A. Martin from the Concordia Hut traversed the Dreieckhorn and Aletschhorn, and on the descent had to bivouac at 3,800 m.; on August 7 the same party, after ascending the Wellenkuppe by the usual route, descended to the Trift Glacier by a couloir on the N. arête, a route unknown to the Zermatt guides and not mentioned by either Conway or Studer; on August 14 MM. Léon Dufour and A. Martin from Saas ascended the Sudlenz Spitze, thence gained the Nadeljoch, and joined the usual route to the Dom, which they climbed, thence descended by the Hohberg Glacier and the Festi Joch to the Festi Hut and Randa; on July 16 Herr W. Flender, with Heinrich and Aloys Burgener, reached the Nadelhorn from the Hohbalen Glacier by the E. face; on September 5 the same, with Heinrich Burgener and Ferd. Furrer, traversed the Nord End, descending by the N. ridge to the Jager Joch; on September 4 Sig. Domenico Ferrari ascended the Filarhorn (3,679 m.=12,069 ft.) from Macugnaga (probably by the same route as Prof. K. Schulz in 1882); on August 4 SS. Ric. Gerla and C. Casati, with Lor. Marani, crossed the Passo del Rothorn from the Cap. Sella to Macugnaga; on August 3 Mr. F. Schrempf, with J. Baptiste and Anselme Macquignaz, crossed the Schwarzsee Joch in the Furggenrat (W. of the Théodule) from Fornet to Zermatt; on August 7 MM. E. Born and J. Jacottet, with Chas. Veillon, climbed the Grand Moeveran from the N.E.; on August 7 MM. J. Jacottet, Aug. Baumann, and Ad. Perrenod climbed the Dent de la Forclaz (2,727 m.=8,946 ft.); on September 7 H.H. J. Liniger, R. Winterhalter, and J. Bolli from the Concordia Hut ascended the Grindelwald Viescherhorn, thence gained the S. peak by the S.E. ridge, and descended to the Bergli Hut; on July 19 M. Julien Gallet, with Jos. Kalbermatten and Abr. Muller, climbed the Doldenhorn from the N.E.; on August 26, 27 SS. Anton. Campari and Dr. Don Ottolenghi, with F. Longhi and C. Alberti, crossed the Passo del Cervandone from Devero, and returned thither by the Krieg Alp Pass; on March 19 H.H. Oscar Schuster and R. Helbling ascended the Gwächtenhorn (Steinberg, 3,428 m.=11,246 ft.) by the S. face; on July 19 H.H. G. B. Litscher and R. Helbling ascended the Stucklistock by the W. face; on July 22 Herr G. B. Litscher descended from the Maasplankstock (3,403 m. = 11,165 ft., Geschenen Thal) by the E. face; on August 14, H.H. Jos. Liniger, Carl Hermann, and E. Winterhalter climbed the Stotzigrat (S. of the Düssistock); on June 25, 1898, H.H. G. Brion, L. Zündel, and A. Schweitzer traversed from E. to W. the Ruchen (8,625 ft.,

in Erstfeldthal) and three adjoining peaks; on July 17, 1898, the same party traversed from E. to W. another Ruchen (9,505 ft.); H.H. G. Brion and L. Zündel traversed the Mantliser (9,551 ft.) from E. to W.; the same traversed the Kronte (10,197 ft.) from E. to S.W.; on June 3, 1898, Herr G. Brion climbed the Wichelhorn (9,083 ft., S. of Kronte); on July 23, H.H. A. Oswald and A. Schweitzer climbed the Sennenkehlenstock (9,093 ft.); on June 29 the Vrenelsgärtli was climbed direct from the Klonseesee by four members of the *Alpina Turicensis* (?); on August 7 Herr D. Stokar with Oswald Mettier ascended Piz Forbisch by the W. face; on August 11 the same, with Mr. Shattuck, traversed the Errgrat; the same ascended Piz Platta by the N.E. ridge; on July 28, S.S. Dr. Carlo Riva, Prof. L. Brugnatelli, and Ant. Cederna, with Enr. Schenatti and Carlo Albareda, ascended Piz Cambrena by a new route (doubtful); on June 12 Herr A. Ryzewsky, with Ch. Klucker and A. Dandrea, ascended the Punta S. Anna (? Piz Trubinasca or Badile) by the N. face; on July 9 the same, with Joh. Eggenberger, ascended the Punta Alessandra (pt. of Torrone); on July 31 Mr. J. T. Burton, with Chr. Zipperl and Fl. Grass, ascended Piz Spigna (3,825 m. = 12,549 ft., in Piz Palu) by the N.W. ridge; on August 19, 1898, Herr Hans Biendl, with Jos. Ladner, ascended the Faselfadsfütze (Fervall) by a new route; on August 23, 1898, the same traversed the N. Pflünspitze from E. to W.; on August 19, 1897, Herr Hans Forcher-Mayr descended from the Rothpleisskopf (Silvretta) by a difficult route to the Urgsee; on September 24, 1898, H.H. Franz Hörtnagel, A. Ledl, Jos. Pircher, L. Prohaska, and F. Stolz traversed the Klein Piz Buin from E. to W.

In the Club district there are but four articles. Herr E. Schenckel (St. Gall) describes two ascents in the Ofen Pass district in 1897. The ascent of Piz Tavrill (3,070 m. = 10,072 ft., W. of Scarl) is probably new, as on starting from Scarl it was not exactly known where the top was. The descent was made to the Ofen Pass and thence to an alp above S. Giacomo di Fraele. The party meant to go the next day to Pontresina, but were attracted by the Piz Murtaröl (3,183 m. = 10,443 ft.), which was reached in 6½ hours. Then descending to S. Giacomo, they crossed the Alpisella Pass to Livigno. Herr W. Flender (Unterengadin), on June 19, 1899, with the guide Jacob Brunett, ascended Piz Lischanna from Schuls by the W. face and the N.W. ridge. This ridge and a gendarme on it offered considerable difficulty, but the top was reached in 6½ hrs. This forms a fourth route up the mountain. On June 24 with the same guide he ascended Piz Pisor (3,178 m. = 10,429 ft.) from the Scarl side. This was attended with many difficulties. Twice they had to turn back, and the col between the peaks was only reached after 11 hrs. hard work at 5.35 P.M. They did not visit the top, though only a quarter of an hour off, but after 10 min. halt descended by the usual route. The snow in the couloir was in such good order that they were able to glissade, and Fontana (5,500 ft. below)

was reached in 1½ hr. at 7.15. Prof. Schiess-Gemuseus (Basel) made a tour through the Club district in 1899. The Professor, who has contributed many articles to the 'Jahrbuch,' made his first visit to the district in 1860. On the present occasion he was accompanied by a grandson of thirteen years. That he is still a sturdy walker is proved by his having in one day crossed the Alpisella Pass from Livigno to S. Giacomo di Fraele, thence to the Munster Alp, and over the Dosradond Pass to S. Maria in Munster. Time 10 hrs. 25 min. Even this was not enough, for after supper they went out for a stroll towards Munster. Dr. E. Walder (Uto) spent some time in the Vercina Hut (built by section Uto). With the guide Peter Guler he climbed the Fluela Weisshorn (3,088 m. = 10,131 ft.), and another Weisshorn (2,833 m. = 9,294 ft.), N. of the Hut, and from this made a traverse to the Canard Horn (2,611 m. = 8,566 ft.). This group deserves far more attention than it receives. Next come excursions out of the Club district. Madame Eugénie Rochat has at last succeeded in reaching the summit of the Aiguille Verte. With Jos. Demarchi and his son Jean she left the Couvercle at 10.15 P.M. on August 23. The top was reached at 6.15 A.M. Here Demarchi wished only to remain ten minutes. They, however, rested half an hour, and then the guide would wait no longer. The descent was difficult from soft snow. The Couvercle was reached at noon. Here they spent another night. The lady wished to ascend Les Droites, but, as both guides objected, was contented with Les Courtes, which was reached in a very leisurely fashion in 9¾ hrs. Many crystals were found on the way. The descent was difficult and dangerous on the loose stones, but the Montanvert was reached at 8 P.M., and Chamonix by lantern-light at 9.45 P.M. Herr A. Pfunder (Uto) describes many pleasant places in the neighbourhood of Bex and some mountain excursions. The ascent of the Grand Moeveran on June 3, 1897, was more difficult than usual on account of the great quantity of snow. Herr J. Labhardt (Basel) describes a traverse of the Zinal Rothhorn. He and his friend H. Robert, with the guides Joachim, Tabin, and Felix Abbet, left the Mountet Hut at 1 A.M. on July 29, 1899. The difficulties are well known. As each was passed Tabin thanked it for letting them pass so nicely: 'Au revoir, mon cher! comme tu as été gentil.' Being asked as to the stability of a piece of rock, he said: 'I have spoken to it, and it has told me it would hold.' The top was reached at 9.15 A.M. The descent was difficult, and in some parts dangerous. On the steep slope above the Trift Glacier Abbet and the first tourist, against Tabin's wishes, began to glissade. They soon set the snow on both sides in motion and strove to stop. The effort would perhaps have been in vain had the avalanche not stopped of itself. At this spot a few days later, on August 4, the guide Tabin and Herr Baumann of Zürich and the porter Antille perished, falling 2,000 ft. on to the Trift Glacier. The party reached Zermatt at 7 P.M. Herr Robert Helbling describes various ascents in the mountains E. of Saas, not because they are new, but because he thinks the district is unreasonably

neglected. He would have the name Saas restricted to the Fletschlhorn-Weissmies group, and the name Mischabel retained for the mountains to the west. With his friends he spent several nights on the Almagel Alp above Saas, and he gives an amusing description of the Sennerin, who was astonished at their consumption of milk, and at last refused to supply any more. One of the party had almost to go on his knees to get a glass of Cognac. 'Es ischt üch nit ärscht'—'I don't believe you, you're not serious.' Herr A. Bosshard (Wintertthur) being hindered by bad weather from completing the Panorama from the Sulzfluh, left Paznaun and went to Rankweil (near Feldkirch). From this he made his way into the Laternserthal. It was September 24, and the Alps were already deserted. The rude bathing establishment of Hinternbad was indeed not closed, but there was no one there. The mattresses were hanging in the bedrooms, and he would have stayed all night, but he had only a piece of chocolate to eat, so he was fain to go on. He reached the Furka (5,808 ft.), leading to the Bregenzer Wald, at 8 P.M. After passing with difficulty through a wood in the dark, and then following a track with stepping-stones and mud between (where he had to walk in the mud, as he could not see the stones), he reached Damüls at 9 P.M. He brought a 'gruss' to the host of the village public from a friend near Rankweil, who provided him with his best clothes and a cordial welcome. Thence he proceeded by Hochkrumbach (Lechthal) and the Genteljoch to Oberstdorf on September 27. He climbed various of the picturesque peaks of the district, the last being that of the Nebelhorn from Oberstdorf. From this he descended by the ridge to W. After some scrambling he reached the Rubihorn. He descended with difficulty a narrow ravine, and finally found himself at the top of a smooth rock-face, too high for a jump and with no holds to speak of. He managed to get down far enough to venture on a leap, which landed him in safety. He ought not to have attempted this, especially as he owns he is not free from giddiness. He learned afterwards this passage was one of the most difficult tours in Allgäu. Dr. W. K. A. Nippold takes us to almost entirely new ground in the Transylvanian and Roumanian Alps. The great charm of this region is its freshness. The local club (which consists mainly of Germans) has been at work for twenty years and has accomplished much, but there is still plenty of novelty. In the woods are bears and wild swine. Eagles are common, and brigands not unknown. The highest summit is the Negoï (2,544 m. = 8,346 ft.). There are three shelter-huts (two of which are open as inns), situated about 1,000 m. (3,281 ft.) below the peaks. The scenery is beautiful, and often grand. The N. face of the Negoï is very bold. The flora is remarkably rich and beautiful. The language may be a difficulty. Latin was found to be useful. The word 'bib' was always understood.

Dr. R. Zeller (Bern), who two years ago wrote of the Natron lakes in the Libyan desert, now describes his travels through the Algerian Atlas in April, 1893. The centre from which excursions

were made was Batna (1,050 m.=3,445 ft.), S. of Constantine. The new town was built in 1844, and is exclusively a military station. The Hôtel des Etrangers was found quite satisfactory. From this he made the ascent of Cedar Peak (2,094 m.=6,870 ft.). A good winding path leads to the summit, which is entirely covered with cedars. The fallen giants rendered progress difficult when he left the path. The extent of the cedar forests in Algeria is estimated at 50,000 hectares, and some of the trees are as much as 3 m. (9.8 ft.) in diameter. The aftergrowth is, however, spoiled by the pasturing of goats, &c., and many forests are dying out in spite of the Government efforts. Cedar forests are found also in Cyprus, in the Taurus Mountains in Asia Minor, and on the Lebanon. Here is the most famous forest known in history. It is now reduced to about 800 trees, which are all old, and there is no young growth. The wood of the fallen trees does not lose its hardness, and therefore the growing trees are not cut down. The age is not known, but a tree with a diameter of 5 ft. 10 in. was found to have 310 rings. On the high plateau between the Great and Little Atlas are found great quantities of Halfa grass, which grows in clumps like our sedges. It is used extensively in the country for making baskets, ropes, shoes, and cloths. These are to be found in every bazaar from Spain, through Morocco, and Algeria to Tunis. By far the largest amount, however, is exported to Europe (and to England especially) for the manufacture of the finer qualities of paper. The whole export is estimated at 225,000 tons, of which 210,000 are used in the manufacture of paper.

Dr. Ad. Oswald describes an ascent of Ararat made in 1897. He observes that until the tenth century A.D. the name 'Ararat' was applied to a country and not to a mountain. The ascent was commenced on September 29 from Sardar Bulagh (2,290 m.=7,514 ft.). Partly riding, partly on foot, they reached a bivouac at about 3,000 m. (9,843 ft.). Next morning they started at 6 A.M. Herr Stober and the Cossacks soon went on in front, whilst the others maintained a steady pace. After 3 hrs.' weary climbing over slopes of rubbish and lava blocks they reached the great snowfield. They hoped to reach its upper edge in 2½ hrs., but it was only reached at 2 P.M. They were, however, glad to see that the Little Ararat (3,914 m.=12,941 ft.) and the Tschat (4,520 m.=14,829 ft.) were both below them. After laborious climbing the summit of the Great Ararat (5,156 m.=16,917 ft.) was reached at 5.45 P.M. Here an icy wind compelled them, after ten minutes' halt, to descend. In half an hour, however, the darkness arrested their progress, and they had to bivouac as well as they could at a height of about 4,800 m. (15,748 ft.). As Dr. Stober and the Cossacks had most of the provisions with them, the party were badly off. Herr Oswald had only a piece of chocolate, an apple, and an egg—the two latter, of course, being frozen. The lights seen over the plain were wonderful, and the stars magnificent. At 5 A.M. on October 1 they were able to start, and after a difficult descent over lava blocks, often iced and often unstable, they reached easier ground. At

12.30 they joined the Cossacks, who were also descending. These had eaten most of the provisions, and had left only black bread and frozen soup, but even these were acceptable after a fast of 30 hrs. Sardar Bulagh was reached at 2 P.M. Dr. Stober had not arrived. At Erivan they obtained an interpreter and returned to search. An hour above Sardar Bulagh the body was found. His watch and purse were missing. He had been murdered, and the body thrown into a cleft in the rocks. A Plastun (foot Cossack), who was afterwards on his trial at Erivan for various crimes, confessed that he had committed the murder.

M. H. Correvon (Genève) writes of the Turtmann Valley. This is small, but can show all the phenomena of the Alps. Hotel accommodation is not deficient, but nevertheless it is much neglected by the tourist. Perhaps this neglect is one of its charms. The Hôtel du Glacier at Meiden is a curiosity. The landlord is a many-sided man, given even to invention. His house is a veritable museum, and is ornamented by himself with his latest invention of 'pyrogravure.' Flowers, trees, birds, and animals are thus depicted on the doors and other flat surfaces. He has even invented a flying machine and taken out a patent. This activity probably renders the long winters more endurable to him than to the other members of the family, since it is the only one that remains in the valley all the year. Besides describing the ascents and passes, M. Correvon relates many interesting customs of the inhabitants. Perhaps the most curious is that of distributing one day's produce of the Alps amongst the poor. This is in gratitude for the deliverance of the Alpine pastures from a plague of serpents. Persons come from Gampel and even from Leuk on August 13, and on the following day go first to the most distant alp (Hungerli) and to the others (seventeen in number) in succession. It is worth their while, for not unfrequently each person receives at each alp half a kilogramme of cheese.

Messrs. Forel, Lugeon, and Maret make their twentieth report of the glaciers. They complain that the sheets of the map (50155) being issued at different periods do not show the condition of the glaciers at the same date. They admit, however, that to effect this would be very difficult. Prof. Forel states that in part of the Valais (included in 19 sheets of the map) the area of the glaciers in the period 1871-1881 was less than that in 1839-1860 by 54 sq. kil. (about 21 sq. m.), and of course the difference between the maximum of 1820 and the minimum of 1900 would be much greater. He suggests methods of correcting the discrepancies, but the question is very difficult. In 1899 seventy-three glaciers were observed. The retreat is still general over the greater part. Most of those which were advancing have ceased to do so.

Herr C. Egger (Davos) describes the houses in the Engadine. The character of these has remained the same in spite of the many violent changes which have passed over that region. The houses are built almost exclusively of stone, whereas in the other Alpine valleys wood is used. This arises probably from their relation to

Roman rather than German habits. The question is asked, 'Then where has all the wood gone to?' Much, no doubt, would be wanted for limekilns, and also for smelting purposes, since in earlier times mining was not uncommon. The article is illustrated by many photographs of the old houses, one of which dates from 1542.

Dr. W. Schibler (Davos) has an interesting article on Davos. It is chiefly economical. He describes the houses, farms, &c. There is a strange contrast on a market day in the winter between the peasants who bring their goods to market and the fashionable company at the winter Kurort from all parts of the world. Herr F. W. Sprecher (Piz Sol) writes on Avalanches with special reference to the Taminathal (Ragatz). Many illustrations are given of the special avalanche courses. It has been estimated that in one year in five of the principal mountain cantons, 1,325 hectares (3,305 acres) of wood were destroyed. The same writer gives some account of the ascent of the Bifertenstock (11,240 ft.), the second summit of the Tödi group, a much neglected mountain which has only been ascended three times in the last thirty-six years. There are photographs of the two remarkable caldrons which must be traversed in the ascent from the Muttensee Hut.

The Editor sums up the various Alpine accidents in the past year. The loss of life was forty-nine, of which thirty-one were of parties either without guides or walking alone.

All the reviews except three are by the Editor, and two of these three (to judge by the initials) are by the previous Editor, who has done much work with Dr. Dübi.

A new hut has been built on the Hufi Alp in the Maderanerthal to accommodate forty persons.

The Central Committee reports (1899) that tourists are becoming more and more exacting. Some years ago the Cabane d'Orny was thought a charming abode; now it is regarded as little better than a stable. Several tourists have complained that there were in the huts neither pegs to hang their clothes on nor slippers to replace their boots. There seems to be a desire that the huts should be made pleasant places of resort, like little hotels. (Such they are, indeed, in various parts of the Eastern Alps.) The Committee recommend that refuges should be placed as high up as possible, and it should be understood that they were not intended for a lengthened stay. During their term of office ten new huts have been erected.

A new guides' tariff has been issued for no less than 2,510 ascents.

Three hundred and seventy guides are now insured for 1,255,000 fr. (50,200*l.*).

In spite of the construction of the new hotel on the Place de la Concorde, the Club intend to renew and refit the old Concordia Hut. (This was done in 1899.) The Lower Matterhorn Hut is to be repaired by the Club and enlarged, as its present accommodation is quite insufficient.

The number of members at the end of 1899 was 5,802, and the balance to credit of the Club was 33,234 fr. (1,329l. 8s.).

The case attached to the volume contains panoramas from the Calanda and the Fahnenstöck (near Elm), and a plan of the Hufi Alp Hut.
J. S.

A. B. C. für Schweizer Bergführer. Von G. Strasser. 8vo. pp. 10. (Grindelwald: Peter. 1900.) 20 cts.

An A. B. C. in verse, as thus, under F:—

‘Firn! die Felder blinken weit; Hehrer Friede rings gedeiht.
Führer, fühlst du irgendwo Dich wie hier so frei und froh?’

South-Western France. South-Eastern France. By Augustus J. C. Hare. 2 vols. 8vo. (London: George Allen. 1890.)

Mr. Hare's guide-books are not for the climber, but as they embrace the Jura Mountains, Savoy, Dauphiné, and the Pyrenees, and as they are pleasantly and well written, they are of value for the more intelligent tourist through those mountainous regions. The plan adopted is to describe in regular order, historically and otherwise, the places along the lines of railway, or within easy access of them. The books are delightfully illustrated by woodcuts from sketches and photographs; and the printing is of course excellent. The price of each volume is 10s. 6d.

Ein Winter in der Gletscherwelt. Skizzen vom Bau d. Jungfrauabahn. Von F. Wrubel. 8vo., pp. 92. (Zürich: Zürcher. 1899.) fr.1,50.

An account of the housing and provisioning, during the winters of 1897–99, of the eighty workmen employed in cutting the Jungfrau railway. They were housed on the Eiger Glacier, at a height of 2,360 m., and were therefore frequently cut off from communication with the lower world. Water was provided by electrical melting of the snow. This winter the work is slowly though steadily being carried on.

Das Oberengadin in der Vergangenheit und die Gegenwart. Von Ernst Lechner. 8vo., pp. vii, 188; ill. (Leipzig: Engelmann. 1900.) M. 3.

This work contains an account of the history of the Upper Engadine, a chapter on the ‘romansch’ language and its literature, and a guide to the district, including the ascents which may be made. As in previous editions (‘Piz Languard u. d. Berninagruppe,’ 1858 and 1865), the account of the first ascent of the highest point of the Bernina, by J. Coaz in 1856, is here reprinted from the ‘Jahresber. d. Naturf. Ges. Graubündens.’ The illustrations are fair, and include reproductions of the three copperplates of the first and second editions, which are of interest.

Dizionario alpino italiano. Vette e valichi italiani per cura dell' ing. E. Bignami-Sormani. Valli Lombarde per cura dell' ing. C. Scolari. 8vo., pp. xxi, 309. (Milano: Hoepli. 1892.)

This is one of the excellent ‘Manuali Hoepli,’ and is issued under the auspices of the Milan section of the C.A.I. It is a gazetteer of the peaks, passes, and valleys of Northern Italy;

towns, villages, &c., are not included. The following extract shows the method adopted :—

'Disgrazia monte (Alpi Retiche) m. 3676s.m. Da Cattaeggio (Val Masino), m. 795s.m. per la valle di Sasso Bissolo alle alpi di Preda Rossa m. 1059s.m. ore 4, sentiero. Da qui alla Capanna Cecilia del C.A.I. m. 2558s.m. ore 2. Da questa all' altra capanna del C.A.I. m. 3400 ed alla vetta ore 4.30. Sulle roccie e sul ghiacciaio. Da Chiesa . . . (ecc.). Osterie e guide a Cattaeggio, e San Martino. Albergo e guide a Chiesa. Ricoveri alle capanne del C.A.I. Cecilia, all' altra seguente ed alla terza di Corna Rossa.'

The size of the volume is for the pocket, 6 in. by 4 in., and $\frac{1}{2}$ in. thick, and the price is 3.50 lire.

Le Nevi. Da I. M. Angeloni. 8vo, pp. 83. (Torino : Roux e C. 1900. L. 1.)

A short volume of poems of sentiment by a mountaineer, who, like many others, finds among the Alps his solace for the worries of life. As the writer expresses it—

Quivi il passato, in silenzio,
Dorma il suo sonno di pace.

Montblanc. Roman. Von Rudolph Stratz. 8vo, pp. 304.

Der weisse Tod. Roman aus der Gletscherwelt. Von R. Stratz. 8vo, pp. 250. (Stuttgart: J. G. Cotta. 1899.)

Each year the subject of mountaineering becomes more popular. The sixpenny magazine and the sentimental novel nowadays make diligent use of it for sensational description. In 'The Woman of Fortune' Mr. Crockett hauled his hero up the Jungfrau by a new route, known only to Mr. Crockett. In 'Montblanc' Herr Stratz lures his hero to suicide by persuading him of the charms of a solitary night ascent of the mountain, despite the doctor's warning that climbing would be fatal. The hero is found dead at the top by the woman whose conduct towards him had reconciled him to probable death. There are evidently readers for such stories, who enjoy sharing the breathlessness of the climber, for 'Der weisse Tod' has reached its fifth edition. The collector of Alpine books ought to obtain Herr Stratz's two novels, not necessarily to read them, but because they are interesting specimens of a curious order of mountaineering literature. The price of each is 3 M.

Les variations périodiques des glaciers. 5me rapport, 1899, rédigé par E. Richter. 8vo, pp. 20. (Genève: Georg. 1900.)

This is the fifth report of 'La Commission internationale pour l'étude des Glaciers.' It contains short summaries of observations made, during the year 1899, in Switzerland, where out of seventy glaciers observed the Glacier de Boveyre, in the Rhône basin, was the only one which showed distinct increase, while most of the others clearly showed decrease; the Eastern Alps, where the glaciers were found to be on the whole decreasing; Dauphiné, where also decrease was noted, as was the case too among the mountains of North America, where some forty glaciers were under observation; in Norway, Sweden, Spitsbergen, Greenland, and

Russia. The chief publications of the year on this subject were 'Untersuchungen am Hintereisferner,' issued by the German and Austrian Club as the second of the 'Wissenschaftliche Ergänzungshefte zur Zeitschrift,' and 'Observations dans les Alpes Dauphinoises organisées par la Soc. d. Touristes du Dauphiné sous la direction du Prof. W. Kilian;' and particulars of both these important works are to be found in this report.

Les variations d. glaciers dans les régions arctiques et boréales. Par C. Rabot. 8vo, pp. 86. (Genève; Georg. 1897.)

Like the previous pamphlet this also is published by the International Commission. It describes Greenland and Iceland. In the latter the glaciers have steadily progressed since the Norman colonisation—especially about the beginning of the eighteenth century—till within recent years, when a slight retrogression is to be noted, not at all comparable, however, in amount to that in the Alps between 1850 and 1880.

The Geographical Journal. January, 1901.

This number contains a paper, with illustrations, by Mr. J. E. S. Moore, descriptive of the country to the north of Lake Tanganyika, in central Africa, including the range of Ruwenzori, the summit of which is stated by Mr. Scott Elliot and Dr. Gregory to be about 16,500 ft. The first attempted ascent of this range was made by Mr. Stairs, a member of Mr. Stanley's party, who reached a height of about 10,000 ft. Mr. Moore, in 1899, made an attempt to reach the summit of Ngomwimbi, one of the highest peaks of the range. According to Sir Harry Johnston's calculation, made on visiting the region last year (a report of which visit is also contained in the above Journal), Mr. Moore would appear to have ascended to over 13,000 ft., which is just below the line of permanent snow; while Sir Harry Johnston himself ascended the range to 14,800 ft., the highest point yet reached.

PROCEEDINGS OF THE ALPINE CLUB.

THE ANNUAL GENERAL MEETING of the Club was held in the Hall of the Club on Monday, December 17, at 8.30 P.M., the Right Hon. James Bryce, *President*, in the chair.

Messrs. O. J. Bainbridge, A. L. Clover, Gilbert Davidson, E. Freeman, T. H. Grose, C. E. Groves, Sir Charles B. Looock, Bart., Messrs. W. A. Mounsey, F. C. Squance, F. B. Stead, were balloted for and elected members of the Club.

On the motion of Mr. MORSE, seconded by Mr. HULTON, the Right Hon. James Bryce was re-elected President for the next year.

On the motion of Mr. HORACE WALKER, seconded by Mr. H. PASTEUR, the Vice-Presidents and other members of Committee, being eligible, were re-elected.

On the motion of Mr. WOOLLEY, seconded by Mr. LUTTMAN-

JOHNSON, Messrs. F. W. Newmarch and Sydney Spencer were unanimously elected members of Committee, in the places of Messrs. G. A. Solly and H. E. M. Stutfield, who retired by rotation.

On the motion of Mr. D. W. FRESHFIELD, seconded by Mr. WILLINK, Mr. A. L. Mumm was unanimously elected Hon. Secretary in the place of Dr. W. A. Wills, who did not offer himself for re-election.

On the motion of Mr. C. E. MATHEWS, seconded by Mr. F. O. SCHUSTER, a very hearty vote of thanks was accorded to Dr. Wills for his services as Hon. Secretary.

The PRESIDENT, in referring shortly to the events of the year, said that there had been fewer accidents than for some years past, and only three of those occurring among the high summits had been serious, those on the Weisshorn, the Ecrins, and the Matterhorn. Only one had proved fatal to an Englishman, but he was, unfortunately, also a member of the Club. Mr. Cockin was known to many personally, and known as one of the most zealous mountaineers. It was partly his natural confidence in his own great powers of endurance which brought about the unhappy catastrophe in which he perished. Two other deaths among old members had occurred in the year—the one of a man famous throughout the whole English-speaking world, Mr. Ruskin, who was not only a great imaginative genius and master of style, but also a man who had imbibed in a most extraordinary degree a passion for mountain scenery. No one had shown a more careful and close study of mountain form and a greater appreciation of its grandeur and beauty. The other loss had been that of Dr. Marcet, a very distinguished man of science and very warmly interested in all the objects of the Club.

The HON. SECRETARY then read the following statement :

‘In accordance with the circular sent out last week the Committee wish to lay before the general meeting the question of the publication of further volumes of Ball’s “Alpine Guide.”

‘They do this with the view of obtaining the opinion of the majority of the members on the question, and also of ascertaining whether the members of the Club are prepared, in the event of their deciding that they wish to continue the publication, to afford such literary assistance to the Committee as will justify them in making a further effort towards the publication of Vol. II.

‘It will be remembered that at the close of last year Mr. Coolidge resigned the office of Editor, which he had held during the publication of Vol. I. and the General Introduction.

‘The general meeting had in December, 1898, sanctioned the continuance of the work, on the understanding that this course would involve the employment of the general funds of the Club. As the amount standing to the credit of the Ball Fund was then 30*l.* 14*s.* 8*d.*, it was stated that 700*l.* would cover the whole cost of the publication of Vol. II.

‘Under these circumstances the Committee have during the past year endeavoured to find some member who would undertake the

difficult task of acting as general Editor, but so far they have been unable to find anyone who felt himself to be competent and willing to be nominated to this post, and the position of affairs at this moment is that, speaking generally, the Club has undertaken, in return for the money subscribed, to give to subscribers at least two volumes of the work and the General Introduction, but is so far unable to fulfil its pledge for want of an Editor. It appears, therefore, to the Committee that if the Club wish a further effort to be made, members must express their views decidedly, and must at the same time give practical proof of their interest in the matter by putting forward the names of those among them who may be willing and able to undertake the revision of the entire sections of the second volume in such a way that it will be possible for a supervising Editor or Editors to combine these corrected sections into a complete work. The districts to be treated in these sections have been sufficiently indicated in the circular referred to above.

'Appeals have already been made to the Club to suggest members among whom might be found one who was willing to act as Editor, but, except from members who are on the Committee, no suggestions have been received. Such suggestions as have been made have, unfortunately, led to no practical result. It is further felt that, if the work is to be continued, members who are willing to assist in the manner above described must undertake to do so definitely and specifically within the first three months of 1901.

'The sum now in hand on account of the Ball Fund may be put at about 136*l.* 5*s.* 10*d.*, including an estimate of sales to date (Messrs. Longmans' account not being rendered till next spring). The continuance of the publication, should the literary side of the question be satisfactorily settled, would involve the Club in a further expenditure of at least 400*l.* to 500*l.*'

The PRESIDENT said that the Committee were anxious to have the opinion of the Club on a matter of so much importance.

Mr. C. PILKINGTON said that many members felt it strange that the Club should have so much difficulty in carrying out the work; still, it ought to be done. A small amount of money was in hand, and some of the map work had been done for the second volume. He thought it would be a mistake if the work were not carried to as good a conclusion as the first volume, which was in every way most excellent.

Mr. HORACE WALKER asked whether there was much work still to be done to complete the notes supplied by the last Editor.

Dr. WILLS replied that there was still much to be done.

Mr. WITHERS asked whether the work or only the names of helpers were wanted in the first three months of next year.

Dr. WILLS explained that it was names that were wanted, coupled with a definite undertaking that those members volunteering were prepared to give active literary assistance.

Mr. SHEA suggested that it would be well definitely to abandon now the idea of the third volume, as the district it would cover was

so very thoroughly treated by the German and Austrian Club. The efforts of the Alpine Club should be concentrated on the second volume.

Mr. L. PILKINGTON agreed about the third volume, and thought that the last four sections of the second volume might also be given up as not belonging to the Central Alps—a point to which Mr. Coolidge had himself drawn attention.

Mr. C. T. DENT spoke as one who was perhaps responsible for the republication of this work having been undertaken by the Club, as he was President at the time of Mr. Ball's death. He understood that the Committee had come to the Club to ascertain whether the Club really wished to go on with the work or not. He moved that the Club authorise the Committee to continue their efforts to find an Editor for the second volume during the first three months of 1901, and that if such an Editor and assistants be not found by that time, the work be then given up.

Mr. D. FRESHFIELD was prepared to second this resolution with certain restrictions. If the younger members of the Club wished the work to be continued, then they must put their shoulders to the wheel and work as their predecessors had done. On the other hand, if they thought that 'Baedeker' and the 'Climbers' Guides' were sufficient, it would be folly to spend the Club funds on a new 'Alpine Guide.' In that case, as we had received subscriptions from outsiders, the Club would have to return part of those subscriptions.

Dr. WILLS said that in the case of giving up the work and returning half the amount of these outside subscriptions (on the basis that the first volume and General Introduction represented half the work that had been promised to subscribers), the Club would have to pay about 78*l.*; and if the work were gone on with, a sum of about 500*l.* would have to be provided from the Club funds.

Mr. PUCKLE said that many members were afraid that the second volume might cost much more than was estimated, as had happened in the case of the first volume.

Dr. WILLS explained that the cost of the printing could be fairly accurately foretold, that there was little new map work to be done, as only two of the district maps were new, all the others being reproduced from the Alpine Club map. As this map belonged jointly to Messrs. Longmans and Messrs. Stanford, the latter would necessarily be employed in this part of the work.

Mr. MORSE thought that some of the districts mentioned in the circular could not be considered to be Alpine, and might, therefore, be omitted.

In reply to a question, Dr. WILLS replied that the sales of the 'Guide' as yet had produced about 90*l.*

The PRESIDENT said that the question of the third volume was not at present being considered. With regard to the 'Climbers' Guides,' there were no volumes for the Bernese Oberland or the Bernina, both of which districts would come into the second volume of Ball's 'Alpine Guide.' If the Club wished that the work should be continued, the Hon. Secretary would be very grateful to have,

within the next three months, names of any members who would be willing to assist.

Mr. DENT's motion was then carried unanimously.

A vote of thanks was proposed and carried to Mr. HASKETT SMITH for his management of the picture exhibition.

Mr. F. O. SCHUSTER, on behalf of Sir Martin Conway, who was absent in America, read a paper on 'The Future of the Alpine Club.'

Mr. D. FRESHFIELD then read a 'Note' on the same subject, suggested by Sir M. Conway's paper (see pp. 300-5).

Mr. C. E. MATHEWS said that he considered the suggestion of lowering the qualification was a monstrous one. He did not think that as it stood it was too high. He was well acquainted with all the Alpine clubs in Europe, and none of them had a mountaineering qualification; the Alpine Club was the only one which had this restriction, and he thought that it would be a sure sign of decadence if any change were made.

Mr. HORACE WALKER was much in sympathy with Mr. Freshfield's remarks, and did not think that the qualification ought to be lowered unless owing to an absolute necessity for getting more funds.

Mr. C. PILKINGTON thought that in some slight way the qualification might be reduced. When a man had been many years to the Alps the Committee did not expect that he should necessarily have done so much high climbing as a man who had been for a few seasons only. Any other reduction might form a club within a club, and therefore split up the Alpine Club.

Mr. WITHERS thought that if climbers were unable to take up Ball's 'Alpine Guide,' perhaps the lovers of mountains might be able to do it, which would be a reason for lowering the qualification.

Mr. WILLINK added his testimony to that of Mr. Pilkington as to the spirit which had of late years animated the Committee in deciding upon the qualifications of candidates, and in encouraging the knowledge and the love of the Alps rather than mere gymnastic feats upon them. Besides being lovers of mountains, the members were also proud to be members of the Alpine Club; and if anything were done to make the qualification a mere matter of subscription, it would strike at the root of the Club's very reason for existence. The Alpine Club differed from all other similar clubs, in that every one of its members (except those elected on special qualifications) was known to be a man who was practically acquainted with rock and glacier work on the mountains.

Mr. HEARD thought that it would be very useful to have some one from whom the members could get information as to special regions and special conditions, and with whom members could correspond and keep in touch.

Sir ALFRED WILLS, speaking as an original member of the Club, felt that there was much in Sir Martin Conway's paper with which he agreed. If it was practicable, however, to have a really

good man as paid secretary and editor of the 'Journal,' the increased expenditure would, he considered, be more than 200*l.*; but it would be an excellent thing, and would greatly improve the character of the publications of the Club. He thought that the remarks of Mr. Freshfield were admirable. It was unquestionable that somehow a spirit of rashness had crept into mountaineering. He had all his life preached and practised the gospel of prudence, and could point to the fact that he had taken many inexperienced people into high places and never had had an accident. A right spirit should be infused into the exploits entered into by the younger men. If only they felt the responsibility of climbing, accidents would be rare. It was impossible to read the records of the last ten years without seeing that nine-tenths of the accidents were due to want of precaution. Really, the only danger which could not be guarded against was that of bad weather. He did not think that any reduction of the qualification was advisable. Abroad, when one found the absolutely different position occupied by a member of the Alpine Club as compared with that occupied by the members of any of the other Alpine Clubs, one felt that it would be a great misfortune to lower the qualification.

Dr. KENNEDY hoped that it was recognised by the Club that if they adopted the suggestion and turned the 'Journal' into a record of geographical mountaineering, the cost would be nearer 700*l.* than 200*l.* He thought that it would be a great mistake to lower the qualification, as there had been few cases where a good man had been kept out who would have benefited the Club by being in it, and he hoped that it would be long before the Alpine Club ceased to be a *Club*, and became a mere Society.

Dr. WILLS was glad that the subject had been discussed, for it would make it widely known that the Committee were ready to consider qualifications, even though they did not contain a long list of big peaks. It should be remembered that no harm was ever done by a man's submitting his qualification to the Committee. Many men who have done a good deal of varied climbing, but few big peaks, thought that there was no use in putting themselves up as candidates, and therefore did not submit their names to the Committee. A man who had done many seasons' climbing among the lesser peaks was more likely to continue to take an interest in mountains for many years after he had joined the Club than the man who had done the minimum of Matterhorns and Monte Rosas, compressed into four or even three seasons' mountaineering, and thus would prove the more valuable member from the point of view of the vitality of the Club.

Mr. A. J. BUTLER agreed with Dr. Wills, and thought the Committee's power of discretion was already sufficient.

Mr. F. O. SCHUSTER thought that the discussion had rather wandered from the main point, and that the opinion of the Club on the point taken up was a foregone conclusion. It was clear the Club would not entertain a material lowering of the qualification. The main proposal was to raise the character and scope of the

'Alpine Journal.' With the present means at command it could not be expected that anyone with other duties in life could carry on the 'Journal' so satisfactorily as it might be done. The suggestion of the paper was to have an Editor who would bring before the notice of the Club all matters of mountaineering interest. Mr. Freshfield's estimate of 200*l.* extra expenditure was based on what was done at the Royal Geographical Society. The question was one which concerned the aims of the Club in the future, and it seemed that the Club must certainly go beyond the Alps for its climbing. The suggestion in the paper was to have an enlarged 'Journal,' and to include in it everything of interest to members who might wish to go beyond the Alps. If the aims of the Club were enlarged, the membership would be increased also. The test of qualification, he thought, came to this, that a man should know his way about the mountains and be able to judge of his own powers and those of his guides; this required a training of four or five years, and especially on snow and ice.

The PRESIDENT thought that there were three questions—the qualification, the attention to be given to the 'Journal,' and the question of having a permanent paid official. As regarded the first question, there was no desire to abolish the qualification, but only to point out that there was a supposition that the qualification was higher than the Committee really make it. The elasticity allowed ought to be more generally known. He should have thought that the probable increase of expenditure would be more than allowed for by Mr. Freshfield, and less than that by Dr. Kennedy, to make the 'Journal' throughout the world the recognised organ of mountain exploration. There would certainly be an advantage to the Club in having a permanent paid secretary, who would be a kind of referee on matters of interest to members.

The proceedings closed with a vote of thanks to Sir Martin Conway for his paper and to Mr. Schuster for having read it.

An Exhibition of Alpine Paintings was held in the Hall of the Club from December 1 to 22. Refreshments were provided on the afternoons of December 1 and 18. About 1,100 people attended the Exhibition.

The Winter Dinner was held in the Whiteball Rooms, Hôtel Métropole, on Tuesday evening, December 18, when 302 members and guests were present, the latter including Lord Justice Collins, his Honour Judge Wightman Wood, his Honour Judge Bacon, Major-General Wavell, Sir John Edge, Sir H. Trueman Wood, Sir Arthur Clay, Mr. Onslow Ford, R.A., Mr. Wells, R.A., Mr. F. Carruthers Gould, Rev. Canon Pelham Burn, Rev. Prebendary Eardley Wilmot, Sir Lauder Brunton, Dr. Whipham, Mr. J. H. Morgan, Dr. Donkin, Dr. J. Mitchell Bruce, Mr. A. A. Bowlby, Mr. Barry Pain, Mr. Grueber, Dr. E. Schuster, Prof. Miers, F.B.S., Mr. Ambrose Lee, Mr. J. E. S. Moore.

THE
ALPINE JOURNAL.

MAY 1901.

(No. 152.)

THE ALPINE CLUB'S ADDRESS TO THE KING, AND HIS
MAJESTY'S GRACIOUS REPLY.

Alpine Club, 23 Savile Row, London, W.

To the King's Most Excellent Majesty.

MAY it please Your Majesty,
We, the members of the Alpine Club, beg to be permitted to express to Your Majesty the profound grief which we, in common with Your Majesty's subjects all over the world, feel at the death of Her late Majesty Queen Victoria, and to offer to Your Majesty our respectful condolences in so irreparable a bereavement.

In the long roll of the Sovereigns of England there has been none who commanded in equal measure the confidence and love of Her subjects, for they venerated Her not only as a model of the virtues which adorn private life, but also as having shown a splendid example of the nobility of purpose and conscientious devotion to duty which add lustre to the most exalted positions.

We beg to be further permitted to assure your Majesty of our loyal attachment to Your Person. We are warmly sensible of the value to those who are engaged in the work of observation and exploration of the sympathetic interest which Your Majesty has always shown in that advancement of Science and of Orographical discovery which have so marked the late reign. And we desire to express our fervent hope that Your Majesty, whose deep concern for all that touches the welfare and the happiness of the Nation has long been known and appreciated, may see the greatness of England maintained during many years to come, and may find in the trust and the love of a free people the firmest

support of the most ancient and stately of European thrones.

Signed by order and on behalf of the Members of the Alpine Club,

JAMES BRYCE, President.
H. G. WILLINK, Vice-President.
F. O. SCHUSTER, Vice-President.
A. L. MUMM, Hon. Secretary.

Home Office, Whitehall, 29th March, 1901.

Sir,—I am commanded by the King to convey to you hereby His Majesty's thanks for the Loyal and Dutiful Resolution of the Members of the Alpine Club expressing sympathy on the occasion of the lamented death of Her late Majesty Queen Victoria, and congratulation on His Majesty's Accession to the Throne.

I am, Sir, your obedient servant,

CHAS. T. RITCHIE.

A. L. Mumm, Esq., Alpine Club,
23 Savile Row, W.

THE GRAND CAÑON OF THE COLORADO RIVER.

BY TEMPEST ANDERSON.

(Read before the Alpine Club, February 12, 1901.)

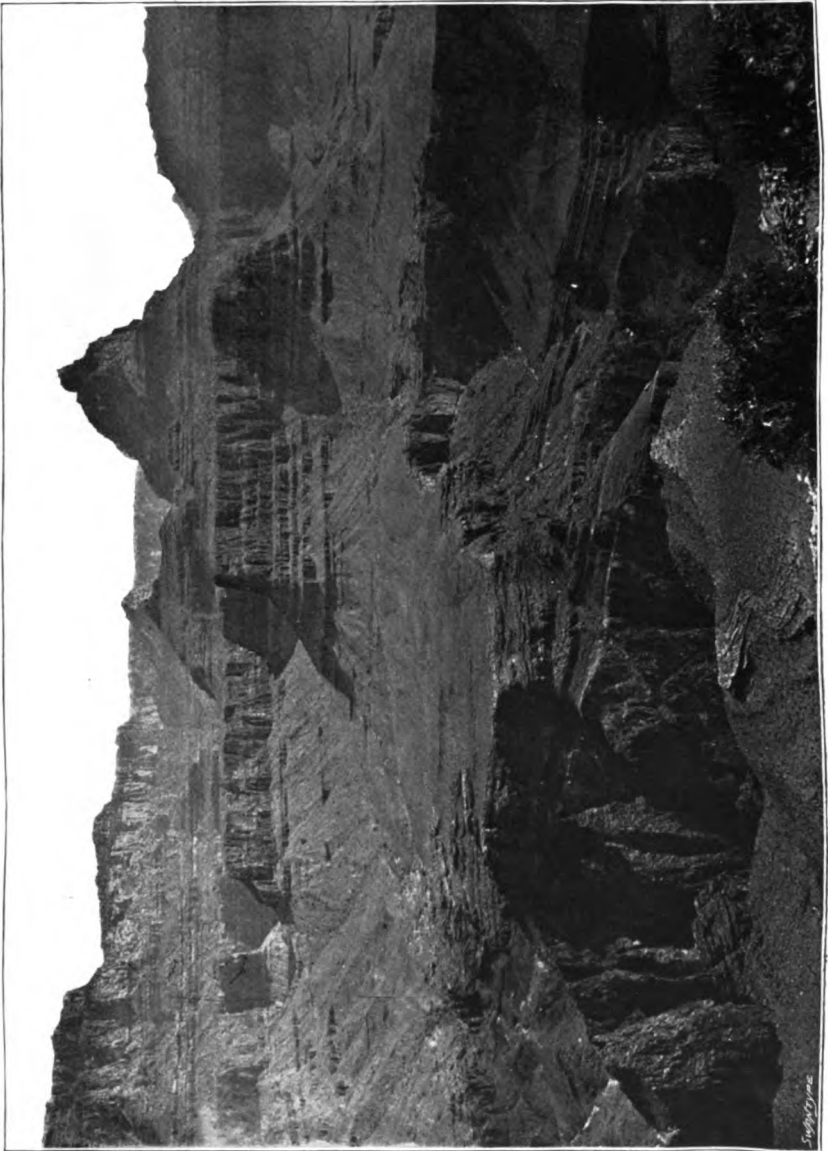
I HAD long dreamed of a holiday in the Far West, but had always been deterred by the distance and by the length of time involved. However in the spring of 1900 I resolved to make the attempt, so I wrote to my friend Professor Davis, of Harvard, for information. I got the inspiring reply, 'If at all possible come at once and join a small party of geologists who start in a fortnight to explore the Grand Cañon region.' Here was the chance of a lifetime, so I made most rapid preparations, packed my photographic apparatus, and caught the 'Lucania' for New York, where I arrived with two or three days in hand. If I had been a day sooner I should have had time to go to the South and photograph the total eclipse; but it could not be done, so I filled up the time by visiting Washington. I lunched at the mess of the Geological Survey, and heard from several who had just returned the account of their yesterday's eclipse experiences, which were extremely interesting and exciting. The party included such men as Gilbert, the explorer of many parts of

the Far West, and Hague, who surveyed the Yellowstone. All seemed to vie with one another in giving me information which proved most useful in the later part of the journey, though of course while I was in the Cañon district with such men as Davis, Dodge of Columbia, and Gregory of Yale I had no need of extraneous assistance. We took the train *via* Chicago to Flagstaff, on the Santa Fé Railway, a distance of over 2,600 miles, gradually picking up our party of six all told—viz. Barrett at Chicago, and Weatherill, our outfitter, at Flagstaff. The latter is in charge of the Hyde exploration among the Zuni Pueblos, and his knowledge of the country and experience in travelling proved invaluable. At Flagstaff we left the railway and civilisation, and spent twenty-one nights in the open without tents, though in that excessively dry climate this involved no hardship. We eventually came out at Milford, the end of a short branch line of railway south of Salt Lake City. Though the distance as the crow flies did not probably exceed 180 miles we zigzagged about in the desert so much that it was calculated we covered between 600 and 700 miles by various combinations of buggy, saddle and pack horses, and 'pie waggon.' Undoubtedly if the traveller is a good rider a saddle horse is the best mode of conveyance, and occasionally it is necessary to use pack horses, but in most places it is possible, though sometimes difficult, to get a waggon which will serve as a base of supplies from one camping place to another. One of the great troubles is the scarcity of water, and détours have frequently to be made from what would otherwise be the most desirable route in order to obtain it. We often travelled from 30 to 40 miles from one spring to the next.

The district of the Colorado plateaux is continuous on the north with the high plateaux of Utah, and the two together present a succession of strata from the Archæan, in the bottom of the cañon, to the late Tertiary. The depth of strata measured in the escarpments is about 10,000 ft., but as the dip is slightly to the north the actual elevation is only about 3,000 ft. to 4,000 ft. greater to the north. Flagstaff is about 7,000 ft. above sea-level. A series of great faults, or monoclines almost equivalent to faults, run roughly north and south, throwing the Carboniferous strata of the Kaibab plateau, the backbone of the region, several thousand feet higher than they are either to the east or west, where they are deeply covered by newer formations. The Colorado River runs across the district with many windings and zigzags, but in a general direction from north-east to south-west. It has cut for itself

a gorge or cañon in places over a mile in vertical depth, which presents scenery absolutely without a parallel in the world. The deeper parts of the cañon show almost vertical walls of 1,000 ft. to 2,000 ft., and the width is in some places not much greater, while the parts nearer the surface of the plateaux, which have been longer exposed to denudation, attain a width of 5 or 6 miles, and are weathered out into a series of 'buttes' and pinnacles of the most fantastic shapes, comparable to temples, pagodas, and pyramids of gigantic size. The strata of which they are composed are brightly coloured, the predominant colours being warm reds, yellows, and chocolates, but with an admixture of blues, bright greys, and occasional greens. The strata are almost horizontal in the upper portions, and with a field glass can be traced for many miles in corresponding positions in all the various fantastic outliers, as well as in the actual walls. We descended by a rough trail nearly to the bottom of the cañon, and should have gone further had it not been for the intense heat. As it was we were rewarded by a view of the great unconformity in the opposite wall. Near the bottom the cañon is cut into a large mass of Archæan crystalline rock, the surface of which had obviously been a good deal weathered in remote ages. A series of strata, probably silurian, had very early been deposited unconformably over this nearly horizontally. Later on these had been considerably tilted, and their surface in turn weathered down to an almost horizontal plain, on the top of which the carboniferous strata had been laid down and still remain practically horizontal, and some dykes and intrusive sheets of columnar basalt, of which more hereafter, had then been injected. Later again, probably during the slow upheaval of the whole mass, the present cañon had been excavated by the river, and now we, standing on a suitable point, can see in the opposite wall of the cañon as plainly as if we could touch it the Archæan rocks, the wedge of silurian, the edge of an intrusive sheet, and the horizontal strata above. They are absolutely inaccessible, but truly this is a land of geology by telescope.

We had had a two days' drive from Flagstaff to the cañon, and, after spending two days examining its south bank, we started to make a détour to the east, in order to get round to explore the country to the north; and to do this we had to return a day's journey south to Cedar Springs (as there was no other water for many miles), then north-east to a ford over the Little Colorado River, which further north runs in an impassable cañon, and then north along the base of the



F. Anderson, photo.

THE GREAT UNCONFORMITY. GRAND CAÑON.

Swan Electric Engraving Co.

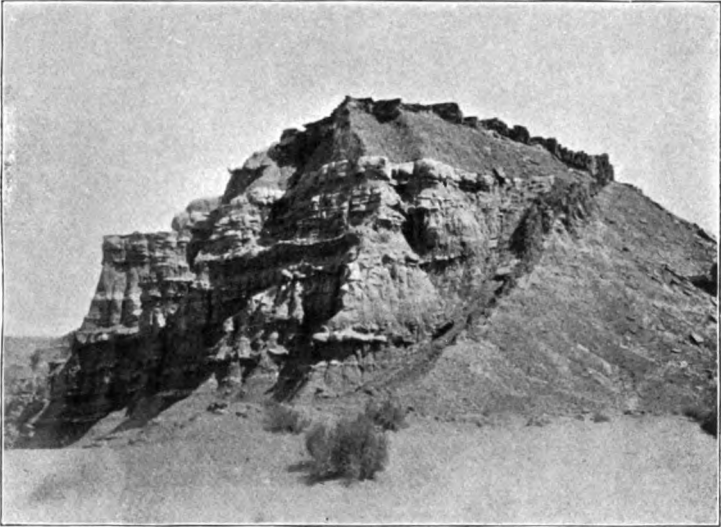
famous Echo Cliffs to Tuba City, and thence to Lee's Ferry, the only possible place for crossing the Great Colorado River. The traveller's routes and camping places in the Arizona Desert are determined almost entirely by the position of the springs, which are few in number, often scanty in quantity, and frequently alkaline and unwholesome. At Tuba City there is a copious spring, and consequently each house has an irrigated garden, which produces vegetables and fruits in abundance. The soil would be everywhere most fertile if only there were sufficient water available.

Next to the Grand Cañon the most striking feature of the district is the cliffs; every plateau ends towards the south in a range of cliffs, not indeed accurately south, but with numerous promontories and recesses, often many miles in extent, and each cliff is the outcrop of one or more geological formations. The range which comes next on the top of the Carboniferous plateau in which the cañon is excavated is the Vermilion Cliffs, which are of the Triassic age and extend from Lee's Ferry first south and then west, forming the edge of the Pariah Plateau and further on the Kanab Plateau. They are in places a thousand feet or more in height, and weathered into shapes almost as fantastic as the cañon walls. For many miles about Jacob's Pools, and again near Kanab, they had at the base a layer of blue clay, which contrasted finely with the red rocks above. Further north again, as we approached the Valley of the Virgen, there were dazzlingly white cliffs of Jurassic age. Each of these formations seems to have its characteristic mode of weathering, which sufficiently distinguish them even at a distance of many miles, though of course there is a family likeness. The cause of their fantastic forms must be sought in the peculiar circumstances under which denudation has acted. The region is one of the driest in the world—so dry that there is no vegetation in most places to protect the underlying rocks. Then the sun beats with intense power, and obviously is likely to render the baked surface of different hardness from the deeper portions, and the rapid alternate heating and cooling sets up differential expansion between the various layers, which is often enough to shiver the hardest crystal, while the few rain storms are apt to be tropical in their violence. Add to this that there appears here to have been no ice age to smooth down weathered crags, and I believe we have the explanation of the extraordinary scenery.

No description of the plateaux would be complete without allusion to the volcanoes, and volcanic rocks are almost every-

where in evidence. The first we saw was Mount San Francisco, near Flagstaff. It is a magnificent mountain of nearly 13,000 ft., standing prominently out alone from a plateau not above 7,000 ft. high, and though surrounded at its base by numerous parasitic cones it is so immeasurably the larger that they do not sensibly interfere with the general effect. It is pointed, and had a good deal of snow on its northern face. It appears to be an old volcano in a stage of denudation comparable to Mont Dore, in Central France, and, like it, associated with a great number of small 'puys,' reminding me much of those in Auvergne, though, unlike them, they appeared to almost surround the mountain. I had often wondered whether the chain of Puys in Auvergne received their supply of ejecta from a fissure or fissures which communicated deep down in the earth's crust with that which ages before had supplied Mont Dore, or whether the source was altogether separate, and their proximity the result of accident, and it was very interesting to see here a very similar case in which the newer puys surrounded the older pile, and were obviously part of the same system. I was very anxious to try an ascent, and to explore the district, and feel sure that in some of the gullies there must be springs, or at any rate water from the melting snow, where a camp could be pitched as a base for excursions. Unfortunately my friends had barely time to see the cañon, and could not include a detailed examination of the mountain in their programme.

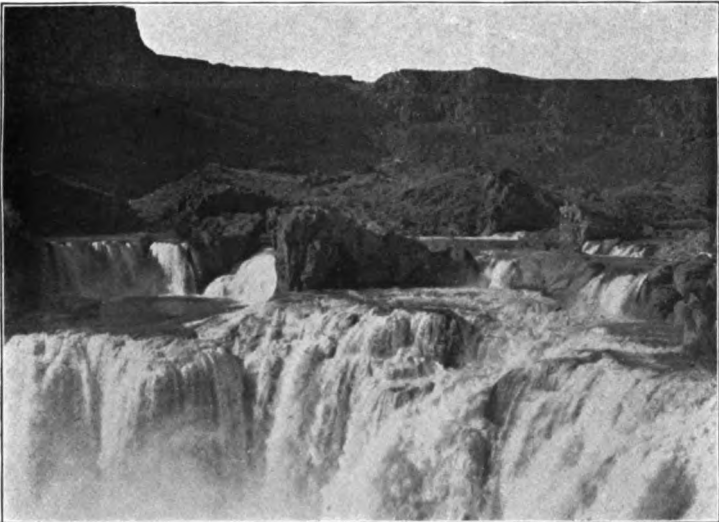
Then on the north of the Grand Cañon and a little more to the west are Mount Trumble and Mounts Logan and Emma, which are all volcanic. We ascended Trumble, and found it much denuded, like Francisco, and, like it, surrounded with an array of recent-looking cinder cones, from which flow several basaltic lava streams, some old and now capping ridges and hills, others quite recent-looking. One of the cones, Vulcan's Throne, described by Dutton, is close to the brink of the cañon, so near that it seems odd that the lava did not find its way out into the bottom of the cañon, especially as intrusive sheets of what must have been at the time liquid basalt have been able to insinuate themselves among the strata composing its wall. It would appear that these sheets and dykes are of very different ages. Some of those in the walls of the cañon are obviously older than the date of the cutting of the cañon and the formation of the present surface features, and the same may be said of such dykes as that shown in the annexed figure, while some of the lava flows are so recent that they actually cascade down the



T. Anderson, photo,

Swan Electric Engraving Co.

A BUTTE WITH VOLCANIC DYKE.



T. Anderson, photo.

Swan Electric Engraving Co.

SHOSONE FALLS. SNAKE RIVER.

walls of the Toroweap valley and into the deeper parts of the cañon itself.

Further north again along the Hurricane Ledge, and especially near where it crosses the valley of the Virgen, are many cinder cones and flows of basaltic lava, some old, some modern. It was heart-rending to be obliged to leave them unexamined in order to keep up with the party, but there was no help for it; their time was exhausted. I must not be thought ungrateful. Without my friends' assistance I should never have made this most interesting excursion, and I must not for a moment be considered as in the slightest degree blaming them for their haste, which was inevitable. But to the lover of volcanoes it was like being called away from a feast before the grouse was reached.

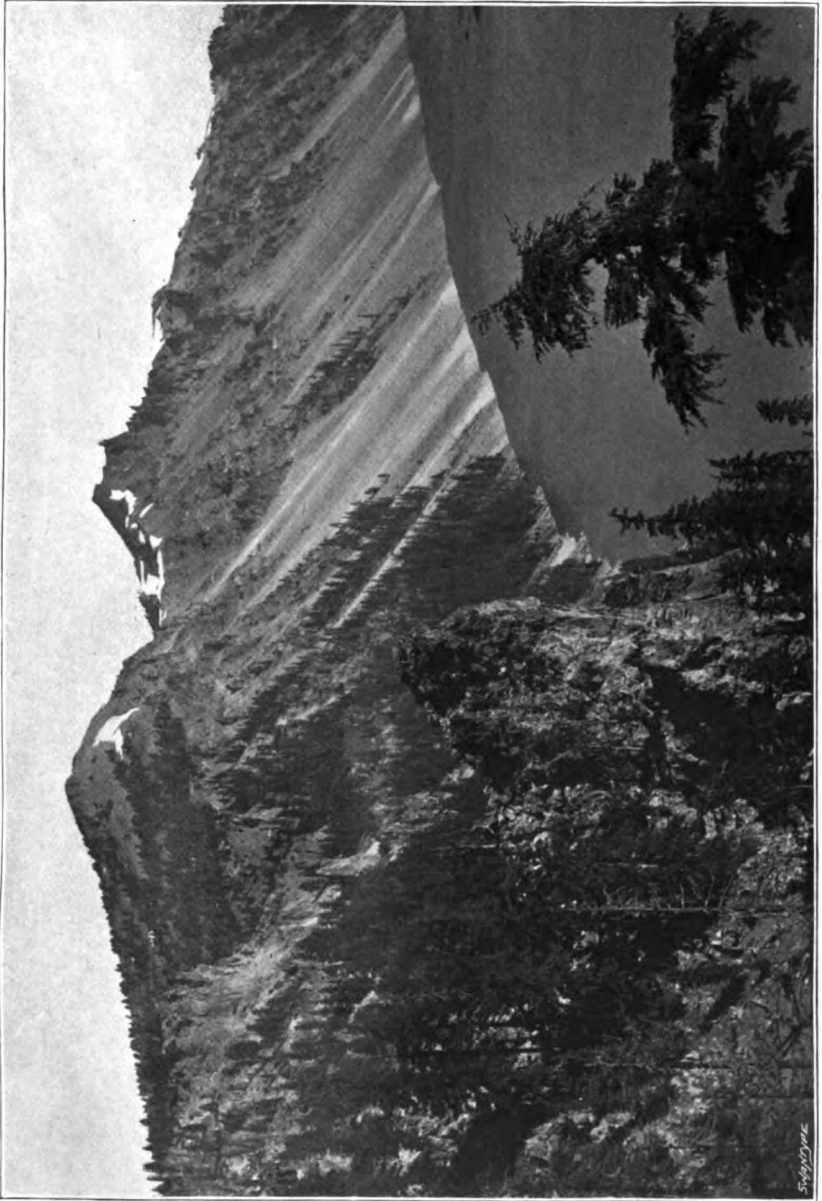
The climate, as already mentioned, is very hot and dry. During the day the solar radiation is intense, owing to our being without the protection of a layer of 7,000 ft. or more of the densest portion of the air, and the temperature of the air is often 100° or more; but directly the sun sinks radiation is for the same reason very active, and the temperature sinks rapidly to 40° or 50°, or even lower, but the air is so dry that no inconvenience is felt. We slept the whole time without tents, and enjoyed to the full each night the marvellous brilliancy of the stars or moon as the case might be. The clearness extends far down towards the horizon. We saw Mercury on three nights with the naked eye, a sight which might not be witnessed in a lifetime in England.

After leaving the Grand Cañon district I visited the Salt Lake of Utah, and saw the wonderful terraces formed by the old shore lines of the ancient Lake Bonneville, so graphically described by Gilbert.

After this I went to the Snake River basalts. These lava beds cover the country for hundreds, perhaps thousands, of square miles to a depth of several hundred feet, and appear to have been the result of eruptions through fissures in the earth's crust, and not to have been ejected from one single habitual vent. I visited the Shosone Falls, the so called Niagara of the West, where the Snake River has cut for itself a new cañon through several hundred feet of the basalt, and well into the Archæan rock on which it rests. The falls themselves pour into a chasm 180 ft. deep excavated in the older rock. There is a most interesting deserted cañon with a series of dry waterfalls in it parallel to what is now the main stream. The Snake River basalts reminded me strongly of similar beds in Iceland, where the fissures are still visible and can

be traced for miles under the bases of rows of small craters. Here the presence of fissures is more a matter of inference. It would have been very interesting to have searched for some, but my outward railway ticket had only one more day to run. (Moral : Confound railway tickets !)

The Crater Lake in Oregon was perhaps after the Grand Cañon the most striking single thing I saw. The Cascade range of mountains is a continuation north of the Sierra Nevada, and runs parallel to the Pacific Coast from Mexico to far up into British Columbia. Beginning with Mount Shasta, in California, it is studded at intervals of from 20 to 100 miles with magnificent pointed mountains, all old volcanoes more or less denuded, and varying from 9,000 ft. to 15,000 ft. in height. They are all snow-capped, and, as they tower several thousand feet above anything in their respective neighbourhoods, are very striking features in the landscape. Among them may be named Mounts Pitt, Hood, Rainier, and St. Helens, and the Crater Lake occupies a place in the series north of Mount Pitt. The Crater itself is about 8 miles by 6 miles, and is surrounded by almost precipitous cliffs rising about 2,000 ft. above the level of the water, which is itself about 2,000 ft. deep in parts. The highest point of the rim is about 8,000 ft. There seems no reason to doubt that the Crater Lake is the basal wreck of a great volcanic pile, comparable to Shasta, which has been in comparatively recent geological times destroyed by an explosion or explosions comparable to that which destroyed Krakatoa in our own day. The country round is thickly covered with debris, apparently the result of the explosion, though not recent enough to be uncovered by vegetation. Since my return I find it has been supposed that the lake has been formed by a volcanic subsidence, and not by an explosion or explosions. Not having seen the Hawaiian craters—some of which are supposed to have been so formed—I am not able to compare them, but I have seen many volcanic subsidences in Iceland with which this crater had nothing in common, while I was strongly reminded of the Crater Lakes of the Eifel, and of the craters of Monte Somma, and the Cañadas at Teneriffe, all of which are recognised as explosive. Moreover there are structures at the crater lake which appear inconsistent with any other theory than that of explosion. At the place in question the lip of the crater almost to its edge is composed of volcanic beds dipping outwards in the usual way, and evidently undisturbed, while the lip itself is formed of a mass of volcanic agglomerate of quite different texture, and composed of frag-



Swan Electric Engraving Co.

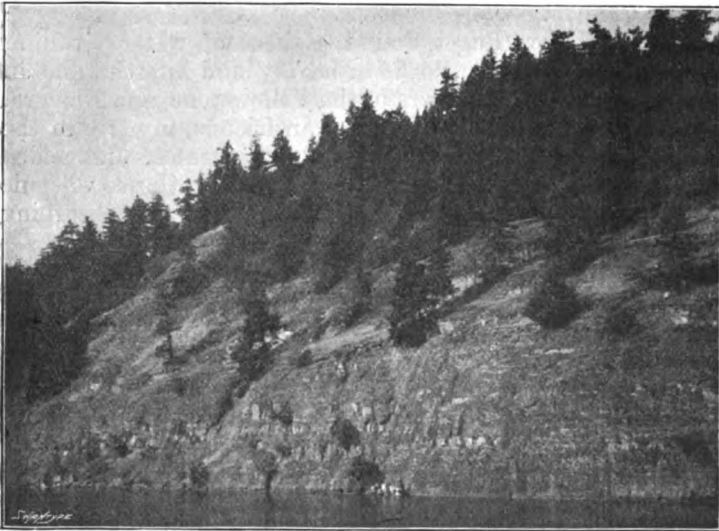
CRATER LAKE, OREGON.

T. Anderson, photo.

5/11/1916

ments the angles of which appear a good deal rounded. This mass lines the inside of the crater for some depth, and ends in a vertical precipice facing towards the lake. Its presence appears conclusive proof that the crater was formed by more than one explosion, and that some of the materials blown out in the earlier stages fell back and became consolidated, and were not completely removed in the later stages of the eruption. The little island in the lake with its small crater is also a typical cone such as generally forms in a big crater during the cessation of an explosive eruption.

Crater Lake is rather an inaccessible place. A visit to it



ON PUGET SOUND.

involves a journey of about 100 miles each way to and from Ashland, the most convenient railway station. The road, or trail, for in places it scarcely deserves the title of road, runs almost all the way through primeval forest. It passes on the way Pelican Bay, on Klamath Lake, where is a lodge, a charming resort for fishermen, hunters, and naturalists. At Pelican Bay Mount Pitt looks temptingly near, and I determined to make an attempt on it. I got a man who said he knew the way to the foot, and we started with a saddle horse each, and a pack-horse with blankets and two days' provisions. We followed a trail where there had once been a waggon track through the woods, and, though it was

much obstructed by fallen timber, reached without much difficulty a lake where we bivouacked. We could get glimpses of the mountain, and it looked not more than 2 or 3 miles distant. There was one arête which seemed easy, if only we could get to its foot. We started through trackless forest much obstructed by fallen trees, and in some places by dense undergrowth. At last we reached a place where we got a more open view, and thought we must have struck our ridge. We toiled up among big rocks, and, when it was too late, found we had struck the wrong ridge, and reluctantly turned back. It was too late to try the other. If I had had a companion accustomed to climbing we could have done better.

Later on I saw Puget Sound, a sheet of water rivalling some of the Norwegian fjords in beauty and interest, and in returning visited the geysers of the Yellowstone, and Niagara. Thus, thanks mainly to my American friends, my trip to the Far West was very successful and pleasurable, and added largely to my practical acquaintance with those volcanic phenomena which have always had for me an absorbing interest.

THE INFLUENCE OF HIGH ALTITUDES IN MOUNTAINEERING.

By MALCOLM L. HEPBURN, M.D., F.R.C.S.

(Read before the Alpine Club, April 2, 1901.)

THERE is nothing more humiliating to the feelings than to try to assume the position of being an authority on any particular subject, be it scientific or otherwise. I can hardly describe the sensations nor show in how many various ways they can be brought about, but I would invite those who are not familiar with them to try the experiment of working in any way they please at some special subject, preferably one about which they fondly hope little is known and few people have written.

Under these circumstances you can readily understand that when our Secretary asked me to read a paper on the influence of high altitudes in mountaineering, I consented to do so with some degree of reluctance. Two other reasons made me hesitate. One is, that, having no personal experience or physiological discoveries to place before you this evening, there are many here far better fitted than I am to unravel this complex problem; and I feel, in this age of original

scientific research, I owe you an apology for this omission, though it is not from want of desire but from force of circumstances. You are able to appreciate, better than any other audience, the difficulties of personal investigation in this particular branch of science, for in the present state of our knowledge it would necessitate, on the one hand, climbing above 17,000 ft. with several cumbersome physiological instruments and also a supply of oxygen, or, on the other hand, performing laboratory experiments on human beings. I have ascertained that there is no apparatus for such experiments in England; and Professor von Liebig, of Munich, who has one, and to whom I wrote, is unable for certain reasons to undertake the experiment I proposed, and I have not had the opportunity of an interview. My other reason is that I feared a physiological dissertation and discussion might prove rather wearisome to the majority of members, but my fears were partially allayed on reading some observations by an eminent physiologist from which I gathered that some of the effects of diminished atmospheric pressure might serve to account for several hitherto unexplained phenomena observed by many climbers at inconsiderable altitudes.

For example, on his authority, I understand that the flea is an animal peculiarly susceptible to the influence of diminution of pressure, exhibiting increased vitality beyond reasonable expectation. I regret to say that I have no evidence with which to refute this important observation.

Again, the abuse of things in general which is an occasional weakness of some climbers when encountering difficulties at high altitudes is due, on the authority of the same physiologist, to the special conditions under which these sufferers (?) find themselves. This is consoling, but I look in vain through his work for some similar explanation for the use of abusive expressions at sea-level; though I do find that they are more commonly met with in cyclists.

Yet once more; those of us who are disposed to judge, with undue harshness, our noisy but more fortunate companions, when we are trying to snatch a few hours' sleep before the morning start, must remember that snoring is always louder than usual under reduction of pressure, owing to the sound being conveyed more readily through the less dense atmosphere.

However, I do not propose to study the influence of diminished atmospheric pressure on all animals from the flea upwards, highly interesting as this would prove, as we have already enough before us.

As far as one may judge from the literature of the last few months, it seems a little difficult, at the beginning of a century, to avoid entering into an elaborate historical sketch of every subject under the sun; but I will spare you this also, and merely remark that so-called mountain-sickness was first described three hundred years ago, and that a large amount of work has been done bearing directly and indirectly on our subject, more especially by foreign physiologists, which only needs putting together to be of great value to us in mountain exploration. This I am attempting to do in the present paper.

I now propose to describe briefly the symptoms complained of by mountaineers; and, for purposes of convenience, I will divide them into three classes:

1. Those of explorers at the end of the eighteenth and beginning of the nineteenth century.
2. Those in the middle of last century.
3. Those within the last twenty or thirty years.

Of the earlier accounts we may regard Bougner, De Saussure, and Humboldt as the types.

De Saussure describes symptoms occurring at from 10,000 ft. to 14,000 ft., and these are his words: 'Faintness, accompanied generally by vomiting, indescribable uneasiness, anxiety, thirst, no appetite, tendency to sleep.'

And he adds: 'This kind of fatigue is absolutely irresistible. . . . When I attempted to force myself, my legs gave out; I felt the approach of a fainting fit associated with violent palpitations; . . . my eyes grew dim. . . . The second peculiarity of this kind of fatigue is that one feels a complete restoration of the strength from the mere cessation of motion.'

Humboldt is responsible for the following symptoms at 17,300 ft.: 'One after another we all began to feel indisposed, and experienced a feeling of nausea, accompanied by giddiness, which was far more distressing than the difficulty in breathing. . . . Blood exuded from the lips and gums, and the eyes became bloodshot. . . .' On another peak, though bleeding did not occur, he says: 'I was seized with such violent pain in the stomach and overpowering giddiness that I sank upon the ground in a state of insensibility, in which condition I was found by my companions. . . .'

There were several papers written in the middle of last century by many observers, both English and foreign, and out of these I have selected Dr. Speer's in the 'Association Medical Journal' for 1853, as this gives the greatest variety

of symptoms, most of which are common to the other accounts. They are:

Somnolence, dizziness, vertigo, confusion of ideas, fulness in the head, headache, ringing in the ears, throbbing of carotids, palpitation, constriction of the chest, dyspnoea, syncopal tendency, occasional oozing of blood from mucous surfaces, increased rapidity of the pulse, anorexia, nausea and vomiting, thirst, loss of appetite, febrile tongue, muscular pains, sense of extreme debility in lower limbs, general prostration of strength.

These symptoms are said to occur at 9,000 ft., and at 10,000 ft. to be more marked.

I ought to mention in this class the opinion of the Italian physiologist, Angelo Mosso, for, although recorded at a later date, his views coincide more with the writers of this period; and without quoting largely from his exhaustive work I can best indicate his opinion by the following passages, which are constantly occurring.

He says (p. 144): 'Many people show symptoms of mountain-sickness at these inconsiderable heights (Little St. Bernard, 2,513 m.). Some stop from time to time during the last part of the climb and arrive panting. They are unable to eat . . . and have a feverish feeling.'

'Dr. Courten, of Zermatt, told me of a lady who had had an attack of mountain-sickness on the Riffelalp, and of another who had suffered on the Gornérgrat. He examined these ladies, but found no defect of the heart in either of them.'

He takes De Saussure's account as one of his types, and also quotes Tscudi's experiences in Peru, which are 'indisposition, such as I never felt before . . . increased discomfort at every step . . . had to stop to draw breath without being able to find sufficient air to relieve me . . . an oppression . . . palpitation . . . breathing short and broken . . . lips chapped, little blood-vessels of the eyelid burst . . . senses became inert,' &c. He also mentions Professor Kronecker's experiences on the Zermatt Breithorn: 'All felt well when they remained motionless and at their ease . . . pulse more rapid . . . the most important and most appreciable symptom was the pernicious influence of the slightest movement . . . palpitation of heart . . . and oppression in breathing.' On Monte Rosa Mosso says there were several of the party who suffered from nausea and vomiting, violent headache, physical prostration, with loss of appetite and sleep. He also says, 'Cold predisposes to mountain-sickness and aggravates its

phenomena.' 'When the snow is deep and soft, so that one sinks into it up to the knees, travellers suffer more from mountain-sickness.' Again (on p. 292): 'This convinced me that mountain-sickness may appear in all at not very great altitudes.'

The descriptions given by those in the third class are well known to most of us, and therefore I need not here do more than extract from their writings their leading symptoms.

Mr. Whymper in the Andes suffered from acute symptoms at an altitude of 16,664 ft. without any previous exertion. They appeared quite suddenly, and were as follows: Accelerated respiration with spasmodic gulps, accelerated action of the heart, general malaise, and incapacity for exertion, intense headache, rise of temperature. These more acute symptoms pass off after a certain time, leaving general feeling of lassitude and disinclination for exertion, accelerated respiration and accelerated action of the heart, with tired feeling in the lower limbs on the slightest movement.

Sir W. Martin Conway, in the Himalayas, mentions his experiences in many passages in his book, from which we gather the following prominent symptoms: Feeling of discomfort, headache in all members of the party, accelerated heart's action, accelerated respiration, disinclination for exertion. These appeared at about 17,000 ft. At 23,000 ft., he says: 'We ceased to pant for breath the moment the need for exertion was withdrawn, and a delicious lassitude and sense of forgetfulness of past labour supervened on our overwrought frames. . . . All felt weak and ill, like men just lifted from beds of sickness.'

Mr. Douglas Freshfield mentions his symptoms in the Caucasus and Himalayas, which can be best described by quoting from a private note in answer to my inquiries as to his experiences. He says: 'Lassitude is the only distinct effect in my own case, *not* increased with height over 15,000 ft., varying on different days and sometimes absent altogether.'

Mr. E. A. FitzGerald describes symptoms which generally took the form of disinclination for exertion. At 16,000 ft., after a hard day's work up a slope of loose stones, he says he suffered acutely from nausea, inability to catch his breath, dry throat, unpleasant feelings of choking . . . difficulty in breathing at night. After remaining several days over a fortnight at altitudes ranging from 18,700 ft. to 23,000 ft. he suffered from the following symptoms during a climb: Incapacity for exertion, accelerated respiration, accelerated

action of the heart, nausea and giddiness. But on this occasion it was very cold, and the party had not partaken of proper nourishment.

The Duke of Abruzzi in his ascent of Mt. St. Elias says that six out of ten in the party were more or less acutely affected. Legs felt as heavy as lead, there was difficulty in breathing and a sense of suffocation, palpitation, throbbing of the temples, and headaches. He draws attention to the fact that it was a slow and monotonous climb, and says: 'It seems to me that the attacks of mountain-sickness experienced by our party were chiefly caused by our long and difficult marches over snow and ice, and weeks of over-fatigue and discomfort we had gone through.'

Mr. and Mrs. Bullock Workman, in the Himalayas, say: 'We both felt quite fit at the summit (19,000 ft.), experiencing no ill-effects from the rarefied air beyond mild headaches, and at once losing breath on sudden exertion.' Zurbriggen was perfectly well.

On reviewing these various descriptions we notice at once that although within the last twenty years or more the number of climbers at increasingly high altitudes is considerably augmented, yet the number of symptoms described by them as inevitable has materially diminished; and, moreover, it is an important point to learn from the more recent accounts that although it often happened that all members of the party were affected at about the same altitude, this was not necessarily the case, and frequently large numbers of individuals were entirely unaffected by the diminished atmospheric pressure. You will also observe the absence of such symptoms as hæmorrhage from nose and mouth, and vomiting.

We can, without much difficulty, reduce the symptoms which we may call unavoidable to the following:

1. General lassitude and tired feeling in the extremities, especially the legs, with disinclination for the slightest exertion when at rest.

These symptoms are aggravated when in motion with the addition of—

2. Increased respiration, accelerated heart's action, feeling of oppression in the chest, sometimes headache, nausea and vomiting.

The crux of the whole matter lies in the question: Are all symptoms as above described by all classes of observers to be regarded as mountain-sickness, irrespective of conditions, altitude, or individuality? If this interpretation of the

complaint be allowed to remain, it complicates interminably the study of the subject, and places an unjustifiable responsibility on the mountains, which I venture to suggest is, to say the least, unscientific. For instance, to say that an individual who partakes of some indigestible food and suffers accordingly is afflicted with indigestion at sea-level, and mountain-sickness if it occurs during climbing, appears to me not only unreasonable but absurd.

Now the first point in treatment is to make an accurate diagnosis, if possible, without which all treatment is empirical and liable to failure; and, in my opinion, it is the non-recognition of this fact which has led to so many conflicting statements met with in connection with Alpine physiology, notably in such a work as Mosso's 'Life of Man in the High Alps;' but in whatever light we regard Professor Mosso's book, and however much we may differ from him in his conclusions, one is bound to acknowledge that it is an admirable record of most painstaking observations under exceptionally difficult circumstances.

The method of approaching any case is much the same in all branches of medicine and surgery.

1. The history and symptoms from the patient's point of view.

2. Our own observations, and the physical signs.

3. Diagnosis from other diseases presenting similar symptoms (or, at any rate, the same leading symptoms).

4. Pathology, or physiological cause.

5. Finally, prognosis and treatment.

The most difficult cases to diagnose are those which possess no specific symptom or symptoms marking them out at once as distinct from any other, or where they present one or more symptoms common to several diseases.

All medical men are aware that there are many cases which always present the same leading symptoms, such as, for example, meningitis, tumour of the brain, and renal disease; or, again, the different varieties of coma; and I could mention several others; and it is only by studying carefully other collateral evidence as to history, conditions, further symptoms or the absence of them, that one is enabled to arrive at a satisfactory diagnosis, and often this is an impossibility even though furnished with these additional data.

The symptoms associated together in a case of so-called mountain-sickness strike us at once as being of a most ordinary type, and ones which are continually arising in connection with many diseases at sea-level; and the more

diseases there are presenting the leading symptoms of this complaint, the greater will be our difficulty in diagnosis, and the more trouble we must take in weighing minutely all collateral evidence.

Physical and mental fatigue, anæmia, neurasthenia, febriculæ, dilated heart, commencing degeneration of circulatory apparatus, are some of the cases which produce exactly the same symptoms as those we have before us for discussion; and it is, therefore, at once evident that we must, if possible, eliminate any of these conditions which from the nature of things is likely to appear and create complications.

Even the very earliest writers, over a hundred years ago, recognised the possibility of fatigue complicating the symptoms of mountain-sickness, and many observers of later years have drawn attention to the same difficulty.

The greatest amount of work a man *can* do is to raise his body-weight through a definite number of feet; and this fact, together with the various groups of muscles brought into play on mountaineering expeditions, lends itself peculiarly to the development of this particular form of complaint.

It is a matter of common medical knowledge that the symptoms complained of in anæmia, senile change, or any pathological defect, such as dilated heart, are at sea-level aggravated by excessive exertion, and often by the least movement, producing, as we say, a condition of fatigue; and on this account rest is the recognised form of treatment adopted in such cases.

We need, therefore, only concern ourselves with fatigue in the healthy subject.

Dr. Pavy, in an interesting paper in the 'Lancet,' 1876, on 'The Effect of Prolonged Muscular Exercise on the System,' describes experiments performed on Perkins and Weston, and Perkins having walked $65\frac{1}{2}$ miles in 29 hrs., at the rate of $4\frac{1}{2}$ miles an hour, with two short halts of half an hour each, was obliged to give in, suffering from fatigue, which showed itself in the following way: a tired feeling in the limbs; rapid, feeble, and irregular pulse; general malaise; rise of temperature; vomiting.

I have read numerous other papers on this subject, describing symptoms and entering into their pathology; notably by Professor Clifford Allbutt, Messrs. Roy and Adami, Mosso, Tissie, Dr. Haig, Dr. Hutchison, and others; but I would draw your attention to one mentioned in Mosso's book (p. 78), where Janetti, a soldier in the Professor's party, walked 36 kilometres in 10 hrs. 22 min., taking 3 hrs. halt

in the middle, with a weight of 22 kilogrammes. Here the symptoms noted were: palpitation, loss of blood-pressure, feeling of lassitude, finally fainting.

Another author on fatigue, Salvioli, in his 'Influence de la Fatigue sur la Digestion stomacale,' speaks of the effect of fatigue on the digestive fluids; and demonstrates that their power is, under the circumstances, greatly diminished, but that they quickly recover after a short rest.

Although it is a matter of doubt, and the authors of articles on fatigue often hold exactly opposite opinions as to the cause, I notice that they all agree in their accounts of the symptoms themselves. Fatigue may be produced in two ways:

1. Directly; either by (a) excessive mental exertion, or (b) excessive bodily exertion.

2. Indirectly; by depriving the tissues of proper nutriment, and so allowing metabolism (wear and tear) to proceed without adequate compensation. This may again act in two different ways: (a) by not supplying digestible food in a suitable form; (b) by the organs, principally the stomach, not being strong enough to deal with the food supplied to it.

The symptoms of fatigue are much the same in any case, whether they are the result of direct or indirect causes, and I have observed that in nearly all accounts nausea and vomiting are included. This constitutes an important point, of which there are very few, in the diagnosis between this condition and what we may call true mountain-sickness. On comparing the cases of fatigue with those of mountain-sickness as described by many of the earlier writers, one is at once struck with the similarity; and, in fact, so much so, that one is forced to admit that there is very little collateral evidence, if any, to enable us to make a clear diagnosis between the two. It is true they occur on the mountain-side, but at a height where the oxygen of the air is amply sufficient for the needs of the tissues, both at rest and under active exertion, and where the mechanical effect of reduction of pressure can be clearly proved not to produce its influence even when rapidly applied, as shown by aeronaut and laboratory experiments; and moreover under circumstances which, in almost every instance which I have looked into, specially predispose towards the development of fatigue. And again, can we accept without question the constantly recurring statement that mountain-sickness, acknowledged by nearly every writer to be due in some way to diminished atmospheric pressure, should show itself at moderate altitudes and disappear entirely several

thousand feet higher up on the same day? On these grounds I have come to the conclusion that the symptoms complained of below a certain height are due to fatigue alone, caused in some of the ways above mentioned; and I am still audacious enough to assert that I see no reason to regard any of the symptoms described by mountaineers below a given height (that height at present undetermined, but certainly not lower than 16,500 ft.) as applying to mountain-sickness.

But assuming for the present that the symptoms appearing above this height may be the result of some condition of the atmosphere due to reduction of pressure, what modifications of the ordinary atmosphere do we find at higher altitudes likely to account for their development?

There are two results to be obtained from reduction of atmospheric pressure—one is the mechanical effect produced by diminishing the ordinary pressure on the body of 15 lbs. to the square inch, and the other is the chemical effect on the blood of the change in density of a unit volume of the atmosphere.

Both these changes may produce different effects, according as they are applied rapidly or gradually. In order to appreciate the results on the human subject of any change relative to the mechanical pressure of the atmosphere, we must consider why it is we do not feel the normal pressure of 15 lbs. to the square inch. The answer is because the pressure is equal and opposite in every direction, and owing to the ordinary permeability of the tissues this is exerted inside as well as outside the body; and time has not only acclimatised us to that pressure, but also the physiological mechanism is so arranged as to work without hindrance between these two forces which it has learnt to disregard.

It must be at once apparent that if the tissues can resist and work at a pressure exerted against them of 15 lbs. to the square inch, they could equally well perform their functions under a pressure of nothing to the square inch, given a sufficient time for acclimatisation. Whether there is a limit to the powers of resistance of the tissues as regards augmentation of pressure I have not yet satisfactorily determined, but in all probability there is such a limit. The difficulty, however, in deciding this point is that if the pressure be increased beyond a certain amount (according to experiments on animals by M. Paul Bert) the chemical effect asserts itself before the mechanical, and produces death by interference with the metabolism of the tissues and the giving off of carbonic acid.

When I speak of the chemical result of reduction of pressure I refer principally to the diminution of oxygen (per unit volume), since this is the main element in the atmosphere upon which the tissues of the human body depend for reconstruction after metabolism.

It is not out of place at this stage to bring to your notice other methods of studying the effect of reduction of pressure on the human subject. These are three in number :

1. In cases of compressed-air illness or caisson-disease.

2. Aëronaut experiments.

3. Laboratory experiments, conducted under bell-jars, from which the air is exhausted by some mechanical means ; and it is not surprising that investigators on the subject of mountain-sickness should turn their attention to these cases in the hope of finding a way out of their difficulties, since these methods are easier of access and more adapted for experiment than the mountains.

The first class comprise those cases of illness occurring in men who have been working in the caissons at a greatly increased pressure (often $3\frac{1}{2}$ to 4 atmospheres), and who are allowed too quickly to return to the normal pressure of the atmosphere, and the symptoms which result from it have been the subject of a good deal of discussion by various writers. Dr. Snell, the medical officer in connection with the Blackwall Tunnel, has given an excellent epitome of most of the writings and theories up to the time of the publication of his book four years ago. There is practically a unanimous agreement regarding the symptoms, the difference being more a matter of degree than of kind ; and they are as follows : Sudden pain occurring in some part of the body, generally one of the joints, the knee being the commonest ; giddiness, sometimes amounting to a definite form of vertigo ; often paralysis of lower limbs ; paralysis of bladder and rectum ; and occasionally coma and death.

The symptoms always occur *after* the men have gained the ordinary atmospheric pressure, usually within half an hour of their arrival at the surface, and never while they are *in* the caissons. The milder cases clear up in a few days, the majority in from three to twelve ; but some last for several weeks, the longest with recovery being five or six weeks.

If, *immediately* on the appearance of the symptoms, the patient be subjected to recompression, improvement takes place rapidly, and if decompression be repeated more slowly than before the symptoms do not as a rule recur.

Although there is not such complete accord with regard to

the cause of the complaint, yet from the *post-mortem* examinations on men and animals, and from experimental work, there is a decided leaning in the majority of accounts towards one particular theory, and that is that it is due to the liberation of gas dissolved in the blood and lymph under mechanical increase of pressure, which finds its way into the intercellular spaces; this causes minute emboli (obstructions in blood-vessels), which may constitute a serious hindrance to the circulation in various parts of the body, producing different effects according to the position and consistence of the organ in which such obstruction occurs. It only requires a further stage in this mechanical influence on the tissues to imagine the formation of hemorrhages, which is indeed said to occur, and has been found *post-mortem*.

We have several records of balloon ascents during the last hundred years, and the symptoms complained of by aëronauts are of the following type: Giddiness and fulness in the head; nausea; accelerated respiration and heart's action; dimness of vision; powerlessness to perform any voluntary movement; sometimes eyes and lips full of blood, followed by coma and death.

It is to be observed that, as a rule, no pain is complained of as in caisson-disease, but the symptoms are more marked the more rapidly the balloon ascends, and show themselves usually about 21,000 ft. to 25,000 ft. The reduction of pressure in aëronaut experiments is necessarily of an extremely rapid nature up to a certain height, and there is reason to believe that when symptoms occur they are due to the combination of the mechanical and chemical effect. Inhalation of oxygen produced a marked improvement on all occasions when it was used, enabling aeronauts to reach an altitude of 27,000 ft. and upwards in comparative comfort.

In the well-known fatal balloon accident in 1875, the two aëronauts who died were found in the car with their mouths full of blood, and with a certain amount of oxygen still remaining in the bag, at a height of only 22,750 ft., thus suggesting that the mechanical effect of reduction of pressure was the cause of death.

The symptom that stands out as specially belonging to aëronauts, and equally characteristic of laboratory experiments, is the powerlessness to perform any voluntary movement, although the conception of volition is still unimpaired; and the remarkable point about this pseudo-paralysis is that, in the case of Mr. Glaisher in 1862, this symptom improved higher up, and the desired movement was accomplished.

This unmistakably gives us the pathology. Dr. Marcet, a member of this Club, has demonstrated that the supply of an adequate amount of oxygen to the motor centres of the brain is of more importance than the supply of that gas to the muscles themselves; and the sudden deprivation of oxygen occurring under these conditions prevents the initial stimulation from the motor area.

The symptoms recorded in laboratory experiments are much the same as in the case of aeronauts, though of a milder type; and it is probable that here we have less of the mechanical effect than the chemical, though I am still inclined to think that, as such experiments have hitherto been performed, the reduction of pressure is too rapid to entirely eliminate the mechanical influence. In M. Paul Bert's and Signor Mosso's experiments the whole period was seldom longer than three or four hours, and often much less; but when symptoms do begin to show themselves, inhalation of oxygen has produced decided improvement, though not in every case. In one or two instances, however, it was a complete success, and enabled the experimenters to sustain pressures as low as we shall ever require.

In 1895 I pointed out that the conditions under which symptoms show themselves in these three classes of cases are totally different from those of mountaineers; and since that time many other writers have made the same observation, so that some—*e.g.* Loëwy and von Schrötter—have marked the distinction by speaking of 'air-rarefaction' and 'air of the heights' (mountains).

In the first place, there is no element of fatigue to eliminate; in the second place, reduction of pressure has been performed rapidly, the longest period being two or three hours, so that probably an insufficient time has been allowed for acclimatisation to the mechanical change of pressure; in the third place, the time during which subjects remain at the reduced pressure is generally very short, often only a few minutes—a time during which most people could exist without much discomfort; in the fourth place, the low temperature of the air is a factor to be considered on the mountains and in aeronaut experiments, but is absent in the laboratory; and I would draw your attention to the results of inhalation of oxygen, which were sometimes disappointing and only partially relieved the symptoms: and this is likely to be the case if the effects are partly due to the mechanical reduction of pressure and partly to diminished supply of oxygen.

Under these circumstances it is difficult to see how such

experiments will help us, except indirectly, in discovering the cause of mountain-sickness ; and it is, I think, partly because investigators attempt to account for all the symptoms resulting from any kind of reduction of pressure by adopting one common theory, that there is so much difference of opinion, and that the subject has assumed such a complicated aspect.

The question of acclimatisation to changes of pressure is an interesting one, and one that requires our careful consideration.

Mr. Whymper was the first to attach importance to this part of the subject in mountaineering, and conducted his investigations in the Andes with this special object in view. Acclimatisation may be studied in its relation to the passage from the ordinary atmosphere to a higher pressure and the reverse process, and also from the ordinary atmosphere to a lower pressure and the reverse process ; and these two conditions may be further dealt with according to their mechanical or chemical influence, or both.

We have an opportunity of studying the purely mechanical effect apart from the chemical in cases of compressed-air illness, since there is plenty of oxygen in the inspired air for the needs of the tissues in whatever position the men find themselves.

The whole study of compressed-air illness turns on the question of acclimatisation, and the point to decide is what length of time is necessary in passing from one pressure to another. In reviewing a series of cases one notices several facts which are full of interest. First, the longer the men remain in the caissons the more liable they are to suffer from the complaint, and the more serious the symptoms, when they return to the ordinary pressure, unless the 'lock-out' period be correspondingly lengthened ; secondly, the men who attend the 'lock-out' mechanism, and are therefore continually passing from one pressure to another without remaining long in any, never suffer from the disease at all ; thirdly, they never suffer while *in* the caissons, however long they stay, but only on returning to the ordinary atmospheric pressure. It has been found that eight hours is about the time that the men can work comfortably and return to the ordinary atmosphere, with a 'lock-out' period of ten to fifteen minutes, free from the fear of development of symptoms.

From these facts we may fairly deduce the following conclusions :

1. That the mechanical acclimatisation to a higher pressure of about three atmospheres is not complete in eight hours.

2. That the mechanical and physical acclimatisation from a higher to a lower pressure is probably of a comparatively

short duration. This receives support also from aëronaut and laboratory experiments (*vide* Paul Bert's work).

3. That although acclimatisation takes place more slowly from a lower to a higher pressure, there are no symptoms attending it. We have again an analogous state of affairs in aëronaut and laboratory experiments where the return from a greatly reduced pressure to that of the ordinary atmosphere is performed very rapidly without being marked by any particular symptoms.

In applying these principles to mountaineering, which essentially belongs to the gradual type of reduction of pressure, we are obviously well acclimatised to the ordinary atmosphere; we then proceed, by adopting a 'lock-out' system extending over a period of hours, and often days, to pass gradually to a lower pressure. Guided by the points and conclusions I have just now dwelt upon, one is led to believe that not only is it possible for the functions of the body to work without hindrance in the absence of atmospheric pressure (provided the necessary amount of oxygen be supplied), but that what we have called the 'lock-out' period is amply sufficient for the acclimatisation of the mechanical effect of the difference in pressure. It occurred to me that, in order to test this point satisfactorily, any experiments performed at sea-level must conform to the type of gradual reduction of pressure found in mountaineering. As far as I can make out from records of laboratory work, no one up to the present has attempted to prolong their experiments over several hours; and to this end I made inquiries regarding bell-jars, &c., but with the disappointing results mentioned at the beginning of my paper.

Largely supported by my observations on acclimatisation, I take it that, in all probability, we have only the chemical side of the question to discuss; but before entering into this part of the subject, I will briefly summarise the various theories already put forward.

One of the earliest theories was that of De Saussure, which was expressed by him in the following words: 'Relaxation of the vessels, which arises from a diminution in the compressing power of the air.' This obviously only accounts for a very small part of the symptoms, and that not a very important one.

M. Brachet, another of the earlier writers, explains some of the symptoms by saying that 'during the act of locomotion those muscles which are contracting remove the oxygen of the blood which traverses them more rapidly than those

which are at rest; hence the necessity for an accelerated respiration.' This is reasonable as far as it goes, but it only accounts for one special symptom.

Dr. Speer, whose account of symptoms we have already mentioned, based his opinion on the following hypothesis which he established as a fact: 'In an ordinary state of health there exists in the intestines a certain quantity of gas, intended to counteract the pressure of the external atmosphere upon the parietes of the abdomen.' He therefore concludes, 'These symptoms may be referred to a three-fold source—viz. a gradually increasing congestion of the deeper portions of the circulatory apparatus, increased venosity of the blood, and loss of equilibrium between the pressure of the external air and that of the gases existing within the intestines.' This mechanical theory assumes that the gases within the intestines are a constant quantity which would not otherwise be able to counteract the normal uniform pressure of the air without our feeling discomfort.

M. Paul Bert's opinion, expressed in 1878, was that diminution of oxygen per unit volume accounts for all symptoms produced in any case of reduction of pressure, based upon numerous experiments performed in the laboratory on animals and on human subjects, together with several balloon ascents. It would take far too long to enter even superficially into M. Bert's great work, but the evidence he brings forward substantiates to a great extent the truth of his theory, though he persistently refuses to acknowledge the mechanical effect of diminished pressure.

Mr. Whymper, in his 'Great Andes of the Equator,' entered minutely into his own symptoms as far as his physiological knowledge was able to guide him, and he is to be congratulated on the admirable way he handles the subject in many parts of his book, considering the disadvantages under which he worked. After describing the symptoms, he says: 'The whole of these, doubtless, were due to diminution of pressure; but the transitory ones, presumably, were produced by some cause which was itself temporary. There are strong grounds for believing that they are due to the expansion (under diminution of external pressure) of gaseous matter within the body, which seeks to be liberated, and causes an internal pressure that strongly affects the blood-vessels. While equilibrium was being restored between the internal and external pressure, "the indescribable feeling of illness" gradually disappeared and headache died away; and it may be reasonably expected that these acute troubles can

be escaped by taking pains to avoid abrupt diminution of pressure. From the permanent effects there is no escape,' &c.

His opinion evidently is that his acute symptoms were caused by the mechanical effect of diminution of pressure, and the chronic symptoms by reduction in volume of oxygen inspired.

It seems to me that the reduction of pressure in his case was too gradual to produce such a sudden evolution of gas in the body; for in caisson-disease the longest 'lock-out' period is three-quarters of an hour, and in the majority of cases ten minutes is considered sufficient to prevent the appearance of symptoms which are generally acknowledged to be due to sudden dissociation of gas from the blood.

Professor Clifford Allbutt at one time attached particular importance to dilatation of the heart as a cause of the symptoms, but in his book on *Medicine* published in the last few years he is inclined to think rather less of it, regarding it as a result of fatigue, and not a cause of mountain-sickness.

Mr. Clinton Dent considers 'the effect of diminished pressure on the portion of spinal cord concerned with the nutrition of the lower limbs is a far more important matter than the effects of pressure on internal organs.' He says in an article on 'Influence of Science on Mountaineering,' in February, 1895, 'The circulation in the portion of the spinal cord, or marrow, immediately concerned with the innervation of the lower limbs becomes greatly disturbed. The partial loss of power in the lower limbs is brought about in this wise: The blood collects and stagnates in this portion.' I gather from this that he concludes that a sort of hypostatic congestion of this part of the cord takes place, which accounts for the symptoms. This is therefore a mechanical explanation, but one somewhat difficult to verify.

Professor Roy, on Sir W. Martin Conway's symptoms, says: 'So far as the symptoms are concerned we need, therefore, be in no difficulty regarding the nature of mountain-sickness. It is asphyxia. The important feature in the asphyxia of mountain-sickness is the reduction in the amount of oxygen supplied to the tissues, but the same effect is produced if, with a limited supply of oxygen to the system, there be from any cause an increased demand for it by the tissues.'

Had the term 'anæmia' been substituted for 'asphyxia,' I think it would have been more intelligible, since the latter suggests somewhat more alarming symptoms than one ordinarily meets with.

Several observers, Viault, Schaumann and Rosanquist, Lawrinovitsch, and others, claim to have found changes in

the quantity of hæmoglobin at high altitudes, and in this way account for the appearance and subsequent disappearance of the symptoms; but there are as many equally positive on the other side. The true explanation of these apparently conflicting observations will be referred to later on.

Angelo Mosso considers the fact that there is less carbonic acid in the blood at high altitudes accounts for the appearance of the symptoms, and he maintains that the experiments he has performed have demonstrated this conclusively. As regards this theory, called by him 'Acapnia,' Dr. A. Loëwy has found that 'it is not borne out by his own experience in the laboratory or in mountain-climbing.' The actual diminution of carbonic acid in the blood at high altitudes may or may not be true, and a point upon which there is great difference of opinion, the tension of that gas in the blood being a very variable quantity under any circumstances; but, be that as it may, it requires an effort to believe that a gas which is undoubtedly of an excretory nature can be of such vital importance to human life.

Professor G. von Liebig's theory is based upon the mechanical effect of reduction of pressure on the lungs themselves, producing a more contracted state of these organs, and so stagnation of the venous circulation through them. This necessarily leads to accelerated respiration.

Dr. A. Loëwy considers that anæmia of the brain will adequately account for the symptoms.

Von Schrötter, 1899, discusses the subject from a chemical point of view, and contributes an interesting article dealing with it much in the same way as I am doing to-night; but he enters into details which time prevents my touching on.

He recognises mountain-sickness as possible in the Alps. He says, 'Height as such is no criterion, but on the whole mountain-sickness appears to set in latest (*i.e.* at greatest height) in the Himalayas, earlier in the Andes, and earliest in the Alps. Thus:

Himalayas: 4,900 to 5,200 m.

Andes: At 5,100 m.

Alps: Mountain-sickness can occur at 3,000 m., declares itself strongly at 3,500 m., and spares nobody at 4,000 m.

'It cannot be doubted that many of the cases ascribed to mountain-sickness under a level of 4,000 m. are in reality not attributable thereto. The symptoms may naturally be produced by physical over-exertion in an unwonted environment, or as a consequence of unfavourable conditions of nutriment,' &c.

Then he says: 'The fact that oxygen consumption is greater in the high levels, and that exertion is inseparably bound up with oxygen consumption, makes it apparent that fatigue will declare itself sooner at high levels than on the flat.'

It is impossible to enter into and discuss all the theories expressed, but these are sufficient for our present purpose, and you will notice there is a great variety of opinion.

I think I am right, however, in stating that all those who have written on the subject regard fatigue or any physical defect as predisposing towards mountain-sickness, and not a distinct form of complaint likely to arise as a complication.

I hope you have been able to follow me in my endeavour to focus my remarks up to what I consider the only part which diminished atmospheric pressure plays in the study of mountain-sickness—viz. the relation of the deficiency of oxygen to the blood both from the view of pulmonary absorption and acclimatisation; and I trust you will pardon me if I enter briefly into the physiology of respiration to enable you to understand the rest of the paper.

The mechanism of respiration may be described shortly as follows:

By rhythmical expansion and contraction of the chest, air charged with oxygen is taken into the lungs through the air-passages, and air charged with carbonic acid is given out. This action is automatic under control of a nerve centre in the brain, but at the same time is capable of alteration by means of volition. The automatic action is partly dependent upon the amount of oxygen in the blood flowing through this centre, and partly due to nerve action exercised through the terminal branches of the pneumogastric nerve in the air-cells, which are so arranged that when expiration has arrived at a certain point it exercises a stimulus to the ends of the nerves which is conducted to the brain, subsequently producing an inspiration. The oxygen of the air, which is the only gas contained in it that we appear to want, on arriving in the air-cells finds its way into the blood in the vessels surrounding them, and combining with the red blood corpuscles enters the circulation, and so is carried to the various tissues of the body, muscles, &c., and there stored up for future use; and no oxygen can be extracted from the tissues when they have once got hold of it. At the same time carbonic acid, which the tissues are ready to give up as a result of their metabolism, is brought away by the blood to the lungs, where this gas is given up to the air in the

alveoli (air-cells) and is expired. The oxygen is held in the blood partly by following the ordinary law of solution of gases in liquids, and partly by loose chemical combination with the hæmoglobin, while on the other hand carbonic acid is held in the blood partly by some chemical combination (at present imperfectly understood), but chiefly by solution, following the ordinary law. It is probable, therefore, that, subject to certain modifications into which it is not necessary for me to enter here, the carbonic acid in the blood would be more influenced by reduction of pressure than the oxygen, and this is generally found to be the case (see Mermod (1878) and Marcet's works).

The difficulty of determining whether the symptoms complained of by mountaineers above a certain height really constitute mountain-sickness, in addition to the complication of fatigue, is threefold. One is, that it does not yet appear to have been determined at what height the oxygen of the air becomes insufficient for human life.

It has long been an old-established physiological fact that, when blood is exposed to a gradually decreasing percentage of oxygen, the blood corpuscles at first only give off a small proportion of the oxygen they contain, but that when the percentage has reached 10 per cent. in the inspired air there is a sudden dissociation of the gas in large quantity.

Setschenow, of St. Petersburg, in 1880 demonstrated that when the atmospheric pressure is reduced to about one-third of the normal, corresponding to an altitude of 28,800 ft. to 29,500 ft., the variations in the chemical absorption of oxygen by the blood is quite insignificant even at the temperature of the body. Very trustworthy experiments were also performed by Geppert and Fränkel in 1883 at Berlin, by which they reached the conclusion that the blood of a living dog at half that of the normal pressure, corresponding to 380 mm. of mercury, showed on the average a slight diminution in the proportion of oxygen, but this was not so great as to be beyond compensation by an augmented respiratory activity. And, again, Hüfner, in 1890, proved that the chemical relation of the oxygen in the blood only began to alter at a pressure of 238 mm. equal to 9,345 m., corresponding to an altitude of 30,607 ft. It is also an acknowledged fact that the relative power of absorption of oxygen by the blood increases as the pressure is reduced; that is to say, as long as there is any oxygen at all remaining in the pulmonary alveoli, the corpuscles of the blood, by means of their selective power, will still take up oxygen and attempt, as far as

possible, to supply the needs of the tissues, the amount of that gas absorbed being dependent, not upon the chemical interchange through the lungs, but upon the demands of the various tissues themselves. Hence we may conceive of a condition of things when the blood will continue to take up oxygen until there is none left in the alveoli; and we are given to understand that the limit of the atmosphere (presumably where there is no oxygen) is 40 miles above sea level, corresponding to a height of 237,600 ft., which I dare not say is beyond the ambition of the Alpine Club, but where it would not be becoming to pursue physiological investigations as to our feelings when our time comes to arrive at that altitude.

I mention these points in order to show that nature has allowed us a very wide margin in which our respiratory mechanism can do its work satisfactorily to the tissues during rest, and this margin is again further widened by some recent physiological facts which have come to light. And this constitutes our second difficulty—viz. that it is not yet decided what the average amount of oxygen is that the tissues need, nor the minimum quantity they can exist on at rest; but we do know that by training the corpuscles can be made to carry a considerably smaller amount of oxygen without any apparent discomfort to the individual. Drs. Haldane and Smith have during the last few years made some important experiments with reference to the oxygen capacity of different corpuscles and different layers of corpuscles, and also the varying capacity of different individuals. From these physiologists we learn that there are distinct differences amounting sometimes to more than 20 per cent. in the specific oxygen capacity of the corpuscles. Many observers have also demonstrated that there is an actual increase of red blood corpuscles at high altitudes, especially in those who remain for some days or months at considerable heights. Others again claim to have proved the contrary, or affirm that the apparent increase is only relative, due to concentration of the plasma which is always present whenever the atmosphere contains less moisture than normal. It appears, however, from the most recent experimental work that there is actual increase of red blood-corpuscles and hæmoglobin, though relatively less of the latter.

And yet another difficulty is that of transporting oxygen to the requisite height, in order to have it at hand as a form of treatment when the symptoms manifest themselves. But, judging from the physiological facts into which we have

just entered, there is a likelihood of its not being necessary; and as it entails a most serious addition to our burdens we are naturally anxious to avoid this if possible.

In spite of these difficulties in connection with what we may call the oxygen theory of mountain-sickness, I am prepared to prove that lack of oxygen is quite sufficient to account for the symptoms usually experienced and described by mountaineers above a certain height; and if there is a form of complaint entirely apart from fatigue and all its indirect causes which we must call mountain-sickness I believe that M. Paul Bert's theory regarding its causation is the correct one.

The sudden evolution of oxygen which I have described as occurring at a certain point when a solution of hæmoglobin is exposed in the laboratory to gradually reduced pressure will account for the suddenness of the appearance of symptoms, as in Mr. Whymper's case, and also the observation made by several climbers that they suffer more at a certain height than above or below this level. The recovery of this symptom must be due to the acclimatisation of the tissues to a smaller amount of oxygen. Deficiency of oxygen in the blood will also account for the accelerated respiration by acting upon the respiratory centre in the medulla oblongata. An additional reason for accelerated respiration is the circulation of an extra amount of carbonic acid in the blood, together with certain unknown chemical products, as the result of muscular action.

The feeling of lassitude, especially in the lower limbs, is due to the fact that, although oxygen is not necessary for the manifestation of muscular energy in the muscles themselves, it is absolutely essential for the maintenance of their irritability, and, therefore, during the slightest exercise the muscles immediately demand more oxygen, which the blood is not able to supply.

The disinclination for exertion is due to the deficiency of oxygen carried to the motor areas in the cerebral cortex, which have been shown by the late Dr. Marcet to depend for their functions upon an adequate supply of oxygen, and where Professor A. Mosso, by a very pretty experiment, has demonstrated that the phenomenon of fatigue is first felt.

The headache can be explained by almost any theory, but in the present instance we account for it by saying that the blood, poor in oxygen, circulating through the vasomotor centre in the brain, raises the blood pressure, which, combined possibly with the effect produced by cold driving the blood more towards the internal organs, throws extra tension on the cerebral vessels.

The rise of temperature, though difficult of explanation, may also be accounted for by poorly oxygenated blood acting in some way on the heat-regulating centre in the pons, and so upsetting the balance; but it is not a constant symptom or may frequently be so slight as to escape observation.

An additional piece of evidence in favour of the oxygen theory is the fact that cases of anæmia at sea-level complain of precisely the same symptoms as climbers at high altitudes.

Since working at this subject I have observed carefully cases of anæmia, and noted their symptoms. In all we hear of the lassitude and tired feeling in the legs, with disinclination for exertion while at rest; while in motion the helpless feeling of the lower extremities, the accelerated heart's action, the accelerated respiration with sense of weight and constriction at the chest. The headache is a variable symptom, as in mountain-sickness; nausea and vomiting are comparatively rare. I cannot say I have observed any rise of temperature.

The conditions which modify the symptoms, and the height at which they manifest themselves, act only in so far as they alter the amount of oxygen taken into the blood.

1. *Temperature of the Air.*—The influence of cold upon the system constitutes a special department by itself, and one I cannot enter into here. But the effect of lowered temperature on the air will be to increase its density, other things being equal. Therefore, if for any reason the temperature of the air on one mountain is not the same as on another at the same level, the symptoms will appear at a higher or lower level respectively. On referring to Sir Martin Conway's experiences it will be noticed that at certain heights he suffered no symptoms so long as the air was cool, but when the temperature rose, although he remained at the same height, they immediately made their appearance.

2. *Condition of Air, whether at rest or in motion.*—The improved condition in their symptoms when sufferers meet a strong current of air has been frequently observed by many climbers, and the reverse effect of stagnant air is also well known, and has been often described.

3. *The Shape and Condition of the Mountain.*—This may have a certain amount of influence over the development of the symptoms, according as one side of the mountain is colder or warmer than another, thus altering the constitution of a given volume of the atmosphere at any particular height.

4. *Hygrometry.*—Undoubtedly the diminution of aqueous vapour in the atmosphere at high altitudes does affect the body in some way, but it has more to do with the relation of

cold to the development of fatigue than with the chemistry of respiration.

5. *Time of Day.*—It has been more than once observed that the symptoms are more likely to manifest themselves during the night when lying down, and are, contrary to expectation, relieved on getting up and moving about. I can only throw out the following suggestion to account for this phenomenon—namely, that owing to the lowered vitality which is always present at night, aggravated also by the cold and deficiency of oxygen on the mountains, the carbonic acid accumulates in the blood and produces dyspnoea, which is immediately thrown off easily under the influence of muscular action.

6. *Individuality.*—(a) Rate and extent of metabolism. (b) Oxygen capacity of the red blood-corpuscles in different individuals. (c) Normal rate and depth of respiration.

The extent and rate of metabolism represents the needs of the various tissues for oxygen; and we are well aware of the difference in the powers of endurance of different individuals.

A previous ascent seems to establish a certain amount of acclimatisation to any subsequent attempt on the same mountain, even though in the meantime the climber may remain for several days at quite a moderate altitude.

There is evidently a growing feeling, both on theoretical and practical grounds, that the symptoms in which we are specially interested can be entirely avoided by proper care and forethought, and there is much to be said in favour of this view of the case. However this may be, the proper course for us to adopt is to pay special attention to the preventive treatment of fatigue; but in laying down the following rules for the guidance of future explorers I purposely avoid referring to any physiological or pathological defect, since I regard it as absolutely essential that those who undertake this sort of work should be possessed of perfectly healthy thoracic and abdominal organs.

Our main efforts should be directed towards the performance of the least possible work under the circumstances, and this may be best accomplished by attending to the five following rules:

(a) *A system of muscular training*, both before and during the expedition. This ought, I think, to be in the form of walking regular distances each day, and uphill if possible.

(b) *Method of walking*, and slow going, occupying several days, if necessary, in completing the ascent, so as to allow ample time for acclimatisation.

(c) *Avoidance of any Nerve Strain.*—At first sight this may appear to you a rather unnecessary point to dwell upon, but the concentration of the mind on a definite object for a length of time is a common and fertile source of fatigue. The more difficult our ascent the more concentration of brain power will be necessary, and therefore, from the point of view of success, the easier our peak is the better.

(d) *Food.*—This I consider a most important point, and one which has not received the attention it deserves. Pure nerve power and endurance will carry us through a great deal, and this necessarily varies with each individual, but we have no right to draw on our powers of physical endurance; and, although it sounds thrilling on paper to say that we have been going so many hours without food or halts, and enduring great hardships, I am convinced this is not the way to conquer the highest mountain in the world.

Our food must be of the simplest and lightest description and at the same time nourishing, so as to obtain the maximum amount of nutriment with the minimum amount of work for the digestive organs.

The meals must be small and frequent, never allowing more than four hours to elapse without taking something.

As regards particular kinds of food, it is difficult to lay down any hard-and-fast line—a great deal depends upon the easy and convenient portability of various articles of diet; but we may learn several hints to guide us in our selection from an article on the dietetic part of training by Dr. Clifford Allbutt in the September 1896 number of 'Travel,' or from any training list in use at the universities. Our food will differ according to whether we are actively engaged in or only training for the expedition; in the former case, fats, sugar, and farinaceous food, in addition to albuminous, are of the utmost importance, though the combination of all in one meal is not desirable.

(e) The last rule, and by far the most difficult to carry out, is *the inhalation of oxygen*. This gas seems not only necessary to counteract the atmospheric deficiency, but also to compensate for the special demands made upon it by the muscles in order to avoid fatigue. That oxygen would be beneficial under the circumstances there is very little doubt; but the practical question to be decided is whether it is absolutely necessary, since we would prefer to do without it if possible, owing to the difficulty of portage. As yet I do not feel competent to give a positive answer one way or the other. If we had not to use our muscles to accomplish an ascent, I



Photo by C. E. Shea

[Swan Electric Engraving Co.]

VIEW OF CRUCIFIX IN CHURCHYARD AT HEILIGENBLUT, CARINTHIA.
Taken from window of the Rupertihaus, with Telephoto lens, moderate-power negative.



Photo by C. E. Shea

[Swan Electric Engraving Co.]

VIEW OF SAME.
From same spot, with No. 2 Frena Camera.

think we have reason to believe that oxygen would not be necessary, as the margin is evidently wide enough to allow for the demands of the tissues during rest up to 30,000 ft. or higher, and, moreover, we can become acclimatised to a smaller amount than usual; but to ascend a mountain in a balloon or by railway are not methods which commend themselves to members of this Club.

The method of carrying oxygen requires careful consideration, but I think it must be in the form of the compressed gas in metal cylinders, preferably small ones.

Provided he have plenty of time, plenty of suitable food, and fine weather, I see nothing unavoidable in the condition of the atmosphere at high altitudes to prevent a man with healthy organs from ascending the highest point on the earth's surface.

It only remains for me to acknowledge my indebtedness to Mr. Victor G. Plarr, the librarian of the Royal College of Surgeons, and Mr. W. M. Rorison, for their valuable assistance in translation work, and for their efforts in obtaining for me much of the bibliography which would otherwise have been difficult to secure; also to Mr. Clinton Dent for kindly looking through the paper and giving me the benefit of his experience to condense it into readable form.

TELEPHOTOGRAPHY.

By CHARLES E. SHEA.

INVENTED in 1891 by that able scientist Mr. J. H. Dallmeyer, the telephotographic lens has now been before the public for a full decade, and it must be a matter for surprise that an appliance so valuable to the photographer has not, in this country at least, received more generally the recognition to which its powers and great utility entitle it. The reason, perhaps, is not far to seek, for, undoubtedly, the successful employment of the lens is attended by certain difficulties, and demands a care and attention to details not of such essential importance in the case of the R.R., and other lenses with which the photographer is more usually familiar. But that these inherent difficulties cannot be overcome by any one prepared to give ordinary attention to a few plain principles is not the fact.

The telephotographic lens may be described as an optical system, adapted to the camera, comprising within small weight and dimensions the magnifying capacity of a powerful

telescope, whereby we are enabled to photograph objects at distances impossible with the lens systems previously in use. Glancing briefly at some of the more obvious uses for this lens, we consider first its employment for military purposes. Here the lens should play an important part. It can do what no mere telescope can ever do. It can, from a distance completely removed from the longest range rifle fire, discover and record an accurate picture of the works erected by the hostile force. In the space of a second of time the telephoto lens can do all this, and can furnish the general in command with an exact plan, in every detail, of the enemy's position. When it is recognised, as is the fact, that the telephotograph of a village church clock, at a distance of two miles, has shown clearly the dial with sufficient definition to permit of the time being seen, it will be understood that all ordinary military works, down to the very cannon in position, must be clearly shown. What can be done by balloon telephotography the Italian military engineers have demonstrated.

To the sculptor and to the architect the telephoto lens is of great value, for oftentimes a group of statuary, a capital, or other architectural detail is in such a position that to obtain a picture free from distortion it is necessary to take it from an approximately equal elevation; and to do this with the ordinary R.R. or R.S. lens is sometimes impossible.

For pure landscape work the telephoto lens is absolutely indispensable. An instance is furnished by Schloss Taufers, in the Ahrnthal, in Tirol. The castle, one of the finest ruins in Tirol, is situated on an eminence just above the village of Sand in Taufers. It has a noble background of valley and mountain as seen from the meadows below the village, but to secure this view, while still retaining adequate dimensions for the Schloss, is, with the ordinary lens, impossible; for if we approach the Schloss sufficiently near to obtain any size and detail the background is entirely lost, being, in technical language, 'thrown down' by the tilting of the camera (even if provided with a 'rising front'), necessitated by the elevation of the ruin above the village. If very near the Schloss becomes a mere silhouette against the sky. But the difficulty is surmounted by the telephoto lens. We have but to return to the meadows a mile further away, near to the St. Walburg Kapelle, and our telephoto lens gives to us the picture we desire. The background is brought up in all its beauty, and the castle has dignity and due importance in the picture. The depth of focus (the correction for outstanding spherical aberration having been duly made by the rotation of lens

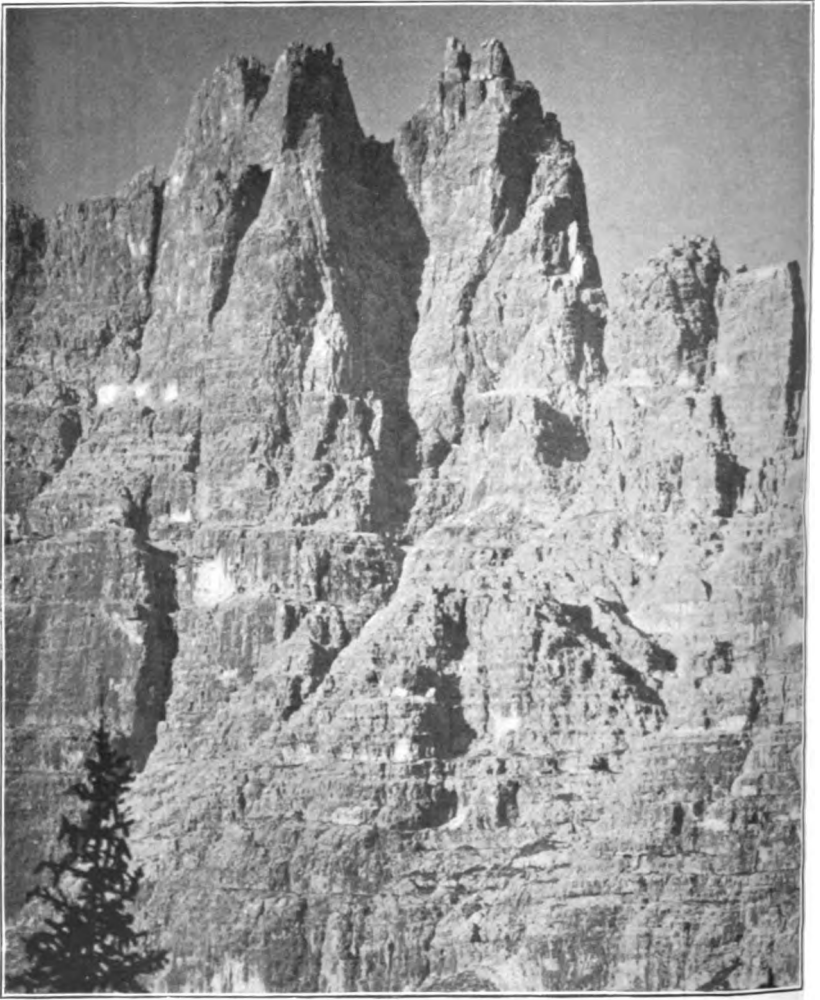


Photo by C. E. Shea]

[Stean Electric Engraving Co.

THE CRODA DA LAGO, TIROL.

Taken from the Faloria Ridge, with Telephoto lens, High-power negative. Distance 4 miles.
Amplification 9 linear.

referred to later on) and the defining power of the telephoto system are evidenced by the practically equal average sharpness of the castle and of the mountain-tops in the background, separated by a distance of over eight miles as the crow flies.

But to the mountaineer the lens has a very special value. In a paper by Sir Martin Conway, recently read before the Alpine Club, the author referred to the great change wrought by the growth of photography, and the development of its ally, the projecting lantern. The large majority of the members of our Club, it was pointed out, are generally unable to take their holiday in the remoter mountain ranges of the earth, but by the aid of the camera, observed Sir Martin Conway, 'if the Club could not go to the Himalayas or the Rockies the Himalayas and the Rockies could come to the Club.'* The telephoto lens extends this principle. Even the fortunate exploring member of our Club has limits placed by time, or other considerations, to the extent of his wanderings and explorations. What advantage, then, on the last day of the outward journey, and when the turning-point has been attained, to take, from some high peak, a view of the great unknown beyond, a peep into the unexplored, a clear and definite picture of things almost invisible with the ordinary lens with which the explorer is usually equipped.

And then the prospecting of a peak with the view of a 'new way up,' or other consideration of laudable Club ambition. Possibly a wide and deep valley intervenes between the mountain which it is desired to photograph and ground of a similar or at all approximate level. To take a view from the absolute foot of the mountain itself would, even with the full employment of the 'rising front,' necessitate a tilting of the camera by which the whole mountain would be, photographically, 'brought down,' and its perspective absolutely distorted. And so the telephoto lens, placed on the opposite side of the valley, bridges the difficulty and space, and gives us the picture which we desire free from distortion.

There are, of course, other uses for the lens, but space does not permit of their description.

At the present time there are before the public several forms of the telephotographic lens, differing in important details. Some have for the 'positive' element of the system a R.R. or R.S. lens; others a single lens, or, again, a 'portrait' combination. Each has claimed for it certain advantages which the others do not possess. It is not pro-

* December 17, 1900. *A. J.* vol. xx. p. 295.

posed to enter now into a consideration of these points of difference, but the suggestions conveyed by this article are based upon the experience derived from the employment of the particular telephoto system used by the writer—in fact, that of the original inventor, Mr. J. H. Dallmeyer. This has for its ‘tele-positive’ a ‘portrait’ combination, one advantage of which is that by a suitable rotation of the back lens of the ‘positive’ element of the lens system provision is made for the correction for outstanding spherical aberration, or the dispersion of focus necessary where the view taken includes several widely different planes or distances in the one picture. This form of telephoto lens has two ‘negative’ elements, giving different powers of magnification with the same camera extension, and these are called the ‘high power’ and ‘moderate power’ negatives. It is advisable that both should be added to the equipment, but if subsequent enlargement of the telephoto picture is desired the beginner will find the ‘moderate power’ negative far more likely to furnish sharp results than the ‘high power.’ At the same time the ‘high power’ negative, when used with the utmost care and precision, will afford, perhaps, more striking and remarkable results. However, it is not for the beginner.

Briefly described the telephotographic lens is a long-focus lens having an almost infinite capacity for providing varying *equivalent* foci, the *back* focus of the combination being always much shorter than that of an ordinary lens of the same *equivalent* focus, which, with such ordinary lens, would require a camera extension quite impossible for practical purposes. The telephoto lens consists of two separate elements—namely, a ‘positive’ long-focus element in front, with a ‘negative’ short-focus element behind. Each element consists of four lenses. It is the adjustment of the distance between these two ‘elements,’ taken as separate units, which provides and controls the enormous range of *equivalent* foci; in other words, it is this adjustment, taken with the camera extension, which furnishes the power to decide the degree of magnification of the object photographed, thereby enabling the operator to obtain, at will, different magnifications of the same view from one and the same point. And it is also upon the accurate adjustment of this distance between the two elements that the perfect focussing of the picture upon the ground glass screen depends. And here we are brought face to face with the greatest of all the practical difficulties which attend the use of the telephotographic lens—that of accurate focussing—and upon a successful mastery of which the full use of the lens depends.

A rack and pinion screw is attached to the lens, which controls the distance between the two elements, a similar screw being attached also to the camera controlling the distance between the two elements constituting the telephoto lens, taken together as a unit, and the ground glass focussing screen. In practice it will be found that the accuracy of focus will depend far more on the correct adjustment of the two elements *inter se* than on the second focussing arrangement which affects the relation of the whole system and the screen. In time the operator will disregard the latter, as the writer invariably does, altogether. When using the moderate power 'negative' element it is necessary, before focussing, to draw out the sliding tube which holds the negative about half an inch.

Relying on the lens screw alone an apparent objection arises from the fact that even the hundredth of a turn of that screw will suffice to throw the picture absolutely out of focus; but in practice this is found to be a great advantage, for the very 'suddenness' of the action of the screw enables the operator to hit the correct focus more certainly and confidently than is possible with the 'slow motion' screw, which produces modifications of focus so gradual that a feeling of uncertainty is created as to when the maximum of sharpness is attained. The unavoidable magnification of the granulation of the ground glass of the screen under the high-power focussing glass, which it is advisable to use, assists to produce this feeling of uncertainty. At the outset the operator is almost inclined to say that the image on the screen at high magnifications never is sharp at all. And in a sense, owing to this granulation, this is true, and the actual maximum of sharpness seems always to remain in doubt. The method found by the writer to produce the best results is to purposely throw the image out of focus equally each way, and then to give the screw a turn half-way between the two extremes, and so to hit the mean between the two. It may appear in theory difficult to recognise the same degree of variation from sharp focus in each direction, but in practice this difficulty seems non-existent. Certainly by this means the writer has found the resulting picture far sharper than it has ever seemed to appear upon the screen. Of course a focussing cloth must be used, and a focussing glass with a 'rocking' front will be found of use when focussing by a high-light near the margin of the picture.

Then the question of diminished light due to every increase of amplification constitutes a very serious difficulty with

which the operator has to contend when great magnification is desired. At small amplifications, up to four or five linear, the matter is of no great importance, but when eight linear is reached the optical law of the decrease of illumination based on the squares of linear amplification furnishes but a small fraction of the light the operator is accustomed to with a R.R. lens of short focus; and this, coupled with the fact that, the positive element being in this case a 'portrait' combination, we must focus with the stop which we intend to use, provides a very real difficulty. Add to this the further fact that the yellow screen, used with isochromatic plates, being between the lenses, must be *in situ* while the focussing is taking place, and we are presented with a diminution of accustomed illumination, which at the outset greatly adds to the difficulty of focussing.

But after some practice these difficulties come to be disregarded, and it becomes possible, even with the isochromatic screen *in situ*, to use—as does the writer invariably—the smallest stop but one on the tele-positive, namely, No. 15 of Dallmeyer's decimal system, equivalent to *f.* 12.25 of the Photographical Society's standard.

In dealing with snow peaks, which provide strongly illumined contrasts, focussing is comparatively easy; but far greater difficulty arises when a rock face, especially on a sunless day, has to be dealt with.

The next point of the highest importance is that of correct exposure. In telephoto work the contrasts are likely to be poor and weak as compared with those obtained with the R.R. or R.S., and especially with the single lens. There is certainly with the former by no means that latitude for the correction of faulty exposure by careful development to which we are accustomed with the last-named lenses. Nevertheless it is the experience of the writer that equal contrast, and so called 'pluck,' in the negative can be obtained with the telephoto lens if—but only if—absolutely correct exposure be given to the plate. Such correctness of exposure depends on several considerations, each of which must be kept in view when the plate is to be exposed. Firstly, the actinic quality of the light has to be correctly estimated. Experience furnishes this power as an instinct; but until this position be attained the operator can use one or other of the actinometers, or exposure meters, which are now upon the market. The next, and in this section of the matter all-important, consideration is the 'intensity ratio,' or the actual *equivalent* or 'corresponding' focus of the telephoto

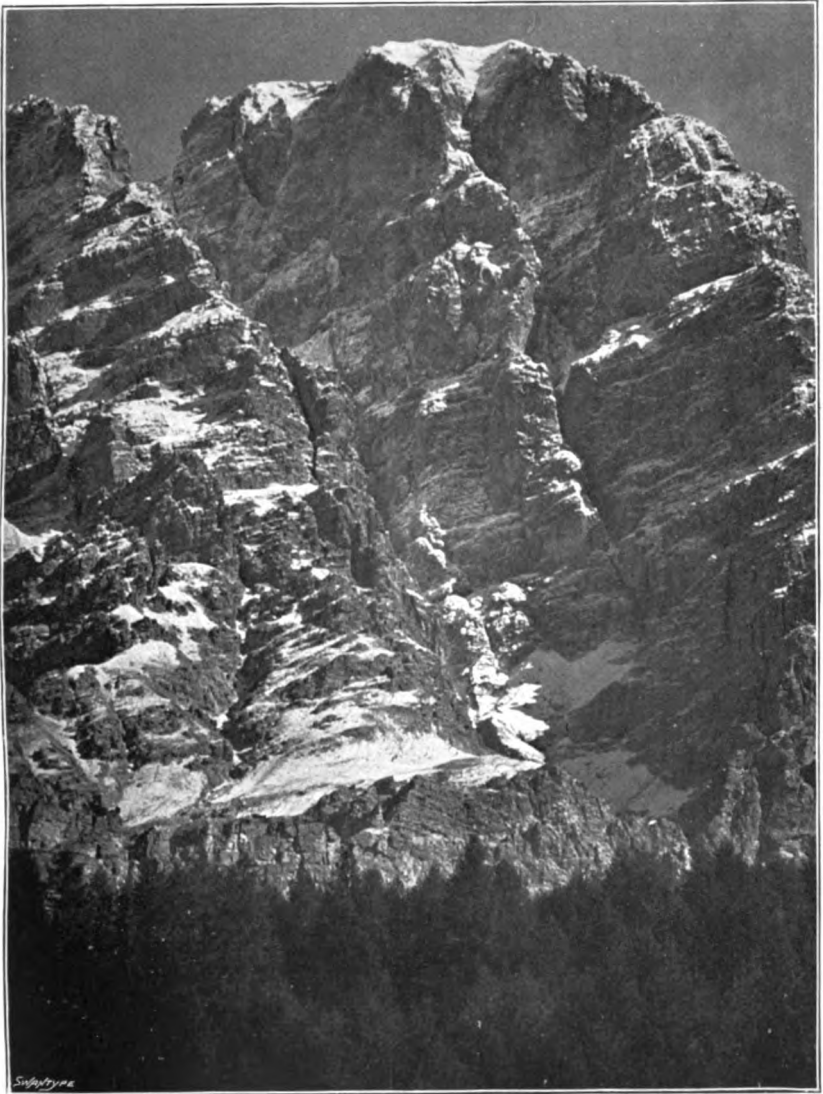


Photo by C. E. Shea]

[Swan Electric Engraving Co.

THE MONTE CRISTALLO, TIROL.

Taken from beyond Cortina. Distance 5 miles. Amplification about 6 linear.

combination resulting from the camera extension (on which the question of magnification mainly depends), which the operator decides to employ for his particular picture. Here we have certain technical questions which cannot be shirked by the successful operator.

Before attempting to ascertain the 'intensity' we have to determine either the particular degree of linear amplification which we desire to obtain, if such be our object, or, more usually, having made our picture upon the screen, and brought it to focus, to ascertain what camera extension, or 'back focus,' has been needed in order to secure this result, and from these data to work out the 'intensity.'

Should it be desired to obtain a particular and definite magnification the camera extension necessary to secure this result may be found by setting the focussing screen at a distance from the negative lens equal to the focal length of the negative itself, minus one, multiplied by the magnification desired—*e.g.* for a magnification of four diameters, using a negative lens of a 3-in. focal length, the camera back, or screen, must be set at a distance of $4-1=3 \times 3$, or 9 in., regardless of the focal length of the positive element, or lens, whatever that may be. But in most cases the object of the photographer would merely be to secure a picture irrespective of its exact magnification. To obtain this picture a certain camera extension will be found to have been required, and the consequent 'back focus,' or extension, will be but a matter of measurement.

There are two ways by which the corresponding foci and intensity ratios of the telephoto lens may be ascertained, the first given being mathematically correct, but the second is easier of working, and sufficiently approximately correct for all practical purposes. These are:—

(a) By means of the linear magnification of the image given by the positive element alone.

Magnification = divide distance from negative lens to focussing screen by the focal length of the negative lens, and add one to the result.

Corresponding focus = focus of positive lens multiplied by the magnification.

Intensity ratio = intensity of positive lens divided by the magnification.

(b) By means of the ratio between the foci of the positive and negative elements.

If the distance between the diaphragm slot and screen (when the lens is focussed on the object) be measured, and

this distance be increased in the same ratio as that known to exist between the foci of the two elements, the result will be the *equivalent* focus of the system.

The intensity is, of course, the *equivalent* focus thus ascertained divided by the clear aperture of the lens.

But many operators will prefer a 'royal road' to the results which may be easily worked out from the above rules, and to such the following tables may be of use:—

For Moderate Power Negative.

Back Focus ^c	Corresponding Focus	Intensity at Full Aperture
in.	in.	f.
5	15	12
6	17	14
7½	20	16
10	25	20
12	29	24
14½	34	28

For High-Power Negative.

Back Focus	Corresponding Focus	Intensity at Full Aperture
in.	in.	f.
6½	26	21
7½	29	24
10½	36	29
13	45	36
15½	54	44
18½	63	50

The above refers only to the No. 1 or smallest of the series of telephoto lenses issued by Messrs. Dallmeyer, the positive lens of which works at full aperture at *f.* 4. Those of the larger sizes, Nos. 2 and 3, work at *f.* 3, and the tables would be calculated on a slightly different basis.

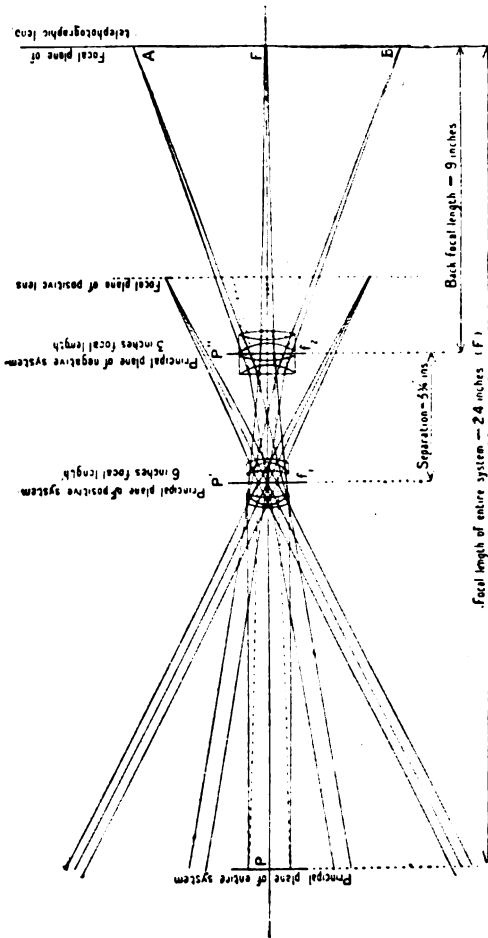
Having determined the 'intensity' at full aperture there comes the modifying influence of the particular stop used, a matter of very simple calculation known to all photographers; and then, again, the additional exposure necessitated by the particular isochromatic screen, if such be used. These points settled we have the correct exposure absolutely within our knowledge.

To those who may desire to realise more clearly the optical working of the telephotographic lens, the diagram on the next page, with explanation, will be of interest.

There are certain less vital points of detail which it may be well to notice. The stand supporting the camera must be absolutely rigid, the least tremor being magnified to the destruction of the sharpness of the picture. Having regard to the large size of the positive lens, and the necessity often for portability, it is not easy to obtain a shutter which on discharge gives no vibration. Hand exposure, with a cap fitting rather loosely, seems the safest method.

* To obtain the 'back focus' measure from the *flange* of the lens to the focussing screen and add 3½ in.

When the view to be photographed contains objects at various distances from the camera a dispersion of focus, whereby each important plane receives, so to speak, its appropriate share of average sharpness, is obtained by the rotation of the back cell of the positive element. As a



This diagram explains the action of the telephotographic lens:—
 P' is an ordinary photographic lens (in this instance of 6 in. focal length), preferably of an intensity of $f/8$ or higher, about half the focal length of P'' for ordinary purposes.
 The focussing screen A, F, B may be placed at any position behind P'' . The greater the camera extension, the greater will be the magnification, but the less the rapidity.
 In the case illustrated, where the camera extension from P'' is 9 in., and the distance between P' and P'' has been adjusted to give a sharp focus, the Principal (or Nodal) plane of emission of the combination is thrown forward to a distance of 2.4 in. from the plate, or the equivalent focus is 2.4 in., with a back focal length of only 9 in.
 Compare rules given:—
 Back focal length
 Focal length of $P'' + 1 = \frac{3}{2} + 1 =$ magnification = 4.
 As focal length of P' is 6 in., the equivalent focal length = $P' \times 4 = 6 \times 4 = 24$.
 If P' has an intensity of $f/8$, then the intensity of the combination is $f/8 \times \frac{1}{4} = f/32$.

maximum half a turn for the high, and one turn for the moderate, power negatives.

It has been indicated that the degree of magnification is largely dependent on camera extension, and the camera

wherewith M. Boissonnas took his noted view of Mont Blanc is said to have been nearly 6 ft. long and 2 ft. square—dimensions inconvenient in the case of high-class mountaineering. A quarter-plate camera with a 12-in. extension, or slightly more, will be found appropriate, the $\frac{1}{4}$ plate being a size convenient for subsequent enlargement.

The field covered at any particular camera extension must be duly considered. The 'angle of view' remains practically constant at all camera extensions. Obviously, therefore, the greater the extension the larger will be the plate covered. With the Dallmeyer No. 1 telephoto system, with the 'moderate power' negative, the 'angle of view' at full aperture is from 18° to 20° , and with the 'high power' negative about 13° . The plates covered will therefore work out thus:—

For Plate covered at Full Aperture	Back Focus necessary	
	For Moderate Power Negative	For High Power Negative
inches	inches	inches
$4\frac{1}{2} \times 3\frac{1}{4}$	5	$6\frac{1}{2}$
5×4	6	$7\frac{1}{2}$
$6\frac{1}{2} \times 4\frac{3}{4}$	$7\frac{1}{2}$	$10\frac{1}{2}$
$8\frac{1}{2} \times 6\frac{1}{4}$	10	13
$10\frac{1}{2} \times 8$	12	$15\frac{1}{2}$
12×10	$14\frac{1}{2}$	$18\frac{1}{2}$

Camera extension, with its attendant increase of magnification, as already pointed out produces a corresponding increase of the 'equivalent focus' of the system. An optical law suggests that the limit placed upon magnification is reached when $f. 72$ is arrived at, the question of 'diffraction' then coming into play. However in practice, as in the case of M. Boissonnas's tele-view of Mt. Blanc, this limit has been safely passed.

In dealing with certain subjects it must be remembered that whereas the ordinary short focus lens distorts the picture by exaggerating the foreground and nearer objects, so the telephoto lens, at the other extreme, gives greater proportionate prominence to the more distant portions of the view—a matter of certain importance in dealing with architectural subjects. Telephoto views of snow peaks are best taken early in the morning before the sun has heated the atmosphere and created that quivering of the air which seems specially to affect the definition of snow and ice in the picture. In taking snow scenes the tendency is generally to avoid the difficulty connected with theoretically correct exposure by



Photo by C. E. Shea

[Swan Electric Engraving Co.]

SCHLOSS TAUFERS, AHRNTHAL, TIROL.

From meadows near St. Walburg Kapelle; taken with Telephoto lens, moderate-power negative.
Distance of Castle $1\frac{1}{2}$ mile; Snow-peaks 10 miles.

deliberately under-exposing ; but although the snow portion of the picture will be clear and brilliant the foreground and shadows will be found dark and without detail. The old rule of the photographer to 'expose for the shadows' holds good in a measure even for the telephoto lens. The operator should not rest content until he attains for his telephoto picture a standard of all-round quality not so very far removed from the best results produced by the R.R. lens.

One expert writer on telephotography states that the peculiar advantages of the lens have to be purchased by a 'sacrifice of optical perfection as compared with well corrected photographic lenses of the usual type,' and that it possesses 'less brilliancy and definition and embraces a narrower angle' than such lenses. That the telephoto lens includes a narrower angle, not, in fact, exceeding 20° , is an unavoidable consequence of magnification, but it would seem that a fuller knowledge of the new lens, and appreciation of its difficulties and requirements, will lead to the conclusion that the loss of brilliancy and definition has been over-estimated, while it is certain that the lens places in the hands of the photographer a power the complete extent of which is not yet fully realised.

The first illustration shows views of the same object taken with an ordinary R.R. lens of 5.6 eq. fo., and with the telephoto lens, moderate power negative ; amplification thirty times, super.

The second is a view of the Croda da Lago, in Tirol, taken with the telephoto lens, high power negative, from the opposite Faloria ridge, distance 4 miles ; amplification about eighty times, super.

The third view is of the Monte Cristallo, with moderate power negative ; distance 5 miles ; amplification about thirty-six, super.

The fourth illustration is a view of Schloss Taufers, Tirol, taken for pictorial effect irrespective of particular magnification. Distance of castle, $1\frac{1}{2}$ mile ; mountain peaks, 10 miles ; actual amplification about eighteen, super.

THE NEW EDITION OF BALL'S 'ALPINE GUIDE.'

HAVING undertaken, at the request of the Committee, the general editorship of the new edition of the second volume of Ball's 'Alpine Guide,' I venture to appeal to members of the Alpine Club and mountaineers generally for assistance. It is obvious that the revision of a work dealing with so wide a region can only be satisfactorily accomplished by the co-operation of many climbers and lovers of the Alps. Such help was freely accorded to Mr. Ball in the preparation of the first edition, and it is more needful than ever now, for the present editor cannot lay claim to the minute personal knowledge which Mr. Coolidge was able to bring to bear on the revision of the volume already published. While my special object in writing these lines is to appeal for help of a general character, I may take the opportunity to mention that, although definite promises of literary assistance have been received for most of the sections, there are still a few for which (at the time of writing) no one has volunteered, viz. 26 (Forest Cantons), 28 (Säntis District), 38 (Bergamasque Valleys), and 39 (Val Camonica District); and I shall be very glad to hear from anyone who will undertake to revise the whole or part of any one of these.

The volume now to be taken in hand embraces the whole of Switzerland (except the region of the Pennine Alps), together with the Italian valleys between the Simplon and the Lake of Garda and those portions of the Tyrol and Vorarlberg that lie to the W. of the Adige and the Inn (from Finstermünz to Landeck) and are bounded on the N. by the line of the Arlberg Railway. General information of all kinds will be welcome; but I may mention the following points in regard to which notes will be especially useful:—

Details as to unfrequented routes, whether described in the former edition or not.

Information as to new or little-known expeditions that can be recommended as worth being made more frequently.

Accounts of important variations on the ordinary routes of peaks or passes. Such are often caused by the opening of a new inn or hut.

Recent information in regard to portions of routes liable to frequent change, *e.g.* as to passing difficult ice-falls or getting on or off glaciers.

Notes as to inns, in regard to which the former edition contained a great deal of first-hand information.

I shall gratefully acknowledge all communications. They may be addressed to me at the Alpine Club, 23 Savile Row, W., or (except during the winter months) may be sent direct to Berkeley Lodge, Ridgway, Wimbledon. They should reach me not later than November 1, 1902, in any case, but the earlier they can be forwarded the better.

A. V. VALENTINE-RICHARDS.

THE ALPINE CLUB LIBRARY.

THE following additions have been made since January:—

Recent Books. (Presented by the Publishers.)

Alaska, Explorations in; in 1898. Twentieth annual report of the U.S. Geological Survey, Part vii. 4to, pp. 509; maps, ill.

Washington, Government Printing Office, 1900

This contains a great deal of information on the mountains and glaciers and geology of Alaska, with numerous illustrations and maps. There are still many blanks on the maps, 'impassable snowy ranges,' for members of the Alpine Club to fill in. It is claimed that Mt. McKinley, towards the centre of Alaska, rises over 20,000 ft., while the highest point in British territory, Mt. Logan, rises only slightly over 19,500 ft.

*Alpine Majestäten und ihr Gefolge; die Gebirgswelt der Erde in Bildern. Folio. Heft 1 (Illustrations only).

München, Vereinigt. Kunstanstalten, 1901. M. 1

Böhm, Dr. A. Führer d. d. Hochschwab-Gruppe, 2te Auflage. Herausgegeben v. d. Section 'Austria' d. D. u. Oe. A.V. 8vo, pp. xv, 154; ill.

Wien, Lechner, 1896

*Duparc, L., et Mrazec, L. Recherches géologiques et pétrographiques sur le Massif du Mont-Blanc. 'Mém. Soc. Phys. et d'Hist. Nat. Genève,' xxxiii., no. 1. 4to, pp. 227; plates. Genève, Georg; Paris, Fischbacher, 1898 (Presented by the Society.)

— (Map to accompany, published separately). Carte géologique du massif du Mont-Blanc, par L. Duparc et L. Mrazec. Levée de 1890-1896 sur la carte topographique de Albert Barbey. Editée par le Comptoir minéralogique et géolog. Suisse, Cours d. Bastions, Genève. (Presented by the Authors.)

*Heer, J. C. An heiligen Wassern. Roman aus dem schweizerischen Hochgebirge. 6te Aufl. 8vo, pp. 399. Stuttgart, Cotta, 1901. M. 3.50

— Der König der Bernina. Roman . . . 4te Aufl. 8vo, pp. 361.

Stuttgart, Cotta, 1900. M. 3.50

Hints to travellers, scientific and general. Edited for the Council of the Royal Geographical Society by John Coles. 8th edition, revised and enlarged. 2 vols. 8vo, pp. 436, 266; maps, ill. London, 1901. 15s.

*Huber, F. Nigritellen. Zwei Novellen aus schönen Erdenwinkeln. 8vo, pp. 208. Bern, Körber, 1901. M. 2.50

'Maud; eine Erinnerung aus d. Berner Oberland.'

'Etta; Ein Sommersonntags-Traum.'

*Marr, J. E. The scientific study of scenery. 8vo, pp. ix, 368; ill.

London, Methuen, 1899. 6s.

*Pfeiffer, G. A la montagne. Croquis montagnards, suivis d'une notice sur la photographie à la montagne par E. Potterat. 4to, pp. 190; ill.

Genève, Eggiman [1894]. Fr. 10

Platter, J. C. Berg- und Thalfahrten in Tirol. 8vo, pp. 268.

Innsbruck, Edlinger, 1901

*Switzerland: Dictionnaire Géographique de la Suisse; publié sous la direction de Charles Knapp et de Maurice Borel. Livraisons 1-8, Aa-Bâle-ville. 4to; maps, ill. Neuchâtel, Attinger, 1900. 75c. a part

*Switzerland: La Suisse au dix-neuvième siècle. Ouvrage publié par un groupe d'écrivains suisses sous la direction de Paul Seippel. Vol. 3. Imp. 8vo; ill.

Lausanne, Payot; Berne, Schmid & Francke, 1901. Fr. 22

Contains, *inter alia*: pp. 397-424, E. Rod, 'La montagne suisse;' pp. 425-456, Dr. H. Dübi, 'Exploration des Alpes.'

* See *Reviews and Notices* in the present number.

- *Wundt, Th. und Maud. In luftigen Höh'n. Engadin-Ortler-Dolomiten. Herausgegeben v. d. Sektion Berlin d. D. u. Oe. A. V. 2te Auflage. 4to, pp. 276; ill. Stuttgart, Greiner & Pfeiffer [1900]
 ——— Another copy, presented by the Author.

Older Books.

- Brocklehurst, T. U. Mexico to-day . . . 8vo, pp. xv, 259; col. and other ill. London, Murray, 1883
 Pp. 104-135, 'Ascent of Popocatepetl,' by the author, and reprint of Mr. F. Ober's account.
- Burnet, Bishop Gilbert. Some Letters. Containing, An account of what seemed most remarkable in Switzerland, Italy, &c. Written by G. Burnet, D.D., to T. H. R. B. 12mo, pp. 307.
 At Rotterdam, Acher, 1686. [The first edition?]
 (Presented by C. W. Nettleton, Esq.)
- Darwin, Charles. Journal of researches into the Natural History and Geology of the countries visited during the voyage of H.M.S. 'Beagle' round the world. 8vo, pp. 492; ill. 'The Minerva Library.'
 London; Ward, Lock [c. 1897]
 Information on mountains and glaciers of Tierra del Fuego, height of snow-line in S. America, description of Andes, mountain sickness, red snow, and geology of regions generally.
- Elliot, G. F. Scott. A naturalist in Mid-Africa, being an account of a journey to the Mountains of the Moon and Tanganyika. 8vo, pp. xvi, 413; maps, ill. London, Innes, 1896
 Mr. Scott Elliot surveyed the valleys round Ruwenzori, and climbed to 10,000 ft., just above the forest line.
- Humboldt, A. v. Cosmos; a sketch of the physical description of the universe. 8vo, 5 vols. London, Bohn, 1849-1884
 Vol. 1, General review of natural phenomena; 2, Description of nature, landscape painting, historical; 3-4, Stars, etc.; 5, Volcanoes of South America, etc.
- (M)[artyn], (T)[homas]. Sketch of a tour through Switzerland: with an accurate map. A new edition. To which is added a short account of an expedition to the summit of Montblanc, by M. De Saussure, of Geneva. 12mo, pp. 131. London, Kearsley, 1788
 The appendix, pp. 96-127, a translation of De Saussure's first account, was issued separately (and also bound with) the 'Sketch,' and has a separate title-page.
 [The first edition, of which the above is practically a reprint, was issued in 1787, and the particulars are as above. The French translation of the 'Sketch' ('Guide du voyageur en Suisse') passed through three editions, 1788-1794.]
 (Presented by C. W. Nettleton, Esq.)
- Smith, Albert, Written and edited by. The Miscellany: a book for the field or the fire-side. Amusing tales and sketches. 8vo, 236. London, Bogue, 1850
 Contains, *inter alia*:—'Sacro Monte at Varallo,' 'Travellers' Albums—Switzerland,' 'The Knapsack—St. Gothard, Interlaken,' 'A day on the glaciers, the Jardin.'
 (Presented by G. W. H. Ellis, Esq.)
- Snow, Robert. Memorials of a tour on the Continent. 8vo. London, Pickering, 1845
 Pp. 88-97, 'Ascent of Mount Etna'; pp. 127-144, 'Passage of the Col du Géant in 1844.'
 (Presented by G. W. H. Ellis, Esq.)

* See *Reviews and Notices* in the present number.

- Ulloa, Antonio de. *Noticias americanas . . .* 8vo.
 Madrid, en la Imprenta Real, 1792
 Pp. 76-79, description of 'la Puna,' or mountain sickness.
- Whitney, J. D. *The Yosemite Guide-Book: a description of the Yosemite Valley and the adjacent region of the Sierra Nevada.* 8vo, pp. vii, 155; maps, ill. Published by authority of the Legislature (Cambridge, Mass.), 1870.
 Contains the history of the climbing and exploration of the mountains of the Sierra Nevada.

Club Publications. (Presented by the Clubs.)

- C.A.I. *Bollettino*, no. 66, anno 33. 1900
 V. Ricci, 'Re Umberto'; A. Ferrari, 'Nella Catena del Monte Bianco'; M. Cermenati, 'Schiller e le Alpi,' 'Un viaggio nell' Oural'; P. Bensa, 'Le grotte dell' Appennino Ligure e delle Alpi Marittime'; A. Cozzaglio, 'L' analisi scientifica del paesaggio'; U. Valbusa, 'L' ardua Grivola bella'; F. L. Molino, 'A Monte Scuderi in Sicilia.'
- Sez. Ligure (Genoa).
 Gite mensili per l' anno 1901. 8vo, pp. 27. 1901
 — — — Regolamenti e tariffe . . . nelle Alpi Ligure e Marittime. Genova, 1896
 — — — see Timosci, P. e. C., *under Pamphlets.*
- Dauphiné. Rocher-Club (fondé à Grenoble, 1895).
 Statuts. 1895
 'Le but est de développer le goût des escalades de rochers, exclusivement sans guides. . . .'
 No bulletin or other publications issued.
- Club Ascensionniste Grenoblois (founded at Grenoble, 1899).
 Statuts et Règlements. 1899
- D. u. Oe. Statuten. 1876
 — 'Austria,' see Böhm, Dr. A., *under 'Recent Books.'*
 — Bayerland. Jahres-Bericht, v. München, 1900
 — Berlin. Jahresbericht für 1900. 8vo, pp. 189.
 Vorträge; v. Erckert, 'Bergtouren in Süd- u. Mittelamerika.'
 E. Hahn, 'Lyskamm u. Weisshorn.'
 F. Machacek, 'Gletschervermessung in d. Ostalpen.'
 L. Darmstaedter, 'Neue Wege in d. Tatra.'
 Dr. Zeller, 'Grödener Dolomiten.'
 F. Schwarz, 'Bergfahrten im Dauphiné, Pelvoux, Ecrins, Meije.'
- — — see Wundt, T., *under 'Recent Books.'*
 — Bozen. Jahresbericht, XXXI. 8vo, pp. 34. 1901
 München, Akad. Alpenverein. VIII. Jahresbericht. 8vo, pp. 91. 1901
 List of members and of their climbs, etc.
- Zürich, Akadem. Alpen-Club; V. Jahresbericht. 8vo, pp. 27. 1900

Pamphlets and Magazine Articles.

- Alpes, A travers les; neiges et glaciers, torrents et lacs. 8vo, pp. 52.
 Paris, Molteni [? 1900]. 75c.
 A descriptive handbook to accompany lantern slides in a system of 'enseignement pittoresque de la géographie.' See Meunier, S., *below.*
- Baillie-Grohman, W. A. An Emperor's sporting chronicle. 8vo, pp. 149-162; 5 plates. In 'The Monthly Review.'
 London, Murray, Feb. 1901. 2s. 6d.
 A most interesting account of the Emperor Maximilian's 'Gejaid Buch'; with five plates therefrom, representing chamois hunting and other sport in Tyrol.
 (Presented by the Publisher.)
- The mountain game of Europe. 8vo, pp. 283-7; ill. In 'Outing,' New York. Dec. 1900. 7½d.
 (Presented by the agents, the Internat. News Co., London.)

- Chamonix, Statuts du Syndicat des Guides de; Tarif des courses. 8vo, pp. 34. Ancey, Gardet, 1898
(Presented, with a MS. list of the Guides, by the Syndicat.)
- Chandler, H. P. Southern High Sierras, California. 8vo, pp. 543-551; ill. In 'Overland Monthly,' 36, no. 216, Marriott, San Francisco. Xmas, 1900
The ascent of Mt. Goddard (13,550 ft.), first ascended in 1879. Good illustrations.
(Presented by the Publisher.)
- C[ramer], Auguste. L'aiguille Verte. 8vo, pp. 14. Reprinted from 'Journal de Genève,' 14 Août 1891. Genève, Imprimerie Suisse, 1891
Account of an ascent.
(Presented by the Publisher.)
- Cushing, H. P. Notes on the Muir Glacier region, Alaska, and its geology. 8vo, pp. 207-230; map, plate. In 'The American Geologist,' Minneapolis, viii, 4. October, 1891
An account of survey and geological work in 1890.
(Presented by the Editors.)
- Deasey, Capt. H. H. P. My travels in Central Asia. 8vo, pp. 19; ill. In 'Wide World Mag.,' Newnes, London. Feb.-Ap. 1901. 3 parts, 6d. each.
An interesting account of a journey in 1896, with numerous excellent illustrations, including views of the Zoji La, Nabo La and An La passes. For another Alpine article in the April number *see under* Stock, E. E.
(Presented by the Publishers.)
- van Dyke, H. From Venice to the Gross Venediger. 8vo, pp. 135-152; ill. In 'Scribner's Magazine,' New York. Feb. 1893
- Fay, C. E. A new Alpine playground . . . in Alaska and the Rockies of Canada. 8vo, pp. 729-742; ill. In 'Munsey's Mag.,' New York. March, 1901. 6d.
A very good article by a former President of the Appalachian Mountain Club, giving a short but thorough account of the start of mountaineering in those parts of America. The numerous illustrations are very good, as befits a leading American Magazine.
(Presented by the London agents, H. Marshall and Son.)
- *Gropallo, L. L'alpinismo e la spedizione italiana al Monte Sant' Elia. 8vo, pp. 77-99. In 'Nuova Antologia,' Roma. 1 Gennaio, 1900
(Presented by the Publishers, Isbister, London.)
- Hasler, G. Drei Tage vor Weihnachten auf d. Wetterhorn. 4to, pp. 89-90; ill. In 'Die Schweiz,' iv, 4. Polygraph. Institut., Zürich, 1900
(Presented by the Publishers.)
- *Inkersley, A. To the top of Mount Rainier with the Mazamas. 8vo, pp. 102-107; ill. In 'Good Words,' Feb., 1901
(Presented by the Publishers, Isbister, London.)
- Lee, W. T. The glacier of Mt. Arapahoe, Colorado. 8vo, pp. 647-654; ill. In 'Journal of Geology,' University of Chicago, viii, no. 7. Oct. Nov., 1900
Observations made during an ascent, Aug. 1900, of Mt. Arapahoe. 13,520 ft.
(Presented by the Editors.)
- Maquet, M. Ascensions dans le Valais. 8vo, pp. 13; ill. Reprinted from 'Bull. Soc. Géog. Lille.' Lille, Danel, Oct. 1899
Dent du Midi, Portjengrat, Matterhorn, in 1898.
(Presented by the Author.)
- Martel, E. A. Les cavernes de la région des Causses. 8vo, pp. 30; ill. Extrait du Livret-Guide . . . du viiiè Congrès géolog. internat. Paris, 1900
- Sur de nouvelles recherches souterraines en Dévoluy. 4to, pp. 3. Reprinted from 'C. R. d. l'Acad. d. Sc.' Paris, 1899
(The two above presented by the Author.)

* See *Reviews and Notices* in the present number.

- Meunier, S. *Les glaciers*. 32mo, pp. 52. Paris, Molteni [c. 1900]
 This and 'A travers les Alpes,' above, are published by Molteni, 44 rue
 du Château d'Eau, Paris, as handbooks to photographic lantern
 slides of mountain scenery, etc., which he has for sale. This is noted
 here as it may be of use to those who are giving popular lectures on
 mountaineering.
- Paillon, Maurice. *Le massif de Pécelet*. 8vo, pp. 31; map, ill. Reprinted
 from Joanne, 'Dictionn. de la France' and 'Rev. Alpine.'
 Lyon (Imp. du 'Salut Public'), 1900
 Topography, etc. Bibliography of ascents.
 (Presented by the Author.)
- *Richter, E. *Geomorphologische Untersuchungen in den Hochalpen*. 4to,
 pp. 103; plates. *Ergänzungshefte*, no. 132 zu Petermann's Mittheilungen.
 Gotha, Perthes, 1900
 (Presented by the Publisher.)
- Russell, Count Henri. *Ascensions solitaires aux Pyrénées*. Folio, p. 1. In
 'Pau-Gazette.' Pau, 20 Janvier, 1901
 An article advocating solitary climbing, with proper precautions, on the
 Pyrenees. A sheep-skin sack must be taken, and when worn, the
 wool must be on the inside, lest a hungry wolf mistake the climber for
 a sheep.
 (Presented by the Publishers.)
- Schultz, J. W. *Winter Hunting of goat and sheep in the Rockies*. 8vo,
 pp. 413-418; ill. In 'Outing,' New York. Jan., 1901. 74d.
 Contains a good illustration of the mountain goat, known to the Indian
 as Mazama and to science by some thirty names.
 (Presented by the Agents, the Internat. News Co., London.)
- Stock, E. E. *A mishap on the Matterhorn (1895)*. 8vo, pp. 89-93. In 'The
 Wide World Magazine,' Newnes, London. April, 1901. 6d.
 (Presented by the Publishers.)
- Strasburger, E. *Die Central-Pyrenäen*. 8vo, pp. 127-142; 264-295. In 'Deutsche
 Rundschau,' Paetel, Berlin, xxvii. Jan.-Feb., 1901. M. 1, each part
 The first article is devoted to a delightful account of a trip among the
 valleys. The second gives a very interesting summary of the life and
 work of Ramond and of the earlier history of the district, from Strabo
 onwards, of the geography and the flora.
 (Presented by Gebrüder Paetel.)
- Timosci, P. e C. *Relazione dell' Ascensione al Grande Cervino, 16 Agosto 1880*.
 C.A.I., Sez. Liguri. 8vo, pp. 20. S. Pier d' Arena (Tip. S. Vincenzo), 1889
 (Presented by the Section.)
- Vaux, G. and W. S. *Some observations on the Illecellwaet and Asulkan
 Glaciers of British Columbia*. 8vo, pp. 121-124; 5 plates.
 — Additional observations. 8vo, pp. 501-511; plan of Illecellwaet Glacier.
 Both Reprinted from 'Proc. Acad. Nat. Sc. Philadelphia,' Feb. and Dec.
 1899.
 An account of the measurements of the flow of those glaciers, with
 excellent illustrative plates.
 (Presented by the Authors.)
- Vaux, W. S. *The Canadian Pacific Railway, from Laggan to Revelstoke*. 8vo,
 pp. 64-86; ill. Reprinted from 'Proc. Engineers' Club Philadelphia,'
 xvii, 2. May 1900
 An account of the Railway across the Rockies and Selkirk Range, with
 special reference to the snowfall and protection from avalanches.
 (Presented by the Author.)
- Vedova, G. Dalla. *La salita sul Monte di S. Elia*. 8vo, pp. 23-32. In 'Rivista
 d'Italia,' Roma. III. Gennaio 15, 1900
 A review of Dr. Filippi's book.
 (Presented by the Publishers.)

* See *Reviews and Notices* in the present number.

- Westman, J. Beobachtungen ü. die Gletscher v. Sulitelma u. Ålmajalos. 8vo, pp. 45-78; map, ill. In 'Bull. Geolog. Inst. University of Upsala.' iv. pt. 1, no. 7. 1899
 An elaborate account of the observations made by the Author in the years 1897-8 on some of the glaciers on the northern borders of Norway and Sweden, with the most accurate map yet published of the district.
 (Presented by the University.)
- Wilson, E. L. Mount Washington in Winter. 8vo, pp. 135-155; ill. In 'Scribner's Magazine,' New York. Feb. 1891
 [Reprinted in 'Mountain Climbing,' Scribner, 1897.]
- Workman, Mrs. F. Bullock. Amid the Snows of Baltistan. 8vo, pp. 74-86; ill. February, 1901
 In 'Scottish Geog. Mag.', xvii, 2.
 (Presented by the R. Scot. Geog. Soc.)

NEW EXPEDITIONS IN 1900—*continued.*

CENTRAL CAUCASUS.

Kuish Group.

THIS is not so much a report on new feats as a number of questions to Messrs. Collier, Newmarch, and Solly, and to 'a person or persons unknown.'

CHARINDA (8,572 m. = 11,700 ft.).—These are name and height given (on the one-verst map) to the mountain which my wife and I, with Muratbi as porter, reached on August 19 in 7 hrs. from Prince Dadeshkeliani's house in Ezeri (Barshi). We had aimed at a peak visible from Ezeri (always $z = ts$) and situated between Charinda and Zyrniar (8,200 m.). It has no name on the one-verst map, and I propose to call it 'Little Charinda.' Its height should be about 500 ft. lower than the chief summit. This latter we gained by the connecting ridge and the S. face, which offered a good scramble over fair rocks. From the top an instructive photograph of the Kuish group was obtained. For the descent we used the somewhat rotten W. ridge, which we subsequently left in order to cross the small glacier and the watershed intervening between us and the Ezeri valley.

No traces of previous ascents were found on any of the summits. Charinda is identical with the Bak of Freshfield's map, and thus probably the peak climbed by Mr. Collier and his party in 1894.

To the W. of Charinda is a high pass called Bak on the new Russian map, but which according to native statements ought to be named Ha-il. The designation Bak Pass had better be reserved to the important and much-frequented col leading to Maseri. It appears that 'Bak' is a collective name given to everything and anything at the head of the Ezeri shelf. But, besides it, special names exist. There are now two Bak Passes on the Russian map—a state of things which ought never to be allowed, even if the objectionable method of inventing new names has to be followed as a last resource.

ZALMAG (8,992 m. = 13,090 ft.).—The new map calls it Zalgmil,

but I prefer the name used by me, as I always heard it like that from natives in various valleys. We climbed it on August 27 by the S. (S.S.W.) face and the S.E. ridge from a camp near the glacier. A night had been spent at the village of Zoleri, and a delightful ride along the Kwa, that most colossal of grass ridges, brought us to the camping ground (c. 8,000 m.).

In Freshfield's book Zalmag is still described as unclimbed; and, as since the publication of that work hardly any climbing had been done in the Caucasus, I expected a virgin prize, the more so as our doyen promised a 'sharp climb.' To my great disgust I discovered a stone-man about 100 ft. under the top, on the ridge. It was a fine piece of work, very thin, very high, and very solid, but contained no cards.

I wrote to several gentlemen about this; but none of them were able to throw any light on the mystery. A Russian topographer is hardly to be thought of, as the rocks, though not difficult, are too repulsive for non-mountaineers. Native hunters do not build cairns to amuse themselves.

Did Collier and party cross a great amount of glacier? If so their Bak might be identical with either Zalmag or its neighbour Liadeval. But the distance from the Becho valley is extremely long, and I may perhaps not seriously suggest the possibility. If anybody climbed Zalmag since the publication of Freshfield's book a mere mistake in nomenclature would be quite inexcusable, for the mountain is far too conspicuous. It is the boldest object in Lower Suanetia.

Ushba Group.

TOTAN.—This is an unimportant summit rising from the pass S.E. of Gulba, and it is about 600 ft. lower than that mountain. My wife and I ascended it on September 9, during one of our photographic excursions, from the Gul Moraine, where we camped for a whole week in splendid weather.

Leila Group.

LEILA PASS.—We were, I believe, the first party to cross by this glorious and magnificent route. One ought to speak of the Leila Passes, for west of the Leila peaks the chain diverges into two branches imprisoning the Khudesh valley. Over the higher and snowy spur we have the pass Pitchkhan (c. 3,500 m. = 11,400 ft.). Then one loses many hundred feet in height until the lower of the two passes is gained. This latter the natives call Leila (c. 3,100 m. = 10,000 ft.). The view from the higher pass only shows Elbrus and Dongusorun. From the second the central mountains stand revealed, with Ushba boldly in front of the spectator.

From Lentekhi one follows the Kheledula valley past the villages of Khelade (2 hrs.) and Katchwash (2 hrs.), until after six or seven hours (walking distances) the mouth of the Djudari valley is reached. On Freshfield's map the Djudari branches off too soon

from the main valley, I think; also the direction of the latter seems to be more S.E. The district has been surveyed for the 1-verst map, if I was rightly informed, but the sheets are not given to outsiders.

There are a few houses at the point where Djudari and Kheledula join. The view of the Leila peak from here is an astonishing revelation. Rising at the extremity of a long, straight, narrow ditch full of black firs, the Leila cleaves the sky like a wedge of rock and ice.

From the last houses (which will not be the last very long) one has to struggle for 5 hrs. through grand forests until the valley suddenly opens out into the park-like circus of Skimeri. This place alone repays all the trouble one has taken in choosing this route. Surrounded by an amphitheatre of snowy crests we find a wonderful garden composed of virgin forests and pastures, of clumps of graceful trees and lovely glades, all untouched by the hand of man or the browsing of cattle. Prince Otar Dadeshkeliani has selected this unique valley, which forms part of the family properties, to construct a summer house, which is to be inhabited in 1901. In connection therewith the path through the jungle of Djudari will be made easy for horses.

From Skimeri it takes 10 hrs. to get to Zkhomari, in the Ingur valley, and the peak can easily be added. The route is self-evident from the first. The only precaution necessary is a supply of dry stockings in one's knapsack, for one has to wade during 8 hrs. through grass which is more than knee-deep. When wet it soaks the legs in a surprisingly short time.

No climber will wish to miss the Leila Pass. The heavy baggage can be sent round by Latpari. In Skimeri circus fine large trees are found at great heights, providing splendid shelter and fire wood. There is an ideal camping place, with water quite near, in the highest clump of trees on the conspicuous green ridge coming down from the pass.

W. R. RICKMERS.

ALPINE NOTES.

'THE ALPINE GUIDE.'—Copies of Vol. I. of the new edition of this work, price 12s. net, and of 'Hints and Notes, Practical and Scientific, for Travellers in the Alps' (being a new edition of the General Introduction), price 3s., can be obtained from all book-sellers, or from Messrs. Stanford, Charing Cross.

THE LIBRARY CATALOGUE is now printed and may be obtained, bound in cloth, on application to the Assistant Secretary, 23 Savile Row. Price 3s.; postage, 3d.

THE ALPINE CLUB OBITUARY, 1900.—Rev. C. H. Hawkins (1872).

PROFESSOR OTTO TORELL.—We learn with deep regret that Professor Torell, who was the oldest honorary member of the

Alpine Club, died on September 11, 1900, at the age of 72.—*La Géographie*, December 15, 1900.

ON THE GIVING OF NAMES TO NEWLY DISCOVERED PLACES.—At the suggestion of the Committee of the Alpine Club the following has been inserted by the Council of the Royal Geographical Society in the latest edition of the Society's 'Hints to Travellers':—*On the Giving of Names to Newly Discovered Places*.—The Council of the Royal Geographical Society would urge upon all travellers that in giving names to any new discoveries which they may make they should be guided by the following restrictions, which, until comparatively recent years, were commonly observed:—(1) That before putting forward any personal or fanciful name the traveller should do his best to ascertain that no local name exists, and where none is forthcoming should further consider whether one might not conveniently be derived from the vicinity, *e.g.* from an adjacent stream, or pasture, or glacier, or from some characteristic of the natural object itself: (2) that no one should commemorate himself in this manner: (3) that any new nomenclature which the traveller may desire to suggest should be put forward tentatively and subject to the approval (1) of the administration of the region or country, if there is one; (2) of the Official Cartographer of the country, if it possesses a Survey Department, or of the State to which the region may belong; (3) or of the Council of the Royal Geographical Society.'

MR. WHYMPER'S EXPEDITION TO THE CANADIAN ROCKIES.—Mr. Whympfer, accompanied by Christian Klucker, of Sils Maria, Joseph Pollinger, of St. Niklaus, Ch. Kaufmann, of Grindelwald, and Joseph Bossonney, of Chamonix, leaves Liverpool for Montreal by the Allan liner 'Australasian' on May 23. After a brief stay in Montreal the party will proceed direct to the mountains.

THE CHORTEN NIMA PASS, IN SIKHIM.—Some months ago Mr. Garwood and I, in collating our geographical material, made the discovery that the pass N. of the Lungma Chu, to which Signor E. Sella and I were led by the native surveyor Rinsing, was not, as he had most confidently asserted on the spot, the pass of that name, but a gap in a spur dividing two of the headwaters of the Teesta. This conclusion has since been confirmed by a perusal of the narrative contained in the 'Routes in Sikkim' (*sic*) compiled in the Intelligence Branch of the Quartermaster-General's Department in India by Captain T. O'Connor, R.A., issued at Calcutta at the end of last year (November 1900). Amongst much other information useful to travellers Captain O'Connor gives a short account of his visit to the true Chorten Nima Pass in 1896, an expedition no one we met at Darjeeling told us of. He made by aneroid the summit of the pass to be 18,650 ft. He makes the following reference to the Jongsong La: 'There is said to be a pass, the Jongsong La, leading out of the valley into Nepal, but I was unable to ascertain whereabouts it lay. From the general configuration of the country it must be extremely lofty and difficult.' It is interesting, and at the same time somewhat vexatious, to

learn that in place of the piles of snow we had to wade through Captain O'Connor found the approach to the pass unsnowed, although he was there very little earlier in the year than ourselves. Captain O'Connor adds: 'Lhonak, meaning "the Black South," is regarded by the Tibetans as their own property, and they very much resent the appearance there of any foreigner.' It was for this reason that we were provided with a guard of irregular Ghoorkhas. The maps attached to Captain O'Connor's 'Routes' convey no new orographical information, except that in many instances the heights given on them differ from 200 ft. downwards from the heights on the standard two miles to the inch Survey of Sikkim.

DOUGLAS W. FRESHFIELD.

EIGER HÖRNLI.—With reference to the notice on pp. 266-7 of the November number of the 'Alpine Journal' it should have been mentioned that the peak 2,706 m. (8,878 ft.) was first climbed by Sir H. Seymour King on September 2, 1887, with A. Supersaxo and Louis Zurbrücken, and that the mountain was subsequently ascended by the Messrs. Wills.*

DEATH OF A ST. NIKLAUS GUIDE.—The guide César Knobel, of St. Niklaus, died in January of tetanus, following an accident, leaving a widow and one child totally unprovided for. A fund is being raised to relieve the present necessities of the widow and provide a small annuity for the benefit of the child. Subscriptions will be gladly received by G. H. Makins, 47 Charles Street, Berkeley Square, W., or Robert Corry, 39 Park Hill Road, Croydon.

REVIEWS AND NOTICES.

Der Kilimandjaro: Reisen und Studien. Von Prof. Dr. Hans Meyer. Pp. xvi, 436. (Berlin: Dietrich Reimer [Ernst Vohsen]. 1900.) M. 25.

THIS superb volume is the record of no ordinary travel. Although cast for the most part in narrative form it is practically a monograph on the greatest of the volcanic massifs of East Africa. Dr. Hans Meyer had travelled far and wide, and had studied most of the arts of the accomplished explorer before he first set foot upon the slopes of Kilimanjaro in 1887. Disaster to his second caravan, due to collision with a slaving Arab, prevented him from reaching it again in the following year, but in 1889 he conquered its higher summit, Kibo, and, with the help of Herr Purtscheller, climbed far on the lower, but more craggy, Mawenzi. Three Germans, each of considerable scientific attainments—Lent, Volkens, and Widenmann—continued the research, especially from botanical and anthropological standpoints, but much still remained for Herr Meyer to achieve when he returned in 1898 to the scene of his former success. His earlier ascent and attempts had been made from the south to the saddle of the mountain, and thence

* *Alpine Journal*, vol. xiii. p. 416; vol. xv. pp. 29, 30.

right and left, eastward and westward, to the inner faces of Mawenzi and Kibo. In 1898, in the journey recorded in the present book, he completed the circuit of the massif. Along the south-eastern, the northern, and the western sides he followed the high-level paths of the Wajagga, above the upper edge of the forest girdle, but along the north-east and the south he selected lower ways, where the forest yields to the steppe. Three several excursions were made from the north, the west, and the south to the glaciers of Kibo, and the crater was again visited. The general results of the exploration are expressed in two chapters on the volcanic and glacial phenomena, and in an admirable map on the scale of 1:100,000.

Kilimanjaro is now one of the most thoroughly explored regions in all Central Africa. It is a vast mound of oval area, measuring nearly 50 miles from N.N.W. to S.S.E., and more than 30 in the transverse direction. The slopes rise at first almost imperceptibly, at an angle of, perhaps, 5°, from a plateau whose general elevation varies from 2,000 ft. to 4,000 ft. above the sea. Within the great forest which rings the massif round they become steeper, but nowhere exceed an angle of 20°. Above the level of trees the tilt of the ground is again reduced over an area of, perhaps, 300 square miles, and upon the centre of this slightly domed Alpine surface are the culminating peaks, Kibo and Mawenzi, standing about 7 miles apart, upon the major axis of the oval. The saddle between them has an elevation of about 13,000 ft., while the Kaiser Wilhelm Spitze, a tooth on the crater edge of Kibo, rises to 19,717 ft. The cone of Kibo exhibits the usual concave slopes, and the angle of ascent increases, in consequence, from 25° to 35°. The crater is circular and about a mile in diameter. Within is a small cone of eruption, but the volcano is wholly extinct. Firn occupies the crater floor, while a glacier ring depends from the outer lip. This ring ends, northward and eastward, in an ice cliff, which Herr Meyer estimated at some 120 ft. in height, but westward and southward it descends into the valley heads in a series of glacier tongues extending to about 16,000 ft. At one point, on the eastern side, the crater wall is notched by the Hans Meyer Scharte, and here, at the place where access was gained to the summit, the ice wall is broken. It is obvious that, apart from difficulties of food supply, the great height of the summit was the only important obstacle to be encountered.

In the case of Mawenzi, on the other hand, although its summit is not more than 17,585 ft., and glaciers are wanting, the complete ascent would, undoubtedly, present considerable difficulties. Seen from the north or the south this peak has the appearance of a pyramid, especially steep towards the east; but from the east it is seen to be a fissured and splintered ridge, arched from north to south. One of the most interesting results of Dr. Meyer's last journey has been to show that Mawenzi is not, as was supposed, a volcanic neck, like Kenya, but the western portion of a cone whose centre and east have been removed, possibly by some Krakatoa

explosion. In several of the drawings given by Herr Meyer the bedding of the periclinal lavas is clearly indicated in the great natural section formed by the eastern face.

Among other noteworthy points are the contrast between the forest conditions on the north and the south slopes, and the considerable diminution of the snow and ice in the Kibo crater within the nine years which elapsed between Herr Meyer's two visits. The northern forest is generally like that of the western face of Kenya, whereas that of the south, so far as it has not been destroyed by the Wajagga, is of a greener, more leafy description. It is quite likely that on the southern slope of Kenya, among the Kikuyu States, which correspond to the Wajagga of Kilimanjaro, similar conditions prevail, and there, if anywhere in the British Protectorate, may we expect the foundation of an agricultural colony comparable to that of Nyasaland. The shrinkage of the Kibo ice in 1898 is similar to that which was very evident on Kenya in the following year. Probably it was caused in both cases by the terrible drought which afflicted the whole region for a period of several years, but possibly it may have been due, in part, at any rate, to some progressive change in the climate, for the extent of the shrinkage was very great.

Herr Meyer's journey in 1898 was made under very different conditions to those which had prevailed ten years earlier. The road from Tanga on the coast to the foot of the mountain was by the German Railway to Muhesa, and thence by beaten roadway, without fear either of Arab or Masai interference. The Wajagga States, whose shambas have almost replaced the forest along the south and east of Kilimanjaro, have become perhaps the most promising field of German colonial enterprise in East Africa. On the admirable map of the whole massif and its neighbourhood which Herr Krauss has prepared from the observations of Meyer, together with those of Johannes, Lent, Widenmann, and others, there are shown two military stations, Moshi and Marangu, two stations of the German Evangelical Mission, and three of the Catholic Black Fathers Mission, also an ostrich farm. Herr Meyer's return was by the five days' journey through Taveta, to the Voi station of the Uganda Railway. From cover to cover there is, therefore, scarcely any incident which can be described as an adventure, and yet such is the facility of the author's pen, so varied his scientific interests, and so thorough his slowly accumulated knowledge of the region, that there is hardly a dull page from beginning to end. The picture presented, enriched as it is with a quite luxurious wealth of illustration from photographs and from the pencil and brush of Herr Ernst Platz, Dr. Meyer's companion, is undoubtedly one of the most attractive which has lately been added to geographical literature.

Perhaps it should be stated that Kilimanjaro is now only six days from Mombasa by way of Voi, and, therefore, within a month of London. The first ascent of Mawenzi remains for the enterprise of some climber with a long vacation to spare, and the geological

investigation of the great caldera at its eastern foot might not be unremunerative.

H. J. M.

The Rockies of Canada. By Walter Dwight Wilcox. (G. P. Putnam's Sons.)

The work under notice would appear at first sight to be a second edition of the beautiful volume written by Mr. Wilcox and published in 1896. The author explains in his preface that the encouraging reception given to his previous work led him to re-write and enlarge 'Camping in the Canadian Rockies.' The intervening four years have added much to his knowledge of this region. Not only has he revisited this playground of America, and done much excellent exploration work, but he has had the benefit of additional material afforded by the explorations of Professor Coleman, Dr. Norman Collie and his parties, and certain members of the Appalachian Club.

A sketch map, the combined efforts of recent explorers, accompanies the text, which, as the author explains in his first work, was not possible, 'as there are no detailed maps covering the region.' A second map, $1\frac{1}{2}$ in. to the mile, of the Lake Louise region, showing part of the summit range of the Canadian Rockies, surveyed and drawn by the author in contour lines, is appended. Mr. Wilcox may with truth be called a pioneer of this region where he appears to have become imbued with enthusiasm for exploration. The lake is within an easy walk of Laggan Station, on the Canadian Pacific Railway, and although he states the charm of the place is beyond his power of description the graphic word-painting in chapters ii. and iii., together with the photogravures, readily give one ample proof that it must be an ideal spot, and, to quote from the text, 'it has the enduring attraction of nature in one of her grandest and most inspiring moods.' The mountains in the vicinity of the lake, more especially Mts. Victoria, Lefroy, Aberdeen, and Temple, have afforded climbing to several parties, being, as they are, in close proximity to the railway. On p. 41 we have a more detailed account of the accident on Mount Lefroy in 1894, some particulars of which were given by Mr. Allen in his contribution to the 'Journal,' vol. xviii.; see also vol. xix. p. 70.

Two journeys are recorded to Mt. Assiniboine, one of the highest peaks of Southern Canada, which from one point of view resembles in outline the Matterhorn from the Riffel. On the occasion of his first visit a tour of the mountain was made by three of the party, each carrying his own blanket and food for three days. The journey, graphically described on pp. 85 to 97, appears to have been attended with very considerable hardships, and only by determined plodding and sheer luck was the feat accomplished. A height of 9,000 ft. was attained, a distance of 51 miles by pedometer being covered. On p. 85 Mr. Wilcox explains how, with his camera tripod for a plane table, an improvised alidade, the upright sticks threaded with horse-hair, and a length of linen for a base line, he was able to measure and determine the height of this

noble peak, which came out 11,680 ft., as against 11,880 ft. by the typographical survey of Canada, from angles taken at a distance.

Whilst the Rockies offer abundant work to the mountaineer, towards which Mr. Wilcox has given considerable attention, it is not from this point of view that we may regard him at his best. It is rather as an explorer and chronicler that he excels. His journey to the Upper Saskatchewan, chapter ix., was not only a fine performance, but the description of the journey abounds with lively episodes. The difficulties attending the mountaineer in his ordinary work even in the Alps are bad enough, but in the Rockies it is in the valleys that the additional difficulties arise to man and beast, and it is amidst the rotten timber, charred trunks, muskegs, and fording of rivers that we find the author ever ready with graphic and lucid descriptions. The story described on p. 59 of a pack horse being caught in the tree, which, springing forward like a spring, turned the horse a somersault, given 'with no fond hope than any one will credit the tale,' is quite credible to one who knows the difficulties and dangers of the forests of the Canadian Rockies.

One chapter is devoted to climbing, with its past records and future possibilities, the author quoting very freely from Dr. Collie's accounts of his 1897-8 expeditions as published in the 'Royal Geographical Journal.' Useful information is given on the rock formations of the Selkirks, Summit range, and Canadian Rockies as a guide to the future climber, and confirms our own observations of the rotten condition of the rocks in the Waputehk range.

Chapter xiv., on the game animals and fishing, gives evidence of the author's qualifications as a sportsman and fisherman. In his opinion the game laws to which the Stoney Indians have now to submit will tend to make game much more plentiful than hitherto. For the fisherman this region offers great possibilities: trout is to be found more or less in all the lakes and torrents, in sizes up to forty-seven pounds.

In the appendix information is given about trips near Lake Louise, also valuable advice on equipment, personal effects, notes on 'breaking camp,' making marches, and 'making camps,' all of which should be useful to mountain explorers contemplating a journey into this country.

The book is, of course, not without faults. On p. 189 'a stupendous wall of rock between 11,000 and 12,000 ft. high' should read, in our opinion, 4,000 to 5,000 ft. high. P. 193 'a few weeks before my trip' should read 'a year before.'

The phraseology of mountain terms, and also of plants, strikes one as peculiar. Pitches, rock-slides, corrals, washouts, and outfits are terms we are not accustomed to see in our 'Journal,' whilst a whiskey jack is quite new to us as a bird, and for plants the scarlet-painted cups, and cow parsnips are doubtless confined to American flora. Apart from this the book is delightful reading, not unnecessarily spun out, beautifully illustrated, and will rank in the first line of work on Canadian Rocky explorations. G. P. B.

Fifteen Years' Sport and Life in the Hunting Grounds of Western America and British Columbia. By W. A. Baillie-Grohman. Illustrated by seventy-seven photographs. With three specially prepared maps of the N.W. coast of the U.S.A., British Columbia, and the Kootenay District. (London: Horace Cox. 1900.)

This handsome volume, as will be naturally anticipated by those who have had the good fortune to read Mr. Baillie-Grohman's previous books, will be found full of interest. The author tells his story—and, unlike some modern writers, he has a story to tell—with a straightforward vigour and keen sense of humour which at once attracts the reader. The book appeals, no doubt, to the sportsman more than to the mountaineer, but so much of the hunting is carried on amongst mountains, and requires climbing ability of such a high order, that mountaineers will find much of high interest in it. As Mr. Baillie-Grohman says, p. 88—

The chase of the white 'goat,' or, as it properly should be called, 'antelope-goat,' is a most exciting one, if the surmounting of obstacles counts for anything. Indeed, as I look back, for purposes of comparison, to the *successful* days I have had after chamois in different parts of Europe—for the unsuccessful ones, of which there were a goodly number, slip one's memory with gratifying ease—I recollect very few indeed which entailed harder work than I underwent in the chase of the American chamois, as one might term these hardy inhabitants of the rocky wastes above timber-line in North America.

Let us take, in illustration, an account of a 'goat' hunt in the Bitter Root Mountains, pp. 98-100.

I had sighted a solitary ram grazing on one of the frequent amphitheatre-shaped steep slopes, but well down about the middle of the declivity, while I was on the top of the knife-backed ridge. Unfortunately the goat had seen me, and had taken to his hoofs, but in a very leisurely manner, keeping in his flight a course parallel to mine—*i.e.* approaching neither the top nor the bottom of the slope. It was a very long shot, and my trial shot, taken very steadily while he was making one of his frequent stands, missed him a little to the left, proved that my distance-judging was fairly correct. I hoped to get nearer, so reserved my fire, and for the next three-quarters of an hour a most exciting steeplechase took place, my only course being to follow out the ridge. A chamois would have put himself beyond danger in a few minutes, though our respective paths were not smooth ones. Indeed, his was as rough as mine, huge boulders piled over each other, or separated by dark yawning chasms, generally too broad even for a goat's muscles, making progress very slow. But no doubt there was a good deal of fooling about the old billy's proceedings, for from time to time he would squat down and take a rest, much amused, no doubt, by the frantic scrambles of his breathless pursuer above him, clearly outlined against the horizon, and feeling very sure that the shaking aim would be anything but dangerous to him. In this he was right, for eleven times in the course of that singular race did I throw myself flat on some handy rock and take as deliberate aim at my distant quarry as my unsteady hands, trembling from the exertion in the trying atmosphere of these high altitudes, would allow. Eleven times the bullet whizzed past him, once detaching a fragment of rock which must have hit him, for I could distinctly perceive him make a side jump. I was very nearly at my wind's and wits' end, fagged out by my run, which, as

I looked back, I saw covered very nearly the whole semicircle of the ridge, and which, as I afterwards found, was keenly watched with glasses by my friend and some of the men from their camp, far down the mountain-side. The worst about it was that by this time I had only one cartridge left. Hunter and hunted were approaching the end of the semicircular ridge, where it fell off in one enormous precipice, a configuration of the ground that, of course, would shortly terminate the chase, a continuation being only feasible to winged creatures. The ram was steering for a tooth-like crag, separated from the main ridge by a profound abyss. Here, evidently, he felt himself secure, and as I watched him sit down very leisurely to take in all the fun of my defeat very uncharitable sentiments escaped my parched and breathless lips. A quarter of an hour's much needed breathing spell gave me at this juncture a chance to survey the ground a little more critically than I had hitherto done. It would have been folly to risk my last cartridge at an impossible range. The old billy was evidently feeling very much at home, and, as I could easily see with my glasses, kept his gaze steadfastly fixed in my direction.

The formation of the ground, as I presently discovered, favoured the employment of the following ruse: Retiring behind the top of the ridge, I took off my canvas jacket and hat, dressed up a handy stone with these garments, and slowly lifting it on the top of the ridge, deposited it there, in plain sight of the watchful ram. Then I disappeared from his vision, and made a long *détour*, including a disagreeable creep through a ledge of shelving rock, in places only a foot or two in width, with the object of getting round the great buttress of rock at a considerably lower level, and so approach the ram from a direction he little expected, to within one hundred and fifty yards or so. It was an anxious minute as I lifted my head inch by inch over a projecting ledge, and there, in plain view, saw my game, his gaze still fixed upward at my dummy. For full five minutes I lay there. What with the excitement and my breathlessness I instinctively felt that every minute thus gained would bring my bullet an inch nearer to my quarry. When finally the old 500 express sped its solid 480 gr. bullet the ram was my meat.

The wapiti, the moose, caribou, bighorn, antelope, the bears, and the bison all 'bulk' largely in Mr. Baillie-Grohman's pages, five chapters being devoted to them, while the seal shares a chapter with the other fur-bearing animals of the Pacific Coast, and the salmon of the Pacific Coast has a chapter to himself.

Chapters x. to xiii. are devoted to Kootenay—a map of which is provided. That Mr. Baillie-Grohman has left his mark on the district will be gathered from the fact that a town called after him is indicated on the map.

The account of pioneering in Kootenay, to which the author went in 1882, will be found full of interest. Some idea of the state of the district will be given by the fact that it is now divided into West, East, and North Kootenay, and that the part now known as West Kootenay is 'quite twice the size of Wales.' In 1882 it was a 'perfectly uninhabited wilderness.'

No one who reads Mr. Baillie-Grohman's adventures in this part of the 'attic of North America'—how he 'ran' a sawmill and a 'store;' how 'red tape,' even across the Atlantic, fetters enter-

prise; how he made a canal; how he imported a steam launch, which was cleared free of duty as a settler's 'agricultural instrument'—can fail to be both interested and amused.

Life was at times, as the French have it, *très mouvementé*. To say nothing of other incidents, such as the accident with the steam launch, on p. 254, the author twice very narrowly escaped with his life—from at one time the rifle, at another the revolver of one Sprowle, who combined in himself the characters of a skilful pioneer and a half-crazy desperado. As Mr. Baillie-Grohman's friend 'Bonanza Clark' said of his escape from a she 'grezzlie,' on both these occasions 'hit was a close call and no mistake.'

We have no space to do justice to the delightful chapter on 'The Yellow and White Agony,' in which Mrs. Baillie-Grohman, for whose courage and resolution we have the greatest admiration, treats of Western servants. The stories of her Chinese domestics are most graphically told. Here is an example (pp. 347-8):—

The way some of the white 'Hoodlums' of the town behaved to the Chinamen was disgraceful. They frightened my man so much that for some time he scarcely liked to go outside the gate to pass a large vacant place close to us which the boys of the town had made a playground of. One day they knocked him off the side-walk, and at the same time cut his head so badly with a stone that he rushed home to me, and I had to plaster and bandage his head and eye. I telephoned at once to the police station. The conversation I had was somewhat characteristic of the happy-go-lucky colonial way of doing things.

'The boys on the green opposite my house attacked my Chinaman, who was going into town; they have knocked him about very badly. As they are still playing on the green the man is afraid to go out. Send a policeman up.'

'Well, take the names of the boys and send them to us.'

'I can't go out and catch them; that is your business.'

'See if there ain't a policeman in Douglas Street, and put him on to them.'

'I can't see one my end of Douglas Street; what is the man to do?'

'Well, I guess if he is scared he best stop at home; or you could walk down the street with him a bit: they won't go for him if you are there. We are too busy to look after every Chinaman that has a stone thrown at him.'

Cool; but, as there seemed that no more help was forthcoming, I did accompany Gee past the dangerous playground.

'I got something for boys now, when he come and throw stone at me,' chuckled Gee a day or two after this, and with this he produced from his wide sleeve a long iron crowbar. 'I tuck him up my sleeve,' he said. 'Boy come; I just knock him hard on head.'

'Give it to me, Gee; where did you get it?'

'I go hardware (ironmonger) store. Man there he know me. He ask me what the matter with my head; I tell him all about boy; then he give me bar; he tell me that settle boy pretty soon.'

'Yes, Gee, and that will settle you too; for if it killed the boy you would be hanged.'

I kept that bar and returned it to the man at the hardware stores, whose only excuse for having supplied him gratis with such a murderous weapon was, 'Well, they all carry them.'

The book is well printed, fully illustrated, many of the plates being excellent, and supplied with maps of (1) The Kootenay District, (2) Part of British Columbia and the adjoining portions of Washington and Montana, with Oregon and Idaho, (3) The Territory of Alaska, on which, by the way, Mount Logan is indicated. We heartily commend the volume to all who are interested in sport, mountaineering, and exploration.

Chamonix and the Range of Mont Blanc. By Edward Whymper. Sixth Edition. (London: John Murray. 1901.)

Zermatt and the Matterhorn. By the same. Fifth Edition. (London: John Murray. 1901.)

These well known guide-books are, following the precedent of 1900, again published earlier this year. They have, as usual, been brought up to date. The principal additional item in the Chamonix Guide this year is a plan of the railway from Le Fayet to Chamonix. We learn that amongst those who disappear from the list of guides in consequence of their having passed the age limit are the well known names of Michel Payot and Edouard Cupelin. We gather from the Zermatt Guide that the central committee of the Swiss Alpine Club intends to erect an *annexe* to the Matterhorn *cabane* on the Hörnli ridge.

Recherches Géologiques et Pétrographiques sur le Massif du Mont-Blanc. Par L. Duparc et L. Mrazec. 4to., pp. 227; plates. (Genève: Georg. 1898.) Fr. 25.

Mont Blanc holds the first place in the affections of mountaineers, and the literature thereon the first place in many a mountaineering bibliophile's collection. In any such collection a place ought to be found for this new monograph on the geology of the mountain. For some years past the two authors—professors at Geneva and Bucharest respectively—have been issuing numerous short papers on special points on the geology of the range, and now in this volume they make a definite and important contribution to the systematic geological description of Mont Blanc. The letterpress is accompanied by many plates of geological specimens and sections, and by many photographs of the mountain taken from unusual points of view, which make the book of interest to others besides geologists. The work forms vol. xxxiii., No. 1, of the 'Mém. de la Soc. de Physique et d'Histoire Nat. de Genève,' and may be obtained by English readers through Messrs. Sampson Low & Co.

To complete the letterpress description—but quite separate therefrom—a new and very clear geological map of the whole range (scale 500,000) has been published by the authors. Of this more exact particulars will be found at p. 405 of this number of the 'Journal.'

Une ascension au Mont-Blanc. Par G. Pfeiffer. 8vo, pp. 24; ill. (Vevey, 1900.)

'To such base uses.' This pamphlet, by a member of the S.A.C., is published as an advertisement by the Société 'Chocolat Peter,' on whose chocolate alone one of the party subsisted during

the expedition; which, however, ended gloriously with bouquets and champagne. The pamphlet is neatly got up, in two editions, French and German, and collectors of curiosities may note that it is to be had gratis from the Company.

Die Alpen in Natur- und Lebensbildern. Dargestellt v. H. A. Berlepsch. 5te Auflage. 8vo, pp. x, 570; plates. (Jena: Costenoble. 1885.)

It is not necessary at this time of day to review an alpine work so well known as this; but it may be well at the present time, when mountaineering literature of very varying quality is so abundantly produced, to revive acquaintance with one of the early, charming, and careful works on the subject. English lovers of the Alps were made acquainted with this interesting and entertaining volume, with its vivid and poetical sketches of life, science, and climbing, through the translation made by Mr. Leslie Stephen, and published by Messrs. Longmans in 1861, the year of the publication of the first German edition. During the author's lifetime three other editions were called for, each being fuller and richer than its predecessor, and the work was translated into nearly all the languages of Europe. After his death in 1883 the work was corrected and brought up to date by his son, who published the fifth edition in 1885, of which a copy has recently been presented to the library of the Alpine Club, and of which a condensed form (now out of print) was issued as a pocket edition.

Dictionnaire Géographique de la Suisse. Livraisons 1-8, Aa-Bâle-ville. 4to. (Neuchâtel: Attinger. 1900.)

We welcome this first section of what promises to be a very useful gazetteer. Every page has good maps and illustrations from photographs. The articles give full and accurate information, historical, topographical, mountaineering, &c. In this section we note specially the articles 'Aar, Glacier de l'' (two illustrations and two maps, and an account, with bibliography, of the scientific explorations made by Agassiz and others), 'Adula' (with maps), 'Aletsch Glacier' (three illustrations and map), 'Alpes' (36 pages, with illustrations and maps). The work is edited by M. Charles Knapp and M. Maurice Borel, assisted by many well known authorities, such as Mr. Coolidge, M. Kurz, Professor F. A. Forel, Professor Renevier. There will be about one hundred parts, and the price is 75c. a part.

Alpine Majestäten und ihr Gefolge: die Gebirgswelt der Erde in Bildern. Heft 1. Folio. (München: Vereinigte Kunstanstalten, A.-G. 1901. 1 M.)

We trust that this work, of which monthly parts are promised, will receive more support than has been given to similar ventures in the past. This first number contains twenty-four reproductions from photographs (8 in. by 6 in.) of the Alps of Switzerland and Tyrol, and they are excellent reproductions. As there is no letter-press a note as to the point of view from which the photographs have been taken is needed, but not given. If the publication is

continued, and views of mountains outside Europe are produced, the work will be of much interest and value.

To the Top of Mount Rainier. By A. Inkersley. 8vo, pp. 7; ill. In 'Good Words.' (London: Isbister. February 1901. 6d.)
Mazama: a Record of Mountaineering in the Pacific North-West. Rainier Number. (Mazamas Club, Portland, Oregon. October 1900.)

In 1897 a party of fifty, including nine ladies, made an ascent of Mount Rainier (14,528 ft.). The expedition presents no difficulty, but, as much snow and ice have to be traversed, one would expect that considerable care would have been taken. On the contrary, however, the most simple precautions appear to have been neglected on the descent, and one of the party, Professor McClure, slipping on a steep slope, was killed, and two others ran great risk of death from falling into a crevasse.

In regard to the nomenclature of the mountain it seems a mistake that the native name, with its pleasant sound and meaning—Tahoma (or Tacoma), 'The Great Mother'—should not be retained. It is interesting to note that there is an Indian legend of a hunter, who once tried to reach the summit, being killed for his presumption by the angry mountain deity. Historically the ascent was first attempted by Lieut. Kautz in 1857; but it was not till 1870 that the summit, which, as usual, was looked upon as inaccessible, was reached by Gen. Stevens and Mr. Van Tromp.*

Nuova Antologia (Rome) for January 1900.

In an article in this number on 'L' alpinismo e la Spedizione Italiana al Monte Sant' Elia,' by Laura Gropallo, the author takes the opportunity, in reviewing the story of the Duke of the Abruzzi's expedition, of giving a short account of mountaineering literature in general. She shows how Switzerland, France, Germany, and especially England each has a popular alpine literature independent of club periodicals, which are scarcely known by the general reader, and to which Italian climbers have hitherto almost exclusively confined their writings. She trusts that Signor Filippi's work on the expedition will form but the first of a series of Italian books devoted to the subject, which will rank equally with the popular works in other languages.

The Scientific Study of Scenery. By John E. Marr. 8vo, pp. ix, 368; ill. (London: Methuen. 1899. 6s.)

From the consideration of geology in relation to geography has sprung the scientific study of scenery, to which this book forms a helpful introduction. Some knowledge of geomorphology, as the

* 'Mount Tacoma, as seen from Puget Sound, was a magnificent object. Rising over the deep waters, and towering up from amid the forests, this splendid peak, streaming with glaciers, afforded a prospect which (though to be sure, owing to fogs and the smoke of forest fires, it was often concealed from the eyes of disappointed travellers) was among the most superb mountain views in the world' (see p. 433).

science is named, is a necessary part of the mental outfit of every explorer, but especially of the mountaineering explorer, for most of the beauties of scenery and most of the problems of geology are to be found among the mountains of the world. Mr. Marr has written a very readable book and carefully chosen his illustrations, most of which, together with more than one hundred pages of letterpress, deal with mountains and glaciers.

A la Montagne. Par G. Pfeiffer. 4to, pp. 196: ill. (Genève: Eggimann. 1897. 10 fr.)

A volume of short articles—rhapsodies they might be called—by a writer who is enthusiastic about mountain scenery. Such enthusiasm in any one is not of itself sufficient to justify the writing of a book, but M. Pfeiffer can communicate his impressions in a pleasing manner, and he has thereby added another readable work to the long list of the less important items of Alpine literature which has been produced to satisfy an ever-growing demand. M. Pfeiffer treats chiefly of the Canton Valais; and ascents of the Grand Mœveran, the Tour Sallières and Aiguille du Tour are described. M. E. Potterat, a photographer at Montreux, adds a chapter on mountain photography, practical hints and receipts. There are numerous illustrations, mostly from photographs, but compared with the beautiful illustrations produced in many Alpine works nowadays they cannot be said to be good.

Engadin-Ortler-Dolomiten. Von Theodor und Maud Wundt. Imp. 8vo, pp. 276; ill. (Stuttgart: Greiner & Pfeiffer. 1900.)

This is the fifth work by Herr Wundt that has been published under the auspices of the Berlin section of the D.u.Oe.A.V., and the third devoted to a portion of the Dolomites. It is, however, the first in which Frau Wundt's name is associated with her husband's on the title page, though she took part in the expeditions described in the previous volumes. As the good quality of Herr Wundt's work is now so well known, it is hardly necessary to do more than draw attention to the publication of this new volume, which is a fit companion to the others in the interest of the letterpress and the excellence and abundance of the illustrations. The title sufficiently indicates the district treated of.

Geomorphologische Untersuchungen in den Hochalpen. Von Dr. E. Richter. 4to, pp. 103; plates. 'Petermann's Mittheil.,' Ergänzungsh. 132. (Gotha: Perthes. 1900. M. 6.40.)

In this work Professor Richter fully and clearly describes the corries (Germ. 'Kahre') of the Alps, and especially of the Eastern Alps, and discusses the method of their formation. The term is here restricted to the niches or hollows formed on mountain-sides by the action of ice, so that naturally there are two kinds to consider, those still under the action of ice and those no longer so. Such hollows seldom occur on a slope greater than 31°. The plates are good and helpful to the understanding of the letterpress.

Neue Studien zur Kenntnis Kaukasiens. Von C. v. Hahn. 8vo, pp. 335.
(Leipzig: Duncker & Humblot. 1900. M. 6.)

We would draw the attention of those interested in Caucasian life and travel to this new work by Professor v. Hahn. Like his previous works ('Aus dem Kaukasus,' 1892; 'Kaukasische Reisen,' 1896) this is devoted to topographical description and ethnographical studies. In this volume are treated the valleys on the north side of the Central Caucasus range, Daghestan and Kakhétia.

La Suisse au XIX^e Siècle. 3 vols. imp. 8vo; ill. (Lausanne: Payot; Berne: Schmidt & Francke. 1901.)

In the third volume of this work occur two articles which are of interest to the mountaineer. M. Edouard Rod writes on 'La Montagne Suisse' (pp. 397-424). He gives a short account of the development of the feeling for mountains, of their representation by modern Swiss artists (with illustrations), and of the change in customs and manners brought about by the advent of the age of the great hotel. Dr. Dübi writes (pp. 425-456) on 'Exploration des Alpes,' giving a history of 'alpinism' in Switzerland, under the two headings (1) the age of individuals, which is otherwise called the age of science, up to 1857; and (2) the age of societies, since the foundation of the Alpine Club. The account is most interesting as far as it goes, but is meagre, from its being restricted to mountaineering by the Swiss. It is illustrated by excellently printed portraits of guides.

The volumes contain, besides, authoritative articles on 'Hygiene,' 'National Fêtes,' 'Finance,' 'Art,' 'Literature,' &c. The price of each volume is 22f. unbound, or 25f. bound.

Nigritellen. Zwei Novellen von F. Huber. (Bern: Kôrber. 1901.) M. 2.50.
An heiligen Wassern. 4te Aufl. *Der König der Bernina.* 6te Aufl. Von J. C. Heer. (Stuttgart: Cotta. 1901.) M. 3.50 each.

The reader of Alpine literature has no cause to complain of lack of variety. Alongside the works on mountaineering, mountain geology and geography, and other mountain science, poetry and drama, lies a considerable body of fiction. Rousseau's 'La Nouvelle Héloïse' may perhaps be taken as the first work of the kind. Florian, who had a great vogue as a writer of sentiment, wrote at the close of the eighteenth century a short tale, 'Claudine,' the scene of which is at the Montanvert. An English story of the same name, treating of the catastrophe at Bagnes, went through six editions. Scott's 'Anne of Geierstein' takes us through Alpine scenery; Ballantyne wrote 'Rivers of Ice,' a didactic story for boys, about the glaciers of Mont Blanc; Daudet charmed us with 'Tartarin sur les Alpes,' and there are many more whom, from lack of space, we cannot mention. In the last number of the 'Journal' we had occasion to refer to several recent novels, and now we have to lay the names of others before our readers. Herr Huber's are very slight tales, with a background of Swiss flowers, touring, and mountain landscape. ('Nigritella' is the vanilla-

scented Alpine orchid.) Herr Heer's, on the other hand, are serious novels. They are full of the life of the Alpine regions and of the influence on character of the life and of the scenic ruggedness. There is climbing and hunting, good description of scenery, and interesting drawing of character.

CORRESPONDENCE.

MOUNTAINEERING IN CANADA.

To the Editor of the ALPINE JOURNAL.

SIR,—In 'Munsey's Magazine' for March 1901 there appeared an interesting article dealing with the exploration of the 'New Alpine Playground' in the Canadian Rockies and the Selkirks, a region which is now beginning to attract, very deservedly, the attention of European and American climbers. In this paper there occurs the following passage: 'Among mere lovers of the sport alpinists from Europe were first upon the scene—the Rev. W. S. Green and the Rev. H. Swanzy, of the Alpine Club, in 1888.' Professor Ch. E. Fry, the writer of the article, has inadvertently done me a little injustice in giving priority to my fellow members of the Alpine Club, for I was quite six years earlier upon the scene. Beginning in 1882, when I explored the southern parts of the Selkirks, I spent until the year 1890 annually many weeks, and in several of these years the entire summer and autumn, in that highly picturesque mountain land. Attracted at first by the capital *Haplocerus* shooting and the superb scenery, as well as by the primeval condition of the whole Kootenay country, I subsequently interested myself in the development of the district, acquiring a large land concession from the British Columbia Government. While devoting myself to sport I did a good deal of climbing, and though, as I freely acknowledge in my *Fifteen Years' Sport and Life in the Hunting Grounds of Western America*, I can lay no claim to have scaled any first-class peaks where extensive ice slopes had to be crossed, I ascended a number of second and third rate mountains upon which I am convinced no white man's foot had ever rested. I did almost all my climbing with Indians—the Flatbows and the Upper Kootenays—who were then still the best natives for mountain work I have met in any part of North America; but, as it was impossible to prevail upon them to put foot on ice, and I was unprovided with the necessary accessories for really serious mountain exploration, I had to content myself with rock work.

The Rev. Green and the Rev. Swanzy, as Professor Fay states, visited the Selkirks first in 1888, and they spent several weeks in climbing the peaks near the Canadian Pacific Railway, but being unprovided with suitable porters and other means of transportation they did not get further than some seven miles (in a straight line)

from the railway. I met them, as Rev. Green in his *Among the Selkirk Glaciers* mentions, just after the conclusion of their expedition, too late to assist them with any advice which my six years' experience in these mountains might have enabled me to extend to them. In 1888 it was easy enough to get to one's starting point by rail, but in 1882, 1883, and 1884 it was a very different thing, for the Selkirks were until the last-named year a perfectly wild country. In 1882 there was in the whole of West Kootenay district, a region twice the size of Wales, not a single white settler nor a single house of any kind, and it took me much longer to reach Kootenay Lake by canoe and horseback travel from Helena, in Montana, than it would to-day from London. In 1882 no white man had ever crossed the Selkirks from east to west, Major Roger, after whom the pass used by the Canadian Pacific Railway is called, being the explorer who first achieved this feat in 1883.

To-day the 'New Alpine Playground' can be reached from London in eleven or twelve days, from the south by the Great Northern, and from the north by the Canadian Pacific Railway; and what was then West Kootenay is now the scene of some of the richest mining in America. Scores of steamers, several railways, telephones, and electric light and power undertakings have made the country round Kootenay Lake one of the most attractive fields for mining enterprise, and the population totals some 20,000 where eighteen years ago there was not a single resident white man—an achievement of which Canada can be proud.

Apologising for the length of this communication,

Yours obediently,

W. A. BAILLIE-GROHMAN,
Alpine Club, 1874.

[NOTE.—In confirmation of Mr. Baillie-Grohman's letter we may mention the fact that the Officials of the British Columbia Government have named after him (see p. 420) a stream, a mountain, and a post office. We have also seen a letter from Mr. Theodore Roosevelt, Vice-President of the United States (Honorary A.C.), to Mr. Baillie-Grohman, in which he says, 'When I was in the Kootenay country I heard much of you, often in exasperating fashion, for I ran across two men who had been out with you, and who, whenever I began to make bad weather of it over the slide rock and through down timber, would begin to recite your feats as a walker and hunter.'—EDITOR *Alpine Journal*.]

THE EARLIEST ROCK-CLIMB.

To the Editor of the ALPINE JOURNAL.

DEAR SIR,—Now that the annexation by Alpinists of the Himálayas has well set in it may specially interest your readers to learn that a *traversée* in that region constitutes what may safely be considered as the most ancient record of rock-climbing in existence.

Many of them will know of the great treasury of Indian folklore entitled the 'Jātaka, or Birth Stories of the Buddha,' and of how these old tales, to the number of about six hundred or more, were adapted by the Buddhists to lend point and attractiveness to their doctrines, especially to that of Karma, the general Indian tenet of effective action working through countless rebirths. As a Buddhist compilation the 'Jātaka' may be said, from internal evidence, to date approximately from the age of Alexander the Great or that of his immediate successors. But the stories themselves are far and indefinitely older. One-half of them, translated from the Pali by four or five scholars, has been published by the Cambridge University Press. At the present rate of publication the story I am referring to will not appear in English garb for another three or four years.

It is named the 'Chaddanta Jātaka, or Six-Tusk Birth Story,' and tells of a mighty herd of mythical elephants believed to dwell in the Himālayas in the midst of luxurious vegetation. The future Buddha is born as their leader—a majestic white elephant, six-tusked. One of his two queen elephants grows jealous at the apparently greater devotion of her lord to the other queen, and vows to avenge herself on him in her next birth. Re-born as a king's daughter, she becomes the consort of the King of Benares, and then has reminiscence of her vow. Affecting to be seized by the craving of a woman with child, she tells her husband she must get the tusks of the Chaddanta elephant king or die, and so induces him to muster a host of hunters beneath her window. From these she selects a brawny Hercules named Sonuttara, and gives him full instructions how he is to discover this wondrous creature, overcoming his fears by the promise of the tithes from five villages. How he accomplishes the journey I translate, condensing somewhat, from the original, as follows:—

'And when he had heard her Sonuttara consented, saying, "Very good, lady; I will kill the elephant and fetch you his tusks." Then she, well pleased, paid him 1,000 (kahāpanas), and bade him go home and get ready to start in seven days' time. Then she sent for a smith, and gave him this order: "Good sir, we want an axe, an adze, a mattock, a spade, a mallet, a billhook for chopping down canes and brushwood, a sickle, a metal staff and stanchions, and a grappling iron. Make all these quickly and bring them." Next she commanded a leather-worker, saying, "Good sir, it is your business to make us a leather sack capable of containing a kumbha. We want also a leather rope, straps, gloves, and shoes, and a leather umbrella. Make all these quickly and bring them." And both of them did so. And she had provisions prepared, and all other requisites for his journey—fire-drills, and so on. And when she had stowed everything into the leather sack, both the tools and the provisions—namely, a bag of barley meal, and so forth—the whole weighed a kumbha (about 1 cwt.).

'Sonuttara, after making his own preparations, went on the seventh day and waited on the queen. And she said, "All that

you will require on your journey has been got ready. Take this knapsack." And he, being as strong as an elephant, lifted it up as if it were a bag of sweets, and fixing it on his loins left his hands free. She bestowed a maintenance fund on his children, informed the king, and dismissed him. Saluting the king and queen, the hunter descended from the palace, mounted a chariot, and, with a great escort, departed from the city. Passing through towns and villages, he came to the frontier, and there turned back the country folk, and entered the forest, escorted by the border folk. When he had reached the end of human pathways he turned back the border folk and went on alone. For thirty yojanas (= $30 \times 7\frac{1}{2}$ miles) he penetrated through seventeen sorts of jungle, reaping and chopping a path, felling trees, and digging out roots. In a bamboo jungle he fashioned a ladder, mounted a bamboo cluster, and swung himself along above from stem to stem. In a marsh jungle he took two planks, and laid them down one after the other as he went; and to cross a watery jungle he made a canoe. Finally he came to the foot of a mountain precipice.

'Here he tied his grappling iron to his rope, and, throwing it aloft, hooked the rock with it, and climbed up. He then drove his brazen staff, shod with diamond, into the rock, and into the cleft hammered a stanchion. Getting on to this, he hauled up his grappling iron, and again hooked it aloft. (Going up and driving in the second stanchion,) the rope hanging down, he descended by it, and making fast the lower stanchion to the rope, he, clutching the latter in his left hand, and taking his mallet in the right, struck at the rope till the stanchion was extracted. Then he climbed up again. On this wise he ascended to the summit, and traversing descended by similar methods. Hammering in a stanchion at the top of the first ridge, he wound his rope on to it, and, fastening his knapsack on to the rope, and sitting in the knapsack, he went down, unwinding the rope like a spider paying out its web. Some say that he caught the wind as well with his umbrella, descending like a bird.

'Thence he proceeded to cross six more mountain ranges, the last and greatest being the glorious peak *Suvannapassa* (= *Côte d'Or*). Finally from the *Fairies' Rock* he looked down on the base of the mountains, and saw afar the great banyan grove with its thousands of pillared stems, in colour like a cloud. This was the haunt of the mythical elephants, whose white leader he, in ignoble fashion (literally, not in Aryan form), had come to slay.'

The plucky climber succeeds in his quest, and in a most sportsmanlike fashion shoots the monarch he has entrapped in a pit with poisoned arrows. The suffering elephant converses magnanimously with his slayer, and by his insight discerns the identity and motive of the vindictive instigatrix. He himself with his trunk takes the hunter's saw and saws off his tusks, dying thereupon with serenity. By the power of his virtue he causes the hunter to return in seven days, the journey out and the chase

having occupied seven years. But the tokens of the great dead awake remorseful memories in the queen, and she dies of a broken heart.

It is clear that our hunter is not climbing on any very elevated *niveau*. There is no allusion to snow or ice. The ascents were apparently conceived to have been effected in some region abounding in gorges or small dolomitic ranges. As a pure piece of rock work they seemed to me not so bad, especially when the amount of ironmongery the man carried is borne in mind—worthy to rank him next to Alice's White Knight. But there must have been a goodly number of 'stanchions' expended on those descents, unless there was such an Oriental profusion of that leather rope as would have put to the blush the yards exacted by Dolomites and the Aiguille du Géant. Anyway he seems to have managed the unwinding less like a spider than an Alpinist, since he is not said on descending to make it a *corde fixe*. I do not gather that he wore putties, but the leather shoes—without nails—suggest a kind of moccasin as effective on the rock as *passi di gatto*. The resort to a parachute seems almost prophetic of new departures in Alpinism!

I am, dear Sir,

Yours faithfully,

CAROLINE A. (FOLEY) RHYS DAVIDS.

PROCEEDINGS OF THE ALPINE CLUB.

A GENERAL MEETING of the Club was held in the Hall on Tuesday evening, February 12, 1901, at 8.30, the Right Hon. James Bryce, *President*, in the chair.

The following candidates were balloted for and elected members of the Club:—Messrs. W. Pelham Burn, H. K. Corning, J. Davidson, G. T. Glover, C. A. Hasler, G. W. Nettleton, H. Simms.

The PRESIDENT: 'I wish, in informing the Club that this meeting was postponed till this day in consequence of the calamity which has befallen the nation, to ask the members to pass a resolution expressive of our grief at the loss of our beloved Queen, together with one which shall convey our condolences to the King and the Royal Family, and shall at the same time express our sentiments of loyalty and attachment to him on his accession. Never in our history has the loss of any Sovereign so stirred the feelings of the nation. Seldom, indeed, in modern history has there been such an expression of genuine and deep sorrow from a whole people, sorrow which has evoked countless marks of sympathy from all parts of the world. When we recollect the long and glorious reign and the character of the life that has now closed we shall not be surprised at a manifestation of sorrow so unexampled, because in our Queen public virtues and excellences, which had been subjected to the test of a reign of sixty-four years, and had come out of that test recognised and admired by the whole world, were united with all the virtues that adorn private

life. All her tastes and predilections were for things noble and of good report. We here may remember with special pleasure that there was nothing that she loved better than nature, and in particular the grandeurs and the beauties of mountain nature, and nothing that she enjoyed more than poetry and art. We have hardly yet begun to realise how much we owe of our nation's peace, concord, and contentment to the admirable way in which she performed her functions as a constitutional monarch for so many years, to her conscientious assiduity in the discharge of the work which came daily, and indeed hourly, before her, to her tact, to her sound judgment, to her careful abstention from anything like political partisanship, and to the genial kindness which enabled her to associate herself with all the joys and sorrows of her subjects. These made her an important factor in the peace and well-being of the constitutional system of England, and we can form no better wish for her successor than that he may walk in the path marked out for him, and find that the Throne is never so firmly placed as when it rests upon the affections of the people. In such a resolution of condolence we may include the expression of our loyalty to the King and of our best auguries for a happy and peaceful reign for him. He has always shown himself courteous, warm-hearted, and sincerely interested in the well-being of the people, and his declarations published a few days ago were eminently worthy both of his own position and of the traditions which he has received from his mother. He enters on his reign with all good auspices, and we earnestly hope that it may be a long and prosperous one. As I gather that you are disposed to favour this suggestion I will move that an address of condolence on the death of her late Majesty, and one expressing our loyal attachment to King Edward on the occasion of his accession, be transmitted to the King.'

Mr. C. T. DENT: 'But few words are needed from me in seconding the proposal that has just been made from the chair. In the first place the President has admirably voiced what I believe to be the feeling of the Club, and, further, no arguments are necessary in support of a resolution that will assuredly commend itself not only to those present to-night but to every member of the Club; and I do not forget that we number in our ranks many who are not our own countrymen. Diverse as are the professions and occupations of our members, various as are their views, their aims and objects in life, outside these walls, it is yet absolutely safe to assume that the expression of our condolence will be as unanimous as our congratulations to his Majesty the King on his accession will be sincere. I venture to suggest that the President and the Honorary Secretary be requested to draft a suitable address and forward it, on behalf of the Club, to the proper quarter.'

The motion was unanimously carried.

On the motion of Dr. SAVAGE, seconded by Mr. PICKFORD, Mr. C. Schuster was elected a member of Committee in place of Mr. A. L. Mumm, who had been elected Hon. Secretary.

Dr. TEMPEST ANDERSON read a paper on 'The Grand Cañon of the Colorado River,' which was illustrated by lantern slides.

Mr. SHEA thought that the colours of the Cañon region were finer than any in the Dolomites. In Colorado 500 square miles of territory were over 13,000 ft. in height, and there were more than one hundred peaks over 14,000 ft., though none up to 15,000 ft. The number of unclimbed peaks was still very large. There was not much first-class climbing, but a great deal of interesting climbing.

Professor KENNEDY said that the Cañon formation replaced what are valleys with us. As regarded the colours, he thought them hideous, and that they would be most uncomfortable to live with, as they were crude and strong.

The PRESIDENT conveyed to Dr. Anderson the thanks of the Club for his paper, which showed that the true alpine traveller had his eyes open for everything. The cañons of the Rocky Mountain and Sierra Nevada regions were the features of Western American scenery which possessed most grandeur and beauty, for the peaks were seldom of striking form and, as they often rose from elevated plateaux, those of the Rocky Mountains did not make any great impression on the eye. The gorges, however, were very remarkable, and quite unlike anything in the Alps or the Pyrenees, though in the Sierra Nevada one was sometimes distantly reminded of some of the valleys of Norway. As regarded the colour, the country described by Dr. Anderson was most striking and peculiar, but it was a country to visit rather than to live in. Nor, indeed, was it likely to be ever thickly peopled, for the climate was too dry to allow of any extensive agriculture. Further N. the scenery was far more noble. Mount Tacoma, as seen from Puget Sound, was a magnificent object. Rising over the deep waters, and towering up from amid the forests, this splendid peak, streaming with glaciers, afforded a prospect which (though to be sure, owing to fogs and the smoke of forest fires, it was often concealed from the eyes of disappointed travellers) was among the most superb mountain views in the world.

With a hearty vote of thanks to Dr. Anderson the proceedings terminated.

A GENERAL MEETING of the Club was held in the Hall on Tuesday evening, March 5, 1901, at 8.30, the Right Hon. James Bryce, *President*, in the chair.

In submitting the accounts for the year 1900 Dr. WILLS said—

'I beg to submit a statement of the Club accounts for the year 1900.

'On the side of receipts I have to note an increase of two guinea subscriptions by nine, a decrease of one guinea subscriptions by seven, and a diminution of three in the number of entrance fees, as compared with 1899.

'It is most satisfactory that the letting of the hall has brought us in 68*l.* 18*s.* this year, as against only 8*l.* 8*s.* last year. As large a

sum, or slightly larger, will come to us from this source in 1901. Against these receipts for the hall we must put the expenses of lighting, heating, and cleaning, which reduce the actual net receipts to about 60*l.*

‘ On the expenditure side there is little that is fresh to remark.

‘ Firing has increased 5*l.* 4*s.* 6*d.*, a natural result of the greater use of the hall and the increased cost of coal. There is an apparent increase of nearly 20*l.* in the electric lighting. This is made up of an increase of 5*l.* in the current bill for the first quarter of 1900, when the hall was let for a month, and 15*l.* for some very necessary alterations to the wiring. In this connection I may mention that at last a very serious fault has been discovered in our wiring, which had escaped detection by careful testing, and which, I expect, has existed for a long time; this fault is probably also the cause of the melting of the main fuses, which on several occasions plunged the hall into darkness at the most inconvenient moments. I hope, therefore, that Mr. Mumm may be spared much worry which fell to the lot of Mr. Wicks and myself from the insecurity of our lighting arrangements.

‘ Furnishing is, of course, much less this year, as last year we bought new bookcases, and would not be as much as it is if it were not that when I wanted to put in the new stove in the hall the District Surveyor insisted on an enormous monument being put up in commemoration of the London Building Act, quite useless from a practical point of view, but very expensive. I regret that there has been such difficulty in getting the stove to burn efficiently. The fault was entirely due to the carelessness of workmen in fixing, and has now, I believe, been got over.

‘ The library catalogue was produced at the economical rate of 114*l.* 5*s.* 1*d.*, including compiling, which does not all come into this year’s accounts. I regret that its great merits have only been recognised by members to the extent of 13*l.* 11*s.* 1*d.*

‘ Exhibitions have cost about 35*l.* less than last year. There have been refreshments three times instead of five.

‘ I feel an apology is due to the Club for my having supplied the Assistant-Secretary with a typewriter, but the Club must be progressive, if anything. So at least Sir Martin Conway thinks.

‘ As to the “Alpine Journal,” the actual cost of the four numbers for 1900 was 281*l.* 0*s.* 11*d.*, against which must be put receipts for advertisements and sales of those four numbers 130*l.* 5*s.* 6*d.*, leaving a balance of cost of 150*l.* 15*s.* 5*d.*, which is further reduced to 117*l.* 0*s.* 10*d.* if the sales of the back numbers (rather less than last year) be taken into consideration. Last year the cost of the “Journal” was 156*l.* 7*s.*

‘ Thus our total expenditure amounted to 1,111*l.* 17*s.* 9*d.*, and our receipts to 1,191*l.* 7*s.*, leaving a credit balance of 79*l.* 9*s.* 3*d.*, which I hope may be considered satisfactory.

‘ We must remember that there has been exceptional expenditure on library catalogue and typewriter of nearly 100*l.*, but then there always is exceptional expenditure on some object or other.

There have also been exceptional receipts, or rather, I hope I may say, receipts over and above the ordinary Club income, of 68*l.* 18*s.* for hire of the hall. Without this there would have been a very small balance.

‘From the point of view of strict finance it would no doubt be more satisfactory if we could place our entrance fees and any such exceptional receipts as those obtained from letting the hall to a reserve fund, to meet the increased rent which we shall have to pay in some ten years’ time, and the depreciation of our decorations and furniture, even though it is true that the proportion of our two guinea subscriptions is rising, and the membership of the Club has increased nearly 100 in the last ten years.

‘Never having been able during my treasurership to reach this pitch of administrative excellence, I can only conclude by recommending the plan most heartily to my successor, Mr. Mumm.

‘As the particulars of the Ball’s “Alpine Guide” account were referred to at length at the December meeting I merely lay the summary before you now, without reference to any details.’

The accounts were then unanimously adopted, and a hearty vote of thanks accorded to Dr. Wills for his services as Treasurer.

Mr. J. E. S. MOORE read a paper on ‘The Ruwenzori Mountains,’ which was illustrated by lantern slides.

Mr. FRESHFIELD asked whether Sir Harry Johnston’s more recent explorations had thrown any further light on what there was for mountaineers still to do on the range. He also wished to know what time it took to get to the range from London. He thought it interesting that glaciers were found in the tropics at so low a level as 18,000 ft., for in Sikkhim this was the lowest at which they were found.

Sir MARTIN CONWAY asked if the flora was similar to that on Kenya, whether the glaciers were dry, whether or not considerable streams came from them, whether the range generally was easy of access, whether carriers were easy to be found, and whether they objected to going to high altitudes.

Mr. DENT asked whether there was any sign of the glaciers having been at a lower level in the past.

Mr. BRYCE wished to ask whether there was any zone of herbage corresponding to the pastoral alps in Switzerland, and whether there was any herbaceous alpine flora; whether the glacier ice showed the same characteristics as observed by Mr. Mackinder on Kenya.

Mr. MOORE, in reply, said that he thought that Sir H. Johnson had ascended to about the same point as he had himself. As regarded time, it took two days on the Uganda Railway, and then a march of only twenty days thereafter. With regard to the flora, much was very like, if not identical with, that on Kenya. The surface of the glaciers was very dry indeed, of a very peculiar green, hard and difficult to climb, and with very small streams coming from it. The height of the snow-line was much lower than he had expected to find it. Snow was found as low as

12,000 ft., and permanent snow at 13,000 ft. The Ruwenzori range was isolated, and thus produced a great atmospheric disturbance. Nearly every day rain fell on the mountains. It was perfectly easy to get porters and mules, and the porters did not object to going up the mountains. There were many peaks, some very easy, and some very difficult—so steep that no snow could lie on them. The natives were very friendly; and though there were many elephants there was no danger of attack by them.

The proceedings terminated with a hearty vote of thanks to Mr. Moore.

A GENERAL MEETING of the Club was held in the Hall on Tuesday evening, April 2, the Right Hon. James Bryce, *President*, in the chair.

Messrs. J. Annan Bryce, F. W. Hill, G. F. Turner, J. H. Vince, and Sir H. W. Lawrence, Bart., were balloted for and elected members of the Club.

The PRESIDENT announced that an acknowledgment of the Club's letter of condolence and of loyalty to the King had been received from the Home Office.

The PRESIDENT intimated that Mr. Valentine Richards had agreed to be the general editor of the second volume of Ball's 'Alpine Guide,' and that, as most of the sections had been taken up by members, the work would now be proceeded with. He also informed the Club that Professor Bonney had presented to the Club a pencil sketch by Elijah Walton of Jean Tairraz, taken in 1866. A hearty vote of thanks was accorded to Professor Bonney for his gift.

The PRESIDENT then, on behalf of the Committee, laid before the Club the question of accommodation at the winter dinner. The number of members attending the dinner was yearly increasing, which was a very agreeable fact, but it had the corresponding drawback that it had not for some years been possible to accommodate all in the principal room of the *Hôtel Métropole*. The Committee felt that, as members had a prior claim to any guests to be in the principal room, some means must be devised of limiting the number of guests. The Committee were in difficulty as to how to deal with the matter, especially in connection with Rule X., which gave members the right to bring any number of guests, and therefore they wished to lay the matter before the Club to take the general opinion. There were only two rooms in London that were larger than the Whitehall Rooms, and, as far as the Committee could make out, in neither of them did it appear that so good a dinner could be obtained at the price as at the *Métropole*.

Mr. DENT moved: 'That in the opinion of this meeting, in order to prevent overcrowding and the use of an "overflow" room, the number of guests at the ensuing winter dinner should be limited, the right to introduce a guest being determined, if necessary, by ballot.' He had no prejudice in favour of any one of the plans. If matters were left as they were, with the steady increase in the numbers attending the dinner, there would this year be no convenient

sitting room for those who dined in the overflow room when, after dinner, they came into the principal room. He considered that members had an absolute right to a place in the principal room. He desired also to lighten the work of the Hon. Secretary. He thought that a ballot would work very satisfactorily. There were many objections to its use, but there were more to going to another room.

Mr. WITHERS seconded the motion.

Dr. WILLS was strongly of opinion that the Club should continue at the Whitehall Rooms. He thought it necessary to emphasise the fact that the dinner was primarily a dinner of the Club—'that members shall dine together,' in the words of the rule—and that the introduction of guests was only a secondary consideration. Any move, therefore, should be in the direction of limiting the number of guests, and giving preference in seating to members who did not bring guests. But there would be great practical difficulty in carrying out any such plan, and in persuading members to send in their applications soon enough. The members who came to the dinner were by no means the same as those who attended the meetings, and many of them had so little knowledge of what went on in the Club that they would probably pay little attention to any notice requiring early application. He proposed that preference in the principal room be given to those members who came without guests, and that power be given the Committee to withhold the right to bring guests, if necessary, from members elected in future until they have reached a certain seniority.

Mr. FOA suggested that another room might be tried.

Mr. ARKLE and Mr. NEWMARCH were strongly of opinion that the present rooms should be adhered to.

Mr. WILLINK also felt in favour of remaining at the Whitehall Rooms. He wished to support Mr. Dent's proposal, chiefly because it was limited to the current year. It was in the nature of an experiment, and if found not satisfactory some other plan, such as that of Dr. Wills, might be tried. The Club was growing, and this would in ten or fifteen years become a burning question. It would be difficult, even if legal, to make any distinction among present members. He was opposed to leaving things as they were, as there was a great burden on the Secretary, and the difficulty was not lessening as time went on.

After some further discussion Mr. Dent's motion was declared carried.

Mr. DENT then moved: 'That the Committee be requested to formulate regulations for carrying out the above scheme, and to submit them to the General Meeting on May 7,' and this motion was also carried.

Dr. HEPBURN read a paper on 'The Influence of High Altitudes in Mountaineering.'

The HON. SECRETARY read the following on behalf of Sir Martin Conway, who was unable to be present:—

SOME OBSERVATIONS ON DR. HEPBURN'S PAPER.

By SIR MARTIN CONWAY.

The greatest difficulty a student of this recondite question has to face is that of obtaining accurate observations on which to base his reasoning. Most men suffer from a curious false pride in face of mountain sickness. They are unwilling to admit any weakening or illness till nature renders their abnormal condition obvious to others. They fight against their symptoms. Further, when the climb is over and they have returned to lower levels, they forget what their sensations actually were. They think they felt less discomfort than they did feel. Therefore I always mistrust every one's memory as to mountain sickness. Notes written on the spot and at the time are those alone which have any scientific value whatever. My own notes have always been so made. Their plain statements differ greatly from my memory of what my feelings were.

There are two effects of elevation on the human frame which ought to be plainly distinguished from one another. I call them mountain sickness and mountain lassitude respectively.

1. Mountain sickness closely resembles sea sickness. I have only experienced it in an acute form twice, both times in the Alps, at altitudes of about 12,000 ft. In other regions I have always found that, for the first day or two, at about 14,000 to 16,000 ft., all the members of the party who have come from low levels suffer serious discomfort, especially when taking violent exercise; but sooner or later they become acclimatised, and suffer thenceforward less or not at all. This sickness is, I think, due to a purely nervous derangement which tends to upset the stomach. It arises from a call upon the body to adjust itself to new conditions, and to the body's slow response to that call. It affects a man in bad condition more strongly than one in good condition, just as sea sickness does—in fact it bears a close analogy to sea sickness. I have seen hundreds of cases of this kind of mountain sickness in various parts of the world, notably in crowded railway trains in South America, which cross passes of about the same altitude as Mont Blanc. In the case of such rapid ascents, of course, the symptoms are more violent, but they are almost as plainly apparent in the case of slow ascents made on foot or horseback. These symptoms are not 'due to fatigue alone,'* as stated by Dr. Hepburn. They often appear after a good night's sleep, and when the change of altitude on the previous day produced scarcely any noticeable effect. I have seen two violent cases of mountain sickness in the Alps at an altitude of about 5,000 ft. within half an hour of starting after a good night's sleep.

2. 'Mountain lassitude' is a term invented by Major the Hon. C. G. Bruce, who has had better opportunities of observation than any other intelligent climber. It is best described as a diminution in the strength of a man due to diminished atmospheric pressure. So far as I have been able to observe, weakness is the only symptom, weakness physical, intellectual, and of the will power. This weakness is progressive, but very difficult to test. It begins to affect horses between sea level and 2,000 ft. above the sea, the effect being just sufficient to be perceptible in a race. Dr. Hepburn speaks† of 'powerlessness to perform any voluntary movement.' I have never experienced more than strong disinclination—for example, to wind up a watch or turn over in bed from side to side. In the case of infants the effect of altitude is more marked than in healthy adults. I have known

* P. 377.

† P. 379.

of an infant seriously indisposed at the Riffelalp, and immediately made well by being taken down to Zernatt. The same child was ill at Saas Fee and well at Saas Grund.

Only years of acclimatisation produce much effect in the direction of diminishing mountain lassitude. I suspect that the lungs have to be enlarged in capacity, and all the breathing apparatus structurally developed to adjust a man for long and hard work at heights of 17,000 ft. and upwards. Once a man's diet and lungs are set I do not think he is capable of any but a trifling development in power to endure mountain lassitude. He may bring himself into stronger and better condition at high levels, just as he can at low levels, but mountain lassitude will always subtract a definite fraction, or perhaps a constant quantity, from his strength, whether it be great strength or little strength. Lassitude, I think, varies directly with the supply of oxygen. It is as obvious in starting in the morning as it is at the close of a day's work. If for any reason there should be a local diminution in the supply of oxygen, independent of level, the effect will be felt in increased lassitude. Thus on snow one feels worse than on rock, worse still if the air be stagnant and the oxygen supply steadily diminished by contact with snow; yet worse again when the sun shines hotly than when the temperature is low. In all the high regions of the world traversed by caravan-routes certain spots are known where the effect of altitude is more felt than at neighbouring spots of equal or higher elevation. This fact is as certain as it is important.

It is worth notice that on every occasion on which I have taken caravans to high altitudes the unpleasant effect of altitude has been felt at a lower level on the descent than that at which it was encountered on the ascent. This was true (in the Himalayas) in the Bagrot valley, on the Hispar Pass, and on the Baltoro glacier. It was likewise true (in the Andes) on Illimani, on Mount Sorata, and on Aconcagua. It was as true at the beginning of a season as at the end.

The temptation is to write on this matter at a length that would doubtless be unkind to the Club; I therefore refrain. One correction of fact, however, must be added. Under the heading, 'Time of Day' * Dr. Hepburn records observations that mountain lassitude is more painful at night than by day. I have never found it to be so either in the case of my companions or of myself. I have slept in all six nights at altitudes of approximately 20,000 ft., and I have always had tolerably good nights, and often slept as well as at sea level. Sometimes great fatigue has interfered with the perfection of my sleep, but I don't think altitude had anything to do with it. I feel convinced that I could sleep well at 23,000 ft., and doubtless higher. The only trouble is to keep warm, and I have always succeeded in solving that problem. People who have suffered during their night's rest at very high altitudes have probably suffered from cold and consequent lowered vitality.

Dr. Hepburn concludes his valuable and most interesting paper with an encouraging paragraph. He does not see why we should not be able to climb Mount Everest. As to this hope I express no opinion, and never have expressed one. On the two occasions when I have been at 23,000 ft. I have felt that I could have climbed further, and that if I could have slept there I might have climbed much further. The problem of climbing Mount Everest will be complicated by two main difficulties—politics and finance. If the Government of India would persuade the Government of Nepal to let the Alpine Club try, and if about 10,000/.

* P. 391.

were forthcoming, and a good party with an ample supply of porters could devote two or three consecutive years to the attempt, there would be some chance of conquering the peak. To reach the highest point on the earth's surface, however, will be as difficult a feat as to reach the North Pole, and Peary's method will have to be applied in both cases, for the two problems are not essentially dissimilar.

Mr. DOUGLAS FRESHFIELD did not think that the term 'mountain sickness' should be confined to discomforts experienced above 16,000 feet. The same, or similar, symptoms were often observed at much lower elevations, and there medically attributed to altitude. Mountain sickness depended very much on the individual. Comparatively very few members of the human race had as yet been experimented upon. In the Himalaya he and his party of fifty had twice slept at 20,000 feet with only slight difficulty and no real discomfort. About 10 per cent. felt no serious effect, and 10 per cent. were thoroughly ill and incapacitated. The latter were, with one exception, porters who carried heavy loads. An English official who accompanied him, and who usually lived at 7,000 feet, showed no signs of sickness at 21,000 feet. The feeling of lassitude produced by fatigue, and, in his case, by days of wading through soft new snow, was distinct, but difficult to separate from the effects of altitude. He thought that there was encouragement in the fact that at above 21,000 feet his party were less affected than at 14,000 to 16,000 feet; in the last 5,000 feet they found no increase of difficulty.

Dr. COLLIE said that there was no doubt that symptoms might be produced by fatigue at the sea level which were the same as those of mountain sickness. Nearly the whole of such symptoms were explained by the presence of carbonic acid in the blood and fatigue of the muscles. Few people understood how much work was done in going up a mountain. He had himself been mountain sick at the sea level, at 3,000 feet or 4,000 feet, at 7,000 feet, at 11,000 feet, and at 18,000 feet. In every case he had been out of condition, and was poisoning himself therefore with carbonic acid and other products produced by the combustion of the body, which were thrown into the blood. The same symptoms could also be produced without work by going up in a balloon. If, therefore, the same symptoms could be produced both by fatigue and by diminution in pressure, it was very difficult to differentiate in the case of mountaineers what their so called mountain sickness was due to. In the case of diminution of pressure there came in the question of the gases in the blood. At high levels carbonic acid was much more readily thrown off than at lower levels. As regarded the absorption of oxygen, part obeyed the ordinary law of the diffusion of gases, but most of it formed a definite chemical compound irrespective of ordinary pressures. In the air at sea level there was five times as much oxygen in an inspiration as was required by the lungs. At 30,000 ft. there was still enough oxygen and to spare. A great deal had been said of fatigue of the legs, but the arms also were fatigued, as any one would find who tried step-cutting at

19,000 ft. In fact the whole system was affected by fatigue, and the question was one of the chief items in the symptoms, but what was due to diminished pressure and what to fatigue was at present uncertain.

Mr. LONGSTAFF thought that as a great deal of carbonic acid was formed by muscular exertion to make up for this it was important while actually ascending to consume small quantities of carbohydrates, especially sugar.

Dr. BUCKMASTER assumed as one condition that the individual was in proper training. The body responded in a very remarkable way to diminished pressure. The lungs become more distended, so that the actual area of the surface of these organs, where the interchanges between the blood and the gases of the air occurs, becomes increased. The type of respiration is deeper, but not necessarily more rapid. The rate of blood-flow through the lungs also increases as the atmospheric pressure diminishes. At the sea level the organism is luxuriously supplied with oxygen—indeed, with more than is necessary for life. About 18 volumes per cent. of this gas exists in arterial blood, but experiments have shown that 5 volumes per cent. are sufficient to maintain life. He had seen that in an atmosphere of 90 per cent. oxygen animals can withstand a diminished pressure equal to 130 mm. of mercury. This corresponds to an altitude of at least 2,000 feet above the highest point on the earth's surface. Under diminished pressure there is an undoubted increase in the colouring-matter of the blood, more than could be accounted for by any numerical increase of blood corpuscles.

Mr. BRYCE was struck by the fact that the data in the whole matter were still very imperfect, which was strange when it was considered how many persons were now living at high altitudes. It was desirable that such persons should in future provide themselves with apparatus for making more exact observations, and that they should have hints from scientific authorities to enable them to direct their observations. The matter would be solved by the experiments of the physiologist taken not at high altitudes combined with the accurate observations of those who reached high altitudes. There were great differences between different countries and different mountains as regarded liability to mountain sickness. In some cases the phenomena, at any rate of lassitude and difficulty of breathing, occurred at 8,000 feet, while in other countries they did not occur at 15,000 feet. He thought that the result of the discussion was cheering with regard to the future. Dr. Hepburn, Dr. Collie, and Dr. Buckmaster had shown that the difficulty as regarded oxygen was not insuperable. The fact that we were still in the infancy of the inquiry was strange, seeing that the phenomena had been noticed three hundred years ago.

The proceedings terminated with a hearty vote of thanks to Dr. Hepburn for his paper.

Gifts to the Alpine Club.

Mr. W. R. Rickmers has presented to the Alpine Club the photograph by him of 'Conglomerate Mountains in Bokhara,' exhibited at the Club Hall in May last year.—Professor Bonney has presented to the Club a pencil sketch by Elijah Walton of Jean Tairraz, taken in 1866 (see p. 486).

Addendum, Page 488, Line 9.

The forests of Colorado were not so striking as those of the western slope of the Sierra Nevada, where trees were found over 300 ft. in height.



SULITELMA

from

*The Swedish Government
Kjellström's & Westman's
Maps. by V.H. Gatzky.*

Glaciers

THE
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AUGUST 1901.

(No. 158.)

SULITELMA.

BY VICTOR H. GATTY.

FORBES, in 'Norway and its Glaciers,' describes Sulitelma as the highest of Arctic mountains, 'not only in Scandinavia, but in the North Polar regions,' and writes, 'Its very remote position with respect to habitations, its great northern latitude, its uncommon height, and, what is perhaps not without some weight, its high-sounding name, make it a real feature in the physical geography of the country.'

During the fifty years which have elapsed since these words were written much has happened to modify these manifold claims to eminence. The height and the latitude are still the same, but as titles to respect they have depreciated sadly; remote it still may be, but not from habitations, which, since the discovery of copper ores, have grown up round its very base. Sulitelma's last and most enduring title to a special standing amongst mountains is to be found in the writings of Wahlenberg, who, to quote Forbes again, nearly a century ago accurately described its glaciers 'in a manner which had not been done in any other place save the vicinity of Mt. Blanc.' 'On this account,' he continues, 'it deserves to be considered classical.'

Of the meaning of the Lappish name each traveller seems to hear a different version; Wahlenberg translates it 'the festival-day mountain,' which he derives from the legend that in olden times the Lapps on a certain day made sacrifice there to some supernatural ruler of the hills. I was told that it means the 'Eye of the Sun,' which seems at least a fitter rendering of a 'high-sounding name.' This title, according to my informant, derives its significance from the circumstance that the midnight sun shines out from behind the mountain, seen from a certain point.

The annals of the range, though spread over a period of close on a century, are yet scanty; they commence, of course, with Wahlenberg's exploration of the Salajækna and ascent of South Sulitelma (about 5,500 ft.*) in 1807, which have received less than the attention they merit at the hands of the historians of mountaineering. As describing, perhaps, the first of glacier expeditions outside the main European ranges to which the methods of the mountaineering craft were applied his narrative is of great interest, and, as it has never, I believe, appeared in English, I have reproduced it in his own words below. The frequent references to De Saussure which his book contains make it clear whence he derived his inspiration, and most probably his craft. The next ascent of one of Sulitelma's peaks appears to have been that of Lektor G. Elowson, who in July 1868 was the first to reach the summit of the highest Swedish peak (1,878 m. = 6,159 ft.).† The climb was made from the S.E. across the Stuorajækna, and he seems to have encountered no especial difficulties.

Next follows the conquest of the sharpest and most abrupt of Sulitelma's peaks by Herr Ed. Aanderud, of Bodö, who on July 30, 1888, made the first ascent of Stortoppen,‡ which had successfully resisted his assaults in 1884 and 1886. The climb was made by the N. arête from the Salajækna. In 1891 the same peak was climbed along the jagged W. arête from Vardetoppen by Herr J. T. Dahl, another Bodö climber.

These ascents did not suffice to settle the vexed question as to which country could claim the highest summit of the range. The circumstance that Norway and Sweden divide its peaks and glaciers almost equally, and that no official map even now exists on the Norwegian side, has resulted in much confusion, to which is to be added that arising from the lack of distinctive names to the many summits which go to make up Sulitelma; the history of the range is so bound up with the consequent misapprehensions from which few references are entirely free that some allusion to them becomes a necessary part of it. The following extract from the 'Norwegian Tourist Year-book' will serve to illustrate the perplexity in which the subject is involved:—'It still cannot be said with certainty where Sulitelma's highest peak is

* G. Wahlenberg, *Bericht über Messungen und Beobachtungen zur Bestimmung der Höhe und Temperatur der Lappländischen Alpen*. (Translation from the Swedish.) Göttingen, 1812.

† *Kgl. Vettensk Academiens förhandl.*, 1869, fol. 190. Stockholm.

‡ *Norwegian Tourist Club Year-book*, 1889.

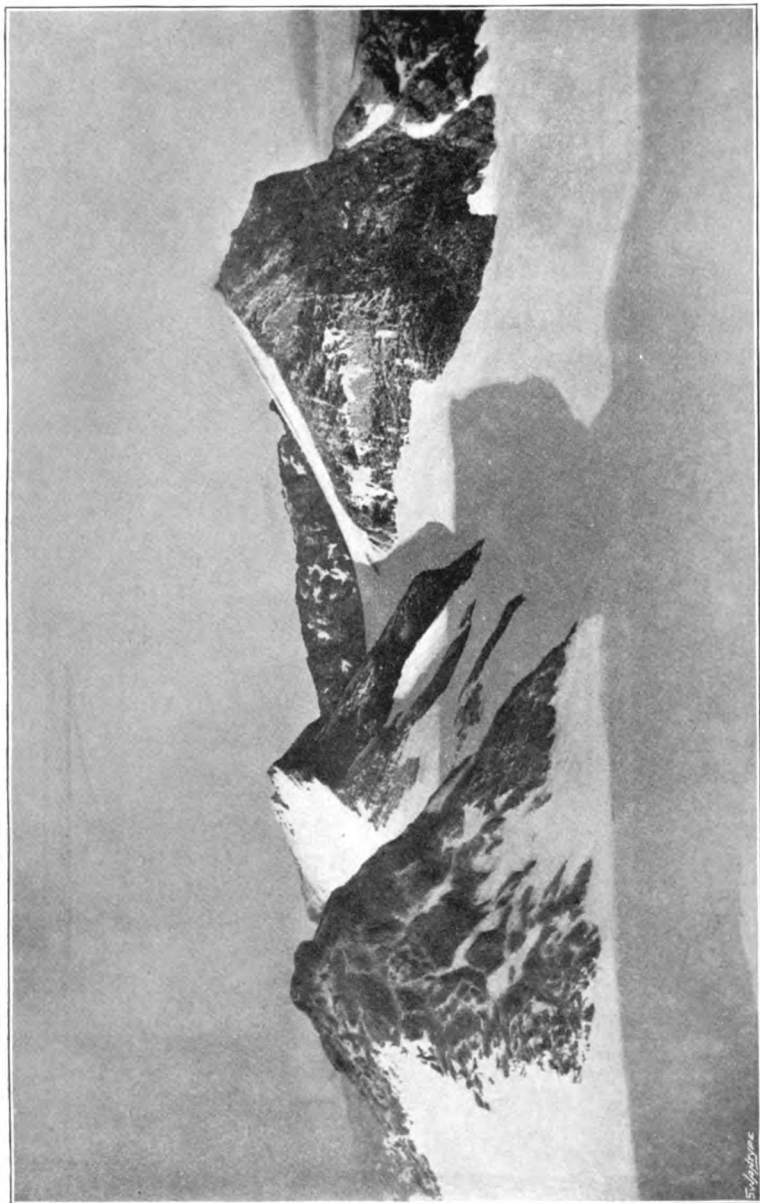


Photo by I. H. Gatty

NORTH SULITELMA, FROM STORTOPPEN.

[Swan Electric Engraving Co.]

situated. N. Sulitelma was found (by Wahlenberg) to be 6,001 ft. If this be correct the highest summit of the whole group is on the Swedish side; this last was climbed in 1868 by G. Elowson, who says, "On the Norwegian side there is a higher peak which is inaccessible to the foot of man." Herr K. Widmark also assumes, like Elowson, that the Norwegian peak (east horn) is the higher; it is therefore probable that Wahlenberg has measured wrong, and that the honour of possessing the highest peak belongs to Norway.' By the Norwegian peak Stortoppen alone is meant, as the context shows. The key to this conflict of authorities about so simple a matter of fact is to be found in a recently published and most instructive map* by Dr. J. Westman, which for the first time shows clearly the relation between the peaks on both sides of the frontier; it proves that neither Stortoppen nor the Swedish peak can claim supremacy, but that the place of honour belongs to a third peak lying between the two entirely in Norway, which, strangely enough, seems to have dropped between two stools and to have been almost entirely overlooked. Its height is given as 1,903 mètres (=6,241 ft.), and there can be no doubt that it is the peak named North Sulitelma by Wahlenberg, and described by him close on a century ago as the highest summit; so in the end the old geographer is justified. Since this peak is named on Westman's map Störstetoppen, it is not surprising that his estimate of its height has been taken to apply to Stortoppen, an entirely different peak. It is, no doubt, the higher peak referred to by Elowson, and seems to have escaped the notice of Norwegian climbers, owing to a mistaken identification of the mountain, in the absence of a map, as the Swedish peak which lies behind. To complete the disentanglement requires the confession of a triple error on my own part. I expressed the belief† that in climbing Swedish Sulitelma we had made the first ascent of the culminating point of the range. Further investigation has disclosed the facts that the Swedish peak is not the highest, and that it had already been climbed, but has also made it clear that we did not climb that peak at all, but North Sulitelma (or Störstetoppen), which seems, in fact, to be the culminating point, and which was still unclimbed, from which it appears

* This map accompanies a detailed description of the glacier system of Sulitelma by Dr. J. Westman, illustrated by numerous photographs and panoramas. *Bulletin of the Geological Institution of the University of Upsala*, vol. iv. part 1, no. 7, 1899.

† *Alpine Journal*, vol. xx. p. 277.

that though two wrongs do not make a right the resultant of three may come very near the mark.

Herr Aanderud, to whose co-operation and acquaintance with the subject whatever accuracy and completeness the foregoing chronology of the range possesses is in large measure due, tells me that an attempted ascent of N. Sulitelma was made on August 8, 1865, by Prof. J. Anderson, which failed from unavoidable causes, which are summarised as the 'mountain's steepness.' Apart from this it seems to have enjoyed a complete immunity from attack, which is seldom the fortune of the *doyen* of a range, in this aspiring age, for nearly a century after its earliest recognition.

To return to the opening chapter of Sulitelma's history, Wahlenberg's narrative relates that he reached the shores of the Lommijaur on July 12, 1807, and found the lake still ice-bound and buried beneath a mantle of water-logged snow. On the 14th he set out along the shore to the further end, and thence struck upwards on to the Salajækna glacier, which he crossed to its eastern end, and thence ascended the Lairo Fjall, in order to observe the glacier better. He mentions that it was broken by huge crevasses, and relates a story showing how a Lapp of his acquaintance had learnt the value of companionship and the rope whilst voyaging amongst them. This Lapp was out on the glacier leading a string of reindeer behind him; what he was doing there in such company does not appear, but in the event he fell into a crevasse, and only extricated himself by clinging to the reindeer line, the animals themselves refusing to pursue the venture further. No doubt the incident confirmed their owner still more deeply in the conviction that they are the one thing in this world which really would be missed. The account of the rest of the expedition is best given in Wahlenberg's own words. 'When the observations were completed,' he writes, 'I made my way back over the snow-field and climbed the glacier where its edge was covered with snow, and went on further up the glacier above the ice cavern, making my way towards the highest peak of South Sulitelma. Here the glacier was covered a foot deep with snow, which rendered the wide crevasses invisible, and on that account so dangerous that we walked tied to one another by a rope at fixed distances apart, in order that we might be able to rescue any one who should fall into a crevasse. From here there rose before us a great snow wall, to be climbed, a half-mile continuously upwards, which was a laborious business, and took the greatest part of the day; no bare patch or uncovered rock

was there to be found on the whole ascent from the lowest edge of the glacier up to the highest peak ; the snow was so hard that scarce a footprint could be perceived on it. The refulgence of the dazzling white snow and the cutting glacier wind caused the eyes and the sight to be attacked by a slight inflammation, although I made use the whole day (as always on excursions above the snow line) of a tolerably thick black veil. Thirst plagued me much, and no water was there to be found on the whole mountain; for plentiful as is water in mountain regions below the snow line it is rare above. I was thus forced to suck out the water from the snow, which set up an inflammation on the lips which did not heal for nearly the whole summer ; therefore I warn others against it. Where the declivity ended the two highest tops of S. Sulitelma were girt round by huge transversal schrunds in the snow mass, to come across which there was no other way than to avoid them altogether by a long détour. Such details cannot be distinguished by an inspection such as we made at a distance of half a mile. At last, about half-past five in the evening, we reached the highest peak of S. Sulitelma, which is distinguished by a dark-coloured rock wall on the S.E. side, and there, for the first time, was I able to examine the bare rock. . . . As concerns the view, I found it in no way pleasing ; it was incomparably extensive.

‘As night was approaching it was desirable to find some nearer way for the descent on the north-west side. To commence with, at the point where the declivity begins the most dangerous crevasse in the snow mass had to be crossed. These crevasses were often a fathom wide, and the narrow ones over which we leaped seemed to be 60 or 80 ft. deep . . . for all that we ventured at once on the descent after roping ourselves together and furnishing ourselves with large “ snow spurs.” We went far down over the glacier between S and N.W. Sulitelma,* then west over the base of S. Sulitelma, and last of all right down the cliff to the shores of the Lommijaur.’

Forbes credits Wahlenberg with the ascent of the highest peak of Sulitelma on July 15, but there is no confirmation of this in the old explorer’s narrative. He writes, ‘July 14 was the most noteworthy day of the journey through the exploration of what is, so far as I know, the greatest glacier in all Scandinavia and through the ascent of South Sulitelma.’ On the 15th he was travelling downwards between the Langvand and the Örevand.

As to my own experiences, little needs to be added to the

* Stortoppen.

account already given.* The journey to the foot of the mountains is now a very simple matter. After the period of detention, which is the necessary penalty of Norwegian travel, has expired, Furulund is reached in less than twenty-four hours from Bodö by means of steamers on the chain of lakes, which reaches nearly to the Swedish frontier, and a short connecting mineral railway. The officials of the mining company are most obliging, and rooms are reserved at headquarters for the use of travellers. We were furnished with a map and with the welcome information of the existence of a higher peak than Stortoppen, still unclimbed.

Our first night in camp was marked by a deluge and a gale which beat against the back of the tent, with the lamentable result that the pocket in which everything worthy of a place above the floor reposed was found next morning to be full of water. Warned by this we were inspired to spend several hours in erecting substantial outworks, whereupon the wind changed and blew in at the door for the rest of our stay. The ascent of Stortoppen was in the nature of a surprise on the demon who regulates the weather in these parts. Starting at once in the afternoon after the rain stopped, with no definite plans, the climb was completed on a brilliant evening, and rewarded by a splendid panorama of snowy peaks stretching seawards and southwards for a hundred miles. My Norsemen were most attracted by the wide view over Sweden; to scan the territory of the somewhat estranged partner from some high point of vantage seemed to cause them a kind of weird delight, and always called for the quotation of a tag beginning, 'Hearst thou what says the Swede to Norske man?' We reached camp late in the evening, and were again on the glacier at eight next morning, but the presiding genius was on guard and never again relaxed his vigilance. Everything was buried in a veil which might have suggested home to some early Briton from the neighbourhood of the capital before the purity of its fogs was contaminated by human arts, and whatever reproaches might be levelled at the condition of the immediate defences of Sulitelma's citadel are at once met by a consideration of the wider strategy which made it a matter of difficulty to find the mountain at all. We traversed the course across the glacier to the base of North Sulitelma three times under the same conditions, and if the tracks did not come within the Euclidian definition of a straight line they at all events afforded ample demonstration of the correct-

* *Alpine Journal*, vol. xx. p. 276.

ness of the proposition that two sides of a triangle are greater than the third.

We finally left the shores of the Lommijaur on the worst terms with the weather; the tent was saturated within an hour of striking, and the joys of packing were heightened by a steady downpour. The early morning fording of the Tjeurajokk fresh from the melting snows above, which followed, suggested Queen Elizabeth's pronouncement on speeches (according to an eminent authority), and none will deny to mountaineering difficulties of the kind the foregoing paper attempts to solve a place in the same category of 'things we chiefly bless when once we've got them over.'

WITH LADIES IN THE LEPONTINES.

BY GEORGE BROKE.

(Read before the Alpine Club, May 7, 1901.)

IT has generally been the custom for a member, when commencing his paper, to declare that nothing but the sternest sense of discipline, or else a very real personal friendship for our Secretary, would have induced him to occupy such a prominent position. I am afraid that I must be less modest than most men, for the full disadvantage of the promise I had given only came over me by degrees, as effort after effort to obtain slides proved a failure. I had a certain number of inferior specimens of my own, and had not anticipated any difficulty in making up the rest. But London shops and personal friends were alike drawn blank, and at last in desperation I took to showering letters promiscuously, writing to every one, whether I knew them or not, whom I had any reason to suppose had ever been in the Lepontine district. Even so nothing resulted for some time, but at last I struck oil, and, thanks to the great kindness of total strangers, am able to make a fair show this evening. And in view of the title of my paper it is worth while laying some stress on the fact that almost every photograph shown to-night has been taken by a lady or with the assistance of a lady.

Now, the first point to which I wish to call your attention is the sad fact that so many of our members, after doing five, eight, or ten years' good work in the Alps, suddenly give up climbing altogether. Only the other day a man, in writing to me, said he was sorry that circumstances had placed him on the retired list. What circumstances? So far as I know

it was only that he had got married. Now of course there is nothing new in that, as Mr. Leslie Stephen pointed out to us so many years ago. But when that difficulty arises most men seem to assume that only two courses are open to them: the unselfish man stops at home and gives up climbing; the selfish man leaves his wife, either at home or in his Swiss headquarters, and goes climbing as usual. The sacred ibis is safest in the middle, and surely a third course is preferable to either, viz. to take his wife climbing with him.

Moreover Herr Meurer, in a paper read to this Club fifteen years ago, pointed out that the highest ideal in climbing was not to become a guideless climber only, but an amateur guide. At the time he foresaw the difficulty, one which already troubles our professional brethren—the creation of a *clientèle*. Even in making up a party to climb without guides it is very difficult to get hold of the right men at the right time. But what pleasure can be greater than introducing your better half to all those glories which lie so near to heaven, and what greater satisfaction to yourself than some quite minor expedition successfully accomplished by a very weak party under your guidance? Naturally the expeditions will have to be very minor at first, or, better still, let there be for a short time a fair supply of professional assistance. And, having done it very often, I would emphatically discourage our members from going too often alone with their wives, or with any one distinctly weaker than themselves. Even on easy peaks it often means defeat—we retired discomfited three times running one summer—and if anything goes at all wrong the strain is very great. As an 'Altes Murmelthier' said in our 'Journal' not long ago, 'the added responsibility of getting somebody else out of the scrape besides yourself may heighten interest to the point of anxiety.'

But, you will say, what has all this to do with the Lepontines? Everything—or if not the Lepontines some similar district. For what is the sort of thing that often happens when one of our members gets married? At once his idea is to take his wife to the Montanvert or to Zermatt to show her the Alps at their very best. So what does he do? Let us suppose he is a nice, unselfish sort of person, and so capable of refusing an invitation to just make a third for the Dent Blanche. 'Your wife won't mind for once, you know.' So he takes her for a day in the icefall of the Gorner Glacier, which she probably likes very much; and then as a reward for virtue she is taken up the Breithorn. A most uncomfortable night at a Theodul hut is followed by a day of trudging

ceaselessly up endless snow slopes under a blazing sun. At last, utterly exhausted, broiled, faint, and weary, she reaches her goal, to find, perhaps, as happened once to a lady I know well, twenty-nine other people seated on the top! That lady has never been up another mountain.

Zinal, or Saas, or Arolla is better, but not much better, because it is very hard to be content with small things when big peaks are also to hand; and, having reached a summit, it is always annoying to find it greatly overtopped on all sides. Therefore go where all the mountains are small. It does not at all follow that there won't be ample difficulties if judiciously selected, while in this Lepontine district, of which I have to speak this evening, there are still a few novelties, though only a few. I propose to confine myself to-night to that portion of the Lepontines which lies W. of the St. Gotthard, with the exception of my starting-point, Piora. (I might have started equally well at Berisal, but some men might be tempted to get out of the train at Visp instead of going on to Brieg.) Piora is the only place I know over 6,000 ft. which can be reached in almost exactly twenty-four hours from London. The journey by the St. Gotthard railway to Airolo is a very comfortable one, while the transport of your luggage to Piora has been made easy by Signor Lombardi's excellent arrangement, by which you simply pay 15c. per kilo. to send it up and 10c. to bring it down, and he does the rest. And yet it is curious how few English ever go there, though the hotel has been in existence for over thirty years. The lake, nearly two miles long, is charming; bathing, boating, fishing all help to fill up idle days. Other smaller lakes make objects for short walks. Piz Blas, Piz Rondadura, and others offer more serious expeditions; but the pick of the bunch is Pizzo Columbe, a quaint little peak of pure dolomite (some one else may say how it got there), which, if taken scientifically, gives a very good climb. The first ascent was made by the S.E. face, undoubtedly short and direct, but with practically no climbing at all. But if either the S.W. or N. ridges be followed there will be scrambling and to spare. My wife and I went up by the S.W. ridge, and had plenty of excitement before we reached the 'last turret' of the Adula 'Guide Book,' which gives Mr. Coolidge's route thus: 'From the pass clamber up the S.E. face of the peak, crossing several gullies. Ascend one of these gullies which is a good way to the N. and so gain a little hollow at the E. foot of the last turret. This is nearly split in two by a narrow crack, by means of which, and the rocks to the right, the summit is

attained after an amusing short scramble.' We were rather frightened about this crack and its short scramble; but the scramble is *very* short indeed, as the last turret is only 10 ft. high. The real difficulty is to get two people on the top at once.

From Piora we had a very sporting day across to Hospenthal. We ought to have crossed four ridges, but we went wrong near the start, and, instead of reaching the Taneda Pass, had to go right over the Poncioni Negri and Punta Nera instead. Mr. Coolidge somewhere speaks of the Bocca di Cadlino as a savage gully, but we only found a pleasing snow couloir down which we glissaded, toiled up to the Pian Bornengo Pass, traversed to the Maigels ridge, and glissaded again nearly all the way down to the Portgera Alp in the Unter Alp valley. While imbibing milk at the Beim Stein huts we saw an unusual sight, a calf being carried down by the torrent for about two hundred yards, when it succeeded in struggling out, and seemed very little the worse. From Andermatt we drove to Hospenthal, trying hard to look as if we had just come by train. We got found out though later on, and received many lectures on our rashness in going without guides. I ought perhaps to say at this point that many of my own experiences might be misleading to others, since I have always been in the Lepontines in June and July, at which times these smaller districts are at their best.

At Hospenthal you are again in contact with full-blown luxury, but there is not very much climbing to be had there; and the bare open Urserenthal is a little dull, so that Realp, five miles away to the W., makes a better stopping-place to those who have no fear of extreme simplicity when combined with perfect cleanliness. Any shortcomings in the diet can be made up by unlimited cream. Various expeditions may be made to the N., but that is not Lepontine, so is out of my beat to night. The chief object at Realp is to avoid driving over the Furka, a fine route, no doubt, or rather a route which gives a fine view from the top—that is, if you can see it, which has only once been my lot out of six or seven times; and, taken from whichever side you like, the slow crawl up to the top is very monotonous. But on the S. of Realp there are several nice little peaks, and probably the best way of reaching the upper Rhone valley would be to climb the Wyttengewasserstock, a peak which, with but one exception, is unique in the Alps, though Dr. Collie has discovered another in the Canadian Rockies, in supplying from its snows three great river systems: in this case that of the Rhone on the W. by way

of the Gerenthal, the Rhine on the N. by the Muttenbach and Reuss, and the Po on the S. by way of the Ticino. Its only rival is the Pizzo Lunghino, which substitutes the Danube for the Rhone.

The descent is easy to Oberwald, where there is an amusing little hotel, whose 'pension' is, or was, four francs a day, and plenty of climbing may be had; or Ulrichen may be patronised, where the inn is one of those delightful native houses with vast rooms full of ancient furniture; and only 3 miles lower down is the Golden Cross at Münster, one of the very best of the smaller hotels. Here I remember a great friend being much amused at starting in a carriage for a new peak. It fell out thus: We wanted to climb the Galmihorn and go down to Oberwald, so with all our luggage we departed at 2.30 A.M. At Ulrichen we got out, and the carriage went on with all our belongings, while we turned uphill to the Blas Alp, and after a somewhat long expedition secured our peak, which was then new, and got down to Oberwald in the evening.

At Münster there is a very fine church, and going one Sunday to high mass we heard a most excellent sermon, slightly spoiled for us by the fact that every now and then the preacher lapsed into *patois*, and so we lost some of the best bits. Just as service began a man came in and knelt down beside me who seemed somehow familiar, but you can't turn and stare hard at a man who is only a foot off, and it was not till we were going out of church that I realised it was Jost, who was up there to look after a sick brother.

From Münster there are two routes to Binn through the Blindenthal, either of which can be combined with the ascent of the Rappenhorn, a very fine view-point. Had we only done our duty on the Rappenhorn I might have been able to show you a fine slide of four chamois, who stood at quite a short distance, uneasily inspecting us while we silently wrestled for the field glasses, quite oblivious of the camera which lay beside us. But an even better expedition, though longer, would be to go up the Merzenthal, over the Merzenbachschien to the Blindenhorn, and so to Binn by either the Mittlenberg or the Thäli Glacier.

Binn is a real centre, and a very charming one, with any amount of exactly the sort of climbing which is wanted. In the early days, ten years ago or so, it was a delightful spot, but then a time supervened when they began to be ambitious at the inn, and there was a stage of development which was not so nice, in which the prices distinctly got ahead of the

comfort. Now I understand that a further stage has been reached, which may safely be recommended, the comfort having caught up the prices, though I fear the old simplicity has departed.

I should have no time to-night to enter minutely into the climbs to be done at Binn, though the slides will perhaps give some idea. The most convenient groups from our point of view are the Schienhorn and Cherbadung massifs, though the Helsenhorn is not much further off. The Ofenhorn is most often climbed, but is rather longer and less interesting, except topographically. The Hüllehorn can be taken on the way to Berisal, in combination with the direct route of the Steinenjoch, a very pleasing little pass, thoroughly well suited to guideless parties; or, if more ambitious, you may, from the Steinenjoch, go up the Bortelhorn by its N. arête, and go down to Berisal. We took it once in the opposite direction very early in the year, and were rather perturbed at finding the N. ridge very heavily corniced; but the snow was in very good order, and we encountered no real difficulty. Or, if very humble-minded, you may, taking the Bettlihorn on the way, if you like, go by the Saflisch or Safnisch Pass; there is some diversity of spelling, and much more difference of opinion as to the best way down from the col to Berisal. Those who have plunged down through the wood below Im Stafel to the Ganterbrücke are emphatic in declaring it to be an evil way. We therefore rounded the hill from Seewji Stafel to the Steinen Alp by a horrible switchback path, which took an enormous time and was most trying to the temper, since the hotel roof was the whole time just under our feet. I believe really the best and shortest way would be to traverse straight across from the pass in a southerly direction, hardly descending at all till the Saurerrück was crossed, and then drop down on the Steinen Alp.

At Berisal you will find again the luxury you left at Hospenthal, with far more pleasant surroundings, but there is not a great deal of climbing. Both Bortelhorn and Hüllehorn have already been spoken of; the Wasenhorn affords a good scramble, and may be descended by way of the Kaltwasser Glacier to the Hospice, and so to Simplon. Or, as is more likely, you may drive the 12 miles on an off day. Simplon possesses two hotels, both of which are pretty well known; the Poste is rather more pretentious and the dinner excellent, but it is always the same dinner; but if you only stop one night that does not matter.

From Simplon the pleasantest way of reaching Veglia is



Photo by F. Baker Gibbs]

[Swan Electric Engraving Co.

SCHIENHORN AND CHERBADUNG GROUPS, FROM OFENHORN.



Photo by Rev. G. Brooke]

[Swan Electric Engraving Co.

PIZZO COLUMBE, EASTERN ARÊTE. Digitized by Google

over Monte Leone, but now I hesitate a little. Not long ago I had a mild controversy with my Bishop's wife. She declared that no Italian inn was ever dirty, and was very emphatic about it. It is not seemly to contradict your Bishop's wife, but I remained unconvinced. 'Hardly could a lady stop at Veglia,' wrote some one in the 'Alpine Journal' ten years ago. Well, as I hope to show shortly, two ladies at least have done it and survived, but they didn't exactly like it. But it is a great pity, as there is any amount of most excellent climbing to be had on the great cliffs which surround Veglia, climbing which is being gradually explored by our colleagues of the Italian Club, but so far practically untouched by English climbers. And at the same time it is a spot of very great beauty.

From Veglia to Devero there is a choice of two or three low passes, all said to be very beautiful; but unfortunately Devero is under a cloud, which I sincerely hope some member present may be able to remove. For the writer just referred to has recorded that 'Veglia is better than Devero by many degrees.' If he be right my wife has some justification for declining to go to Devero at present; but I do trust some one may be able to clear its character, as I should like to go there next year, though practically all the Devero climbs can be done from Binn.

From Devero a variety of rather longer passes over a complicated and badly mapped region lead us to Tosa Falls, where the inn, though in Italy, is under Swiss management, and so escapes all imputation. It is, in fact, a delightful little hostelry, much what Binn used to be ten years ago, where every effort is made to make you comfortable as a friend of the family. Here, as Mr. Cust has often pointed out, there are endless agreeable excursions; those on the E. are outside our present limits, but the Neufelgiuhörner and the Grieshorn group are especially to be recommended, while many of the ascents already mentioned, such as Ofenhorn, Hohsandhorn, and Blindenhorn, are within easy reach.

From Tosa the mule path of the San Giacomo leads you back again *via* All' Acqua, where there is a very simple but well spoken of tiny inn at the Swiss custom house, to Airolo, and the circle is complete.

Of course endless variety may be made by cutting across at any point; thus from Realp All' Acqua may be reached by the Cavanna Pass; a whole bunch of cols lead from Oberwald to the head of the Val Bedretto, and at Ulrichen the well-known Gries Pass route goes across to Tosa.

We had here a rather amusing experience once. It was very early in the season—June 11, to be exact—and my wife and I, with my old guide Adolf Andenmatten, were plodding across the glacier in a snow storm, when to us appeared, some two or three hundred yards away, a large blue umbrella advancing slowly towards us. We began to laugh, but Adolf, who had spotted the tip of a rifle protruding behind the broly, growled out, ‘Grenzwächter.’ And so it was! Such a pretty boy, who, though we were still half a mile inside Switzerland, at once demanded to search our sacks. It did not seem worth arguing the point, as we were undoubtedly bound for Tosa; but when he wanted to begin with my wife’s Adolf poured out such a volley of patois on the impropriety of such a proceeding that he abandoned not only my wife’s but Adolf’s also, in which my wife’s sack was ensconced. But he made up for it with mine, which he slowly emptied piece by piece on the snow, while my wife sat and laughed. Ten tins of jam first struck him as ridiculously extravagant and obviously liable to duty, but we urged that they were only for mountain use and that it was a long way to Berisal *via* Binn. Appeased, he opened a box of Brand’s meat lozenges. Immediately a smile spread over his face, and he said, ‘Caramelli?’ ‘Try one,’ said I, and promptly a couple went into his mouth. Shortly a pained expression was visible, and he resumed his duties with extra vigour. Presently he found my spare tobacco pouch (my other was safe in my breast pocket), opened it, and shook his head solemnly. ‘Oh, you’ll allow that,’ I said. ‘No,’ he replied; ‘there’s more than 100 grammes here,’ and went on chanting, ‘Centi grammi, centi grammi,’ balancing the pouch up and down in his hand. Then an inspiration seized me. I said, ‘Ma anche per madama?’ (‘What about the lady’s allowance?’) Adolf roared, and our friend with the sweetest of smiles at once handed back the pouch. We saw him several times afterwards, as they had a regular camp just below the Falls, sending two men up every day to patrol the head of the valley.

From Binn numerous passes lead across the range to Tosa, Devero, or Veglia, and the latter is, of course, reached with the utmost ease from Berisal without going to Simplon.

And now, having dealt with the district in general, without, I trust, having been unduly dull, I will particularise with the account of one special run along the N. side which ended in a rather amusing manner. At the beginning of July my wife and I, after crossing the Laquinjoch with all due assistance, were awaiting at Berisal the arrival of my sister from England.

With a view to the transport of her sack with due efficiency and economy we had been making inquiries about porters, without much result, till Adolf suggested that he had a young brother-in-law, who, being neither guide nor porter, but only, as he phrased it, a 'common man,' would no doubt be willing to come for five or six francs a day. So I handed over sundry coins to Adolf to disburse on telegrams, which he must have done with remarkable inefficiency, for though the wire was, I think, called into use four times, no one had any idea whether the 'gewöhnliche Mann' was coming or not till he actually made his appearance on the morning of the day on which my sister arrived, after travelling steadily for 38 hrs.

Only one day's rest was allowed her before crossing the Forca del Rebbio to Veglia, which we found in some disorder, as, though Roggia had just opened his house, the servants had not arrived, nor, what was more serious, the cows, and it took a man three hours to go for milk and return. An additional nuisance was, according to our host, due to the absence of the herd, viz. the presence of innumerable small and exceedingly venomous gnats. He declared that these would all disappear with the arrival of the cows; and if this is true I can only suppose that in the tiny tarns, where presumably the gnats breed, the trampling hoofs destroy the nymphæ before they have time to develop into the perfect insect.

We rested a day at Veglia, during which an elderly German, guided by Alois Kronig, arrived to us from Binn. Him accordingly we taught to play squails with 5-franc pieces—a great resource in small inns in evil weather. Next morning we started for the Ritter in heavy rain, which caused us some disquiet, for the pass, which none of us had ever seen before, has more than once been the scene of ludicrous mistakes in bad weather. In 1890 two very well known climbers, finding the ridge wrapped in fog, twisted too much to the left on their ascent from Veglia, with the result that they crossed a spur instead of the main ridge, and presently going down the Mottiscia glen found themselves back at the inn they had left in the morning. This, however, they boldly published as a 'new expedition.' In 1894 another party, though accompanied by a local man, repeated the performance on the other side, but their great desire seems to have been to keep it a profound secret.

Fortunately for us the rain ceased, the clouds rolled away, and we had nothing worse to face than a N.W. gale. True we had some little difficulty in hitting off the descent down the cliffs on the other side; and Adolf and I indulged in the

usual acrimonious arguments, with the not unusual result that we each in turn led the others astray, though the honour of discovering the feasible gully fell to me.

Binn was reached about midday on the Saturday, and we arranged to leave on the Monday for a new pass to the Rhone valley between the Ober-Turbhorn and the Strahlgräte. At Tschampigenkeller we left the Albrun mule path, and climbed by narrower and steeper tracks to the Turben Alp, where we stopped to eat. As up to this point I have kept clear of the actuals I may be allowed to lay down as a law that with ladies, and as a matter of fact with nearly all climbers, a safe rule is to feed often. There was considerable grumbling on this occasion, because nearly three hours had elapsed since leaving Binn. Then we climbed some very steep grass slopes, and a less steep and very simple little glacier. It was getting warm now, and my wife proceeded steadily up it, umbrella in hand, while I, having discovered a crevasse at least six inches wide by the simple process of putting my leg into it, was arguing with Adolf as to the advisability of roping. Adolf, however, not only had the rope on his own shoulders but was fifty yards ahead, so had distinctly the best of the argument, and we arrived at the top at 8 o'clock, still unroped. The view was at first rather puzzling, it being possible to descend left or right into two entirely different valleys, but a few steps forward enabled me to identify the Blinden Glacier. We put on the rope, went down a short steep snowface to the head of a small buttress, and there ate largely. We here noticed that Adolf ate very little, and seemed rather short in his temper; but imagined that Schmid had probably given the men an extra festive supper the night before.

The descent of the Blinden Glacier was for some time uneventful till we suddenly reached a small bergschrund, and the 'common man,' who was leading, and who had never been on ice before, jibbed vigorously. At last, exhorted by the whole party, he prepared to leap the fearsome chasm, which may have been five feet wide with a drop of about the same. I foresaw what was likely to happen, and coming close up to my wife, who was giving him rope, held her up short with a couple of turns round my axe well driven in, just as our porter made a prodigious bound in the air. As he landed his heels slipped up, and away he went on his back at express speed till the tautened rope brought him up with a jerk that was felt by the whole party, my wife's waist naturally coming in for an extra share of compression.

Further down there were patches of bare ice where it was necessary to go cautiously, but our friend, like most novices, forgot to go on going slowly after he was clear of the difficult bits, and so more than once earned my wife's anathemas for pulling her over in the slipperiest places. Twelve o'clock saw us clear of the glacier and consuming vast quantities of milk at the highest cattle alp. But by this time the heat was tremendous. We halted at the point where our valley joined that of the Rhone, and sadly contemplated the white expanse of highroad, which stretched on the other side of the river, some half-mile away, from Reckingen to our destination at Münster. More than two miles of it to be covered, and not a particle of shade. It was not to be faced, and we struck off to the right, trusting to find some shadier path on the left bank of the river, which might bring us to the bridge opposite Münster. In this we succeeded, and once within the hospitable portals of the Golden Cross soon forgot our fatigues.

Next morning Adolf came with a serious visage to report himself 'sehr krank.' He himself attributed it to having drunk at Binn some water which had been left forgotten in his room for many days—'acht zehn,' he said, and we were divided in opinion as to whether he meant eighteen or, as seemed more probable, eight or ten. I thought the milk drunk at Beim Keller might have something to do with it, and, finding his temperature barely above normal, administered a nauseous dose of pounded-up pills, flavoured with a little eau de Cologne. This he took most meekly, and, as with touching faith he said that he thought he should be better next day, we drove up in the afternoon to Oberwald, our *objectif* being the still unclimbed Saashorn, which we hoped to traverse in some way to Realp.

But in the evening, though no worse, he was certainly no better, and next morning was about the same, the symptoms pointing to a mild attack of influenza. Like all these men, now that he was seedy he was getting desperately homesick, and so, as we were almost at our journey's end, we thought it better to let him go, sending the porter with him to take care of him. And we were somewhat reconciled to this course when our landlord, an old chamois-hunter, declared that he knew the lower slopes of our mountain well, and would be charmed to accompany us on its first ascent. It was even a sadder parting than usual with our guide; but later in the day we heard the men had got safely to Viesch, and hoped that the next evening would see them home at Saas.

At dinner-time a great thunder-storm came rolling up, and went on at intervals during the night. We were called at half-past 12, but found rain still falling, so retired to bed again till 4 o'clock, when appearances were more hopeful. By the time we were fairly off it was half-past 5, but we thought little of this, believing our peak to be a mere trifle, on which time was of no importance.

Away past Unterwasser, and up the Gerenthal, we started in full daylight; but our old host, a great stalwart man of between fifty and sixty, proved sorely garrulous, and, what was worse, found it necessary to halt whenever he had any information to impart. Now it was the site of an old chapel, now the quarry whence the stone for the local stoves was hewn that checked his steps and loosed his tongue. Rapidly the ladies waxed wroth at being pulled up every three or four hundred yards, just as they were comfortably settled into their stride; insult was added to injury when to each in turn he offered a slender bamboo alpenstock as more suitable than their own axes; and at last I had to impress upon him that we had come out to walk and not to talk.

Pained, but not altogether silenced, he ambled along more steadily, stirred up by the point of my axe whenever he endeavoured to halt to point out the exact spot where he had succeeded in doing to death a chamois, and these were fairly numerous. He had also a romance about a bear, only a few years back, and the great hunt that was organised in pursuit: but I gathered that they went somewhat on the principle of 'not having lost a bear,' and were quite satisfied when they had driven him out of the country.

At last we found ourselves at Im Schweif, a collection of some half-dozen mouldering hovels at the foot of the tremendous cliffs which here drop to the west from our peak. On these some two score sheep, according to old Kreuzer, managed some years ago to get so irretrievably pounded that it was found impossible to extricate them, and, to save them from a lingering death, they were deliberately shot down with rifles. A few of the carcasses fell over the precipice, but the majority had to be left where they lay. Here we had to cross the Saasbach, a fair-sized stream even at 7 A.M., and, though we managed to ford it with only a few splashes, we wondered what was likely to be its afternoon condition on a summer's day.

Some 40 min. later, the orthodox 2½ hrs. having elapsed since the start, we halted amid grey boulders and parsley fern for our first meal, and then pushed on till we rounded

the corner and saw to the N.E. the Geren Glacier stretching up to the Wyttewasser Stock before mentioned.

All traces of a track had now disappeared, and, after a few minutes more along the bottom of the valley, we turned again to our left up a narrow and appallingly steep grass gully, which made us pant and groan dismally for half an hour. At last we topped the ridge, and began doubling back along the top of the cliffs, which had so overshadowed us two hours before. Here there was no possible difficulty; our peak stood up at no great distance, sharp and spearlike certainly, but no misgivings assailed us till, about 10 o'clock, we reached the foot of a great slope, still partly covered with snow. A delightfully clear cold stream coursed among the great rocks, and we stopped again not only to eat, as in all probability we should not see water higher up, but also to reconnoitre our future course.

Straight in front, nearly due north of us, and perhaps half a mile away, rose the jagged point of the Saashorn, and for the first time we began to think that perhaps our work was only just beginning. To south-east and south-west rose two ridges enclosing the upper part of our slope. That to the left was the one seen on the sky line from Oberwald, and though it was obviously easy to reach the lower part of it, an uncompromising and almost perpendicular step higher up offered an all but certain bar to progress. The ridge to the east was far less steep, but jagged like a broken saw, promising work for the rest of the day should we be forced to keep to the crest.

I therefore proposed to go up the slope to the foot of the last notch in this eastern ridge, thence somehow, though the rocks did not look altogether inviting, to gain the notch and finish the climb by the ridge. Kreuzer, however, objected vehemently, declaring it was only possible to go further by turning the east ridge and getting on to its north side. To humour him we accordingly tramped up a long snow bed which stretched conveniently down the slope, and found on gaining the crest at the nearest gap that, as I expected, there was a sheer drop on the other side of some hundreds of feet. A sorely dismayed man now was our host, and began to throw out hints that sufficient had been done for honour. We dismissed these suggestions with contempt, dropped down again to the snow which lay along the foot of the crest, and tramped along for 20 min. till we were under my notch.

Obviously, if success was to be gained, this was the only way, but a serious effort was inevitable. Solemnly we depo-

sited our axes with the ladies' coats, umbrellas, and other impedimenta behind a big rock, and girded ourselves with the rope, a performance new to Kreuzer, but hardening his heart he professed himself ready to go wherever the ladies would, and at 12 o'clock we started upwards. In a minute or two we were brought to a stand by a 'pitch' of about 12 ft., very smooth and forbidding, but slanting up to the left I discovered a feasible means of turning the obstacle. At the top of this was a fair-sized ledge, and I hauled up the others in succession, after which we rounded an awkward corner and dropped down again into the gully just above the before-mentioned pitch.

While I had been struggling with the first difficulty our poor old host had been cheering the ladies with such remarks as, 'The Herr is quite mad,' 'We shall all be killed,' 'The rocks are utterly impossible,' and finally turned to my sister with the searching enquiry, 'Haben Sie nicht Angst?' These continual growlings irritated us all so much that at last I asked him if he would like to wait where he was till we returned, saying I thought we should be away about an hour and a half or two hours. He hemmed and hawed a bit, and to give him time to consider I proceeded to attack the next pitch, which was now evidently the only obstacle between us and the notch.

This was about the same height as the other, but a few friendly cracks, aided by some knee and elbow work, got me up to the sticking point, where the final slab not only projected over my head, but carried on its upper sloping surface a number of loose stones. Slowly I got a finger over into a convenient crevice, then an arm followed, until I was so far up that I was just worming delicately on to the great slab with good holds for both hands, when I disturbed some loose stone, and a rock some 18 inches square began to roll down. With a yell to those below I swung my right foot across to the opposite side of the chimney, and stopped the boulder with my shin (I still bear the mark, though several years have elapsed) as it paused for its final leap.

Gazing with anxiety under my right arm, a ludicrous picture presented itself. On one side of the chimney the ladies were hastily ensconcing themselves behind a projecting buttress, while on the other Kreuzer was making desperate efforts to flatten out his rather bulky person. All was clear, however, and swinging my leg back I let go the boulder, which by this time seemed to weigh tons, and bouncing on the top of the lower pitch it split into two pieces and whizzed away

down to the valley. In a minute more I was safely up and prepared to assist the others. My last performance had meantime settled Kreuzer; he was not going any further tied to a madman who hurled large rocks about, and thankfully decided to rest where he was till our return.

So he detached himself from the rope; my sister coiled the end round her waist—we had 120 ft. in all—and we scrambled up to the notch, whence a decidedly long drop let us down to much easier going, though constant watchfulness with regard to loose stones was necessary. Still we made steady progress upward till close to the top we halted, to choose between two parallel chimneys either of which seemed to lead to the actual summit. The right-hand one began with an 8-ft. pitch, while that on the left was easy; so up it I went, till I found it becoming inconveniently narrow, and soon I had to drop the sack and leave it in the cleft. Narrower still it became, till at last it closed overhead, leaving only the smallest of holes on the right, through which with many contortions I wriggled, to find myself at the head of chimney number one, at the foot of which the last member of our trio was still patiently sitting.

One glance round revealed the fact that we were only on a great 'gendarme'; the real peak lay some distance off to the north-east, and I hurriedly made an excursion over the next point to see if we could stick to the ridge. Finding this all right, I set to work to get my followers up. All went well for a time, but then my wife stuck badly in the narrowest part, and it was some time before she appeared through the rabbit hole at the end, pushing her hat before her, as, being a stiff straw, it would only go through edgeways. The other lady also nearly proved a fixture, thanks to the extra coils of rope wound round her, and at one time it looked as if she would have to untie and come up through the other chimney, but my wife found a point at the top of the gendarme from which, hard held, she could survey and encourage progress, and at last we joined forces again.

The next pinnacle was the only one where a slip seemed at all likely; its top had apparently been sliced off, leaving a broad smooth surface at an inclination of about thirty degrees, on which it was necessary to squirm for one appreciable instant without grip while changing holds. But with the rope securely hitched a slip would have been no great matter, and we landed safely again on the ridge beyond, from which the eye seemed to drop almost sheer into Oberwald. Here we hustled along gaily till a short knife-edge of snow called

for steadiness in the absence of axes. Then we traversed again to the right, swarmed two more great slabs, and swung up among the cluster of spikes which represent the real top. Two of these rise above the rest, and standing in the notch between it was just possible to touch their sharp points with the hand.

Then we looked at the time; nearly half-past two. No time to build a cairn; and no jam or sardine tin in which to place our names, for the sack had been left in what we with one accord called the 'bad crack.' Finally we deposited a matchbox with our names under a few stones in the notch between the final teeth, fixing a safety pin in the rock above to point out its hiding-place, and after the briefest of halts fled downwards with, I fear, no thoughts about the view. I do dimly recollect that the distance was hazy, and most of the Pennine ranges wrapped in cloud, though many of the Oberland peaks could be identified.

My sister now took the lead, and led right well, only hesitating once or twice as to the exact route. Back along the ridge to the great gendarme, then down the chimney up which we had *not* come, easily dropping over its final pitch, though I then had to go up the other to recover the sack, and so to just under the notch, up which I again led, and we found ourselves once more above the spot where we had left Kreuzer nearly *four* hours before instead of the two I had reckoned when I thought the gendarme was the real peak. Wild yells elicited no response, and we wondered if he had tried to get down alone and had killed himself.

I lowered the ladies, and then followed with assistance from a shoulder at the critical point. We repeated the process at the lower pitch, and slithered down the snow to our big rock, to at last fully realise our woes. Kreuzer had gone home, and had taken everything with him, including all our ice axes and the wine gourd! Dire were the maledictions heaped on his head by the others on their way along the snow slopes, as from time to time one of them lost her footing and shot down till checked by the rope, while the absence of the wine bottle stirred up a most unchristian spirit in my thirsty body. Wrath mounted still higher when we found by the tracks that the old man had gaily glissaded where we felt bound to walk cautiously down; but much of our woe was forgotten when we got back to our clear stream at a quarter-past five, and, not having touched food or drink for over six hours, pretty well cleared out the sack, while I was ensnared into drinking undue quantities of the icy water by getting hold of our biscuit tin, a cut-down Bath Oliver, which holds about a pint,

and was filled and emptied often enough to cause me to repent it for the next day or two.

For fifty minutes we sat there, basking recklessly in the sun and finishing up the jam tins, till I felt bound to point out that the shadow had already covered most of the valley, and that there were less impossible things than getting benighted in our lanternless condition in the forest on a path that none of us had ever seen before that morning. So down we pressed until again at that awful grass gully Kreuzer's ears must have burnt freely, for it was no joke, with night coming on, to have to creep and crawl for fear of a tumble, when with axes we could have scurried down gaily.

Round the corner I managed to hit off among the boulders the faint sheep trail up which we had come in the early hours, and we pushed on steadily, only halting once for a drink of water and a biscuit, till again we reached the Saasbach, to find it, as we had expected, in a very different condition from that of the morning. So tumultuously was it coming down that the patch of stones in the middle, by which we had crossed almost dry-shod, was now 2 ft. under water. Uncoiling 10 or 12 ft. of the rope, and giving the others the end, I jumped for the stones, and then backed up stream till the water was surging high above my knees. Aided by a jerk from the rope, my wife just reached the stones, and then, losing her balance, promptly knelt down at my feet, but hurriedly got up again, and safely effected the narrower leap to the further shore, where she untied and tossed me back the rope. It then took me four or five casts before I got it over to my sister, there being little more than enough to reach her, while if one strand touched the racing water it was instantly whirled away. At last she caught it, tied on, and got over safely, imitating my wife's performance in every particular.

This icy cold bath refreshed them both considerably, and it was almost at a run that we pressed on downwards, just clearing the forest as night finally closed in on us. On reaching the bridge over the torrent near its junction with the Gornerlibach there was a choice of route, and some one suggested that the path by which we had come in the morning was not only very narrow, but overhung the torrent in a way that offered unpleasant possibilities in the dusk. However we preferred to chance the evils that we knew of, and hurrying on at last got back to the paved mule track which mounts from Unterwasser to the hamlet of Gerendorf. It was no longer possible to tell at all at what angle the stones were set, barely to see whether they were large or

small, and when we totalled up our croppers at the bottom they came to a very respectable sum.

Finally the flat level of the Rhone valley was reached, and then our hotel, at the somewhat tardy hour of nearly half-past nine. Our appearance created a tremendous sensation, for old Kreuzer had come in half an hour before to report that we were all most certainly killed. He had waited for 3 hrs. where we left him, and then, deciding that we were probably killed, but might possibly have found some better way down, had collected all our impedimenta and made the best of his way back to the Saasbach, where he had waited a long time in the vain hope of seeing us descending by that valley, till gathering darkness drove him at last homewards.

He fell on our necks with such unfeigned joy at our safe return, and poured forth such eulogies on our masterly performances, that our wrath speedily evaporated, though that of my sister revived to some tune when she found that, on the assumption that she was either lost or slain, her room had been bestowed on some other travellers. They were speedily evicted, and after we had taken turns at the one tub of the establishment and discussed an excellent supper we finally retired to rest about midnight.

Now this is the sort of climbing to which almost every lady may aspire. So many who are thoroughly up to a day of 10 or 12 hrs. are disgusted with the noblest of all sports by being started on their career with a long dull snow-grind from a fashionable centre, preluded perhaps by a miserably uncomfortable night in a hut, or in one of those tiny inns so abundant now at places like Zermatt, in which sleep is generally almost unprocurable. If only their male belongings would give them short days with plenty of rock-scrambling, expeditions such as may be found in abundance in less frequented districts like the Lepontines, fewer of our members would give up climbing, fewer wives would be left behind, and it would be found that not a few ladies were in time perfectly capable of making 'a third on the rope' even in a guideless party.

THE GRINDELWALD DRU.

By G. HASLER.

THE peak now for some years known under this name is that to which the figures 3414 are attached on the Siegfried map, and forms the lowest part of that rocky ridge

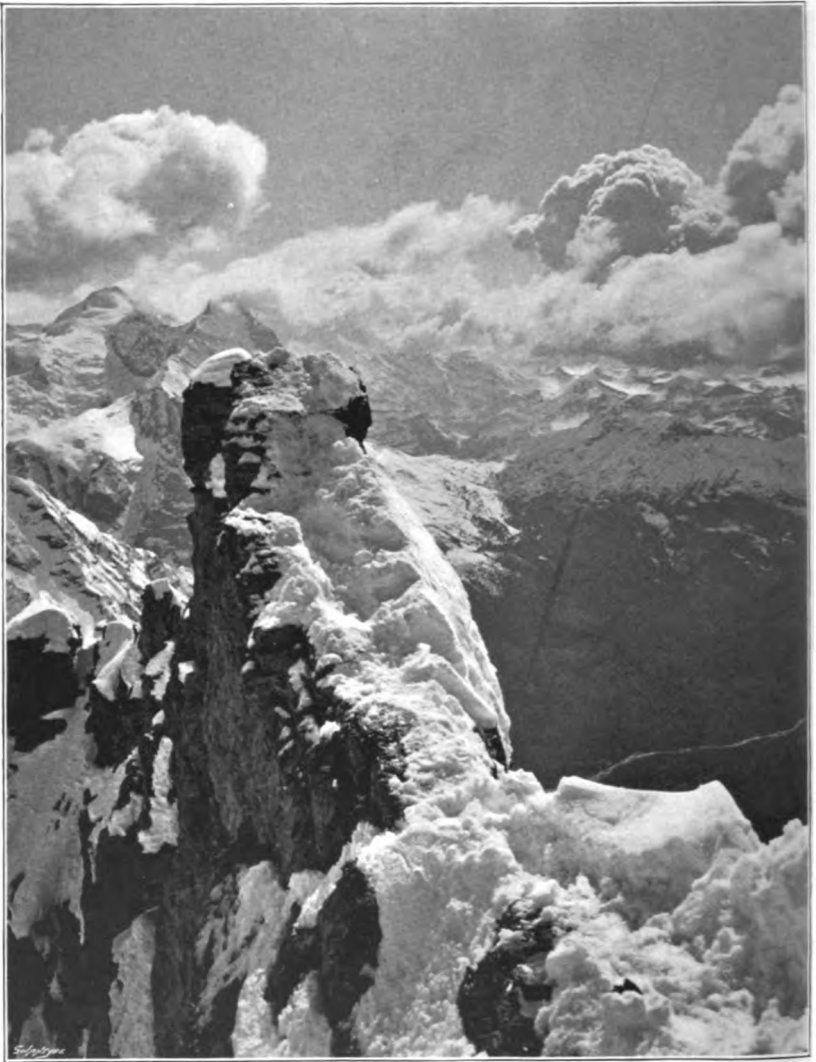


Photo by G. Hasler

[Swiss Electric Engraving Co.]

THE LOWER "GENDARME." (THE GRINDELWALD DRU.)

which runs from the Wetterhorn in a north-west direction. From that point nearly perpendicular buttresses lead down to the Great Scheidegg route, whereas from the Hühnergutz Glacier a wall of smooth rocks leads to the arête which comes down from the Dru in a south-west direction.

Seen from Grindelwald the peak seems to be accessible without serious difficulties, but the nearer one gets to it the steeper and harder it becomes.

After several unsuccessful attempts we—that is, my two guides, Chr. Jossi, Peter Bernet, and I—started again from the Gleckstein Hut on May 13, 1901, at 3.15 a.m. The first part of the way was the same we had taken some days before for an ascent of the Wetterhorn from the Hühnergutz Glacier. We reached the arête N. of the Krinne Firn at point 2867, then followed it to the breakfast place, from which I took some photographs. Walking over the Hühnergutz Glacier through very soft snow, we came first to easy rocks, and afterwards over a steep snow ridge to a smooth rocky wall, which, however, was covered with snow, so that we could traverse it. This part will very probably be impossible in summer, when no snow enables the climber to get to the foot of the Dru.

From a somewhat safer place here I succeeded in taking photographs of our route.

The last part of the snow traverse was rather awkward. Then we got to the upper of the two little snow-fields, from which smooth perpendicular, or even overhanging, rocks lead to the gaps in the arête above. Our four-yard-long wooden pole, which we had carried so far, began now to help us. With iron nails and ropes we fastened it on the wall, and, although rather unsafe, Peter began to climb it. It shook dangerously, being barely three inches thick. Still Peter managed to reach the gap. There Grindelwald, which had been hidden for some time, appeared again. We had to pass over two very nasty 'gendarmes' (the second of which is shown in the accompanying illustration), whose rocks were entirely rotten; the first especially was in a bad state.

As soon as we had passed the second tower the difficulties were over. In five minutes more we reached the top over easy snow-covered rocks. There we spent more than an hour in building a cairn and hoisting a white flag on our pole easily visible from Grindelwald. The ascent took us 13 hours from the hut. The top of the Dru looks quite harmless. The difficult part is the traverse of the smooth rocks and the bit above the two snow-fields with the two gendarmes.

In coming down we did not go over these, but managed with rope and iron nails to let ourselves down to the snow. For the benefit of future climbers I may remark that no rope has been left behind. We were back in the hut at midnight.

THE ALPINE CLUB ANNUAL EXHIBITION OF PHOTOGRAPHS.

THE Exhibition of Photographs that was held in the Hall of the Club during the month of May was quite up to the usual level, though there were perhaps fewer very striking pictures than in some previous years.

Mrs. Aubrey Le Blond showed some good work, but her most conspicuous contribution, a view of the Portiengrat, though vivid and impressive, struck one as being rather lacking in the half-tones which this lady's work usually possesses.

Mrs. Bullock Workman is only less gifted as a photographer than as a lady explorer. One of her photographs showed a region which had never before been visited, having been the subject of discovery by this distinguished lady and her husband. Another, a view of 'Mt. Bullock Workman,' showed well the contrast in tone between snow and sky which appears to prevail in this region. The footmarks leading to the very summit place it beyond doubt that this point, which was at an altitude of over 19,000 ft. above the sea, was actually ascended by the party.

A view of some crevasses on the Doldenhorn, by Miss Benham, showed good work.

Another interesting view in the Himalayas was a panorama of a part of the Karakorums, by Sir Martin Conway. A portion of this which was framed separately was perhaps even more striking. Sir Martin also showed three views of Illimani, which indicated in a manner full of significance to the mountaineer the difficulties of transport which may be caused by soft snow in the Andes.

The work of Mr. Valentine Richards made one feel at once that photography is a field in which the qualities of the artist can be shown with great effect. A general view looking from the Galenstock was beautifully soft. The slopes on the far side of the valley in the middle distance were indicated with what we could but describe as a clean wash, which was very happy in effect, while indistinct patches of snow in the far distance mingled with the sky in a manner which really recalled actual experience. The view of the Saasgrat from above Saasgrund was delightfully atmospheric. The foreground was chosen with great taste and judgment.

Mr. Dent had a large view of the Finsteraarhorn from the Gastenhorn, which was very pleasing and technically excellent, though perhaps the sky was a little too dark. The effect of mist in the long valley which stretched away into the mountains appeared to us to be particularly realistic, and to indicate the difference in

temperature which prevails between a summit and a valley on a hot summer's day. Mr. Dent also had a picture of the icefall on the Glacier du Géant in which he represented with firmness and decision, together with great correctness of tone, the well-known features of this scene. Another view of the Saas Valley in winter was very beautiful.

Mr. Hastings exhibited a number of photographs of Norway, which were of some interest.

Mr. G. P. Baker's large views of Norway were of great assistance to the exhibition.

Dr. Tempest Anderson showed some views illustrating the curious features of the country traversed by him on his tour in the Colorado district. The view of the 'Crater Lake' (Oregon) showed a pine-clad slope rising from a sheet of calm water, and well illustrated the curious geological formations in that country.

To look at Mr. Howard Priestman's large brown view of the Hornungstinden is to recall some of the most delightful moments of mountaineering experience. The composition was good, and the sky very true to the effect aimed at.

Mr. Alfred Holmes exhibited twelve half-plate silver prints of the Graians which showed conscientious work, and his picture of Monte Rosa from the Cima di Jazzi was soft and pleasing. The piece of arête in the foreground helped the effect, and the clouds were very well managed. Another view of the Pic Sans Nom, in Dauphiné, was good in composition, and the wafted cloud on the left of the picture was treated with much skill.

Mr. J. H. Doncaster had a good view of the Aiguille de la Za and the Perroc, which was interesting.

We were glad to see contributions from Mr. du Pontet on the walls of the Club. His view of the Matterhorn from the Col d'Hérens was somewhat spoiled by a triangular black shadow in the foreground. The views in the neighbourhood of the Combin were attractive, one of them showing how the ingenuity of an hotel-keeper enabled him to divert a stream to produce a more effective waterfall.

Mr. Barclay Squire showed a sketch of the Drei Zinnen, in which he appears to have been assisted by some photographic process.

Mr. J. P. Somers was not prevented by his invaluable services to the nation in South Africa from continuing his services to the Alpine Club. His view of Zermatt in winter might well be the work of a much older photographer.

The 'Eiger and Mönch' appeared this time in connection with the name of Dr. Kennedy. This picture was a little too black, but his view of Mt. Blanc from the Grands Montets was delightful, and shows with what patience he must have waited for a good cloud effect, and how well we have been rewarded by his virtue. The cloud of this last picture was particularly pleasing—the technique without a fault.

Mr. E. C. Oppenheim exhibited a view taken from the summit

of the Dufourspitze. The distance, which showed typical Italian cloudland, was rather chalky, but the picture as a whole showed considerable strength.

Dr. Norman Collie's views of the Canadian Rockies were among the most interesting of the exhibits. We were especially attracted by a charming view of the Bush Valley River, taken, we apprehend, about the time of sunset. The sky was full of perspective, and the whole picture possesses great depth. We think, however, the composition might have been improved by cutting off a couple of inches at the bottom.

Mr. Sydney Spencer's work is, if possible, better than ever this year. He is able, in a quite unknown district, and in spite of all the obstacles which hamper the explorer, to produce work of the very highest class, and which seems to suggest the exercise of the most fastidious care and patience. We cannot, for instance, imagine that the spots in the Bush Valley which he has represented are always diversified by the delightful play of light and shade which characterises these two photographs. He must have chosen his moment, as well as his point of view, with the greatest judgment.

Space must not forbid our mentioning Mr. Garwood's large panorama of the Bernina-Roseg range, in which the effect of sunshine on snow is reproduced with a success which is rarely attained. This photograph appeared to us to be, from the point of view of technical merit, one of the best in the exhibition. Mr. Garwood also showed a beautiful little brown study of a tree and mountain and water, taken on the Lake of Como.

Mr. S. Donkin often incurs the suspicion at a distance of putting in clouds artificially, an impression which is always agreeably dissipated on a closer inspection. His four exhibits, especially one of the Grosse Ruchen, were by no means devoid of interest.

We are very glad to see that Mr. Woolley has been kind enough to present his photograph of Latsga to the permanent collection. The light effects in this picture were very good, and the technique and composition were unexceptionable. It was undoubtedly one of the best photographs in this year's exhibition.

Mr. Speyer's view of Monte Rosa from the Monte Moro Pass was very soft and aerial, but still better work was shown in a view of Alagna, which is also to enrich the permanent collection. Another very charming picture represented a river and some rocks near Borca, and the effect of spray caught in a beam of sunlight was remarkably happy and uncommon.

We must not forget to mention a scene of A. Somerset Bullock, 'Crossing a Snow Bridge,' an almost unique spectacle. The composition was distinctly clever. 'Dawn on the Mount Dolent,' by the same exhibitor, had great pictorial value, the rising sun just catching two peaks in the distance, whilst the low tones and cold shadows of the foreground enabled one to readily imagine the real sunrise.

We wish we had as much space as we have inclination to say

more about the other exhibitors, much of whose work was very good. For example, Messrs. C. R. Wollaston and Vaughan Cornish, Sir William Abney and Messrs. O. K. Williamson, A. A. Booth, H. E. M. Stutfield, and C. H. Nettleton all showed work which really merited lengthy comment. We think the Alpine Club has every reason to be proud of its annual photographic exhibition.

We must add that much interest was caused at the exhibition by the collection of old photographs of the Alps taken by M. Bisson, and lent by Mr. William Mathews. We understand these have since been presented to the Club, and will thus be of permanent value to the members.

THE ALPINE CLUB LIBRARY.

Recent Books. (Presented by the Authors or the Publishers.)

- Baedeker, K. Switzerland. 19th edition. Leipsic, 1901
Bibliotheca geographica. Herausgegeben v. d. Ges. f. Erdkunde zu Berlin.
Band vi, 1897. 8vo, pp. xvi, 444. Berlin, Kühl, 1900
A very valuable bibliography of the books and the articles of the year
dealing with geographical science.
- *Deasey, Captain H. H. P. In Tibet and Chinese Turkestan. 8vo, pp. xvi,
420; map, ill. London, Unwin, 1901
- *Ferrand, Henri. Belledonne et les Sept-Laux. Montagnes d'Uriage et
d'Allevard. 4to, pp. 122; numerous plates from photographs.
Grenoble, Gratiot, 1901
- *Fuchs, Prof. Josef. Hannibals Alpenübergang. Ein Studien- und
Reiseergebnis. 8vo, pp. 152; maps. Wien, Konegen, 1897. M. 3.50
- *Holdich, Col. Sir T. H. The Indian Borderland, 1800-1900. 8vo, pp. xii,
397; map, ill. London, Methuen, 1901. 15/- net
- *Hunting in Many Lands. The Book of the Boone and Crockett Club.
Editors T. Roosevelt, G. B. Grinnell. 8vo, pp. 447; ill.
New York, Forest and Stream Publ. Co., 1895

Contains, *inter alia* :—

- A. Sampson, 'A Bear Hunt in the Sierras,' pp. 187-219.
H. L. Stimson, 'The Ascent of Chief Mountain, Montana,' pp. 220-237.
W. W. Rockill, 'Big Game of Mongolia and Tibet,' pp. 255-277.

- Lefebure, C. Mes étapes d'alpinisme. 12mo, pp. 174; ill.
Bruxelles, Soc. Protectrice des Enfants martyrs [1901]
Description of many ascents in the Alps generally, with good little
illustrations on almost every page. The work, which is sold for the
benefit of the Society, may be obtained direct in various editions at
prices from fr. 5 to fr. 100. The address of the Society is 25, rue des
Comédiens, Brussels.
- *Little, A. J. Mount Omi and beyond. A record of travel on the Tibetan
border. 8vo, pp. xiv, 268; map, ill. London, Heinemann, 1901
- *Lynch, H. F. B. Armenia. Travels and Studies. 2 vols, roy. 8vo, pp. 470,
580; maps, col. ill. London, etc., Longmans, 1901. 42/- net
- *Mader, Dr. Fritz. Die höchsten Teile der Seealpen und der Ligurischen
Alpen in physiographischer Beziehung. 8vo, pp. 235; ill.
Leipzig, Fock, 1897
- Maund, J. O., *see* 'Sport, The "House" on,' 1898.
- Merzbacher, Gottfried. Aus den Hochregionen des Kaukasus. Wanderungen,
Erlebnisse, Beobachtungen. 2 vols, imp. 8vo, pp. xxxvii, 957: 963; maps,
ill. Leipzig, Duncker & Humblot, 1901. M. 40

* See *Reviews and Notices* in the present number.

- *Sieger, Dr. R. *Die Alpen*. Sammlung Göschen. 8vo, pp. 170; map, ill. Leipzig, Göschen, 1900
- *Sport, The "House" on. By members of the London Stock Exchange. 8vo, ill. London, Gale & Polden. 1898
Contains, pp. 269-285, ill., 'Mountaineering,' by J. O. Maund.
- Vade Mecum dell' Alpinista. Cenni sulla costituzione e sull' andamento del C.A.I., sulle norme tecniche e igieniche per le gite nell' alta montagna. ed elenco delle Guide, dei Segnavie, Rifugi ed Alberghi alpini. . . . per cura del C. A. I. Anno II. 8vo, pp. 166; ill. Torino, etc., Paravia, 1900. 1 lira
This is the second issue of this very useful little handbook. The title gives sufficient indication of its scope. Exact particulars of the publications of the sections would be useful and would occupy little extra space. This is the only part of the handbook where the information is vague.
- Whymper, E. *Chamonix and the range of Mont Blanc*. 6th edition. London, Murray; etc., 1901. 3s. net
- *The Valley of Zermatt and the Matterhorn*. 5th edition. London, Murray; etc., 1901. 3s. net

Older Books.

- Beiträge zur Geographie des festen Wassers. 8vo, pp. vi, 313. Vol. 1 of 'Wissens. Veröffentl. d. Ver. f. Erdkunde. Leipzig.' Leipzig, Duncker u. Humblot, 1891
Contains:—
G. Schwarze, 'Die Firngrenze in Amerika.'
M. Friedrich, 'Ueber Niederschläge u. Schneelagerung in d. Arktis.'
G. Hartmann, 'Der Einfluss d. Treibeises a. d. Bodengestalt d. Polargebiete.'
H. Meyer, 'Zur Kenntniss v. Eis u. Schnee d. Kilimandscharo.'
C. Sandler, 'Zur Strandlinien u. Terrassen-Literatur.'
(Presented by the Society.)
- (Berthout van Berchem, J.) *Itinéraire de la Vallée de Chamonix, d'une partie du Bas-Valais et des montagnes avoisinantes*. (3me édition.) 12mo, pp. 230; 2 maps. Genève, Manget, 1805
- Bonstetten, Ch. Victor de. *La Scandinavie et les Alpes*. 8vo, pp. xxx, 118. Genève et Paris, Paschoud, 1826
Describes a geological journey and compares the Alps of Scandinavia with those of Switzerland.
- Carloni, A. *Le Alpi dal Monte Rosa alle sorgenti dell' Adige, versante italiano*. 16mo, pp. 316. Como, Omarini e Colombo, 1891
A gazetteer.
(Presented by the Author.)
- (Ducommun, J. C.) *Une excursion au Mont-Blanc*. 8vo, pp. 31; 3 plates. Genève, Vaney, 1858
The first edition.
- Ebel, J. G. *Manuel du voyageur en Suisse* . . . 3me édition. 3 vols. 8vo. Zürich, Orell Fussli; Paris et Genève, Paschoud, 1818
A second reprint of the 1810 edition, the first reprint of which was made in 1817 in consequence of the appearance of a pirated edition by Langlois in Paris.
- *Manuel du voyageur en Suisse*. . . . Par L.-G. Ebel. Nouvelle Edition. 8vo, pp. 664; plates. Paris, Audin; Genève, Cherbuliez, 1832
A reprint of the pirated Ebel of 1830-1831, with the title-page slightly different.
- Hogard, H. *Principaux glaciers de la Suisse*. Imprimés en Lavis Aquarelle d'après les originaux . . . pris par Henri Hogard. 10 folio plates. Strasbourg, Simon; Paris, Baillière, 1854
Lacking the 51 pp. of letterpress.

* See *Reviews and Notices* in the present number.

[Huchet de la Bedoyère, N. F. H.] Voyage en Savoie et dans le midi de la France en 1804 et 1805. 8vo. pp. 439. Paris, Giguet et Michaud, 1808

The Author suffered from mountain-sickness when ascending the Buet.

Pp. 379-437 describe Mont Buet, Chamonix, Col de Balme, Great St.-Bernard.

Joanne, A. Itinéraire descriptif et historique de la Suisse . . . du Mont-Blanc, . . . et du Mont-Rose. 8vo, pp. xii, 635; map, 2 plates.

Paris, Paulin, 1841

This is the first edition, and the method adopted has been taken, as acknowledged in the Preface, from Murray's 'Handbook,' which first appeared in 1839.

Keysler, J. G. Travels (in 1729) through Germany, Bohemia, Hungary, Switzerland. . . . Third edition from the second German. 4 vols. 8vo, maps, ill. London, Keith, etc., 1750

Vol. 1, pp. 1-69, North Switzerland, Tirol; pp. 173-246, Savoy, Mont Cenis. The following remarks are of some interest:—

P. 174, 'On the mountain of Grindelwald [which the writer did not visit] is the Gletscher, or the ice-mountain, whose ice is said never to melt, but to increase every year on all sides both in height and circumference': p. 222, 'The vast mountains called *montagnes maudites*, i.e. "cursed mountains," and *les glaciers*, i.e. "the ice-houses," near Ancy, one leaves to the left. They are about three days' journey from Geneva, and are perpetually covered with snow and ice, which makes the trade of climbing up them in search of rock crystals extremely dangerous': p. 225, 'Lofty mountains covered with snow, and what is much more agreeable, Ancy situated on a beautiful lake.'

(Presented by C. W. Nettleton, Esq.)

Lechner, E. Das Thal Bergell in Graubünden, mit Chiavenna. 2te Aufl. 8vo, pp. 148; map, frontispiece. Leipzig, Engelmann, 1874

Leonhardi, G. Das Poschiavino-Thal . . . Ein Beitrag zur Kenntniss der italienischen Schweiz. 8vo, pp. 136; map, frontispiece.

Leipzig, Engelmann, 1859

— Das Veltlin, nebst einer Beschreibung der Bäder von Bormio . . . als Wegweiser . . vom Stillser Joch bis zum Splügen. 8vo, pp. xiii, 199; map.

Leipzig, Engelmann, 1860

Manget, J. L. Chamonix, le Mont-Blanc, les deux Saint-Bernard, et la Vallée de Sixt. Nouvel Itinéraire. . . . 4te édition. 12mo, pp. 260; panorama, maps.

Genève, Gruaz, 1851

Martin, David. Excursions géologiques dans les vallées limitrophes de l'Ubaye et de la Durance. 8vo, pp. 111. Gap, Jouglard, 1888

In continuation of earlier articles in 'Alpes démocratiques,' Sep., 1887.

(Presented by the Publisher.)

Payot, V. Guide-itinéraire au Mont-Blanc, à Chamonix et dans les Vallées voisines. 18mo, pp. 144; map.

Genève, Gruaz; Chamonix, Payot, 1857

Pococke, Richard [Bishop of Ossory]. A description of the East, and Some other Countries. 3 vols (1, 2a, 2b), folio; plates, etc.

London, Printed for the Author, by W. Bowyer, 1743, 1745

In vol. 2, part 2, occur the following; p. 217: 'From Geneva I went to the Glacières in Savoy, an account of which has been lately published'; p. 219: 'Near Baume I saw in the month of June an extraordinary grotto called Glacière by reason that it always has ice in it. . . .'

(Presented by W. D. Freshfield, Esq.)

Richard [ps. i.e. J. M. V. Audin]. Guide aux Pyrénées, itinéraire pedestre des montagnes . . . 18mo, pp. xvi, 420; map. Paris, Audin, 1834

This contains reprints from the works of Azais, Thiers, Jubinal, Ramond (Mont-Perdu, 'Jour. des Mines,' 83, an 7), C. L. (Ascension au Canigou, 'Jour. de Maine et Loire,' mars, 1832); and others.

Stevenson, S. W. A tour in France, Savoy, Northern Italy, Switzerland. . . . 2 vols., 8vo. London, Rivington; etc., 1827

Includes Simplon, Chamonix, Oberland.

(Vol. 1 presented by C. W. Nettleton, Esq.; vol. 2 was already in the Club library.)

- Switzerland. Collection de vues remarquables des Alpes de la Suisse.
Premier Cahier. Folio, 10 copper plates, and 1 p. letterpress. Berne, 1789
Reprint of 1778 edition, in which only this part was issued.
- Theobald, Prof. G., und Weilenmann, J. J. Die Bäder von Bormio. I. Land-
schaftsbilder (von G. Theobald), Bergfahrten (von J. J. Weilenmann).
8vo, pp. 147. St. Gallen, Scheitlin & Zollikofer [1868]
- Tirol, Aus d. Bergen an d. Deutschen Sprachgrenze in Süd; . . . Eine Bitte an
alle Alpenfreunde v. mehreren Alpinisten. 8vo, pp. 54.
Stuttgart, Aue, 1880
- A guide-book.
- Wagnon, Aug. Autour des Plans des Frenières. Excursions et escalades de la
Dent de Morcles aux Diablerets. 8vo, pp. 150. Bex, Meister, 1890
- Waring, G. E. Tyrol and the skirt of the Alps. Roy. 8vo, pp. 171; ill.
New York, Harper, 1880
- General travel, including ascent of Tofana.
- *Wiley, W. H. and Sara K. The Yosemite, Alaska, and the Yellowstone.
Reprinted from 'Engineering.' 4to, pp. xix, 230; map, ill.
London, 'Engineering'; New York, Wiley [1894]
(Presented by the Publishers.)

Club Publications (Presented by the Clubs).

- C.A.F. Section de l'Ain (Bourg). Bulletin, no. 1. 8vo, pp. 121. 1886
This contains *inter alia*:—d'Angeville, Mlle., 'Lettre sur son ascension
du Mont-Blanc'; Augerd, V., 'Une excursion à Chamouny en 1790.'
- Section du Jura (Besançon). Bulletins, 5-7. 1877-1879
- Section de Provence. Bulletins, 6-7. 1900-1
(Presented by M. L. Borelli.)
- C.A.I. Bergamo. Relazione sull' andamento della Sezione nell' anno 1900.
8vo, pp. 70. 1901
- Florence. Omaggio alla memoria di Tommaso De Cambray-Digny. 8vo,
pp. 19. 1901
- Sez. Valtellinese (Sondrio). Guida alla Valtellina. 2da edizione.
(1884)
- Venice. Relazione. 8vo, pp. 13; with three ill. post-cards of Club-huts.
1901
- D. u. Oe. Gleiwitz. Tätigkeitsbericht. 8vo, pp. 43. 1900
- Hallein (1884). Jahresberichte. 1897-1900
- Leipzig. Bericht für 1869-1879. 8vo, pp. 38. 1880
- Memmingen. Jahresberichte. 1897-1900
- List of members and ascents.
- Prag. Jahres-Berichte. 1894-1900
- Saizkammergut (1874). Tätigkeits-Bericht, 1874-1899. 8vo, pp. 22.
Ischl, 1900
- Mazamas, Portland. Mazama; Alaska number. April, 1901
- Russia. Club alpin russe (Moscow, 1900).
A printed notice of the formation of a 'Russian Mountaineering
Society' in Moscow with Monsieur A. v. Meck as President.
- S.A.C. Chaux-de-Fonds. Bulletin annuel, no. 9. 1901
- Soc. Alpina Friulana. Giovanni Marinelli; commemorazione. (Taramelli, T.)
8vo, pp. 42. Udine, Doretta, 1901
- Guida del Friuli (G. Marinelli and others). 8vo, maps, ill.
1. Illustrazione del Comune di Udine. 8vo, pp. 482. (1886) 7 lire
2. Canal del Ferro o Valle del Fella. Pp. 326. (With full bibliography.)
(1894) 5 lire
3. Carnia: Bacino superiore del Tagliamento. Pp. 556.
(1898) 8.50 lire

* See *Reviews and Notices* in the present number.

- Soc. les Excursionnistes Marseillais, Bulletins annuels, 3-4. 1900-1901
 The scope of the Club includes climbing, especially preparatory work on
 minor expeditions.
 Svenska Turistför. Arsskrift. 1901

Pamphlets and Magazine Articles.

- Abraham, A. P. Our Alps at home; winter mountaineering in England (Lake District). 8vo, pp. 233-9; ill. In 'Harmsworth's Magazine,' London. April, 1901, 3 $\frac{1}{2}$ d.
 An article accompanied by seven illustrations from Messrs. Abrahams' well-known photographs.
 (Presented by the Publishers.)
- Alpine Mjæstäten, nos. 2-6. See 'Reviews and Notices' in last number of the 'Journal.'
- d'Angeville, Mlle; 'Ascension au Mont-Blanc,' see C.A.F., Section de l'Ain.
- Augerd, V., 'Une excursion à Chamouny en 1790,' see C.A.F., Section de l'Ain.
- Cobbold, Capt. R. P. Through the Thian Shan. 8vo, pp. 736-744; ill. In 'Windsor Mag.,' Ward Lock. May, 1901, 3 $\frac{1}{2}$ d.
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- Conway, Sir Martin. Climbs and Explorations in the Andes. 8vo, pp. 4. In 'Proceedings Roy. Inst.' May, 1899
 (Presented by the Secretary.)
- Diener, Carl Dr. Die Eiszeit im Himalaya. 8vo, pp. 1-35. In 'Mit. d. k. k. Geogr. Ges. in Wien,' xxxix, 1. 1896
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- Ergebnisse einer geologischen Expedition in den Central-Himalaya von Johar, Hundes, und Painkhanda. 4to, pp. 76 (533-608); map, plates. Reprinted from 'Denksch. math.-naturw. Classe d. k. Akad. Wissensch.' Wien, vol. lxii. Wien, k. k. Staatsdruckerei, 1895
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- Fay, C. E. The Canadian Alps. 8vo, pp. 161-5. In 'Journ. of School Geography,' Lancaster, Pa. (U.S.A.), 1, 6. June, 1897
 A geographical description.
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- Gletscher-Commission, Bericht der, 1898-9 (Hagenbach-Bischoff). 8vo, pp. 9. Reprinted from 'Verh. d. Schweiz. Naturf.-Ges.' Neuchâtel, Attinger, 1900
- 1899-1900. 8vo, pp. 7. Reprinted from 'Verh. d. Schw. Naturf.-Ges.' Chur, Casanova, 1901
- Gletscher- u. Glazialphysick. 8vo, pp. 294-317. In 'Jahrb. d. Astron. u. Geophys.' Leipzig, Mayer, 1897
 A review of the chief works of the year 1896.
 (Presented by the Publishers.)
- Greim, Dr. G. Die Gletscherbai in Alaska u. ihre Erforschung d. John Muir. 4to, pp. 255-260; map, ill. In 'Globus,' lxxi, nr. 16. Braunschweig, Vieweg, April 17, 1897
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 (Presented by the Publishers.)
- Guglielminetti, Dr. E. Le mal des altitudes: le mal de montagne comparé au mal de ballon—observations faites pendant treize jours au sommet du Mont-Blanc. 4to, pp. 49-54; 73-78; ill. In 'Le Progrès Médical,' Paris, xiii, 4 et 5. Jan. 26 et Fév. 2, 1901
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- Guichardaz, l'Abbé B. Mémoire sur les bouquetins. 8vo, pp. 52. Aoste, Imprim. catholique, 1897
 A new edition. First published in 1850.

- Hunt, E. M. Mount Hamilton. 8vo, pp. 486; ill. In 'Overland Monthly,'
Marriott, San Francisco. Nov., 1900. 10c.
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(In Russian.) Moscow, Mamont, 1897
An ascent, illustrations, and bibliography.
(Presented by the Author.)
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- Lenz, Emil. Die Ersteigung des Elbrus, 10 Juli 1829. 8vo, pp. 449-470. In
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Extracts from letters by E. Lenz, including one pencilled on summit of
Elbruz, edited by H. v. Samson-Himmelstjerna.
(Presented by the Publishers.)
- Markow, E. de. Expédition scientifique au Caucase. Ascension du grand
Ararat (par E. de Markoff) et du petit Ararat (par E. de Kovalewsky).
8vo, pp. 577-591. In 'Bul. de la Soc. Roy. Belge de Géog.,' no. 6. 1888
(Presented by the Society.)
- Mont Ventoux en Hiver. In 'Le Midi Sportif,' Marseilles. Mars 7, 1901
An ascent of Mont Ventoux in winter is rare, and on this occasion the
winter descent of the north face was made for the first time. An
account in the style of Tartarin appeared in 'Le petit Marseillais,'
Mars 1, 1901, 'A travers les glaciers du Ventoux.' Both accounts
have been presented by M. L. Borelli.
- Paillon, Maurice. Exploration du Massif de Séguret. 8vo, pp. 54. Reprinted,
with alterations, from 'Ann. C.A.F.' 26, 1899. Paris (Chamerot) 1901
(Presented by the Author.)
- Raffles, W. Winter. Zermatt, with the Col d'Erin and de Collon; and an
ascent to the summit of Mont Blanc. Two letters; addressed to the editor
of the 'Liverpool Times.' 8vo, pp. 22. Privately printed [? Liverpool], 1864
(Presented by R. S. Mushet, Esq.)
- Royal Geographical Society. Year-book. 8vo, pp. 237; ill. 1901
- Schlagintweit, Dr. Emil. Der Name des höchsten Berges der Erde. 4to.
pp. 40-3. In 'Petermann's Mitteil.' 47. Feb., 1901
A consideration of the authorities for the name, and a suggestion that
the name be 'Gaurisankar-Everest.'
(Presented by the Publishers, Perthes, Gotha.)
- Shepstone, H. The English Switzerland. 8vo, pp. 63-75; ill. In 'The
Windsor Mag.,' London. June, 1901
Climbing in the Lake District; illustrated with Abrahams' photographs.
- Stöpel, C. T. Besteigung u. Höhenbestimmung d. Pic v. Orizaba. 8vo,
pp. 543-8. In 'Gaea,' Mayer, Leipzig. 1897
Mostly reprinted from 'D. u. Oe. A.V. Mit.'
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- Strasburger, E. Die Central-Pyrenäen. 8vo, pp. 83-100. In 'Deutsche
Rundschau,' Berlin, Paetel; 27, 7. April, 1901
Another delightful article in continuation and conclusion of the two
noted in the last number of the 'Journal.'
(Presented by the Publishers.)
- Temple, Sir Richard. The Himalayas. 8vo, pp. 166-177; ill. In 'Imperial
Colonial Mag.,' London. Mch., 1901
A general description, accompanied by four illustrations from Dr. and
Mrs. Workman's book.
- Volvens, Dr. G. Exkursionen am Kilima-Ndjaru. 8vo, pp. 152-173. In
'Verh. Ges. f. Erdk. Berlin,' xxii, 3. 1895
Botanical excursions.
(Presented by the Society.)

- Wells, H. L. The Cascade Mountains. 8vo, pp. 166-171. In 'Journ. of School Geography,' Lancaster, Pa. (U.S.A.), 1, 6. June, 1897
A geographical description.
(Presented by the Editor.)
- Whymper, E. Biographical notice of Jean Payot. 8vo, pp. 3; portrait. (1898)
- Johann zum Taugwald. 8vo, pp. 4; portrait. (1898)
Issued with the Chamonix and Zermatt 'Guides.'
- Workman, Dr. W. H. Tent life in the Himalayas. 8vo, pp. 68-73; ill. In 'Outing,' New York, xxxviii, 1. April, 1901. 7½d.
(Presented by the Agents, the International News Co., London.)
- Workman, Mrs. Bullock; Cyclist and Mountaineer. A Record climb in the Himalayas. 8vo, pp. 281-5; ill. In 'The Young Woman,' Marshall, London. May, 1901. 3d.
(Presented by the Publishers.)
- A woman above the snow-line. 8vo, pp. 568-573; ill. In 'The Lady's Magazine,' Pearson, London. June, 1901. 6d.

The following is an analysis, under districts, of the more recent items in the above;—

- | | |
|---|--|
| <p>Africa, <i>see</i> Beitr. z. Geog., Volkens.
 America, <i>see</i> Beitr. z. Geog., Conway,
 Fay, Greim, Hunting, Mazama,
 Stöpel, Wells, Wiley.
 Ararat, <i>see</i> Iwanowsky, Lynch.
 Asia, Central, <i>see</i> Cobbold, Deasey,
 Little.
 Caucasus, <i>see</i> Lenz, Merzbacher.
 Dauphiné, <i>see</i> Ferrand, Martin, Pail-
 lon.
 General, <i>see</i> Lefebure, Sport, Vade-
 mecum.
 Glaciers, <i>see</i> Beitr. z. Geog., Gletscher-
 Commission.</p> | <p>Great Britain, <i>see</i> Abraham, Shep-
 stone.
 Guides, <i>see</i> Whymper.
 Hannibal, <i>see</i> Fuchs.
 Himalayas, <i>see</i> Diener, Holdich, Tem-
 ple, Schlagintweit, Workman.
 Maritime Alps, <i>see</i> Mader.
 Mont Blanc, <i>see</i> Whymper.
 Mountain-sickness, <i>see</i> Guglielminetti.
 Oberland, <i>see</i> Lendenfeld.
 Pennine Alps, <i>see</i> Whymper.
 Pyrenees, <i>see</i> Strasburger.
 Valais, <i>see</i> Wagnon.</p> |
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ALPINE NOTES.

'THE ALPINE GUIDE.'—Copies of Vol. I. of the new edition of this work, price 12s. net, and of 'Hints and Notes, Practical and Scientific, for Travellers in the Alps' (being a new edition of the General Introduction), price 3s., can be obtained from all book-sellers, or from Messrs. Stanford, Charing Cross.

THE LIBRARY CATALOGUE is now printed and may be obtained, bound in cloth, on application to the Assistant Secretary, 23 Savile Row. Price 8s.; postage, 3d.

PRESENTATIONS TO THE CLUB.—The following presentations have been made to the Club:—Mr. Henry Wagner has presented a water-colour sketch of the 'Wetterhorn,' by R. P. Bonington; Mr. Woolley has presented the photograph of 'Latsga,' which was shown at the recent exhibition; and Mr. Speyer his photograph of 'Alagna,' which was also exhibited. Mr. W. Mathews has presented a number of mountain photographs, belonging to the earlier days of climbing, taken by the brothers Bisson.

APPEAL OF THE NATIONAL TRUST TO LOVERS OF THE ENGLISH LAKES.—The National Trust for Places of Historic Interest and

Natural Beauty, whose headquarters are at 1 Great College Street, Westminster, is engaged in a public-spirited effort to purchase for the people a mile of the western shore of Derwentwater.

The estate lies along the slope of Cathels, between the main road to Borrowdale and the lake, and is therefore of very easy access either by bicycle, carriage, or boat. It consists of some meadows, with endless variety of view, and a wood, partly of oak and birch, partly of larch. Through this wood runs the old packhorse road to Borrowdale. If obtained for the use of the public this beautiful shore will give the additional delight to boating parties of being able to land freely and wander where they will. As matters are at present there are only three public landing-places available on the western shore; and at no part of the shore, except where the common touches the lake at Brandelhow mine, can the public roam without trespass.

Proprietorial rights in the lake district have doubtless done much to keep the woods undestroyed, and the lake shores unbuilt upon; but it cannot be denied that the difficulty of access and freedom of foot upon our lake shores does much diminish the delight of the holiday-maker. But one of the reasons that has induced the National Trust to move in the matter is the wish to preserve, as far as in their power lies, the peculiar charm of Derwentwater, which is that at its southern end, both on its east and western shores, there are no villa residences.

Ruskin, who knew Derwentwater by heart, and once claimed that if there was anything he could do it was to guide to all that was best worth seeing upon its waters and its shores, felt the peculiar charm of Derwentwater—its deep tranquillity, its undisturbed naturalness.

Every year our great northern towns are brought nearer by swifter locomotion to their natural holiday resort—the English lakes—the danger of the building syndicate grows. It is to forestall this danger, while there is yet time, that the National Trust is now endeavouring to raise a sum of 7,000*l.* to purchase the estate at the cost of 6,500*l.*, and have a small endowment for its future management and up-keep.

The National Trust relies on the help of lovers of Nature throughout Great Britain, and they have made a special appeal to Lancashire and the northern counties. That appeal has so far been answered well, and a sum of over 3,000*l.* has been promised. Committees are at work in Liverpool, Manchester, and Leeds, and a strong local committee at Keswick has determined to do what it can in the neighbourhood.

The vendor has set a definite time—six months—during which his offer is open; three months of that time have already expired, and it is urgent that any one who is interested in the good cause, which is, after all, the cause of education and inspiration, of greater rest and a happier holiday, should assist at once by sending whatever contribution they can afford to the Secretary, Nigel Bond, Esq., 1 Great College Street, Westminster, S W., or to

myself at Crosthwaite Vicarage, Keswick. Cheques should be crossed National and Provincial Bank of England.

H. D. RAWNSLEY.

SULITELMA (*A. J.* vol. xx. p. 277).—For Swedish peak (1,878 m. = 6,159 ft.) read North Sulitelma (1,908 m. = 6,241 ft.), which, it has since been found, was the peak ascended. This latter and not the Swedish peak is the culminating point of the range, and there seems no doubt that the ascent described was the first.

The above correction must also be made in all cases where the 'Swedish peak' is mentioned (pp. 276-8).

LAGKOFEL HÜTTE.—Very early this spring the Lagkofel Hütte, belonging to the Akademische Sektion, Wien, of the D.Oe.A.V., was destroyed by an avalanche. The position of the hut was such that its loss could only be accounted for by a catastrophe of exceptional magnitude. Mr. Rickmers, who visited the spot to look for a new site, found the assumption fully borne out by what he saw. The avalanche had evidently been of the kind called 'Staublawine,' because it consists of powdery snow. It is this particular species which produces enormous air-pressure. The hut had been knocked into small splinters, which were well churned up with the mass and evenly distributed throughout the entire length of the avalanche, reaching down as far as the Confinboden. The quantity of snow is such as to give one the impression of a small glacier, especially as a crevasse about 15 ft. deep has been formed in the middle.

It is unlikely that a similar site will be discovered, uniting the same advantageous position with freedom from the same risk. The nearest Alp, the Confinboden, would offer the simplest, though less ambitious, solution.

W. R. R.

REVIEWS AND NOTICES.

Zeitschrift des Deutschen und Oesterreichischen Alpenvereins.
Vol. xxxi. 1900.

THIS volume, like its predecessor, has twenty-three full-page illustrations; but those in the text are now 101, being a large increase. There are also forty maps and plans. The principal illustrations are either from the pencil of Mr. E. T. Compton or from photographs by Herr F. Benesch. Herr F. Burckhardt describes the observatory on the Zugspitze. This is built at the W. end of the Muenchener Haus, and its flat roof rises 1 m. above the summit of the mountain. It is made secure by sixteen wire ropes, which are fixed 1 m. (40 in.) deep in the rock, and pass through the wooden sides of the building to the platform. There are, besides, two wire ropes which pass right over the platform.*

* The necessity for such precautions is shown by the case of the hut on the Fochezkopf (9,480 ft.) for the Wiesbachhorn, which was absolutely blown away last December for a space of more than 20 yds. by a gale from the S.W.

The cost was 1,000*l.*, divided about equally between the cost of materials, transport, and putting up. The observatory on Ben Nevis (4,406 ft.) cost 12,500*l.*; that on the Puy de Dôme (4,796 ft.), 11,800*l.*; that on the Pic du Midi (9,438 ft.), 11,208*l.*; that on the Säntis (8,202 ft.), 3,500*l.*; on the Sonnblick (10,171 ft.), 7,250*l.*; on the Schneekopf (3,280 ft.), 2,250*l.*; on the Brocken (3,740 ft.), only 500*l.* The cost of maintenance is comparatively small, being only 400*l.* per annum—less than any except the Säntis, Sonnblick, and Brocken—whilst on the Puy de Dôme and Pic du Midi the cost is respectively 1,500*l.* and 1,750*l.*; on Ben Nevis the cost is about 500*l.* per annum.* Professor Dr. R. Wettstein writes of the scientific objects to be attained by Alpine gardens. These are much more common in the Western Alps, but are mainly devoted to the preservation of the rarer species. He suggests that such gardens should be formed near Schutzhütten, where they could be more easily attended to. Plants should be brought hither from both higher and lower stations, and their changes observed. The formation of hybrids might be also observed, and for this purpose plants should be selected which have as yet shown no tendency to such changes. Such a garden is to be formed near the Bremer Schutzhütte in the Gschnitzthal, near Steinach, on the Brenner. A letter is inserted from Herr Anton E. Schönbach to Professor E. Richter on the study of 'folklore.' Nothing of importance has yet been done in the E. Alps, and the need of action is every day increasing as the yearly increasing tourist flood tends to wipe out old customs. Previous study is required on the part of observers, and much care is necessary in verifying statements. A case is known in which a series of observations on one district were printed as belonging to another. Herr Albert Penck describes the surface formation of the Herzegovina. This is a Karstland, the Dinaric Alps being a continuation of the Southern Limestone Alps, and, as in the Karst, the surface is much cracked and broken. The rainfall almost immediately disappears beneath the surface. There is only one valley with a regular stream, the Narenta, which has no branches, but has many springs in its bed, and receives others from both banks. Herr A. Rothpletz contributes observations on the geology of the Rätikon (between Bludenz and the Prättigau), made in three expeditions in the neighbourhood of the Scesa Plana, with various plans and sections.

Herr Dr. Max Eckert describes the Gottesacker plateau, a 'karrenfeld' on the Hobe Ifen, W. of Oberstdorf. Most Alpine tourists are familiar (sometimes in an unpleasant way) with this limestone formation, which resembles a petrified glacier. The clefts in this are sometimes 70 ft. in depth. The origin is due to subterranean pressure, owing to the inhomogeneous character of

Had the gale been from the S.E. the hut would have fallen down the mountain. On the S.W. side the hut was secured by wire ropes, but these proved insufficient.

* Nothing is said about the instruments, and these must largely affect both original cost and maintenance.

the limestone, and the softer parts are subsequently eroded by water.

Herr Dr. R. Klein writes of the 'Nordföhn' in the Tragössthal, a weather-study in this remote valley, which enters the valley of the Mürz near Bruck. The valley is backed on the N. by the range of the Hochschwab (7,475 ft.) which for a long distance does not fall below 2,000 m. (6,562 ft.). The Föhn is generally regarded as a warm wind coming from the African desert; but it appears that, under the same conditions, the same phenomena will present themselves from whatever quarter the wind blows. In Tragöss, when the Nordföhn blows, the temperature is higher in winter and lower in summer than on the N. of the mountains.

Herr Dr. Emil Hagenau writes on Alpinism—almost entirely a product of the nineteenth century. Before that time the mountains were generally regarded with horror, whereas now they are seen with admiration and delight. Mountain-climbing is not only conducive to bodily health, but to mental improvement, increasing presence of mind, self-control, sympathy with others. The change of feeling about mountains, added to the increased facilities of travel, has led thousands to visit the Alps who would otherwise never have left home, and has brought a great increase of prosperity to the districts visited.

Herr Friedrich Müller describes the Kačna Jama (Snake-hole), a cavern in the Karst, near Divazza (seventh station from Triest on the way to Laibach). Here the Reka reappears after leaving the grottoes of S. Kanzian. These are about two miles S.E. of the station, whilst the entrance to the present cavern is 10 min. to the S.W. It was explored in 1890 and 1896. The depth is 213 m. (700 ft.), and the length explored about 1,200 m. ($\frac{3}{4}$ mile). The Reka was long ago supposed to flow in this cavern, and a legend says that once a pair of oxen fell in here and were fished out of the Timavo (the stream supposed to be the Reka emerging from the rocks near Nabresina, 16 miles distant).

Herr R. Schmidt describes the Pitzthal, a valley now much more frequented since the erection of several Schutzhütten at high elevations in the upper valley. He gives many interesting particulars of the manners and customs of the inhabitants. The glacier formerly came nearly to Mittelberg (it is now about three miles distant), and the inundations from it caused great damage. A procession went annually to the glacier, where a pulpit was hewn out of the ice, and prayer was offered to avert the disasters. Now the procession goes only as far as Mittelberg.

Herr Jean Habel describes a number of expeditions made in the Rocky Mountains between 1896 and 1899. The chief of these was an expedition lasting fifteen days up the North Fork Valley, from Field station. The highest point reached was a point (2,860 m. = 9,382 ft.) in the ridge W. of Mt. Balfour (2,855 m. = 9,366 ft.).

Herr W. R. Rickmers describes the exploration of the Karschthal, a mountain group E. of Batoum. The particulars of this exploration have already been laid before the Alpine Club.

There are only two articles describing separate mountain

ascents. Neither of these is new, but both are very interesting. The first is the ascent of the Matterhorn by the Zmuttgrat, by Herren Hans Lorenz and Ed. Wagner. They started on September 9, 1898, from a bivouac about 3,000 m. (9,843 ft.) at 4.10 A.M. The Italian summit was reached at 2.50 P.M., and the Swiss summit at 8 P.M. After a halt of half an hour they began the descent. The path was so good that they soon took off the rope. The old hut was reached at 5 P.M. Here a halt of 15 min. The new hut at 6.40 P.M. and Zermatt at 9 P.M. The second is the traverse of the Aiguille de Grepon by Lieut. W. Lohnmuller and Oscar Schuster on August 11, 1897. This is the first traverse by German tourists. It is one of the most difficult known. The views* of the three 'Abseilstellen' on the descent are remarkable. They had two ropes, 88 yards and 97 yards in length, and it was fortunate, for at one of these places the rope would not come away, and they had to abandon it. The traverse was made by a French party on the same day in advance of them. Herr Frido Kordon describes a tour in the Reisseck group, N.W. of Gmünd (near Spital on the Drave), in August 1899. The highest summit is the Keisseck (2,959 m. = 9,708 ft.). He was accompanied by Mr. E. T. Compton, by whose pencil the article is finely illustrated.

Herr F. Benesch describes a nine days' tour in the Riesenferner group, in which he ascended the Hochgall, Wildgall, and others. He had rather an unpleasant experience on the descent from the Lenkstein. A wide crevasse could only be crossed by leaping on to an edge of ice projecting from the further side. As the rope had been left behind this was rather a ticklish matter.

The remaining articles describe mountain groups, and contain accounts not only of the ascents made by the writers, but also of many other ascents made in the group. They may almost be regarded as guides to the districts of which they treat. Herr H. Krautz thus describes the group of the Loferer Steinberge, S.W. of Lofer (Saalachthal, S.W. of Salzburg). This group is so small that a tourist can easily make the circuit in a day's walk. The highest summits hardly exceed 8,000 ft. The opening of the Schmidt-Zabierow Hut will no doubt increase the number of tourists. There are many pleasant spots near, the most picturesque being S. Ulrich on the Pillersee.

Dr. Karl Blodig contributes a first part of his ascents in the Rhätikon (1886-1889). In 1888 he effected the second ascent of the Drusenfluh (2,829 m. = 9,280 ft.). The first ascent was made in 1870 by the guide Ch. Zudrell alone. This was long doubted, till in 1888 the letters 'C. Z. 70' were found cut on the rock.

Dr. Th. Christomannos describes the Latemar group, which is conspicuous from many points near Bozen, though not so much so as the Rosengarten. It is bounded by the Karer Pass, the Avisio in Fassathal, and the S.W. branch of the Eggenenthal. It was

* The photographs were taken by M. Al. Brault, one of the French party who preceded them.

visited frequently by geologists (Richthofen and others) about 1850, but seldom by mountaineers, owing to the superior attractions of the Rosengarten. Its highest summit, the Diamantispitze (2,864 m. = 9,395 ft.) was first ascended by Gustav Euringer in 1885, a second time by Demeter Diamantidi in 1891. Dr. Christomannos made various excursions between 1894 and 1900 to complete the exploration of the group.

Dr. Karl Bindel has a second article on the Sella group in which he describes many separate ascents. The highest point, the Boëspitze (3,152 m. = 10,341 ft.), was attempted by the well-known mountaineer J. J. Weilenmann. The first ascent was made by Paul Grohmann in 1864. There is plenty of fine climbing in the group. The Zehnerspitze (2,917 m. = 9,571 ft.), Mittagszahn (2,870 m. = 9,417 ft.), and the Murfraitthurm (2,721 m. = 8,927 ft.), are especially difficult. There is a fine panorama of the group by Emil Terschak.

Herr H. Steinitzer contributes a minute description of the Carnic 'Voralpen.' These lie between the Tagliamento, the Piave, and the plain country to the S. He was accompanied in many tours by Herr R. Reschreiter, whose drawings illustrate the article. Some English tourists have visited the district, John Ball, Messrs. Gilbert and Churchill, F. F. Tuckett; but very few others, and it has been almost entirely neglected by German tourists. The mountains are not so high as the Dolomites of Cortina, the highest, the Cima dei Preti, being only 2,703 m. (8,868 ft.), but the scenery is equally fine as the valley level is lower.*

Herr Adolf Gstorner similarly describes the western portion of the Julian Alps. The boundaries of this are the Gailitzthal and Savethal from Pontafel to Weissenfels, the Planitzthal, Koronitzthal, Isonzo to Zaga, thence across to the Canale di Resiutta, and the Fella valley to Pontafel. The chief summits are the Mangart (2,678 m. = 8,785 ft.), and the Wischberg or Jof di Montasio (2,752 m. = 9,028 ft.). The district is more visited than the Alps of Carnia since there are two Schutzhütten, on the Mangart (6,560 ft.), and on the Wischberg (5,930 ft.). Attached to the volume is a map of the Eastern Alps (western portion) 1,500,000; on which the shelter huts are marked in red in different ways according to their capacity for entertaining tourists.

Das Matterhorn und seine Geschichte. Von Theodor Wundt. (Berlin. 1895.)

Die Jungfrau und das Berner Oberland. Von Theodor Wundt. (Berlin. 1897.)

Engadin-Ortler-Dolomiten. Von Theodor und Maud Wundt. (Stuttgart. 1900.)

In these beautifully illustrated volumes Major Wundt has broken somewhat fresh ground in the realm of alpine literature. His

How neglected the district is, appears from the fact that not a single name within its limits is found in the pages of *Baedeker's Eastern Alps* (1895), whilst in *Ball's Eastern Alps* (1873) there are at least two pages (§ 62, Route I., Longarone to Sacile).

previous works, which have received favourable recognition in these pages,* were more purely pictorial, were presented in a form not easily handled, and were of a nature likely to appeal to the few rather than to the many. The volumes before us are convenient both to look at and to read, are uniform in size and general get-up, and are, we understand, intended as the first instalment of a work in which, under the general title 'In Luftigen Höh'n,' it is hoped successively to deal with all the well-known districts of the Alps. Each volume may be said to fulfil a three-fold purpose, forming, in the first place, an illustrated guide book to the districts treated of; recording, secondly, the trips on which the photographs, which so profusely adorn its pages, were taken; and giving, in the third place, a *résumé*—sometimes scanty, but sometimes, as in the case of the Matterhorn, very ample—of important and interesting points connected with the alpine history of the neighbourhood.

It is, perhaps, as picture books that the British reader will chiefly appreciate these works, though the text, often interesting and always bright, will not fail to instruct and amuse those who may find time to read, or even to skim it; while to those who wish to use the volumes as guide books the text and illustrations so complement and amplify each other as to give, taken together, a vivid picture and a clear topographical idea of districts previously unknown to the reader. Major Wundt and his wife (whose services are recognised on the title-page of the third volume) are keen climbers, skilled photographers, and clever bookmakers. They have a definite aim in view, and possess the energy, as well as the ability, to carry it out efficiently. They may be heartily congratulated on the work they have accomplished, and may feel assured that their readers will welcome further instalments with interest and appreciation.

Each of the three volumes before us consists of about two hundred pages, artistically bound and beautifully printed, in Latin type, on excellent paper. Skeleton maps, original in design and remarkable for their power of conveying at a glance the lines of the chief ridges and sub-ridges, have been introduced into the two latter volumes, and will doubtless form an important feature in others yet to come. The illustrations are so numerous and so varied that it is impossible, in a notice like the present, to do them anything like justice. Vignettes and small views of huts, hotels, guides, climbing incidents, &c., are freely scattered through the books on almost every page, while the quarter- and half-page photographs, and the beautiful full-page plates, always artistic and admirably reproduced, and often delicately tinted in faint shades of blue, green, grey, or sepia, combine to make these volumes take a very prominent place among the many beautifully illustrated books which alpine literature now boasts. We heartily wish Major Wundt the success which he deserves, and learn with

* *Alpine Journal*, vol. xvi. p. 341, and vol. xvii. pp. 146, 374.

pleasure that there is some prospect of these works appearing in an English dress. C. W.

From the Cape to Cairo. By E. S. Grogan and A. H. Sharp. 8vo, pp. 378; ill. (London: Hurst & Blackett. 1900.) 21s. net.

We mention this book not for what it contains, but for what is omitted. Mr. Grogan, a member of the Alpine Club, walked through Africa from the Zambesi to the Nile. On the way he passed under the range of Ruwenzori, but he disappoints us in giving us only a borrowed illustration and an apology, in the preface, for his having done no climbing, owing to the superior attractions of big game shooting. He bears out what Mr. Moore found as to the invisibility of the range on account of atmospheric disturbance by heat, for though he was some time in its neighbourhood he only once saw it. Some details are given of the volcanoes further south. The interesting record-breaking which the book describes we have not to do with here.

The Yosemite, Alaska, and the Yellowstone. By W. H. and S. K. Wiley. 4to, pp. 230; ill. (London: Offices of 'Engineering.' 1894.)

To the three places named on this title increasing attention is each year being paid by the climber, and any volume containing illustrations and descriptions of the scenery will be looked at with interest. This book gives an account of a tourist trip. It contains the record of only one climb to 11,000 ft., and that was on the railway, while of the passengers who tried to ascend a little higher 'some found the rare atmosphere a severe tax on their respiratory organs.' The illustrations are very numerous and the mountain and rock views would be of considerable value were the printing of the plates not so indifferent as it is.

Hunting in Many Lands. 8vo, pp. 447; ill. (New York: Forest and Stream Publishing Co. 1895.)

This is one of the volumes on sport of 'the Boone and Crockett Club.' The chief item of interest here to the reader of the 'Journal' is H. L. Stimson's 'The Ascent of Chief Mountain, Montana,' pp. 220-237, with two good illustrations of the great rock crown that forms the top portion of the mountain. The ascent seems to have afforded some good rock-climbing during the final 1,500 feet. There is a local legend that many years ago an Indian braving the spirit of the summit, who repeatedly threatened to hurl him down, safely reached the top. There are other articles in the volume that will appeal to the mountaineer who is also a sportsman. These are 'A Bear Hunt in the Sierras,' 'Big Game of Mongolia and Tibet,' and 'To the Gulf of Cortez,' which last describes the shooting of mountain sheep.

Belledonne et les Sept-Laux: Montagnes d'Uriage et d'Alleverd. Par Henri Ferrand. 4to, pp. 122; plates. (Grenoble: Gratier. 1901.)

This is a beautifully printed and exquisitely illustrated work. Reasonable objections may as a rule be made to a scattered

arrangement—or rather lack of arrangement—of illustrations upon a page so as to interfere with the continuity of the letterpress, but here one is perhaps thankful that this style has been adopted. The text meanders among dainty views of lakes and cascades, flowers, peasants, rocks, and snow peaks, while the full-page plates preserve the feeling of expanded and continuous beauty which every mountainous country yields. This is certainly a book that ought to be in the possession of all who care that mountains should in literature receive only that reverent and respectful treatment that is their due at the hands of an enthusiastic admirer. This Monsieur Ferrand is; and it is hardly necessary to add that in his hands the text is fit accompaniment to the illustrations. The work is issued in various styles at prices varying from 20f. to 50f.

Die H6chsten Teile der Seealpen und der Ligurischen Alpen in physiographischer Beziehung. Von Dr. Fritz Mader. 8vo, pp. 235. (Leipzig: Fock. 1897.)

Those who can read German, and are also interested in the southern portion of the Western Alps, will do well to see this book. A description is here given of the district orographically and geologically, of its climate, rivers, lakes, and mountains, the climbs already made and those still to be made. A great deal of information, which is all of interest, is brought together, though the unfortunate absence of an index or a map makes it difficult for the reader to find his way about. There are twelve illustrations of mountains from photographs by the author, from whom the work is to be obtained direct (Rue d'Augsbourg 1, Nice) for 3f.

Die Alpen. Sammlung G6schen. Von Dr. R. Sieger. 8vo, pp. 170; map, ill. (Leipzig: G6schen. 1900.) Pfg. 80

A good introductory handbook dealing with the Alps in general in every aspect, except that of climbing, which is considered to be of too special an interest to be brought into a short popular work. The division of the Alps here used is that of Dr. B6hm, who makes only two main divisions, the Eastern and the Western Alps, including in the latter what we more commonly know as the Central Alps.

The Indian Borderland. 1880-1900. By Col. Sir T. H. Holdich. (London: Methuen. 1901.) 15s. net.

Mount Omi and Beyond: a Record of Travel on the Thibetan Border. By A. J. Little. (London: Heinemann. 1901.)

In Tibet and Chinese Turkestan. By Capt. H. H. P. Deasey. (London: Unwin. 1901.) 21s.

The literature that deals with the special interests of the climber in the vast mountain regions of Central Asia is as yet very small in amount, and our knowledge must still be gained from the reading of works on general travel. Among these the three named above will be found useful.

Col. Holdich's valuable record of survey work will be read throughout with interest, but especially the chapter in which are described his experiences on the Pamirs, on which he and his party were nearly isolated by a snow storm.

Mr. Little, on his journey towards Tibet, passed close by vast snow-covered ranges which remain practically unexplored by Europeans, and he gives a very readable account of what he saw. We note that the Buddhists of Western China, following the practice common also to their brethren in Northern India and in Japan of choosing for their holy buildings positions that afford a wide outlook, have erected temples and monasteries on the summit of Mount Omi, which, according to Mr. Little's admittedly doubtful calculation (p. 86), lies at 10,500 ft.* This choice of site is in marked contrast with the European preference for the rich flats of a river-side, but accords with a common religious feeling which inclined Greek thought upwards to the peaceful summit of Olympus and compelled the nomad Hebrew to receive the law from the terrors of Sinai.

Between 1896 and 1899 Captain Deasey made journeys of exploration on the borders of Kashmir, Tibet, and Turkestan. He passed through much country not previously visited by Europeans, and carefully mapped out much that has hitherto been unmapped. He gives a very full and careful account of his expeditions, making it at the same time most useful in its details for any future explorer, and for the arm-chair traveller one of the most readable books of travel of some years past. The map is a careful piece of work and the illustrations are very good. The district is one of special interest to readers of the 'Journal,' and it is one where the traveller still finds that the inhabitants place every possible obstacle in the way of his progress. Any information which may be given about it is, therefore, of great value.

These books will anew impress upon the reader the fact that in at least one part of the world there is still very much for the members of Alpine clubs to climb and to explore.

The House on Sport. By Members of the Stock Exchange. 8vo, ill. (London: Gale & Polden. 1898.) 10s. 6d.

In this volume will be found an article on 'Mountaineering,' written by Mr. J. O. Maund and illustrated by Mr. McCormick. The article is the endeavour—and because of its quality should prove the successful endeavour—of an enthusiast to convey to the uninitiated some understanding of what mountaineering is, and of why it exercises so strong a fascination as a sport, despite its reputed dangers. Those possible dangers are illustrated by Mr. McCormick in six sketches, which are sufficiently alarming, one would think, not only to warn the novice against the rashness of ignorance, but even to dissuade him altogether from attempting

* Given as 16,500 ft. by an evident misprint, and on Mr. Little's map as 11,100 ft.

further climbing. The proceeds from the sale of the book are given to a Children's Dinner Fund.

Hannibals Alpenübergang: ein Studien- und Reiseergebnis. Von Josef Fuchs. 8vo, pp. 152; maps. (Wien: Konegen. 1897.) M. 3.50.

Professor Fuchs has made the latest contribution to a controversy that will continue for ever to exercise the ingenious scholar. He first goes fully into the question of the 'island;' and then, from local investigation as well as from literary research, argues for the claims of the Valley of the Durance and the Pass of the Mont Genève. He gives his reasons against the Mont du Chat, the Little St. Bernard, and the Mont Cenis, but not against the Col de l'Argentière, which is now, perhaps, the only serious opponent of the Mont Genève.

Armenia: Travels and Studies. By H. F. B. Lynch. 2 vols.; 8vo: maps, col. ill. (London: Longmans. 1901.) 42s. net.

Since Armenia is a country of mountains, these two handsome volumes, descriptive of Armenian travel, offer to the reader of the 'Alpine Journal' much that is of interest. The illustrations, taken from sketches and photographs, are excellent and numerous, and are printed in colours, mostly in slight tints, which relieve and please the eye, and help the mental imaging of the landscape, and especially of its architectural and rock features, though in the few plates where a closer imitation of nature has been attempted the result loses in effect. The volumes deal very fully with the Armenian people, their customs, history, and Church life, and with what especially concerns us here, the mountaineering and survey work done by the author. In 1893 Mr. Lynch ascended Ararat, and in vol. i. describes his ascent, but spoils the narrative by an indiscriminate use of both the present and the past tenses of his verbs. Twelve views, including the fine frontispiece, are given of the mountain. To the list of successful ascents given on p. 199 we would add, with some doubt as to the fact, the ascent by a girl of seventeen, recorded in the 'Alpine Journal' for February 1901, p. 336, and would note that Herr Oswald's ascent is described by Mme. S. Meunier in 'De Saint-Petersbourg à l'Ararat' (Paris, 1899). The chapter on geography at the end of vol. ii., dealing with the distribution of mountains in Europe and Asia, will set the reader's fancy at work on many fascinating questions as to the part which mountain barriers may play in the migrations of the human race and the formation of tribal and of national character. In the second volume will be found accounts of ascents and careful surveys, in 1898, of Sipan, Nimrud, and Bingöl.

The work is made complete by a careful index and a full bibliography of the literature relating to Armenia, in which all items referring to Ararat will be found gathered under that heading.

PROCEEDINGS OF THE ALPINE CLUB.

A GENERAL MEETING of the Club was held in the Hall on Tuesday evening, May 7, the Right Hon. James Bryce, *President*, in the chair.

Dr. W. H. Workman was balloted for and elected a member of the Club.

With regard to balloting for places at the winter dinner, the following rules were, after discussion, agreed to by the meeting :—

1. The President shall be entitled to two guest tickets, the Vice-Presidents and the Hon. Secretary to one guest ticket each.

2. Each member shall be entitled to apply for one guest ticket, and on Tuesday, November 19, eighty guest tickets shall be balloted for by all members whose applications for them shall have been received on or before Monday, November 18, if such applications amount to more than eighty. The priorities of all the applicants shall be determined by the ballot, and any guest tickets which may become available subsequently shall be allotted accordingly. The result of the ballot shall be communicated immediately to all applicants, and posted in the Club rooms.

3. If less than eighty applications are received by Monday, November 18, the excess shall remain in the hands of the Hon. Secretary, to be allotted by him according to priority of application.

4. The Committee shall have a discretionary power to allot guest tickets not exceeding five in number, independently of the ballot.

5. Seats shall be reserved for members elected on December 16, provided that their proposers give notice on or before Saturday, December 14, that they wish to be present, but seats shall not be guaranteed to other members unless their applications are received on or before Saturday, December 14.

6. Notice of the above regulations shall be given by circular in May, June, and November, but no applications for guest tickets or seats shall be received before the issue of the November circular.

The Rev. G. BROKE read a paper entitled 'With Ladies in the Lepontines,' which was illustrated by lantern slides.

The Rev. W. C. COMPTON had made the ascent of the Pizzo Rotondo two years ago, the highest point of the Gotthard group. It was a peak much neglected by Englishmen, though an attractive peak, with many lovely valleys round it. The ascent could be made in a morning, and the climb was a good one, though the rocks were certainly rotten.

Mr. BRYCE considered the Tosa Falls one of the finest waterfalls in the world, though Alpine waterfalls were not as a rule very beautiful. The district was an interesting one for small climbs.

A hearty vote of thanks to Mr. Broke brought the meeting to an end.

THE ACCIDENT ON THE MATTERHORN.

WE take the following letter, addressed to the Editor of the *Times*, from the *Times Weekly Edition* of August 2, 1901 :—

‘ Sir,—Having seen garbled reports of the disaster on the 23rd inst. in the Italian papers, and being afraid they may be copied into the English ones, we think it as well to send the facts to you.

‘ Mr. Bell and his daughter, Miss Trew, Miss Curwen, Dr. Black, Mr. Johnston, my brother Mr. A. P. Mallam, and myself had been staying in this hotel since the beginning of July.

‘ At 4.30 on the morning of July 23 a party, consisting of Miss Bell, Miss Trew, Dr. Black, Mr. Johnston, and my brother, started from this hotel, with Leonard Carrell as guide, and a porter, intending to ascend the Tête du Lion. This is a 4-hrs. climb, and one they were quite capable of and properly equipped for. Unhappily they changed their plan *en route* and determined to ascend to the Matterhorn hut, a very difficult and dangerous expedition for which none of them had experience enough and for which, too, they were hopelessly underguided. They climbed well and reached the hut about 12 o’clock. All went well on the descent till they reached the snow traverse leading from the Col du Lion on to the Tête du Lion. Mr. Mallam, Mr. Johnston, and the porter in that order on the first rope passed this place safely, and waited on the other side for the party on the second rope. Here the order had just been changed, and Dr. Black, who had been leading, changed places with the guide, who was last and who now led, the ladies being between them. They were getting well over when one of the ladies slipped and fell, dragging the others after her. The first party, after finding out from the porter that it was impossible to reach them, hurried down for assistance. We had got anxious at the hotel at their prolonged absence, and at 3 o’clock sent another guide up to assist if necessary. However, he came down with the first party for further help. Major Wundt and his wife, who had just arrived at the hotel, kindly volunteered to go with the relief party, who were got together as quickly as possible. They found Miss Trew and the guide at 10.30 p.m., badly bruised, but alive. Mrs. Wundt spent the whole night beside Miss Trew, and she and the guide were brought down safely to the hotel the next morning. They found Miss Bell and Dr. Black both dead. They too were eventually brought down.

‘ Yours faithfully,

‘ W. A. MALLAM.

‘ Hôtel du Mont-Cervin, Valtournanche, July 27.’

[We have omitted the last paragraph of Mr. Mallam’s letter, as it consists of criticism only.—EDITOR A. J.]

THE
ALPINE JOURNAL.

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MOUNTAIN TRAVEL AND CLIMBS IN BRITISH COLUMBIA.

BY HUGH E. M. STUTFIELD.

(Read before the Alpine Club, June 11, 1901.)

TWO years ago Dr. Collie read a paper in this room describing climbs and explorations on the eastern side of the Canadian Rockies in 1897 and 1898; and you may remember that in the second of these expeditions we failed to reach any of the highest peaks of the chain owing to their lying too far to the west of our base camps in the Saskatchewan and Athabasca Valleys. After our return to civilisation from the 1898 trip I went to Donald, and spent some time in making inquiries as to the best means of getting into the mountains from the western side, but the information I gathered amounted to very little. There was said to be a good trail, as I supposed, down the Columbia, though people at Banff had denied it; but of the lateral valleys leading up into the mountains only the vaguest and most meagre details could be obtained. Everybody agreed that the difficulties of travel would be far greater than on the eastern side—the rivers and muskegs, or marshes, more formidable, and the timber much denser—but this we knew before. Obviously the trip could be at best but an experiment, but it promised, at any rate, to be an interesting one, and, from a geographical point of view, could hardly fail to add to our knowledge of an entirely new region.

The existing maps gave little information, and that little proved to be largely wrong. My first idea was to ascend the Wood River Valley and attack the mountains from the N.W., but Collie very rightly pointed out that the valley of the Bush River offered a much shorter and more direct route. Accordingly, to make a long story short, it was for the Bush

River that he and I, accompanied by Mr. Spencer, started on July 29 last summer. Our outfit awaited us at Donald, and the men in charge thereof were Fred Stephens, headman, one of the best fellows it has ever been my good fortune to meet; Charlie Bassett, axeman; C. Black, cook; and one Alistair MacAlpine, an amusing broth of a boy, who persisted in asserting that he was a Scotchman in the richest brogue that ever cut the murky atmosphere of Belfast. There were some new faces among the horses, but I recognised several old friends of our 1898 trip.

Our start was a very bad one, Bassett essaying to mount a piebald cayoose, when the brute reared and fell back on him, causing such serious internal injuries that he had to be sent back to Banff; and so we lost our best axeman, whose services would afterwards have been invaluable in the dense forests through which we had to cut our way. We made a short day's march along the Columbia trail, after telegraphing for a substitute, who arrived that evening in the person of H. Lang. The trail does not follow the Columbia, but ascends the Blackwater Creek, some four or five miles east of the main river. The forest scenery was magnificent, the tall straight stems of poplar, spruce, silver birch, cottonwood trees and Douglas fir, some of them nearly two hundred feet high and ranged in long shadowy aisles and woodland corridors, their branches hung with long beards of grey and yellow lichens, screening all view of the outside world. The trail, too, was excellent, except where here or there some prostrate giant of the wood, lying across the path, had to be circumvented; and there were some deep mud-holes in which the horses got badly floundered. After three days' travel the forest grew less dense, and we saw something of the mountains on our right, while across the Columbia appeared the snow-flecked tops of some of the lower Selkirks, with belts and patches of bright emerald green running far up their sides.

On Friday, August 3, we reached the Bush, a deep, swift-flowing stream, a hundred yards wide, with high muddy banks clothed with the impenetrable undergrowth that has given the river its name. Here we passed a perfectly awful time with the mosquitoes. The air was

Brushed with the hiss of rustling wings,

and the hum of bees on *Hymettus* can have been nothing to the buzzing of these multitudinous pests. The night was a night of ceaseless torment. Spencer, like a sensible person,

had brought a piece of mosquito netting. Collie and I, being unprovided with any such luxury, of course jeered at him for his ridiculous effeminacy, and lay awake and cursed, while he slept soundly and blended the most resounding snores with the buzzing of the flies.

Next morning we fled. The jungle and muskegs along the river being absolutely hopeless. Collie conceived the idea of retracing our steps five or six miles along the trail, and cutting our way over the shoulder of the mountain which forms the angle between Bush and Columbia Valleys. This we accordingly did, but it proved a tedious job. The ridge was over 1,000 ft. high and very steep, and three days were spent in cutting a track and getting the horses and outfit up piecemeal. The trail was indeed 'a daisy,' as Fred Stephens expressed it, and the fallen logs, rotten timber, bog-holes, and rank undergrowth gave the men plenty to do. At the summit we mounted a rock, which Collie named Mount Pisgah, and saw the promised land we were about to enter. It did not look at all promising. Beneath us the Bush Valley lay spread out, very broad and strangely flat, but hemmed in by lofty pine-clad mountains; and down it the river curved and twisted in innumerable windings amid shingle flats, clumps of firs, and very unpleasant-looking muskeg. Away in the distance the valley forked, and in the angle, filling the exact centre of the picture, rose a magnificent rock and ice peak, which, if the maps were correct, we supposed must be Mount Bryce.

Following the ridge awhile, the horses, with part only of the baggage, crept down into a narrow cleft between the rocks, and we commenced the descent. It was terribly steep, and the timber very bad in places. One horse, carrying all our bacon, broke away into the forest and was seen no more that day. This episode naturally caused us much anxiety. We camped in muskeg near the banks of the Bush. Three more precious days, one of them soaking wet, were spent in saving our bacon and getting the baggage down. The bacon, or rather the quadruped entrusted with it, was found in a natural pen of fallen timber, into which he had jumped, and it required many blows of Fred's axe to extricate him. On Saturday the 11th we started up the valley along the steep muddy banks of the now flooded river, tediously making our trail as we went. Every now and then a horse would fall or plunge wilfully into the water, and have to be got out at the expense of much labour, profanity, and perspiration. In the afternoon we forded a branch of the river on to an island,

and Fred, with Lang, essayed to ford the main stream. Starting somewhat too hastily, he was followed by six or eight of the horses before we had time to secure them. Near the other side the stream was over 5 ft. deep and flowing very strong, and Fred's horse, trying to scramble up the slippery bank, fell back with him into deep water. Fred's foot got caught in the *ladigo*, or leather thong of the saddle, and for a few anxious moments we feared he was done for; but, shaking himself free just in time, he swam ashore. Nothing daunted by this mishap, as soon as he reached dry land he shouted to us to remain, tethered the horses that had crossed with him, and proceeded to construct a raft wherewith to ferry back Lang and himself. A few water-sodden logs were his only available material; and in the stream the raft became unmanageable and was sucked into a narrow and deep rapid. Here poor Lang lost his balance and fell off into the ice-cold torrent, and, but for Fred's nerve and skill, would soon have found a watery grave. Below the rapids the two men, benumbed and exhausted, might have floated down to the Columbia if Collie had not thrown them a rope.

We spent a cheerless night—seven men packed like sardines in one small leaky tent. The valley reeked with damp exhalations from the marshes; it was raining cats and dogs outside; and the horses, with half our outfit across the stream, could be heard whinnying to their companions through the darkness. Next morning Fred constructed a splendid raft of fresh pine-logs, and ferried himself across alone, drove the horses across to us, and by evening the whole outfit was *in statu quo* on the island again—a very fine day's work.

The following day we recrossed the branch stream, and continued slowly up the S. bank, the logs, jungles, and quagmires seeming to have no end. The horses, too, were a great nuisance, and one or two of the mares were especially troublesome that day—I am sorry to say it is generally the ladies who give most trouble on these occasions. There was old Molly, for instance, the bell-mare, a plump matron of mature years, generally with three or four hundred pounds on her back, but always lively and skittish as a kitten. Well, two of these females, finding it rather warm, took a header into the torrent where it was running like a mill-race and 10 ft. deep. One of them—needless to say she carried the flour and bacon—was almost drowned; and it took half an hour's hard work to drag her, half suffocated, up the steep

bank. We camped on the spot in a quagmire and not the best of tempers. The loss of our axeman, Charlie Bassett, was now making itself felt. Fred Stephens was a host in himself, immensely strong, and always willing and cheerful, while Collie continued to display that desperate energy which I have long ceased striving to emulate; but there are limits to human endurance, and we sorely needed another expert axeman.

If the trials of our journey were great, we had our compensations, and the scenery was very fine. Deep valleys, with bold rocky peaks between them, descended on either side from the glacier-clad offshoots of the main chain. Down the Bush River the view was bounded by the Selkirks, with a grand Weisshorn-like pyramid in the centre. Some weeks later I had a good look at this unnamed monarch of an unknown region from the top of Sir Donald, and it is undoubtedly the highest peak of the Selkirk group. At the head of the valley, getting nearer to us every day, was the splendid mountain we supposed to be Mount Bryce. We might have more greatly admired the very real beauty of the forest foliage if it had not been so abominably troublesome. They have a strange fascination of their own, these mighty woods of the wild West, but the charm is apt to evaporate when you are cutting trail.

There was one more bad day in store for us before matters began to improve. The river was still in flood, and its banks finally became so hopelessly impassable that we were forced high up into the forest on the mountain-side. Fred and Collie went on ahead in the morning cutting trails, and in the afternoon the outfit followed. This was perhaps the worst bit of the whole lot, not so much owing to the timber or undergrowth as to the steepness of the ground and the excessive rottenness of the soil, which seemed to be composed exclusively of decayed tree-trunks and other vegetable matter. The descent from the shoulder of the hill was a most parlous operation. Hearing a noise behind me at one bad spot, I turned and saw a small avalanche of ponies slipping and tumbling down on the top of me, the result being that I was knocked over in a sitting posture into a bunch of devil's-club. The devil's-club, I should explain, is a long trailing creeper, with broad leaves and poisonous spikes. It abounds in the British Columbian forests, and—well, it isn't at all a good thing to sit down upon. The horses, meanwhile, were tumbling about all over the place, jammed among logs, struggling in bog-holes, and having a bad time of it altogether.

Once at the bottom, however, our worst troubles were over for the present. Two days' fording the river backwards and forwards with a moderate amount of chopping took us to the head of the valley, where we camped near the junction of the forks, a splendid site in an amphitheatre of mountains, with the great peak towering right above us. Our height was only 2,800 ft., which is remarkably low for a valley running right up into the heart of the mountains, and it quite upset our calculations. The head waters of the Saskatchewan and Athabasca were 2,000 or 3,000 ft. higher, which gave us so much the less timber-work. The weather was bad, and we



FORDING PART OF THE BUSH RIVER.

stayed four days at this camp. In the early mornings and evenings I amused myself hunting for bear, whose tracks were fairly plentiful in the valley, but without success. There were also wild swans, geese, and ducks in marshes hard by.

On Sunday, Collie and I, taking a couple of horses, forded the river, and then proceeded afoot through the most horrible timber up the south bank of the Bush. The river is narrower and more impetuous in its higher reaches, and below the junction of the forks it boils and rushes over boulders between high rocky banks. After an hour or two's toilsome scrambling we reached a splendid gorge which the South Fork has cleft for itself through the hills a short distance above the junction. Looking up the North Fork we saw a high and beautiful

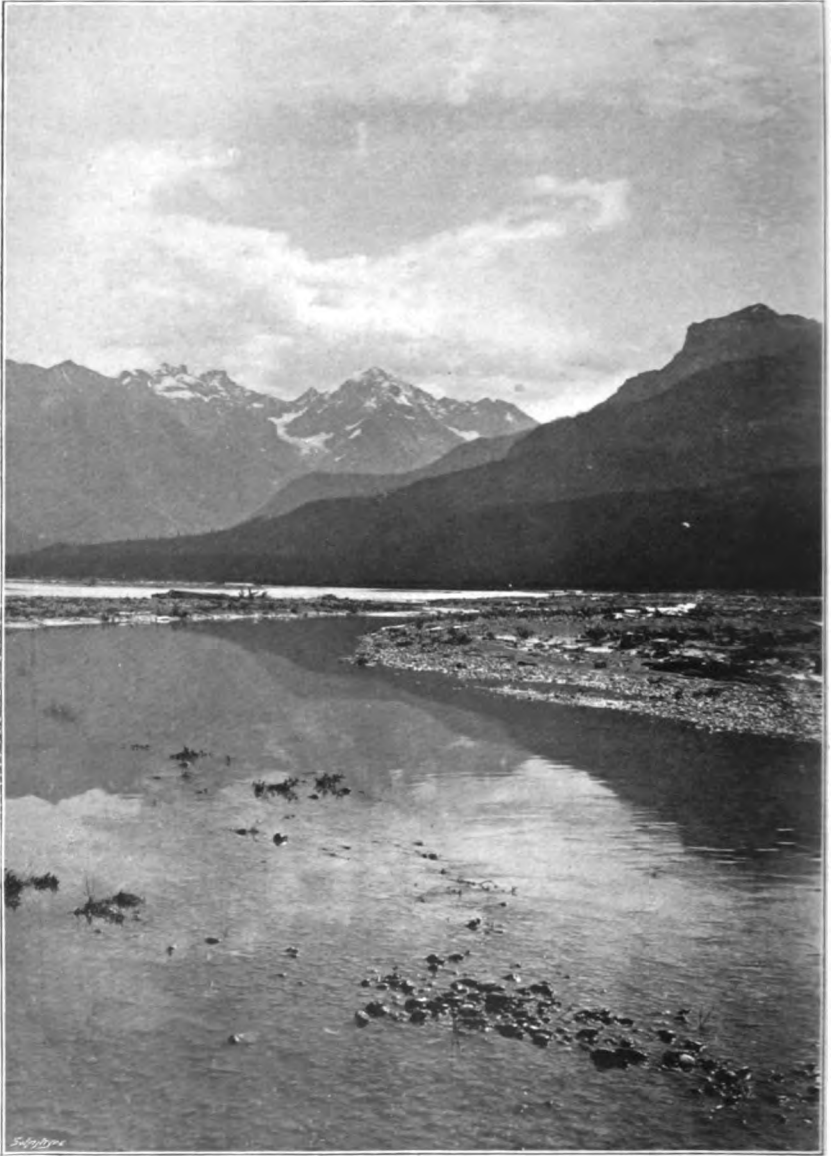


Photo by Sydney Spencer

[Swan Electric Engraving Co.]

THE BUSH RIVER VALLEY AND BUSH PEAK CANADIAN ROCKIES.

pyramid of snow rising in solitary grandeur out of an immense ice-field. There was no mistaking it. It was beyond all doubt the chief goal of our expedition, Mount Columbia; and, to our dismay, it was at least twenty miles distant, when it ought, if the Bush River was correctly located, as the Americans say, on the map, to have been only eight or ten. There was evidently something wrong somewhere. Next day the mystery was explained, when Collie, Spencer, and I started to climb a peak north of the camp. I took the gun and shot a fine Canada goose on the way. We had a tremendously hard climb through the woods, and, my legs giving out below the summit, I gave it up and returned to my goose-hunting. Collie and Spencer had a glorious view, this being absolutely the last clear day of the whole trip, and they made important discoveries. The existing map was all wrong; the head of the Bush Valley was marked on it ten or twelve miles too far to the north, and we were that much further off our destination than we had thought. The supposed Mount Bryce was not Mount Bryce at all, but another peak twelve miles south of it which we had seen from the Columbian icefield in 1898, and which Collie has named Bush Peak.

We had a council of war that evening and decided to *cache* half our provisions and baggage, so as to travel as light as possible, and push on next morning as far as we could up the North Fork of the Bush. Half an hour from the start the timber got very bad, and Fred essayed to ford the river, but it was too deep and rapid, and the attempt had to be abandoned. Ahead the ground sloped precipitously to the level of the river; the timber looked as though a forest of scaffolding poles had fallen across each other, and further progress along the banks of the stream would, at the best, be at the rate of about a mile a day. Accordingly Fred conceived a somewhat bold idea. Striking up the hill in a torrent of rain, by dint of hard work and skilful guidance, he conducted the whole outfit up 5,000 ft. of timber-covered mountain-side to the foot of the peak which Collie and Spencer had ascended the day before. His idea—an impracticable one, as it proved—was to find a passage above timber level, and along the benches of rock which lined the face of the mountain. We camped in a nice enough spot, with one drawback—there was no water; and Alec had to fetch snow in buckets for every meal from a place some hundreds of yards off, a labour he strongly objected to. While the tents were being pitched I wandered off through the rain in search of an old Rocky Mountain goat which Collie had seen the day before, returning drenched to

the skin, and without any meat, to a most uncomfortable dinner in our leaky little tent. Next morning the weather had improved, so I went off early after goat, as our meat was getting very low. I saw no game of any description, but had some gorgeous Elijah Walton-like views, through the mist, of Mount Columbia: now a sharp pyramid whose graceful contours were in marked contrast to the flat-topped mountain it appears from the northern side. Nearer, the triple-peaked Mount Bryce—the real Bryce, named by Collie in 1898 after our President—towered majestically over the narrow valley. The view reminded me somewhat of that from the Brevet, but it was far more extensive, and the mountains rising steeply 11,000 ft., or more, from the low-lying valleys, formed a far more impressive panorama than anything we had seen from the Saskatchewan or Athabasca.

Returning to lunch, I found that the others had sighted three goats browsing on a hill not far from the camp. Descending into a deep valley, I climbed up the other side, and, after an amusing stalk, managed to bag the biggest of the three. The beast rolled, stone dead, head over heels down a steep shale-slope to the brink of some rocks 1,200 ft. in depth. A few yards more and he would have gone over the edge, and we should have seen him no more. With some trouble I got down to him, but moving the carcass alone—it weighed over 150 lbs.—was out of the question. However, an hour later Black and Alec, hearing the shots, came to my assistance with a rope, and we managed with infinite trouble and some risk to haul the beast up a few feet to a safer position where we could gralloch him. The rescue of that goat from his parlous position afforded me the most exciting climbing experience of the whole trip. It was impossible to get the carcass home that night, but there was much jubilation in camp at the prospect of fresh meat after three weeks' uninterrupted salt pork.

That night the weather, which had misbehaved itself all along, went hopelessly mad. It rained and sleeted all next day, and we never stirred from camp; but the following afternoon, taking a horse part of the way, we went, and after much trouble brought in the goat, returning, as usual, drenched to the skin. In the night the wind went round to the north, and the driven snow and sleet forced its way into our miserable little tent, the ground in the morning being covered to a depth of several inches. Our exposed camp was not a joyous habitation now—at least the men grumbled a good deal; personally I did not mind it at all—and our

prospects of serious mountaineering grew fainter and fainter. We had uninviting glimpses now and then, through the rolling masses of vapour, of the Bush Valley far below, and the muddy torrent tearing along between the shingle flats and muskegs ; but for a whole fortnight the mountain tops were never clear, and travel in the deep snow was out of the question. I forgot, though, there was a brief sunset one evening, one 'crowded hour of glorious life,' when the mountain world displayed itself to us in all its splendour. I had had an interesting afternoon's scramble on the peak after goat, and was within two or three hundred yards of camp. The landscape was



CAMP ON GOAT PEAK.

wrapped in a white mantle of freshly fallen snow ; the clouds suddenly dispersed, and the sun went down, not in the conventional blaze of green and gold and orange, but with a soft saffron effulgence, more suggestive of dawn than sunset, that shed a strange unearthly radiance over peak and glacier and snowfield. I had taken the cartridges out of my Mauser in order to climb some rocks, and was sauntering on towards the tent, my mind absorbed in the weird witchery of the scene, when suddenly there bounded out of the bushes the father of all the goats, the finest old billy you ever saw, his long white fringe brushing the branches, as he lumbered heavily out of view. I am afraid I swore, and the splendours of the mountain world and the sunset seemed suddenly to

fade, for in moments like these the instincts of the artist and the sportsman, which ought to go together, seem somewhat to clash.

Early on Sunday the 26th we three started with Fred to climb a fine rock peak, about 11,000 ft. high, west of the camp. The morning was fairly fine, but towards midday the clouds rolled up as relentlessly as ever, and after wandering about aimlessly in the fog for some hours we gave it up and returned to camp. Time and provisions were now running out; our men, all except Fred, were the reverse of happy, saying that this God-forsaken valley was no fit place for civilised beings; so, as the weather seemed more hopeless than ever, we struck camp next day and descended again to our *cache* in the valley.

Lest I should seem to have painted too gloomy a picture of our week's sojourn in the high camp, I should here like to say that personally I enjoyed it exceedingly. I had most delightful scrambles over the wild craggy hills after goat, with occasional glimpses of the most enchanting scenery, when one or another of the great peaks coyly unveiled itself to view. It was very wet and cold, no doubt, but we always had a jolly big fire of logs outside the tent—wood is cheap in these parts—and so made ourselves pretty comfortable, while the absence of the mosquito pest made the hills, even in snow and slush, seem a sort of Paradise to me.

On the way home we ascended a peak on the south side of the valley—for the benefit of Collie in particular, and geographical science in general. The brushwood and timber were the worst we ever encountered, and the labour of climbing something awful, so I hope geographical science will be grateful. In two and a half hours we made barely 1,000 ft.; but when at length we emerged from the stuffy air of the forest into the open we felt as though we had wings, and, being all in excellent training, did the remaining 2,000 ft. or so with the greatest ease. The high peaks, as usual, were in cloud, but the valleys and lower ranges were all plainly visible, and Collie was able to correct and add many details to his map of the region. The results you have seen on the screen this evening. Although, owing to bad weather and other misfortunes, we had not done all we had hoped to do—one seldom does in this wicked world—our trip was by no means a failure from a geographical point of view, as you may judge by comparing the old map with Dr. Collie's present one. I may remind you that in 1897, before he went with Mr. Baker on his first trip, the map of the mountains ten

miles north of the C.P.R. was little better than a blank, while beyond Mount Lyell the main range was entirely unexplored. I think, therefore, you will agree that, as our Club now so largely occupies itself with mountain exploration and geography, we are much in his debt for these contributions of his to our knowledge of the Alps of Canada.

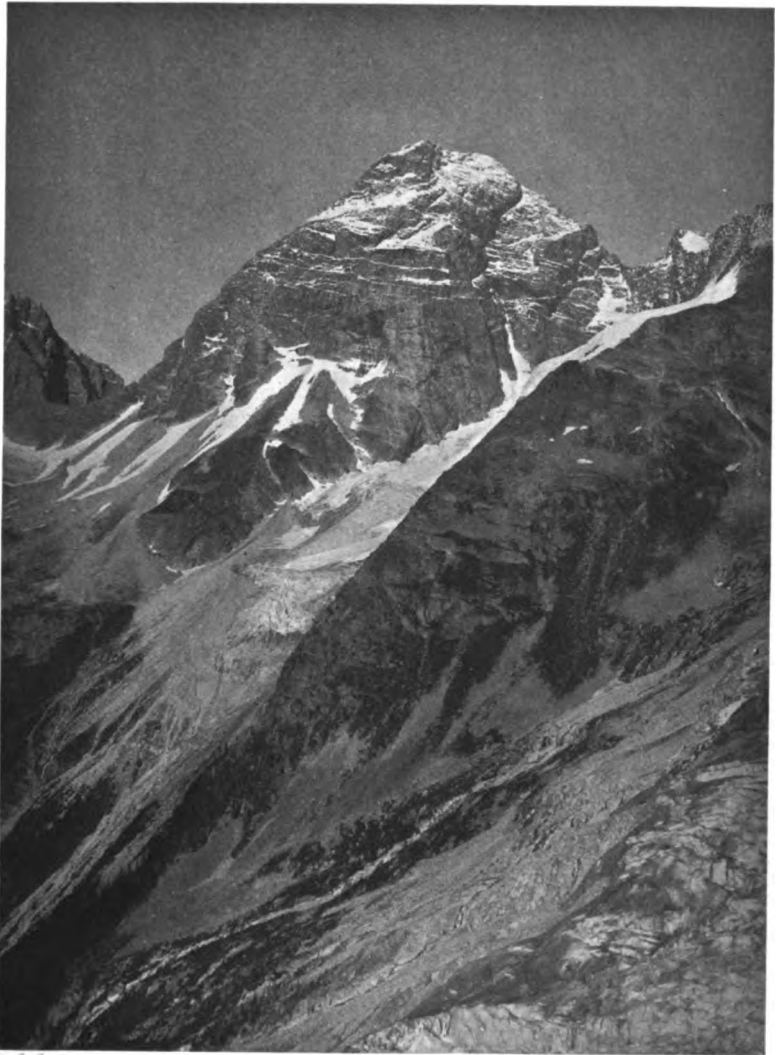
The trail being cut, and the river having shrunk owing to the cold, our journey down the valley, as usual on these occasions, was a comparatively easy matter. We had a most enjoyable day's trout-fishing on an extemporised raft in a small lake, and then on to Donald and civilisation in a down-pour of rain. 'No. 1,' the C.P.R. west-bound express, was twelve hours late owing to a landslide on the line—as a negro porter phrased it, 'the scenery had come down;' and after a night with the telegraph clerks at the station we reached Glacier at 6 A.M. Here we went our respective ways. The weather improved, and Collie and Spencer each did a new peak, of which they will no doubt tell you presently, and a few days more put Mount Sir Donald in a condition for me to attempt to climb it.

Before describing Sir Donald I should like to give a short account of a solitary ramble up its neighbour—Eagle Peak—by an unorthodox route, late in September two years previously. After our trip to the Athabasca I found myself alone at Glacier. Collie had gone home, and Woolley deserted me for the joys of Vancouver and the Pacific Coast. There was nobody to climb with, and my energies were at first centred in the pursuit of a huge grizzly, whose quite fresh tracks, with those of her two cubs, were visible not very far from the hotel. After three days' unsuccessful hunting I bethought me of a modest climb up Eagle Peak. The then C.P.R. guide assured me that the mountain was impossible owing to 40 ft. of unscaleable rock on the arête. I said (in effect), 'Bosh;' and he then said he had a toothache, so I started rather late one morning alone. Being unable to get any information as to the route, I followed the valley leading under the N.W. face of Sir Donald, which affords a superb view of that mountain. I soon found I was cut off from Eagle Peak by a valley, with a small but much crevassed glacier at the bottom, and had to cut my way down a steep little ice slope to get on to it. After crossing the glacier a long couloir led up to the foot of the final rocks, and then it was an easy scramble to the summit. The view is, I think, finer than that from Sir Donald, as the latter mountain gives the picture a truly noble foreground.

An evil idea came into my head to try a new way down. All went well till at the very bottom of the slope I found myself cut off by cliffs, and had to remount a good 1,000 ft., the result being that I just reached the forest at nightfall; and then the fun began. The mountain-side was very steep, and in parts rocky; and the forest—well, like other British Columbian forests. There was no moon, and the faint starlight failed to penetrate the gloom of the huge cedars and pines. For eight mortal hours I felt my way down, tumbling over logs and into holes, and wondering when I should break a leg or sprain an ankle. How Collie will jeer, I thought, when he hears of it!—and sure enough he did. Some additional interest was lent to my nocturnal wanderings by the knowledge, during part of the time, that I was following the trail of the old grizzly; so, as these beasts usually travel by night, and it might be unpleasant if I stumbled on her in the dark, I just kept holloaing at intervals to let her know I was coming. There was no cause for alarm, as I found out afterwards that she had been shot that afternoon near Roger's Pass, two miles up the line, and measured 9 ft. 6 in. from snout to tail.

Before describing my climb up Sir Donald a few words on the previous history of the mountain may not be out of place. Long deemed inaccessible by people on the spot, it is now going the way of all such peaks, having been climbed half a dozen times, though not as yet by a lady. In 1888 Mr. William Green attempted the ascent by the Illecellewaet névé, and climbed the peak that now bears his name. The first actual ascent was made in 1890 by Messrs. Huber, Sulzer, and H. Cooper by a couloir on the N.W. face. For nine years the mountain remained unclimbed until in 1899 M. Leprince-Ringuet followed Mr. Green's route with success, descending from the col between Green Peak and Sir Donald, and joining the ordinary route up the rocks.

I arrived at Glacier from Vancouver on September 11 last summer. The hotel stands at the narrow entrance of a curious deep bay in the hills, and I know few more striking effects than when, as the train creeps round those wonderful loops in the line, and over the spider-legged trestle-bridges, the Great Glacier bursts into view, gleaming white amid the pines, with the splendid peak of Sir Donald towering right above you. With us came an American lady, who had ideas concerning the mountains. The crevasses of the Great Glacier, she maintained, were all artificial, and nothing could shake her conviction. Not a few Americans appear to think



J. Spencer

Susan Clavin, Engraving Co.

Mount Sir Donald from Glacier Crest, Kilkirk's

that the glacier was put there by the C.P.R. as an ornament, and one citizen of the Great Republic actually asked the manageress of the hotel if it was there when she arrived! The season was waning, but the weather was fine and the opportunity too good to lose. I accordingly engaged two of the Swiss guides now stationed at the hotel by the C.P.R., Jacob Müller, of Grindelwald, and — Michel, and at 3.10 A.M. next morning we were off. A full moon lit up with a strangely weird radiance the beautiful forest path leading to the foot of the Illecellewaet Glacier—anybody who can pronounce, much less spell, that word ought, I think, to have a prize! The path soon ended, but there was a tiny trail beyond it which, as the dawn came up over the shoulder of the peak, seemed like a Piccadilly pavement after our experiences in the Bush Valley. We were soon above the trees and vegetation, and Sir Donald came into full view. A well-constructed moraine, very superior to the ordinary Swiss variety, took us to a glacier that leads up to the foot of the rocks. Here the most serious obstacle has to be passed—the schrund which stopped some of the earlier assailants of the peak. The snow bridge seemed quite equal to our weight, but it did not look at all inviting, and I can well imagine that in some seasons the crossing of it would be a difficult matter.

Just above the schrund we passed through a curious snow tunnel, then crossed one of the steepest little snow-slopes I ever was on, and reached the rocks. Here we had breakfast, and then zigzagged up the face on to the arête. The rocks are nowhere difficult according to modern standards, though very steep and always interesting. There was a good deal of snow still on the mountain, otherwise, I fancy, it might have been necessary to keep a sharp look-out for falling stones. We reached the summit at nine, when the guides amused me by at once claiming a record time for the ascent, which shows that modern Alpine ideas are already taking root in America's new mountain playground. The height of Sir Donald is about 10,700 ft., rather more than 6,500 ft. above Glacier.

The true charm of the Selkirks lies in their supremely lovely valleys, which are unsurpassed in any country that I know. Most of the higher peaks, apart from Sir Donald, lack distinction of form. Hence the view from its summit suffers from the want of any effective foreground. It is, of course, enormously extensive. One seems to be in the centre of a perfect world of mountains, a chaotic far-stretching wilderness of peak, snow-field, and valley, which in imagination you see extending hundreds of miles to the Pacific, nearly

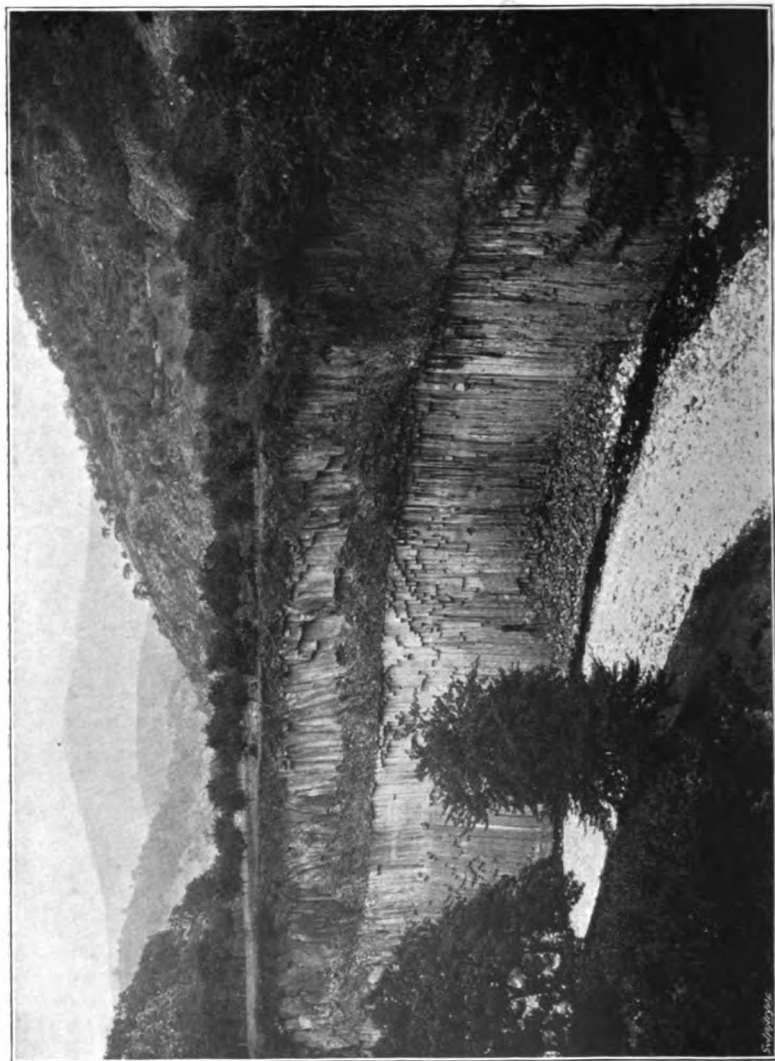
a thousand miles northwards to Alaska, and Heaven knows how many thousands to the south. Bush Valley with its mountains, and the grand Selkirk peak we had seen from it, were quite clear, but a long thin line of cloud cut off the summits of Mount Forbes, Bryce, and other giants of the central chain, only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

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



[Union Electric Engraving Co.]

COLUMNAR BASALT, VALLEY OF JAUJAC.

Photo by *Tempest Anderson, M.D.*

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

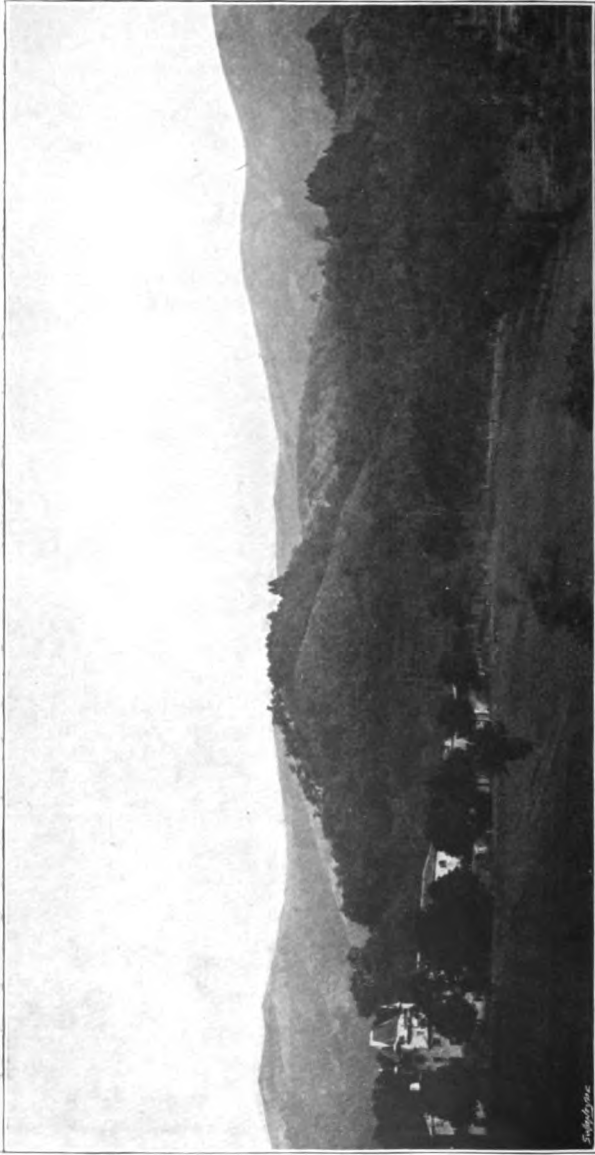


Photo by Tempest Anderson, M.D.

LA COUPE DE JAUJAC, FROM THE N.W.

Esnon Electric Engineering 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 Nevrac 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

saved his face and put francs into his pocket. But that was no trespass; it was but pedestrianism along the high road.

It was on the Klein Eiger that we left the beaten track. Our headquarters were at Little Scheidegg—little no longer, but grown up and fashionable, and devoted to the Jungfrau Bahn, whose motto is *Nulla dies sine linea*. Undoubtedly a marriage for money, which (*vide* the opposition of the Railway Buffet) has already had its tiffs! On our arrival the hall barometer pointed to Set Fair: it always does, for it predicts unblushingly the weather M. Seiler wishes to have. He hides an inconveniently truthful instrument in his bureau.

There is always a comforting reflection during a first week of persistent rain below and new snow above: the weather need not interfere with training walks. But when the 'angels of rain and lightning' stay on over a second seven days one may doubt their celestial character, or at least entertain them unawares. On a midday climb towards the first ice-fall of the Jungfrau Joch the angel of rain pertinaciously kept us company. True, we had compensation. 'Shafts of sunny mist' were shot at a venture among the seracs, and far down in the Lauterbrunnen Valley a blue haze lay over the grassy Alps like the bloom on ripe grapes. Once more on a scramble on the lower rocks of the Mitteleggi (an afternoon expedition undertaken to soothe the feelings of the Rockman who had been led too fast among the crevasses of the upper Guggi glacier) 'arrowy rain' made excellent practice, and even hail found entrance between the joints of our harness. The ascent from craggy ledge to craggy ledge, from shale-strewn shelf to yet another plastered with ice, was made light of by the Rockman; he was in his element free. Meanwhile the Iceman dripped raindrops until they made a puddle at his feet, and then came on at the word of command, not omitting to mention that he considered the pace unnecessarily fast.

This varied practice in harness helped us to learn our paces, and when the first promising day was heralded by a night of stars we were ready for it. There is positive relief in leaving one's hotel after a two-o'clock breakfast. The air of a deserted *salle à manger* is flat, and suggestive of stale *petits pains* and a yawning porter regretful of his unprofitable early rising. There is relief, too, in crossing the promenade ground of the excursionists and finding no ghostly conductor shouting, 'This way to the telescopes. Put a penny in the slot for three minutes' view of the acrobats on the greasy pole.'

In the perfidious moonlight we narrowly escape falling

into the artificial crevasses made by the constructors of the Jungfrau Bahn; even the old familiar faces of the Eiger and the Mönch seem in the deceptive silver radiance both steep and strange. Surely a cascade of silver descends over the well-remembered ice-wall of the Mönch, while the final slope of the Eiger is trimmed with tiny stars. It is warm, too warm, though now and again a cold air comes draughtily by. We cross the line by the Eiger Glacier station; there is no night service yet running! From the mouth of the great tunnel creeps forth an odour of smoky fumes like some evil reptile. It is an odour that can be felt as well as seen; it is almost a presence, for it seems to uncoil and crawl among the wilderness of pots and tins and other refuse which litter a dirty snow-slope near to the path to the ice-grotto! As we take to the crisp slope above, a moan, long-drawn, as of a giant in pain, breaks the silence of the night; the Italian workmen are blasting at the end of the tunnel. For a pittance they are content to live in contaminated air, and all to make a tripper's holiday.

The music of the yielding snow-crust as boot and axe crush through alternately, each with its separate note, gives one heart of grace to look for 'the white star' which hovers

'Low over dim fields fresh with blooming dew,
Near the face of dawn.'

Happily the sunrise cannot be bought up by an American company.

We rapidly mounted by the edge of an old avalanche which had descended from the hanging glacier between the two Eigers, the great blocks like shattered fragments of a vast marble temple. They were white, and yet not white as snow. At the first chance we struck across to the shelter of the rocks which flank the right bank of the channel down which the ice-stream thunders whenever a sérac breaks off above. At this point it needs but two or three minutes' quick work to traverse to the stony ledges of the N. face of the Klein Eiger. At first sight they were by no means uninviting even in the early dawnlight, and we found no cause to regret that we had got up early enough 'to steal a few hours from the night.' The north face of the Little Eiger is scored with many wrinkles, sloping rock shelves, the temporary quarters of rolling stones, which do not contain sermons. These make attempts, with the aid of the night frost, to preserve a stable equilibrium. Between these wrinkles there are slabby frontages, sometimes offering moderate hand-hold; at

other times presenting a fair example of a mountain mirror of *verglas*. On August 5 the Little Eiger was also suffering from freckles, represented by patches of snow and shale. It needed no remarkable foresight to predict that these would be ready to peel off when the sun had been on the face a few hours. We halted for breakfast and a consultation at 5.30, and crampons and Mummery spikes (destined to save hours of step-cutting during our season's work) were adjusted in the hope of overcoming the slipperiness of the thin ice on the rocks. Already in the grey light the slopes towards which we were tending looked glassy, and the pattering of falling stones not many feet away was not lost upon us. We decided to go on, avoiding the glazed rocks as much as possible, with the proviso that we should leave time for retreat before the sun touched our peak. That meant at least three hours' grace. On a short rope we advanced extremely cautiously, paying much attention to would-be rolling stones. Diminutive gullies, all too short, led from shelf to shelf (these claimed but comma pauses); then we had to be content with cracks, which meant semicolons; and at last came an expanse of ugly ice and slabs of sliding snow which brought us to a full stop. There was no question as to our continuing our traverse towards the prominent tower on the N.W. arête; for us it was absolutely impossible. The Rockman and the Iceman were in perfect agreement. Retreat was seriously considered; the view was admired; the lapping tide of clouds flowed round the Lauberhorn, flooded its island summit, and crept slowly over Little Scheidegg. 'And the sun looked over the mountain's rim.' Pink cherubs went bathing in the sea of rippling, rolling mist; and the beaming face of the sun seemed to laugh with pleasure at the sight. Then the unpoetic person demanded a decision. The desire to report progress carried the day. The Rockman proceeded to examine the gullies, which are half chimneys and half cracks; they are veined with frozen streamlets; they are smooth with plates of ice; they are full of loose stones—and they certainly won't go in the opinion of the Iceman, who favours another route by snow patches and a distant couloir. This, on nearer acquaintance, proves highly objectionable. A gully midway, almost hidden from view, till one is directly beneath it, offers some security. We insure in it by twisting the rope round anything that looks as if it might hold. At length we stand secure on an upper shelf, which widens out at the base of a steep bastion of smooth rock, and leads on under a conspicuous tower on the N.E. angle of the face. The route

was plain; there was no need to search for the ghostly bootscratches of the Geister. At the rope's end the Rockman advanced until his crampons refused to bite into iron-grey ice, smooth, and well polished. By means of diminutive handholds and a close embrace of the rocks he made a few inches—which were by no means easy to unmake. Then the Iceman tried and failed ignominiously, despite his best efforts to freeze on to the ice by sitting tight on it.

The tide of clouds had ebbed. Little Scheidegg was waking up in sunlight. The early morning business train, which brings up crisp rolls and other delights, screamed to be attended to. There was time to be reminiscent of poetry, and Tennyson's lines corrupted seemed worth quoting:

‘The shadows of the Eiger towers
Slant down the snowy sward.’

‘We can go no further!’

‘No further!’

‘Little Scheidegg will be crowded when we get back.’

‘We will *not* go back.’

If it had not been for the thought of the twopenny telescope tubes we should have gone back, so I have been told.

Stung to unusual action the Iceman led the advance up rocks which gave promise of leading to a shelf which seemed to exist at the top of the bastion-like crags. The Rockman, of course, came up another way! But the shelf flattered only to deceive. It ended abruptly. Below, awkward rocks, glazed with a suspicion of ice; above, slabs; in front, nothing!

We began to nurse extravagant hopes. The Rockman assured the Iceman that the secret of the N. face lay round the tower. Once there he knew he would see the way. The Iceman agreed that his companion ought to be able to see further through a rock wall than anyone else after all the Cumberland practice he had had. Anyhow, the Rockman could go to the extreme tether of the rope if he liked. The fly has gummy pads with which it clings to smooth surfaces, and the Iceman has a theory that the Rockman carries a bottle of ‘Stickfast’ in one of his pockets. With trifling aid, moral and otherwise, from the rope, he descended, traversing so as to avoid the glazed slabs immediately below. The last few feet seemed to give some trouble, but they were managed successfully. A minute later the Rockman had unroped and disappeared round the base of the tower. The Iceman was left on the shelf. In five minutes he knew that the other had found the route. ‘It went, went beautifully, went to the

very summit.' But the intermediate question how the Iceman was to come had first to be answered. A little *verglas* is almost as dangerous as a little learning. Weigh this piece of wisdom against the consideration that he who hesitates is lost, and you at once understand why the Iceman made ready for descent. First, however, the loose end of the rope was tied round a convenient boulder by the Rockman, who, having taken this precaution, prepared to field his friend should he slip. This the latter prophesied was a foregone conclusion; the only doubtful point was how far he would fall before he came to hand. The first dozen feet offered no great difficulty; then holds became less than nominal—a vague expression which is none the less suggestive for that—until the squirming climber felt he had come 'unto this last'—a finger hold of sloping ledge. This proved inadequate, and a moment later the prophecy was fulfilled, and the Rockman had his hands full. A sudden slide, the scrape of the axe, a clatter of loose stones, a tightening of the rope, and the rock-toboggan was over. Total damages, some numbed fingers, and a few silent maledictions. I should like to make this little incident match the thrilling escapades of the Cumberland climber, but I cannot claim that there were only 'invisible holds.' Some day Mr. H. G. Wells will write his most imaginative piece of fiction on the ascent of an invisible mountain; then only will the phrase be justified.

Our turning movement brought us directly below a snow-covered slope leading up to a steep gully, which seemed to give direct access to a ridge sloping upwards at an angle that spoke eloquently of many steps to the summit. To clamber cautiously from shelf to shelf of the intervening rocks was easy enough, thanks to well-frozen snow patches, and the lower section of the gully yielded to vigorous step-kicking. But it was soon a case of enduring hardness, and the Iceman was allowed to cut comfortable steps through the snow crust into the ice beneath. The Rockman constantly pleaded to be allowed to court the rib of rock which edged the gully, but even he proved fickle and did not fall head over heels in love with the slippery slabs. Step-cutting was, therefore, continued: at first after the fashion of an accommodating stairway; then more like a ladder of notches, miserable imitations of rungs!

Once on the final snow slope there came relief, and the Rockman offered his services as step-kicker. A halt of a few minutes gave an opportunity to note the outgoing tide of mist waves, which had left sunny pools of cloud among the shadowy valleys.

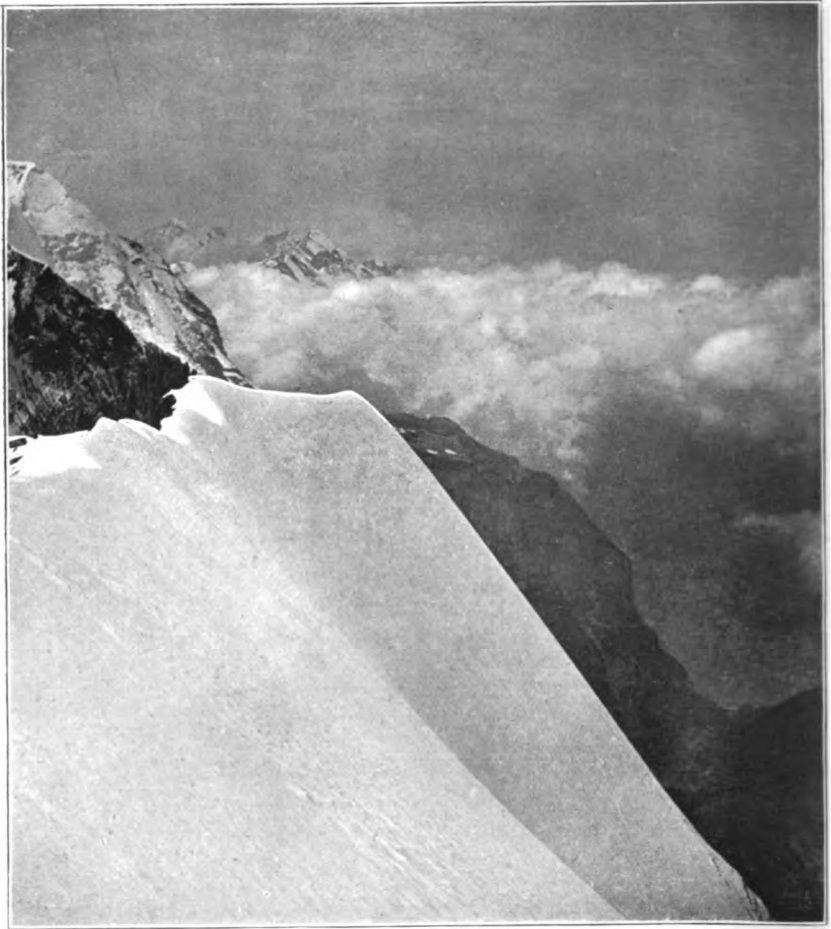


Photo by H. Somerset Bullock

[Svan Electric Engraving Co.]

THE SUMMIT OF THE LITTLE EGER, WITH THE FINAL SNOW SLOPE.

'Sun rays, leaning on our southern hills and lighting
Wild cloud mountains that drag the hills along.'

The prospect of a 'blue and breezy noon' with hot sun upon rock and snow made us hurry on. Our steps took no zigzag course, but a bee-line for the Silberhorn-like summit, a pretty pattern of pin-pricks, which were all we needed, since our boots were armed at all points like a hedgehog's back. The topmost snows provide splendid shelter. There is a hollow of the hills, a snowy basin with a corniced rim on one side and black rocks on the other. Here, despite the urgent call for refreshment from the rucksack, one cannot but drink in the view.

'For to admire an' for to see,
For to be'old this world so wide—
It never done no good to me,
But I can't drop it if I tried!'

If you translate the third line to mean that the finest prospect cannot take the place of porridge or any other delicacy you may have in your sack, it is profoundly true.

I have no more partiality for records and time-tables than certain southern railway companies. The chiefest charm of the complete holiday is its leisurely delight, and the curse of the conducted tourist that travelling by the watch which is so destructive of peace of mind. Yet for those who are bent on setting up new figures it may be courteous to note that we left Little Scheidegg at 3.5 A.M., spent half an hour close to where we took to the rocks of the Little Eiger, turned the tower about 7 A.M., and reached the summit close on two hours later.

I doubt if you can see more difficult or more delightful snow and ice work from any peak of the Oberland than that which rewards the climber on the Little Eiger. The Great Brother in his glittering coat of armour, glazed with *verglas*; the Mönch, showing its precipitous ice-wall in perfect relief; the Jungfrau in her many-folded robe of snow; and, above all, to those who have made lifelong friends of them, the Eiger and Jungfrau Jochs. The final steep of the former pass was ablaze with sunlight: every detail of a day gone by was recalled to me, and over the very ice-slope up which we had climbed by interminable steps for seven hours an avalanche of new snow had swept, leaving an ever-widening trail. The fan-shaped mass of débris lay in the deep shadow at the foot of the precipice. Rarely has a photographer the chance to take such clouds as hovered over the arête of

splintered rock. Like the breakers of a silent sea, they seemed to have risen mysteriously from the waveless blue of the distant horizon, to have rolled threateningly towards the great intercepting wall, and at last to have burst in sunlit spray over each majestic gendarme. Beyond the pass that fails, that tempting snowy breach which leads to impassable precipices, and near the Great Eiger, there were gentle clouds—a pretty enough sight, but with none of the grandeur of the foam clouds over the Eiger Joch.

Then our outlook became severely practical. We knew that a party of Swiss climbers had planned to start that morning for the Jungfrau from the little goblin-like Guggi Hut. We raked, in true nautical style, that sea of ice which separates the cabin from the first ice-wall, but the glasses gave us no news of them. Instead, we made out a gigantic crevasse, stretching from end to end of the ice-fall, and spanned by no bridge of snows. At one solitary point a shattered sérac seemed to have lodged, but we could not determine whether the chasm might be crossed by means of it. On our return we were told that for the first season of the century neither the Jungfrau Joch nor the Jungfrau would be possible from Little Scheidegg: the crevasses were too formidable.

Next we turned our attention to the Great Eiger, where we made out a party of three just beyond the rocks where one usually has breakfast. The mountain had not been ascended before in 1901, and we watched the advance with considerable interest and far more than idle curiosity. Our plan had been to descend by the usual route up the Little Eiger, that is, by way of the sham Eiger Joch, and thence through the ice-fall round and back to the foot of our peak. But an obvious and attractive alternative was offered in a climb from the Little to the Great Eiger, first by the steep snow arête (at least, we hoped it was snow), then by a narrowing couloir and steep rocks to the last ridge, which gives access to the summit. Our only cause for misgiving was the possibility that the ice on the Great Eiger would demand a heavy tale of step-cutting, and that the rocks might be badly glazed.

Like the childlike Chinaman, we refused to know our own mind: in a word, we temporised, keeping a weather eye on the progress of our unknown friends. At 10.35 A.M. we left our first peak, the ostensible objective being a great rock which stood as guardian of the steep S.W. ridge. Here we decided to examine the route to the sham Joch. The

climbing is highly diverting, for one traverses under a small cornice for some distance, and at times one is constrained to duck under the frozen wave, or wade forward with one arm affectionately over the far side. At length it was possible to kick steps along the ridge, and we were speedily in the shadow of the great rock. Here we had another consultation, and again in diplomatic fashion we deferred judgment. The Rockman suddenly awoke to the discovery that the Eiger ice-fall is—mostly ice, and that the descent to the névé above is—mostly snow. On the other hand, he detected rocks ahead on the Great Eiger, and it was useless for him to try to conceal the fact that he was keenly anxious to wreck the Iceman's hopes upon them. For the latter hankered for his beloved crevasses, and pronounced the snow-covered slopes to the névé perfectly safe and easy. However, he admitted that he would like to leave his card on the Big Brother. Besides, the other party were getting up, and after what we had done any pride in refusing to use their steps would deserve to be followed by a fall.

We kicked off for our goal in fine style. The pace was good, and the combination of cheerfulness and determination excellent. One kick to a step is exhilarating, two kicks to a step is depressing, three kicks to a step—well, one would willingly exchange them for one's last halfpence. Even the Iceman soon had enough of it, and suddenly developed a remarkable devotion to rocks, even slabby rocks. In other seasons, when fine weather is the rule rather than the exception, this steeply sloping eave may be hard as ice, and three or four hours' step-cutting may be counted as the cost. In our case it was firm enough to make us imagine we were developing gouty toes by over much step-kicking. At the top of the ridge, which reminds one of a snow-covered eave, there is a lofty stack of rock. For some reason, or for none, we tried to turn it on the right, and had made a short traverse when we decided to explore the face before committing ourselves. This promised better things, and we struck straight up snow at a steep angle, needing steps, and leading to an open gully, bounded on one side by the gendarmes on the ridge, and on the other by a rib of rock joining it higher up. The formation was suggestive of the prongs of a hay fork. Where these are fixed to the shaft there was a choice of route, first a narrow chimney, second a bulging knee, not by any means as sound as one could have wished. The wisdom that follows the event now makes it clear that we should have gone for the chimney. As it was, the Rockman left the Iceman as

firm as he could make himself in gigantic steps with his axe jammed between the rock and the ice, and foot by foot the seventy feet of rope were paid out to him as he climbed over the knee and beyond into an extremely steep and narrow gully. Here he anchored, and the Iceman, with half-frozen hands and feet, was gently urged over the awkward places. To soothe his injured feelings he was allowed to lead up the last rocks and along the fine-cut snowy ridge stretching down from the summit. This was reached at 1.10 P.M., about an hour later than the party we had seen from the Little Eiger. Five minutes' halt was voted sufficient owing to threatening weather, and we were by no means sorry for the steps of ample proportions zigzagging down the western slope. At 2 P.M. at the breakfast place we caught up the men to whom we were indebted for them. They turned out to be an English climber with two guides, who, when they discovered that we had no contempt for professional assistance, proved genial enough. They asked for a quarter of an hour's start so as to avoid danger from any stones which we might have inadvertently disturbed, and we allowed them more than double that time. Getting away at 2.50 we made the descent without difficulty, the *verglas* having thawed off the rocks. About a thousand feet above the Rothstock we were peppered with hail and snow, and imagined we heard thunder, though it is impossible to say for certain, owing to the rumble of explosions caused by the blasting operations. We did *not* take the train from the Eiger Glacier Station to Little Scheidegg, but marched into the hotel, or, to be quite correct, stole into the *dépendance* at 6.15 P.M. The tabulated times were five and a half hours to the top of the Klein Eiger, two and a half hours to the Gross Eiger, and four and a quarter hours back to Kleine Scheidegg.

That evening came the deluge. We had seized the one day in our first fortnight on which any serious expedition could have been justifiably attempted. There was a grim sunset: 'yellow and black, and pale and hectic red.' The Eigers, cloaked in 'mantles grey, star-inwrought,' stood proudly as though men had but paid homage to them, never conquered them. So would I close every mountain pilgrimage, inspired with new knowledge of the eternal 'splendour of the hills' and new desire to climb. As Mr. Bourdillon has sung:—

' The high stars over at night
 Are under at noon ;
 And a young soul's vision of Heaven
 Passes how soon !

He climbs, and the clear-seen goal
 Is gone—ah! where?
 Whispers a voice from the Infinite,
Climb! I am there!

THE PUNTA DI CIAN.

BY THE EDITOR.

WHEN in 1899 an opportunity of ascending Monte Rosa was offered to me, I embraced it with effusion, for my peaks had of late somewhat lacked height, though deficient neither in interest and difficulty, nor, altogether, in novelty. But on the mountain my feelings suffered a rude shock. Those great snow slopes, as to distance so enlightening, as to the nature of snow so didactic, as to mere exercise so satisfying, in actual traverse so exasperating, in retrospect so balm-giving, are crowned at last by ice and rock, which afford a delightful scramble—but—‘but me no buts on such a noble summit,’ you say. But truly, though the prospect pleases, the traces of man’s presence are sordid in the extreme,

‘The fragments, scraps, the bits, and greasy relics.’

Poor Troilus can hardly have been more wrathful when he used these words, than I was when the full significance of the phrase ‘a popular summit’ burst upon me. I was content to fly back to the simplicity of smaller peaks, and leave such great court beauties as Monte Rosa to be adored of the many. [Since then, however, I have been reconquered by her splendours, and may profess for her a ‘tempered and mellow admiration.’]

So it was that when I stood with my friend Tempest Anderson a day or two afterwards near the summit of the Théodule Pass, and regarded the grim ridge which runs southward from the Dent d’Hérens on the W. side of the Val Tournanche, my gaze rested with delight on the last obelisk of that many-needled wall. A white sisterhood of clouds came up one after another, as though they would fain embrace him, but there was little fervour in their movements; their thoughts must have been elsewhere. Thereupon, having learnt his name from Sylvain’s cousin, I vowed to ascend him. I directed Anderson’s attention to him. ‘Is he not worth a photograph?’ ‘Distinctly; he is splendid! I think he deserves the trouble of fitting on the telephoto lense.’ ‘Oh, certainly.’ Thus invariably speaks the man who does none of

the work yet hopes to reap the benefit of a delicate operation. 'By Jove, that is a fierce fellow. Just have a look before I photograph him.' I bury my head in the depths of the photographic bag, imagine that I see splendours untold, though all was gross darkness of the inner sepulchre, and exclaim, 'Magnificent!' 'Make haste,' I shout in an agony, 'the clouds will be upon him in another minute.' Then the telephoto lense does its work. 'He certainly is splendid,' was Anderson's last remark; and so we descended to Breuil.*

After lunch, on September 6th, Sylvain, whom we had been lucky enough to recover, and I started for the Chalets of Cignana, where we were to sleep. The excursion was charming. We reached, after an hour's walking, a fair height above the valley, and then enjoyed charming glimpses into its depths. As when, from the terrace of a lordly garden, the boast and glory of all the countryside, the owner points out his roses, his lilies, his shapely shrubs, and ancient cedars, and the guest to whom he talks so eagerly is impressed with the beauty and variety of the scene, so was I impressed as Sylvain expounded to me the Val Tournanche.

We passed several chalets, one of which was, in part, the property of Sylvain's family. He showed me where he had captured an eaglet in the previous spring. It was eminently a place where nerve was needed. Then our talk for a time was of bullocks. We even glanced at sheep and goats. I learnt the price of a good cow. I learnt also how they are pastured in the summer. When they arrive at the Alp the cows will sometimes fight for days for the supremacy. The cow that wins is, on the return from the Alp to the valley, crowned with bouquets of flowers. 'How interesting,' I cried. 'Such a cow is worth much money.' 'No doubt.' Then he added with a laugh, 'A common friend of ours (his nature, like his name, is frankness itself), whom you wot of, is anxious to possess such a cow.' I could well believe it, for that friend—it was pleasant to see Sylvain's genuine admiration for him—is himself so fearless that courage in man or animal always attracts him. With the village of Val Tournanche in sight we had a discussion on house-building, and on the remarkable increase in the number of summer visitors to the valley below us. This popularity has stimulated the erection of new houses to a very considerable extent.

We reached Cignana in about three hours, walking from

* Mr. McCormack's illustration is from a telephotograph by Dr. Tempest Anderson.



THE PUNTA DI CIAN FROM THE THÉODULE PASS.

Breuil. It is quite a village of chalets (there is also a chapel), in a secluded basin, where about two hundred and fifty cows are kept. But even this secluded basin has its incidents. There, on that slope of Mount Rouss, Sylvain lost a friend who, when chamois-hunting, was carried down by an avalanche. In a ravine to the west, on the other side of the main stream, Jean Baptiste Pession, as good a mountaineer as you could wish to travel with, on his way back from the Dent d'Hérens injured his foot, and was carried by François and Sylvain to these chalets.

We met with true hospitality. Our bed was new hay. The barn was so full that we crept in with the greatest difficulty. The hay was so hot that I recollect wondering what would happen if it took fire while we were asleep. The next thing I remember is crawling out in the morning. A breakfast of bread and milk was awaiting us.

We started at 5 o'clock. The air was laden with the scent of cows; the road was well worn of their frequent feet; the lately-mown meadows had obviously been glutted with treasures from the byres that none but Virgil could celebrate in seemly wise. Even the very brook showed by his muddy waters that he imitated at a humble distance the Augean labours of the hero-deflected Alpheus. Thus in late summer do the practical and remunerative lord it over the basin of Cignana, which must be in spring a very fairyland of flower and fragrance.

To climb a stony ascent, traverse the moraine, ascend the Glacier di Cian, cross the bergschrund, and reach the col to the right (N.) of our peak took us from five till half-past eight. We had halted a quarter of an hour on the moraine, and spent about twenty minutes on the col. We then climbed to the summit, gained at ten minutes past nine, by steep slopes of snow and rock.*

The view was delightful. East, north, and west mighty mountains 'inspiration breathed around.' Southwards rose the Grivola and the Paradis, and made me feel what it was to absent me from felicity awhile: the very clouds that gathered slowly over the Val Savaranche looked almost reproachful, for I had neglected the Cogne peaks for two summers, though they are the very 'heart's desire,' as novelists have it, of the present writer.

* Close under the Colle di Cian *Ranunculus glacialis* was fading, and *Androsaces* were out of flower, while close to the actual col *Chrysanthemum alpinum* was in bloom.

I caught a glimpse—a single flash—of the Dora Baltea in the Aosta Valley. From the Torgnon basin rose the mellow music of countless cowbells mingled with the murmur of streams. The little Cian lake lay lovely as a sleeping nymph in a fold of the vale below, while two other watery meres—the Bananselmo and the Dragone—showed themselves to the N.E.—‘Twin mirrors of Italian Heaven.’

If the spirit of the mountains could but confer the power of happily expressing those delightful impressions of beauty and majesty which reward the climber, I might try to create again for my readers the view from the Punta di Cian. Alas! it is impossible, but this I may say of it—it added the soft alluring charm of Italy (there is always something of *Miranda* about Italian Alps) to the splendour of the defiant Cervin and the massive grandeur of Monte Rosa; it blended in one consummate picture ice-cliff and snow-wreath, rock-tower and chasm, forest and pasture, and all the warm life of the Aosta Valley.

We found the cards of sixteen Italian parties, amongst them that of my friend, Sig. G. Bobba, and his companions, dated August 21, 1899. They seemed to have made several new routes on the peak; but all were true mountain lovers, and none of the sorry traces of inconsiderate visitors which too often offend the eye on a fashionable summit were here to be seen.

In descending we took the E. ridge for some distance, and then crossed at a level to the patch of ice which shows so distinctly in the view of the peak from the Théodule Pass. I, of course, was leader, and enjoyed myself accordingly. When we came to the ice, which was very steep, Sylvain wished to play ‘forward,’ instead of ‘full back,’ but I insisted on cutting the steps. You will smile when I say that there were but two or three, but as the ice was so steep it was necessary to be on the safe side. What satisfied me would have made a dwelling for a dwarfish hermit, or the lair of a minor wild beast.

Always gratifying as it is to lead, here was a peculiar gratification, for, while the look of the place was sufficiently exciting, the time required for this delightful indulgence in self-sufficiency was brief. And there was Sylvain anxious to ply his function of the axe waiting behind, and I could pause and regard him with benignity while he had to ‘salute capacity’ in me!

It was a position to be thoroughly enjoyed. Later, when we faced other little asperities of the mountain, and the axes

were handed down to me, I again sipped the gently stimulating cup which a niggard fortune offers all too seldom to the modest merit of the class called Amateurs.

After regaining our tracks and the Col we reached the glacier by a slight variation of our morning's route, dictated by the state of the snow, and eventually sat down to refresh ourselves by a stream, where the open-eyed innocency of countless gentians * would have charmed even such travellers as are ordinarily careless of mountain flowers.

While we were resting we heard shots; two chamois passed near us, and presently we discerned the hunter on a distant slope. Then we went on our way to Breuil—a delightful walk. Clusters of chalets, green meadows round the haybarns on the flanks of the great hills, brooks tumbling in waterfalls, the little lake of Lore, Val Tournanche itself, the new Church of Chenelle raised high on a sunlit shoulder above the glen which leads to the Grand Tournalin, villages the picture of peace—all these delighted, one after another, the wandering gaze; and the dull roar of the torrent floating up to us—a note of war—and the music of the cowbells—a note of peace—mingled together.

We found two or three big anemones (*Anemone sulphurea*) in flower, and perfect forests of stems crowned with ripe or rapidly ripening seed. *Scutellaria alpina*, *Gentiana ciliata*, and *Dryas octopetala* were in bloom in places, and close to Breuil *Linaria alpina* was more brilliant than I have ever seen it: the orange in it seemed almost aflame.

We reached the hotel at five minutes past six after one of the most enjoyable days I ever spent.

IN MEMORIAM.

WILLIAM MATHEWS.

OUR Club has lost in William Mathews, who died on September 5, one of its original members and a former President. He was born September 10, 1828, at Hagley, in Worcestershire, at the house of his father, who was agent to Lord Lyttelton. In 1842, after about six years in a preparatory school at Hall Green, near Birmingham, where he made more progress in drawing than in arithmetic, he went to King's College School, London. He early became interested in natural science, and at the age of eleven was eagerly studying chemistry, but an explosion—a not unfrequent experience for

* My Note-book says: 'Gentians splendid, twenty blooms on a tuft.'

beginners—in which he narrowly escaped serious injury, probably induced his elders to divert him into the safer paths of botany and geology. While at King's College he used to make short excursions in the Thames Valley to collect plants, and in his holidays investigated the botany of Worcestershire from his home, which was now situated between Kidderminster and Hagley. At the comparatively early age of sixteen he entered his father's office to begin his training as a land agent and surveyor. This, however, was interrupted in his twenty-first year, for his father, following the advice of the late Lord Lyttelton, decided to send his son to Cambridge, so Mathews began residence at St. John's College in the month of November, 1848. Four years in an office is not so good a preparation for university work as a training at school, but his industry and natural abilities enabled him to recover much lost ground, while his wide interests both in literature and in science gained him friends such as Dr. H. J. Roby, and the late Professors Hort and Cardale Babington. His place in the Mathematical Tripos of 1852 hardly did him justice, for he came out twentieth wrangler. Probably he was never a rapid worker, and he suffered from insomnia, as is not uncommon with anxious candidates, all through the examination. After taking his B.A. degree (from which he proceeded to M.A. in 1856), he returned once more to the office, where out-door duties often gave him opportunities of studying the botany and geology of the Midlands, while as an evening occupation he began work on French and German, both of which languages he ultimately read with ease and spoke well, besides having a fair knowledge of Italian. In 1853 he saw the Alps for the first time, and at once yielded to their fascination. Returning in 1854 he made a rather remarkable ascent of the Velan, then very seldom climbed, for the party was not able to leave St. Pierre till 9 A.M. They gained the summit at 3 P.M., and were so fortunate as to obtain a splendid view. In 1856 he explored with his brother, C. E. Mathews, the mountains at the head of the Val de Bagnes. They ascended in bad weather the Combin de Corbassière under the idea (due to a confusion in nomenclature) that it was the Grand Combin (locally known as the Graffeneire), besides making some other glacier excursions.* In 1857 he was one of the first party of Englishmen on the summit of the Finster Aarhorn,+ and afterwards reached, after much toil owing to soft snow, the northern peak of the Grand Combin. Two summers later he and his brother G. S. Mathews had some noted successes. They made the first passage of the Eiger Joch, in company with the Rev. Leslie Stephen, ‡ of the Col Durand, and of the Lys Joch §; afterwards paying a short visit to the Tarentaise, in the course of which they reduced an Alpine impostor,

* Described with those of 1857 in *Peaks, Passes, and Glaciers* (First Series). Chapter IV.

† *Ibid.* Chapter XI. (J. F. Hardy).

‡ *Ibid.* (Second Series) Chapter VII.

§ *Ibid.* Chapter V.

the Mont Iséran, to its true level. Returning in 1860 to the Tarentaise, Mathews climbed the Sassiére (which had not been ascended by any traveller) and the Grande Casse,* after which, in company with the present writer and Mr. J. C. Hawshaw, he for the first time visited Dauphiné and the Cottian Alps. The exceptionally bad weather of that summer made this part of the journey a disappointment. An attack on the Pelvoux, after we had waited for two nights and a day under a huge boulder, failed owing to the incompetency of the local guides: the only result of that on the Viso was ascertaining on which side it should not be attacked.

But in 1861, in company with Mr. Jacomb, he set foot on its summit after passing the night about 1,400 feet lower down.† They also ascended a peak of the Rutor‡ and made the first passage of the Felik Joch, climbing Castor *en route*.§ In 1862 he returned with the present writer to the Graians and Dauphiné. The Rutor, Mont Pourri and the Grivola were ascended, and the first passage made of the Col de Monei; the chief incident in Dauphiné being the first attack on the Ecrins, which was defeated by the state of the snow about 800 feet below the summit. In 1863, with the same friend and his brother G. S. Mathews, more than one new expedition in the Graians and Dauphiné was foiled by bad weather, but they made the first ascent of the north peak of the Grandes Rousses.

His marriage in the autumn of that year to Miss Agnes Lawrence did not terminate his interest in the mountains, though henceforth he avoided arduous ascents, as he had already begun to suffer from breathlessness in going up hill. In 1864 he travelled in the Pyrenees, chiefly for botanical purposes, though he ascended the Maladetta with the late Charles Packe, and in 1866 returned with a family party to the Alps, crossing, however, a couple of glacier passes in the Pennines. In 1868 he made, with the present writer, an interesting journey, including some glacier excursions, through Eastern Switzerland and the Western Tyrol, and in 1872 with the same companion went over other parts of the latter country, ascending the Marmolata and the Gross Glockner. Happening to meet on his penultimate visit to the Alps in 1874, we crossed the Ried pass from St. Nicholas to Saas, and returned to Zermatt by the Alphubel. This, I believe, was his last glacier excursion. Those named above are, however, only a few of Mathews's expeditions over snow and ice, for with him the making of new ascents was subsidiary to obtaining a thorough knowledge of the geography, physiography, and botany of the Alps. In these, and in the doings of our Club, he did not cease to take interest even in the hours of pain and weakness. In topographical questions his accuracy as an observer and his retentive memory made him most helpful to the late John Ball in preparing the first edition of

* *Peaks, Passes, and Glaciers* (Second Series), Chapter XI.

† *Ibid.* Chapter IX.

‡ Then written Rutor.

§ *Peaks, Passes, and Glaciers* (Second Series), Chapter V.

the 'Alpine Guide'; and he formed a very good collection of Alpine plants, now in the Kew Herbarium.* At one time also he paid much attention to hypsometry, publishing papers on that subject in the 'Alpine Journal.'

For some years before his marriage Mathews had resided in Birmingham, where he had taken an increasing share in the educational work of the town. He assisted in the foundation of the Midland Institute, of which he was for some time Honorary Secretary, besides teaching the first mathematical class. In 1868 he was a Vice-President, and delivered the annual address, in the absence of the President. After being for some years a governor of King Edward's School he became bailiff in 1870, a position which, as changes were impending in the constitution of the school, entailed much labour. The education question was then a burning one in the Midland metropolis, and Mathews as a Churchman and a Conservative, though anything but an extreme party man, took an active part in the struggle over the reconstitution of the Grammar School and the formation of the School Board. He also served for some years on the Governing Body of the recently founded Mason's College, the germ of the new Midland University. At the meeting of the British Association in Birmingham in 1865 he was one of the honorary secretaries, assisting in the preparation of the 'Handbook,' and was always a ready helper in any educational work.

These duties, his scientific studies, and the burden of professional work, often heavy, had been for some time telling upon his constitution, till in 1873 he became seriously ill, and his health remained unsatisfactory up to the autumn of 1876, when he was ordered to pass the winter abroad. Seven months were spent in Algeria, and his enforced leisure bore fruit in a paper on its flora, with notes on the hypothesis of the submergence of the Sahara. The change, unfortunately, did not do so much good as was expected, and in 1878 he was again so seriously unwell that retirement from business seemed inevitable. But he was saved from this by wise medical advice and devoted home care, and though he had to spare himself as much as possible he was able to continue professional work, and even his scientific studies till 1893, when he felt himself justified in laying down the burden of the former. Though this brought some improvement in health, it was not enough to enable him to become engrossed in the latter, and the enforced inaction, especially when all the surroundings reminded him of the past, often caused great depression of spirits. In 1899 he quitted Edgbaston for Tunbridge Wells, but the change brought little relief, and an internal malady, which now developed itself, caused much and increasing pain during the remainder of his life. This ended on September 5, and he was laid, on the anniversary of his birth, in the family burial place at Hagley.

As already stated, Mathews was an original member—indeed, one

* The rest of his botanical collection was given to Worcester, and his geological specimens to the Mason's College, Birmingham.

of the actual founders—of the Alpine Club,* of which he was President from 1868 to 1870. Also he was the first to discern Elijah Walton's power in depicting the Alps, and had a large collection of his water-colour drawings. He received in 1867 the Cross of the Order of St. Maurice and St. Lazare from the King of Italy, and when the British Association met in Birmingham in 1886 he was a Vice-President of the Section of Geology and that of Geography. He was a Fellow of the Geological Society of London, of the Royal Geographical Society, a member of the Surveyors' Institute, and of the Land Surveyors' Club, of which, on his retirement in 1893, he was elected an honorary member.

A conscientious discharge of every duty was the characteristic of William Mathews's life. 'Whatsoever thy hand findeth to do, do it with thy might,' seemed to be his motto. He was as exact in small things as in great. Thus even such trifles as writing a letter to a friend, or jotting down notes of an excursion, were done as carefully as if they had been legal documents. His actions in collecting a specimen were characteristic of the man. Many of us would, as we walked, take out paper, wrap up the plant or rock, and put it away, only pausing for an instant to scribble a memorandum. Not so Mathews; he halted, did these things systematically, and then went on. In all his movements, even in eating and drinking, there was a certain deliberateness. Everything was executed with precision; he had a horror of inexactness. It was the same in business, he never slurred over details. His anxiety was to understand each question thoroughly, so that he might, as the mediator between landlord and tenant, bring each to do justice to the other. He had his reward in the respect and trust of both alike. Thus his services were often sought as arbitrator or umpire in disputed cases. But this method of work, combined with a constitutional difficulty in throwing off cares even for a moment, of being content with a passing pleasure, and of letting his mind lie fallow, finally told severely on him, and impaired his energies during the last twenty years of his life. He was obliged to live more or less as an invalid, long walks and strain of any kind being prohibited. It is possible that his earlier Alpine journeys had been productive of mischief, for mountaineering in those days entailed more hardships than it generally does now. In the unfrequented valleys food and sleeping quarters were alike bad, the shelter of a boulder being often preferable to that of a roof; thus the climbs were not seldom more exhausting than restful, and in Mathews's case the heart probably received a strain from which it never recovered. Tall and strongly built, he promised in middle life to reach a healthy old age, but as it sometimes happens with such men, one spot was

* The idea, in fact, of the formation of the Club was originated by him in a letter written to the Rev. F. J. A. Hort dated February 1, 1857. See 'The Formation of the Alpine Club,' by W. Longman, in this Journal, vol. viii. Appendix, p. 84. The letter is printed in *Life and Letters of Fenton John Antony Hort*, vol. i. p. 370 (1896), and in *Annals of Mont Blanc*, by C. E. Mathews, pp. 198, 199.

weak, and this was, unfortunately, found out by his favourite recreation.

Professional and other duties did not allow him much time for writing, and when the leisure came, then his health forbade prolonged mental labour. But besides the articles already mentioned, he contributed one section to the first series of 'Peaks, Passes, and Glaciers,' and three to the second; two papers to the 'Alpine Journal' on 'Climbs in the French Alps,' four on hypsometric subjects, one on the movement of glaciers, with some other notes; also two papers communicated to the Birmingham Philosophical Society, and two in regard to the influence of taxation on real property to the 'Transactions' of the Surveyors' Institute. He published some valuable papers on the 'Flora of Worcestershire' in the 'Midland Naturalist,' and one in pamphlet form on the 'Flora of the Clent and Lickey Hills'; he was author of the chapter on the geology of the neighbourhood of Birmingham in the 'Handbook' prepared for the visit of the British Association in 1865, and wrote part of that on botany in the 'Handbook' besides reading papers at the meeting in 1886.

But I must conclude this brief memorial of my friend. William Mathews was a representative of the older, rather than the newer, school, both in Alpine climbing and in science. To him the beauties and the wonders of mountain regions were their chief attractions, and though he could feel the enjoyment of overcoming difficulties, he had little love for acrobatic performances. So, too, in science, though his knowledge was always precise and accurate, especially in botany, he was a naturalist, rather than a specialist. He was also unusually well read in general literature, where his very retentive memory stood him in good stead. These wide sympathies, and this extensive range of knowledge, made him a most interesting companion in travel. But he possessed yet greater attractions. With a remarkably even temper, without a trace of selfishness or self-seeking, naturally one of the most courteous and considerate of men, yet inflexible in acting up to his own high standards of righteousness and honour, he was emphatically worthy to bear 'the grand old name of gentleman.' To the younger members of the Club long ill-health has made William Mathews hardly more than a name; * but for those elders, now but few, who knew him in his prime, his departure makes a gap which cannot be filled.

T. G. BONNEY.

CHARLES HALFORD HAWKINS.

By the death of the Rev. C. H. Hawkins the Club has lost one of its members of the older school. He was born in 1838, second son of Dr. Francis Hawkins, Physician in Ordinary to the Queen's Household, nephew of Dr. Hawkins, the well-known Provost of Oriel, and brother of Mr. F. Vaughan Hawkins, whose gallant

* His last appearance at a Club dinner was in December 1896.

attempt on the Matterhorn from the south side, in 1860, with Professor Tyndall and the guides Bennen and Carrel* is well known to all readers of 'Vacation Tourists and Notes of Travel.'

He was educated at Harrow and St. John's College, Cambridge, and, after taking his degree, accepted a mastership at Winchester College, where he lived and worked for close on forty years—up to the very beginning of his last illness. This is, perhaps, hardly the occasion for speaking of the serious work of his life, but in lighter moments he was ever 'a fellow of infinite jest, and most excellent fancy,' and by his quaint humours and many-sided interests won for himself the affectionate regard of all who knew him.

Probably he was not well known to many members of the Club, as he never took a prominent part in its management, and, owing to other calls and occupations, had not been able to travel much in the Alps of later years. His climbing was mostly done in the early 'seventies, and he was elected a member of the Club in 1872. As a mountaineer he was, like many others of the older school, not so much a daring gymnast as an enthusiastic lover of the mountains. His object was, not to establish a record up some known peak or force a passage up some hitherto impregnable crag, but to ascend some of the most typical mountains by the most picturesque routes, and enjoy to the full what I may, perhaps, call all the accidents of climbing—the bivouac on the mountain side, the early dawn on the upper snowfields, the mysteries that still lingered over 'those wrinkled hills.' It was, I should say, rather the joy of these experiences, and the love of mountain scenery, that made him climb, than the joy of the act of climbing in itself.

But, whether on the mountain side, or on bye-days below, he was ever a most pleasant companion, full of quips and cranks, and an unfailing source of amusement to those with him. As I write there come back to me, together with the recollections of many climbs in the higher Alps, bright memories of merry days and genial nights in his company at Zermatt and at Pen-y-gwryd under the kindly hospitality of Madame Seiler and Mrs. Owen—experiences which cannot be repeated—memories without which my life, and that of others, would be the poorer.

F. M.

THE ALPINE CLUB LIBRARY.

Recent Guide Books.

Black's Guide to Switzerland, 1901; see Coolidge, W. A. B.

Brusoni, E. Locarno, seine Umgebung und seine Thäler. 8vo, pp. viii, 145; maps, ill. Bellinzona, Colombi, 1899

This is a portion of the 'Guide to the Central Alps,' edited by Prof. Brusoni.

* John Joseph Bennen, of Laax, who was killed in an avalanche on the Haut-de-Cry on February 28, 1864 (*Alpine Journal*, vol. i. p. 288). An appreciation of him as a guide will be found in *Vacation Tourists for 1860*, p. 290. Jean Antoine Carrel, the story of whose tragic death on the Italian side of the Matterhorn is eloquently told by Mr. Whympner in *Alpine Journal*, vol. xv. p. 284.

Coolidge, W. A. B. Guide to Switzerland, with cycling supplement by C. L. Freeston. 8vo, pp. xxx, 245; maps, ill.

London, A. and C. Black, 1901. 3/6

This edition of Black's Guide has been entirely re-written and re-arranged, and new maps have been specially made. The book is primarily intended for the ordinary tourist and the cyclist, but there are also hints for the climber. The print is large and clear, and the paper light in weight.

Joanne, P. Pyrénées. 16mo, pp. 48, xlii, 370; maps, etc.

Paris, Hachette, 1901. Fr. 7.50

This new edition takes the place of the two volumes of the previous edition, and has been issued under the collaboration of MM. Henri Boland and Marcel Monmarche. The book is so put together that it may be divided into three sections without disturbing the binding—a method worthy of imitation by all publishers of guide-books. It is well provided with maps—not all of which, however, are as clear as they ought to be—plans and panoramas, and has all the other excellencies of the well-known series to which it belongs.

Schwaiger, Hch. Führer durch das Wetterstein-Gebirge . . . 2te Aufl. 8vo, pp. xii, 239; map, ill.

München, Lindauer, 1901. M. 4

One of Herr Schwaiger's useful series of local guide-books for tourists and climbers. It is fully illustrated with panoramic views, and has a good map of the range—1/40,000—by E. Waltenberger. The first edition was issued in 1893.

Trautwein's Tirol; bearbeitet von H. Hess. 12te vermehrte Aufl. 8vo, pp. xxvii, 714; maps, plans.

Innsbruck, Edlinger, 1901. M. 7.50

The numerous and clearly printed sectional maps of this guide-book are mostly taken from L. Ravenstein's map of the Eastern Alps, while the general map and a few of the smaller maps are by H. Petters. The name of the editor is a guarantee that climbing is efficiently treated of. A pocket edition, divisible into parts, is also issued at M. 8.50.

New Books (Presented by the Authors or Publishers).

Beraldi, Henri. Cent ans aux Pyrénées. Vol. 4. 8vo, pp. 171.

Privately printed, Paris, 1901

This is the fourth volume of M. Beraldi's delightful, thorough and standard work on the exploration and climbing of the Pyrenees and of the literature connected therewith.

Bourbel, Maj.-Gen. le Marquis de. Routes in Jammu and Kashmir; arranged topographically with descriptions of routes; distances by stages; and information as to supplies and transport. 8vo, pp. xvi, 396.

Calcutta, Spink, 1897

This work contains a list of books and maps on the district.

Burckhardt, Dr. Carl. Profils géologiques transversaux de la Cordillère Argentino-Chilienne. . . Première partie du rapport définitif sur une expédition géologique effectuée par Dr. Leo Wehrli et Dr. Carl Burckhardt. Anales del Museo de La Plata; Seccion geolog. II. Folio, pp. 136; plates. La Plata, Talleres de Publicaciones del Museo, 1900

*Conway, Sir Martin. The Bolivian Andes. A record of climbing & exploration in the Cordillera Real in the years 1898 and 1900. 8vo, pp. xi, 403; ill. London, Harper, 1901. 12/6

*Demidoff, E., Prince San Donato. After Wild Sheep in the Altai and Mongolia. 8vo, pp. xii, 324; map, ill. London, Rowland Ward, 1900

La Plata, Anales del Museo de. *see* Burckhardt, C.

Loughnan, R. A. New Zealand: notes on its geography, . . . Scenery . . . Obl. 8vo, pp. 110; map, ill. Wellington, Lands and Survey Dept., 1901

Among other items contains illustrations and descriptions of the Alps and Glaciers of New Zealand.

* See *Reviews and Notices* in the present number.

- Moore, J. E. S. To the Mountains of the Moon. Being an account of the modern aspect of Central Africa, and of some little known regions traversed by the Tanganyika Expedition, in 1899 and 1900. 8vo, pp. xvi, 350; maps, ill. London, Hurst and Blackett, 1901. 21/- net
- Oberziner, Giovanni. Le guerre di Augusto contro i popoli alpini. Folio, pp. xi, 237; maps. Roma, Loescher, 1900
- O'Connor, Capt. W. F. Routes in Sikkim. Compiled in the Intelligence branch of the Quartermaster-General's Department. Folio, pp. 90. Calcutta, Office of Government Printing, 1900
- A list of the routes arranged in the form of an itinerary, with full descriptive notes as to position, condition, etc., of the different routes.
- *Percy, Earl. Highlands of Asiatic Turkey. 8vo, pp. x, 331; map, ill. London, Arnold, 1901. 14/- net
- Russell, Israel C. A preliminary paper on the geology of the Cascade Mountains in Northern Washington. Extract from the 20th Annual Report of the U.S. Geographical Survey, pt. 2, 4to, pp. 210; maps, ill. Washington, Government Printing Office, 1900
- *Sapojnikof, V. V. The Katun River and its sources. 8vo, pp. vii, 271; maps, ill. (In Russian, with résumé, pp. 15, in French.) Tomsk, Makushin, 1901
- Switzerland. Dictionnaire géographique de la Suisse. Livraisons 9-20, 2me fascicule. Neuchâtel, Attinger, 1901. 9 fr.
- This is the second portion of this very excellent and useful dictionary, containing Bâle-Ville-Bremgarten. It is fully illustrated with maps and pictures. In this section occur articles, with illustrations, on 'Balmhorn,' 'P. Basodino,' 'Beo d'Epicoun,' 'Bella Tola,' 'Bernina,' 'Besso,' 'Bifertenstock,' 'Blumlisalp,' 'Cabane de Boval,' etc.
- Vallot, J., Publiées sous la direction de. Annales de l'observatoire météorologique, physique et glaciaire du Mont-Blanc. Tomes iv et v (planches du tome iv). 4to, pp. 157; plates. Paris, G. Steinheil, 1900
- The principal article is, 'Expériences sur la marche et les variations de la Mer de Glace,' by J. Vallot, pp. 35-157.

Older Books.

- Barrow, John. Summer tours in Central Europe, 1853-4. Bavaria, Austrian Tyrol, North Italy, Savoy, Piedmont, &c. 8vo, pp. viii, 136; map. London, Dalton, 1855
- The author saw Albert Smith's party on Mont Blanc.
(Presented by G. W. H. Ellis, Esq.)
- Bayberger, E., u. Andere. Sing' ma oans! Alpenliederbuch. 8vo, pp. 144. Passau, Abt, 1891
(Presented by the D. u. Oe. A.-V., Section Pfalz-Ludwigshafen.)
- Bonvalot, Gabriel. Through the heart of Asia. Over the Pamir to India. Translated from the French. Roy. 8vo, 2 vols. London, Chapman and Hall, 1889
- Carrel, le Chanoine G. Panorama boréal de la Becca di Nona. Aoste, Lyboz, 1855
(Presentation copy with the Author's signature.)
- Chaîne de la Grivola vue de la Becca di Nona. Panorama and list of ascents. Aoste, Lyboz, 1860
- 3e édition corrigée. Chaîne de la Grivola vue du Pic-Carrel. Aoste, Lyboz, 1862
(The above three presented by Mrs. Wm. Mathews.)
- Gilly, W. S. Narrative of an excursion to the mountains of Piemont. . . . 4to, pp. xx, 279, ccxxiv; maps, plates. London, Rivington, 1824
- A copy of the first edition, with five extra original sepia drawings inserted.
(Presented by C. W. Nettleton, Esq.)

* See *Reviews and Notices* in the present number.

- Massie, Rev. J. W. Recollections of a tour. A summer ramble in Belgium, Germany, and Switzerland. 8vo, pp. xii, 548. London, Snow, 1846.
Pp. 358-482, Switzerland (chiefly Church history), including Chamouni. the description of which and of Mont Blanc is quoted from Talfourd.
(Presented by C. W. Nettleton, Esq.)
- Sprecher, F. Rhetia, vbi Eius verus situs, Politia, bella, foedera, et alia memorabilia accuratissimè describuntur. 32mo, pp. 424. Lugd. Batavorum, Elzevir, 1633
(Presented by F. F. Tuckett, Esq.)
- T(rench), Miss F. M., Aetat. 16. A journal abroad in 1868. For young friends at home. 8vo, pp. 142. London, Bentley (1868)
Chamonix, Rigi, etc.
(Presented by G. W. H. Ellis, Esq.)

Club Publications (Presented by the Clubs).

- C. A. F. Annuaire, 27. 1901
Among the articles are :—
H. Mettrier; Premier passage du Col de la Glière.
J. Delmas; La grande Montagne, Basses-Alpes.
E. Veillard; Dans les Karpates.
F. Leprince-Ringuet; La montagne sainte le T'aé-Houa-Chan.
W. A. B. Coolidge; La légende du Mont Iseran.
Armand Guéry; La peinture de montagne.
J. Bregeault; Sonnets à la montagne.
- C. A. F., Commission des Refuges du. Les Refuges des Montagnes de France en 1901. 8vo, pp. 80. Clermont, Daix, 1901
An account of all the huts belonging to the C. A. F. and others. in Dauphiné, Savoy, the Cevennes, and the Pyrenees; giving all the particulars as to situation, approach, when open, etc., which the traveller requires. 500 copies have been printed; price fr. 1 to members of Alpine Clubs.
- C. A. I. Bollettino, no. 67; vol. xxxiv. 1901
The articles are :—
W. A. B. Coolidge; La catena della Levanna.
A. Ferrari; Nella Catena del Monte Bianco.
F. Virgilio; Le nuove teorie sulla erosione glaciale.
R. Gerla; Il bacino dell' Hobsand.
O. De Falkner; Nelle Dolomiti di Cortina d' Ampezzo.
A. Hess; Selva Nera e Gruppo delle Pale.
— Milan. Annuario 13. 8vo, pp. 313; ill. 1901
Contains full information about Club huts, guides, tariffs, expeditions within two days of Milan, etc.
- Dauphiné, Soc. des Touristes du. Annuaire, 26. 1900
The articles are :—
R. Godefroy; Le massif du Mont Pourri.
L. Bétoux; Les montagnes de la Belle Etoile.
H. Ferrand; Excursions de la S. T. D. au xixè siècle; Congrès de l'alpinisme à Paris; Contribution des Anglais à la topographie du Dauphiné
— Guides, Porteurs et Muletiers. Chalets et refuges. 8vo, pp. 95. 1901
- D. u. Oe., Berlin. Die Berliner Hütte. 8vo, pp. 48, panorama. L. Treptow. (1895)
1901
- Hungarian Club. Jahrbuch. 28. 1901
Among the articles are :—
K. Ritter; Neue Touren in d. Hohen Tatra.
S. Weber; Auf der Weissesee-Spitze.
M. Greisiger; Kulturhistorisches aus der Tatragegend.

- Norske Turistfor. Aarvog. 1901
 Among the articles are:—
 H. J. Haffner; Et par fjeldovergange i Søndmør.
 Wm. Cecil Slingsby; New and old routes up Kviteggen.
 S. A. C. Jahrbuch, 33. 1901
 Among the articles are:—
 W. Flender; Eine Traversierung d Aig. d'Argentiére.
 E. Rochat; Im Mont Blanc Gebiet.
 J. Gallet; Quelques cimes délaissées dans les Alpes bernoises.
 R. Schafer; Frühlingstage in Süds Spanien u. Marokko.
 H. Dübi; Bergreisen u. Bergsteigen in d. Schweiz vor d. 19. Jahrhundert.
 and among the 'Beilagen':—
 Ob den Heidenreben. F. G. Stebler. 8vo, pp. 111; ill.

Pamphlets and Magazine Articles.

- Alpine Pass, An. 8vo, pp. 100-5. In 'Isis,' London; no. 1. January, 1839
 Lucerne to Interlacken by the Joch and Meyringen.
 Baker, E. A. The explorers of Elden Hole, Peak District. 8vo, pp. 354-360;
 ill. In 'The Wide World Mag.,' Newnes, London. July, 1901
 (Presented by the Publishers.)
 Bose, Pramatha Nath. Extracts from the journal of a trip to the glaciers of
 the Kabru, Pandim, &c. (in 1889). 4to, pp. 68. Reprinted from the
 'Records, Geological Survey of India,' xxiv, pt. 1, 1891.
 A very good account of an interesting trip.
 (Presented by the Survey Department.)
 Brunn, D. Turistrouter paa Island. 8vo, pp. 129-168; 121-188; ill. In
 'Danske Turistfor. Aarskr.' 1898; 1899
 Connell, F. The Cup and the Lip. 8vo, pp. 229-238. In 'Cornhill Mag.,'
 Smith, Elder, London; no. 500. August, 1901. 1/-
 A well-written account of risks run by the author at various times while
 mountaineering.
 (Presented by the Publishers.)
 Conway, Sir Martin, *see* Soc. Geogr. de La Paz.
 D. Letters on a tour in Switzerland (5). 8vo. In 'Colburn's New Monthly
 Mag.' 1822
 Deckert, Dr. E. Die Hochketten des nordamerikanischen Felsengebirges und
 Sierra Nevada. 8vo, pp. 1-19; ill. In 'Zeits. Ges. f. Erdkunde, Berlin,'
 xxxvi, 1. 1901
 A topographical and geological description.
 (Presented by the Society.)
 Dooley, Mr. [ps.] An ascent of Popo (Popocatepetl). Reprinted from the
 'Mexican Herald' in 'Climbers' Club Jour.,' III, 2; pp. 176-8. June, 1901
 Font y Sague, M. N. Sota terra, excursio espeleoloch-geologica al Primorat.
 Montanyes de Prades y Alt Panades. 8vo, pp. 34.
 Barcelona, Tip. 'L'Avenç,' 1901
 (Presented by the Publishers.)
 Gallois, L. Les Andes de Patagonie. 8vo, pp. 28; numerous plates and maps.
 Extracted from 'Annales de Géographie,' x, Mai, 1901.
 Paris, Armand Colin (1901)
 A review of the work of Dr. Moreno on the Argentine side, and of Herr
 F. Steffen on the Chilian side, accompanied by many of the photo-
 graphs and maps published in the 'Argentine-Chilian Boundary
 Report;' and also by some hitherto unpublished photographs. The
 pamphlet will be useful to those unable to obtain the original
 'Report,' published in five quarto volumes.
 (Presented by the Publishers.)
 Hamberg, Axel. Undersökningar i Sarjekfjällen. Akademisk Afhandling . . .
 af Filos. Fakult. i Uppsala. 8vo, pp. 102; maps, ill.
 Stockholm, Central-Tryckeriet, 1901
 (Presented by the Royal University of Upsala.)

- Horder, W. G. The story of a mountain hotel (Saas Grund). 8vo, pp. 109-112; ill. In 'Travel,' London. July, 1901
The article contains reproductions of signatures of Lord F. Douglas. F. J. A. Hort, and others.
- Hübl, A. v., *see* Karlseisfeld-Forschungen.
- Karlseisfeld-Forschungen der k. k. Geographischen Gesellschaft. 1. Theil: Die Topographische Aufnahme des Karlseisfeldes in d. Jahren 1899 u. 1900: von Arthur v. Hübl. Abhandl. d. k. k. geog. Ges. in Wien, III. Band. 1901, No. 1. 4to, pp. 25; maps, ill. Wien, Lechner, 1901
The first of three papers. The maps indicate fully the very numerous and careful measurements and survey made of this glacier (Dachstein group), which has been under continuous observation since 1840.
(Presented by the Society.)
- Klingenberg, S. En Bestigning af 'Trolla,' 9de August 1895. 8vo, pp. 30-6. In 'Trondhjems Turistfor. Aarskrift.' 1896
- La Paz, Soc. geogr. de. Boletín I, 1. 1898
Contains, pp. 182-193, Proceedings of the Society's meeting, at which Sir Martin Conway described his ascent of Illimani, and a letter from Sir Martin, 'Excursión al Illampu.'
(Presented by the Society.)
- Martens, D. B. Erindringer fra en reise til Hardanger i Juli maaned 1840. 8vo, pp. 21-33. In 'Turistfor. f. Bergens . . . Aarboeg.' 1895
- Mountaineering, Recent. 8vo, pp. 126-148. In 'The Quarterly Review,' 387. London, Murray. July 1901. 5/-
(Presented by the Publisher.)
- Ranzow, F. Bergkrankheit. 4to, pp. 366-8. In 'Ueber Land u. Meer,' Dent. Verlags-Anst., Stuttgart. Hft. 13, 1901. M. 1
(Presented by the Publishers.)
- Reid, H. F. The variations of glaciers, vi. 8vo, pp. 250-4. In 'Journ. of Geol.,' U.S., ix, 3. April-May, 1901
Summary of 5th ann. report of the International Commission.
- Ronaldshay, Earl of. Across the Himalayas in Mid-Winter. 8vo, pp. 207-217. In 'Blackwood's Mag.' August 1901. 2/6
(Presented by the Publisher.)
- Ruskin, John, Notes by; on his drawings by J. W. M. Turner, R.A. 8vo, pp. 65. Exhibited at the Fine Art Society's Galleries, 148, New Bond Street, 1878 & 1900.
Many of the subjects are mountain views in Switzerland and elsewhere.
- Spender, H. Up the Croda di Lago. 8vo, pp. 109-117; ill. In 'Pall Mall Magazine.' Sep., 1901
- Steele, L. J. In the heart of the Canadian Rockies. 8vo, pp. 243-248; ill. In 'Travel,' London. Oct. 1901
Describes an attempt on Mt. Assiniboine.
- Stock, E. E. A scramble on the Wellenkuppe. 8vo, pp. 332-336; ill. In 'The Wide World Mag.,' Newnes, London. July, 1901
(Presented by the Publishers.)
- Treptow, L., *see* D. u. Oe., Berlin.
- Vandal, A. Fjords de Norvège. 8vo, pp. 32. 'Bibl. ill. Simond.' Paris, Plon, [c. 1898]
- Workman, Mrs. F. B. A woman above the snow line. 8vo, pp. 568-573; ill. In 'The Lady's Mag.,' Pearson, London. June, 1901
(Presented by the Publishers.)

Other Items.

- 5 Pictorial post-cards, with coloured mountain views by E. T. Compton. Edlinger's Verlag, Innsbruck
Exceedingly good—almost equal to the original water-colours from which they are taken.

Studer, G. Panorama vom Mattwald oder Simmelhorn im Wallis. Nach der Natur gezeichnet den 16. Juli 1840.
(Presented by Mrs. Wm. Mathews.)

The following is an analysis under subjects of the more important recent items in the above;—

Africa; see Moore.	Huts; see C. A. F., C. A. I. Milan, D. u. Oe. Berlin.
Altai; see Demidoff, Sapojnikof.	Italian Alps; see Brusoni.
America, North; see Deckert, Russell, Steele.	Mont Blanc; see C. A. I. Boll., S. A. C. Jahrb., Vallot.
Andes; see Burckhardt, Conway, Gallois, Soc. Geog. La Paz.	New Zealand; see Loughnan.
Eastern Alps; see C. A. F. Ann., Hungarian Club Jahrb., Karlseisfeld, Schwaiger.	Norway; see Klingenberg, Martens, Norske Turistf.
Himalayas; see Bose, Bourbel, O'Connor, Ronaldshay, Workman.	Pyrenees; see Beraldi, Joanne.
Historical; see Oberziner, S. A. C. Jahrb.	Speleology; see Baker, Font y Sague.
	Sport; see Demidoff.
	Switzerland; see Coolidge.

ALPINE ACCIDENTS IN 1901.

ANOTHER Alpine season has passed, a season which a well known mountaineer recently described to us as, 'taking it as a whole in point of weather, one of the most unsettled and variable of recent years.' Accidents might, therefore, be expected—accidents, that is, which might properly be so described. We have not made for ourselves nor seen in any Alpine publication a full list of the season's accidents, nor a statement of the number of deaths which have again to be deplored, whether in sub-Alpine districts or amongst the great peaks; but we know that the roll of victims is a long one. We hoped when we proceeded to inquire into the most important so called accidents that we should be able to discern an improvement upon past years in the way of observance of common-sense precautions—of precautions, that is to say, recognised by all who can claim to speak with authority on the subject. But what do we actually find?

We find in 'Alpina' for August 15, p. 105, that on July 17 Jakob Müller, aged 19, was killed on the Piz Grialetsch; he was climbing *alone*. In the 'Revue Alpine' of August 1901, pp. 248-9, we read that Charles Festuz, a young man of Vevey, arrived at the Rambert Cabane on the evening of July 18 to make the ascent of the Petit Muveran. He left the Cabane *alone at 9 o'clock at night*, and reached the summit at 10 (according to a note which he left there). In descending he lost his way, and 'dans l'obscurité tomba dans le vide.' He fell 800 mètres. Nothing can exceed the simple pathos of the story in the 'Revue Alpine': 'Ce malheureux était accompagné par sa fiancée, qu'il laissa à la cabane pour aller accomplir son triste exploit.'

We ourselves this summer met a porter who was crossing the Col du Géant *alone*. Will it be believed that inquiries elicited

from a credible informant the statement that *this same man, in crossing the same col alone last year, fell into a crevasse, was rescued with difficulty, was laid up for some time, and had to pay a sum which must have been to him serious for his conveyance to his home?* The quick-witted Greek said *παθήματα μαθήματα*, but it would appear that amongst a large number of those who venture on mountain expeditions the lessons of experience, however dearly purchased, go for nothing.

With reference to the accident on the Aiguille du Tacul we read in the 'Revue Alpine' of September 1901, p. 286, that on August 11 *fourteen* members of one of the small Genevan clubs, 'Gyms Montagnards,' started for the Tacul with *one* guide. It was pointed out to them that the excursion required care and prudence, owing to the frequent falls of stones, which render the mountain dangerous, though technically it is an easy ascent. But, expostulations notwithstanding, the party set out; they reached the summit in safety, but on the descent, whilst they were putting on the rope to cross a snow couloir, there was a clap of thunder followed by a crash. A huge stone struck M. Auguste Porchet on the chest and carried him away. All haste was made to his assistance, but though he was still breathing when found he soon expired in the arms of his friends. Here too there is a pathos in the story which almost disarms further criticism. M. Porchet was only thirty-one and leaves a widow and a young child.

The accident on the Matterhorn which was reported in our last number * was apparently due to a very grave error of judgment. That so large a party—there were five travellers, of whom two were ladies—should have been accompanied by only one guide and one porter may seem hardly discreet, but we accept Mr. Mallam's assurance when he says of the expedition for which they started, the Tête du Lion, 'This is a four-hours' climb, and one that they were quite capable of and properly equipped for.' (The accident happened on July 23, and they had been staying at Breuil since the beginning of July.) But that they should change their plans *en route*, and ascend to the Matterhorn hut, instead of the Tête du Lion, an expedition 'for which none of them had experience enough, and for which too they were hopelessly underguided' (we quote from Mr. Mallam's letter), was surely a very grave error of judgment indeed. The guide may have been to blame for not absolutely refusing to agree to the change of plans, but it is easy to understand how difficult he must have found the position, and how strong the inducement to follow the imprudent course must have been.

The 'Rivista Mensile C.A.I.' for August 1901, pp. 302-3, gives a narrative of the accident on the Piz Roseg on August 6, in which Professor Joseph Gugelloni lost his life. The accident took place at a height of about 3,450 m. Signor Gugelloni's companion, Signor Mario Roselli, and the guide Bonomi had surmounted a

* *Alpine Journal*, vol. xx. p. 490.

short 'canalino' without difficulty, when Dr. Gugelloni, who was following them *unroped*, fell and was killed. The accident is a particularly sad one, as Dr. Gugelloni, who was only twenty-five years of age, was a devoted lover of the mountains, and had made many expeditions in the Monte Disgrazia district, including the first ascent of the Disgrazia itself from the Passo di Cornarossa by the difficult S. ridge. While we heartily sympathise with our Italian colleagues in the loss of so devoted a mountain lover we must point out once again the danger of even a momentary imprudence—such an imprudence as it is so easy to commit in a moment of excitement. It is pleasant to read that the conduct of the guides (those of two other parties gave every assistance in their power) was deserving of all praise. The 'Rivista' mentions the guide Schenatti as particularly deserving of commendation. We learn from the 'Rivista C. A. I.' for October 1901, pp. 390-1, that on August 28 an accident, very similar to that on the Piz Roseg, happened on the Pizzo Cervandone, by which Signor Camillo Pavesi lost his life. He was at the time of the accident climbing *unroped*. The 'Rivista' makes some remarks on the use of the rope with which we desire to express our entire concurrence—remarks called forth by this accident and that on the Piz Roseg, to which we have already alluded.

We read in the 'Mitt. D. Ö. A. V.' October 15, p. 239, that on October 6 the well known climber Otto Melzer and Ignaz Spöttl, in attempting the E. face of the Jägerkarispitz, lost their lives. Bad weather is supposed to have been the cause of the accident.

The accident near the Roththal Sattel on July 8, by which Herr Naef-Escher and the porter Minning lost their lives, would seem to have been an accident properly so called. We read in the 'Revue Alpine' for October 1901, p. 314, that the caravan had arrived 'près de la crevasse du Roththal' (they had started from the Concordia Hut for the Jungfrau), 'lorsqu'ils furent engloutis sous une avalanche partie des hauteurs.' We are glad to learn that the guide Zraggen, the leader of the party, and the two Baumanns, who were in front of them with an English party, behaved exceedingly well.

We regret to have, at the last minute, to record an accident on the Wetterhorn, where Fritz Boss was killed when chamois-hunting.

The much regretted death of Archdeacon Pelham Burn, on the Croda da Lago, was not, as at first reported, an accident, but was due to heart failure.

We are thankful that no member of our Club has been lost owing to an accident during the past season, but how much more thankful should we have been if the accident roll had been confined to such misfortunes as could truthfully be described as accidental!

Would we fain wash our hands of Alpine accidents? It cannot be done. Those who claim to lead the way in climbing, of whatever nationality they may be, must do all in their power not only to pursue their noble sport with the prudence which it so obviously calls for, and so set a good example; they must also endeavour to

make those who are ambitious of following them understand fully the dangers of their engrossing pursuit.

Non ignara mali miseris succurrere disco,

said the Carthaginian queen. Let us all who have experience, possibly dearly bought, help the ignorant, the soon to be wretched if they do not learn wisdom, by insisting again and again on the imperative duty of observing the recognised rules of the pastime to which we owe so much.

NEW EXPEDITIONS IN 1901.

Tarentaise District.

GRANDE CASSE.—DESCENT BY THE JAGGED EAST ARÊTE CONNECTING THE MOUNTAIN WITH THE GRANDE MOTTE.*—On Friday, July 19, Messrs. A. M. Bartleet and H. J. Mothersill, with the guides Adolf and Josef Schaller and Maximin Gaspard, climbed the Grande Casse by the ordinary route from the Vanoise Club hut, reaching the summit at 7 A.M. Without delay they began the descent of the E. arête. At 7.30 they were forced off the arête and compelled to traverse to the S. for about $\frac{1}{2}$ hr. At 8 A.M. they regained the arête, but at 8.40 they were again obliged to traverse to the S., this time for $\frac{1}{4}$ hr. Soon after 9 A.M. they had to traverse to the S. for twenty minutes or so, but they then found themselves once more on the arête, and at 9.30 were on a snow-covered, flat-topped prominence, or hump, that is very noticeable from the valley of the Leisse. At the east end of this hump the leading guide went on alone, with 60 ft. or 70 ft. of rope, to prospect, but it was about $\frac{1}{4}$ hr. before he could find a way. Then the second man went down to him provided with a piton. He found the leader stationed on the top of a small gendarme that is also very noticeable from the valley, just to the E. of the flat-topped hump. The rock of this gendarme was so rotten that the guide had to spend a considerable time in tearing slabs from the top of it before he could find anything solid enough to hold the piton. The party then proceeded slowly downwards, descending the gendarme with the help of about 60 ft. or 70 ft. of spare rope doubled. This rope was left behind hanging from the piton. The party was soon compelled to traverse to the S. for so long that it seemed as if the arête had been altogether abandoned, but it was regained at 12 o'clock. Progress was then made until about 3.15 P.M., the party being sometimes on the arête, and sometimes traversing for a little to the S. It may be here mentioned that at no time between about 9 A.M. and 3.15 P.M. could the party have got off the mountain either to the N. or S., owing to precipitous cliffs that barred the descent. The climbers then

* This ridge was ascended in 1900 (see *Rivista Mensile*, 1900, p. 390) by S. A. Ferrari with the guides E. Sibille and P. Damé.

(3.15 p.m.) saw a feasible gully below them by which the valley could be gained, and decided to descend to it. Another piton was fixed, and another spare rope (of about 30 ft.) attached, as a safeguard for the last man, the rocks being very rotten where the arête was finally bidden adieu to. This rope was also left behind.

In about $\frac{3}{4}$ hr. the difficulties were over, and a meal was partaken of at 4 p.m. near the top of the gully. Then the easy rocks of the gully were descended for some distance, until it became possible to traverse the lower slopes of the mountain (consisting at first chiefly of grass and afterwards of débris) in a more or less westerly direction towards the Col de la Vanoise and the Club hut, which was reached about 8.30 p.m., after an expedition of some nineteen hours.

The point where the party finally left the arête, and where the second spare rope was left hanging, was at a deep depression (as seen from the valley of the Leisse) just W. of the last large snow-covered prominence, or hump, to the W. of the Col de la Grande Motte. This col consists of the long, level snow ridge that forms the most easterly portion of the arête, and leads straight to the rocky west face of the Grande Motte. It should be said that almost throughout the rock is extremely rotten, and that on this account the arête is dangerous, and not to be recommended.

Eastern Graians.

TERSIVA. FIRST ASCENT BY THE EAST RIDGE (3,513 m. = 11,526 ft.). *June 24.*—This new expedition was effected by SS. Garelli, Giacchino, Pollano, Bravo, Verani-Masin, and Nai, with the porter Aimé Maquignaz, of Val Tournanche.*

Mont Blanc District.

DAMES ANGLAISES (3,604 m. = 11,825 ft.).—H.R.H. the Duke of the Abruzzi, with the guides J. Petigax, A. Fenouillet, L. Croux, and C. Savoye, of Courmayeur, on August 5 reached a bivouac at 2,900 m. on the N.E. wall of the Dames. At 10 o'clock on the morning of the 6th they reached the notch between the southern and central points. The actual summit of the central point proved invincible, though it was almost conquered, but at 2.30 the summit of the southern point was attained. At 7.30 the bivouac was regained, and Courmayeur reached at noon on the following day. This account is summarised from the 'Rivista' of August 1901, p. 1.

MONT BLANC BY THE S.W. (BROUILLARD) RIDGE. *July 20.*—This ascent has been accomplished by SS. J. and G. B. Gugliermi without guides, but accompanied by the porter J. Brocherel, of Courmayeur. The party took five days in going from Courmayeur to Chamonix, bivouacking three times on the way, viz. at 3,900 m., 4,800 m., and on the summit. To the peak with the height

* *Rivista*, July 1901, pp. 246-7.

4,472 m. on Kurz's map they gave the name *Picco Luigi Amadeo*, in honour of the Duke of the Abruzzi.*

COL DE L'AIGUILLE VERTE (3,782 m.?)—The same party crossed the Col between the Aiguille Verte and Les Droites.†

LA NOIRE (Kurz's map), AIGUILLE NOIRE (Italian map), or LA NOIRE AIGUILLE (Mieulet's map) (3,427 m. = 11,244 ft.). August 18. —Mr. G. Yeld, with Sylvain and Abel Pession, of Val Tournanche, ascended this peak, as to which the 'Climbers' Guide' says, 'No information.' They went from the Col du Géant directly to the foot of the peak, and then climbed to the top by the rocks to the (true) right of the big couloir, which is a conspicuous feature in views of the ridge from the W. This route brought them out a little to the S. of the first pinnacle, the foot of which was reached at 7.20, the Col du Géant having been left at 5.20, slight halts included. There were five pinnacles, the most N. of which turned out to be the highest, and was reached at 8. The climbing near the top was interesting and not easy. The one drawback to the climb was the number of loose stones and the rotten character of the rocks in many places. On the descent, just before reaching the glacier, they plunged into the couloir before spoken of for a few steps, but the risk, which would have been great if the sun had been shining upon it, was minimised by the fact that the whole of the couloir was still in the shade. The Col du Géant was reached in about 2 hrs. from the summit.

LES ROUGES.—There are several rock towers in the arête between La Noire and the point where a massive ridge (snow-clad) runs down to the Géant glacier, without name on the maps. These are of red rock, and the name Les Rouges seems appropriate to them. The highest point, as the party satisfied themselves on the spot, is the little two-headed peak next to the junction of ridges above mentioned, though it is not the most conspicuous of these needles. The same party, ascending from the Col du Géant, and mounting by the ridge mentioned above as running down to the Géant glacier at right angles to the Aiguille du Géant—La Noire ridge, reached the highest point between Les Rouges and the snow dome immediately under the A. du Géant without any difficulty. They then went down the ridge towards Les Rouges. On this ridge they found traces of previous visitors in the shape of a sardine tin and a bottle. When the foot of the highest of Les Rouges was reached it was found to be impossible to get up, as the rock face overhung for some 8 or 10 m., say about 30 ft. Access on the E. was also impossible. Eventually the guides descended on the W. side, and climbing a very difficult couloir reached a point under the summit, but well above the impossible rock-face, at the foot of which the traveller had been left. By the help of two ropes the traveller now reached the guides, and then the summit. The descent of the difficult rock-face was made by all the party by skilful use of the rope on the part of the guides. The top was

* *Rivista*, July 1901, p. 246.

† *Ibid.*

reached at 8.30, the Col du Géant having been left at 4.35. Halts probably took 30 min. The Col was regained—a long time having been spent in a halt for lunch—at 11.40. The climbing on the actual peak was distinctly difficult.

Bernese Oberland.

NORTH MAASPLANKJOCH.—DIRECT PASS BETWEEN THE TRIFT HUT AND THE GÖSCHENEN ALP (HEIGHT ABOUT 3,360 m.).—On July 19, 1901, Mr. Legh S. Powell, with Heinrich Zurfluh, of Meiringen, made a new and very direct pass across the ridge separating the Triftthal from the Göschenenthal. The part crossed lies immediately to the N. of the Maasplankstock. The time occupied from the hut to the Damma Gletscher Hotel, in the Göschenenthal, including two short halts, was 6½ hrs.

The route lay across the arm of the Trift Glacier, which lies between the westerly spurs of the peaks of the Thierberg and of the Maasplankstock, as far as a short and easy couloir near the termination of the broad western spur of the Maasplankstock. The time to this spot was 40 min. This spur was now ascended, the ascent to the watershed occupying 1 hr. 40 min. more. No difficulty of any kind was encountered as far as this point, the rope not even being required. A short distance to the left—*i.e.*, N. of the crest attained—lie two steep and continuous snow couloirs on the Göschenenthal side descending to the Kehlen Glacier. The further or more northerly appeared to be the least steep and was therefore followed. The descent, although very steep and requiring considerable care, was not impracticable, and was effected in 1 hr. 20 min. From the bergschrund the route lay across the Kehlen Glacier, the further side being easily gained in 35 min., whence the hotel was reached in 1¼ hr. more.

The only other recognised pass that appears to have been made between these two points is the Maasplankjoch, which lies at some distance to the S. of the Maasplankstock. The route taken in crossing this pass is more circuitous, and, as there appears to be glacier as well as rock difficulty, the time required to traverse it is decidedly longer than that necessary for the new one here described.

Bernina District.

PIZ PRIEVELUSA.—On September 1 Dr. E. Kingscote and Mr. Alexander, with the guides Schocher and Platz, ascended this peak from the Prielvelusa Sattel, and descended by the rocks to the Boval hut. The Tschierva hut was left at 2.20 A.M., the Prielvelusa Sattel reached at 4.10, and the summit at 10 A.M. The descent was begun at 11 A.M., and the Boval hut reached at 4.30 P.M. It was a most interesting climb.

Dolomite District.

LA CEDEL (SORAPIS GROUP) (9,080 ft.) BY THE N. RIDGE.
August 25.—A party, consisting of Miss K. Slingsby, Messrs. W. C.

and W. E. Slingsby, and Herbert Rathbone, made what is believed to be the first ascent of La Cedel by this route. Having passed through the Faloria forest from the inn at Tre Croci they climbed by steep crags to a snow field in the northern lap of the mountain, which presumably affords the natural way up the peak. The party, however, left the snow field, and climbed up to the ridge on the west side, and, after a ridge climb of no great difficulty but of much interest, they reached the summit of the mountain. On the descent they turned down a steep chimney to the upper part of the snow field, and by doing so avoided some awkward slabs. Good glissades brought them to their former route, by which they returned to Tre Croci. Two of the party had previously reconnoitred the mountain from the S.

NORWAY.

The Söndmøre Alps.

SMÖRSKRETTIND BY THE WEST RIDGE (5,241 ft.). *August 28.*—Mr. Herbert Kynaston, with Lars Haugen, of Fibelstadhaugen, had the good fortune to make the ascent of Smörskredtind by an entirely new route, which has added another fine rock climb to the already considerable list of good expeditions which attract mountaineers to Norangsdal.

The first ascent of this mountain was made in the year 1884* by a party who, the same day, made the first tourists', and second actual, ascent of Slogen. They tried at first to climb it from the top of the little snow pass on the N., but were defeated.† Then they descended a few hundred feet down the glacier on the E. side of the mountain and found a way to the summit from there. They descended by the western face to the top of the Skylstadbrække pass.

The W. ridge, the ascent of which is now recorded, descends into the woods below the top of this pass, and forms the profile of the mountain when viewed from the hamlet of Skylstad. The ridge also bounds the W. face.

Mr. Kynaston and Lars reached the base of the actual narrow ridge in about 2 $\frac{3}{4}$ hrs. from Øie. At first the rocks were interesting rather than difficult. By degrees the ridge grew steeper and narrower, and ahead a high crag towered ominously in front, and, apparently, threatened defeat. On reaching it, however, it looked more hopeful. Lars made a good start on the S. side, and cautiously worked up to a place where he found good anchorage, and in time the top of the crag was reached. From here up to the very top the ridge was remarkable for its knife-edge character, which necessitated the turning of certain portions by traversing the face just below and grasping the edge with the hands, as is the case on

* *Alpine Journal*, vol. xii. p. 267.

† This difficult ascent was afterwards made by Messrs. C. W. Patchell and A. B. S. Todd. *Alpine Journal*, vol. xx. p. 47.

some of the extraordinary flakes of rock which form little peaks on the skyline of the Fuss Hörner near the Bel Alp. This type of structure, alternating with steep faces, afforded much interesting climbing. Here and there an easier way might have been found on the N. side, but the party kept, practically, to the ridge the whole time.

The time from Øie to the cairn on the summit was just under 6 hrs., inclusive of short halts. Three hours were occupied in actual rock-climbing. This is the most direct route from Norangsdal, and may be looked upon as a rival of the ridge climb up Kviteggen direct from Fibelstadhaugen,* on which the same skillful guide led a party to victory twelve months earlier.

W. C. S.

CANADIAN ROCKY MOUNTAINS.

We have received the following notes of new ascents from the Rev. J. Outram.

[N.B.—The altitudes given are all approximate, mostly arrived at by comparison of aneroids, including a 'Watkin' on some peaks. There are no mountains over 12,000 ft. high known S. of the Canadian Pacific Railway, or for some distance to the N.]

1. MOUNT VAUX (alt. c. 10,600 ft.). *July 16.*—Professor Fay, of Boston, U.S.A., Mr. J. H. Scattergood, of Philadelphia, U.S.A., and myself; guide, C. Häslar. Leaving Field (alt. 4,050 ft.) about noon on July 15, we went 5 miles W. on an engine to Ottertail Bridge, and then struck up Ottertail Creek by a fair trail for 3 miles, crossed the stream, and ascended by trackless woods on the Eastern slopes of Mt. Hurd to a high camp about 6,700 ft. up. Next morning, starting at 4.30, we climbed by rocks and a steep snow slope to the pass between Mt. Vaux and Mt. Hurd, and thence by rock arête and over a snow dome to the fine glacier which clothes Mt. Vaux on the Southern side and stretches away to the head of the Ice River Valley. Forty minutes further took us to the summit, which we reached in a thunder-storm accompanied by driving hail and snow, at 10.45. We remained only $\frac{1}{2}$ hr. on the top, owing to the intense cold, but got some fine views piecemeal. The descent was made by the glacier and lofty cliffs into the Ice River Valley, and camp regained at 4.50.

2. MOUNT CHANCELLOR (alt. c. 10,400 ft.). *July 30.*—Messrs. J. H. Scattergood, of Philadelphia, and G. M. Weed, of Boston, and myself; guide, C. Häslar. An attempt made on July 20 by the Mt. Vaux party, *via* a spur into Ice River Valley and the long ridge S. of the mountain, having failed through lack of time to negotiate the arête, more than a mile long, and broken by numerous towers and gendarmes, we went on July 29 by train to Leancoil, crossed the Wapta River, and bivouacked high up on the Western slopes (6,400 ft.). Two obvious routes suggested themselves for attack, and, starting at 3, we first attempted the direct rocky

* *Alpine Journal*, vol. xx. p. 267.

Western arête, but were turned back by a lofty cliff, and after losing 6 hrs. descended into the deep, snowy valley leading to the col S. of the main peak, our alternative way. This was quite easy to the rock and snow col wall, and the ridge was reached at 12.20 (alt. c. 9,800 ft.). From thence it was slow work by awkward rocks, mainly pitched at a steep angle, slab-wise, as the snow was in dangerously avalanching condition. We remained on the summit, which was crowned with a fine cornice, from 3 to 4.15, enjoying a magnificent panorama and busy with observations and photography. The descent was made by the same route to camp at 9 P.M., and the return to Field next morning.

3. KIWETINOK PEAK (suggested name) (alt. c. 9,600 ft.). August 8.—With guides, Jos. Pollinger and Chr. Kaufmann. At 5.30 we left camp in the Upper Yoho Valley (alt. c. 6,800 ft.) and proceeded up the valley to the pass leading to the Kiwetinok River (c. 8,800 ft.) in 2 hrs.; thence, skirting the peak on the E. snow slopes, we gained the N.E. ridge and followed it to the summit in 1 hr. Returning, we kept along the ridge, over a small intervening point, to Station 18 of the Government Survey (alt. c. 10,000 ft.), and descended by its Eastern glacier to Insulated Peak. On the way we discovered a large porcupine on the edge of a great crevasse, at an elevation of about 8,800 ft., 1,500 ft. above timberline, and took a photo of him, as the record climber of his species. From Insulated Peak we came straight down to camp at 2 P.M.

4. EMERALD GROUP, 3 peaks (alt. c. 9,800 to 10,200 ft.). August 9 and 13.—With guides, Pollinger and Kaufmann. We ascended the highest peak of the group (c. 10,200 ft.) on August 9 from the Upper Yoho camp by way of the Emerald Pass. Starting at 6.50 we gained the glacier at 7.45, and by good going reached the col (c. 9,800 ft.) at 8.50 and the summit at 9.35, by steep snow slopes and rocks. Owing to bad weather we only remained 15 min., and decided to return by the same route, arriving in camp at 11.25.

On the 13th we climbed the second highest peak, leaving camp at 8.30, and mounting the glacier descending from the col on the N.E. side of the highest peak for $1\frac{1}{2}$ hr. We then took to the rock arête on our left, and ascended by it and the steep snow slopes on the N.W. face to the top at 11.30 (c. 10,000 ft.). At 12 we went on by the N.E. ridge to the slightly lower Angle Peak above the Upper and main Yoho Valleys, and, following the arête, which turns here at right angles, came to Michael's Peak, climbed last year by Prof. Michael and Häsler, and about the same height as the Angle Peak. We remained here an hour, and then crossed the glacier directly to the col between the highest and second peaks (35 min., alt. c. 9,500 ft.), and descended by the finely crevassed glacier to camp in 42 min. more.

5. MT. HABEL (alt. c. 10,600 ft.). August 15.—Mr. E. Whymper and myself. Guides: C. Klucker, J. Pollinger, and C. Kaufmann. We started at 4.45 from our Upper Yoho camp, and ascended

through woods and up the glacier below Insulated Peak to the col below its eastern cliff (alt. c. 8,700 ft.). A sharp dip of 300 ft. took us to the wide expanse of the Habel Glacier, along which we went steadily for 2 hrs. over excellent snow to the rocks at the base of Mt. Habel. After $\frac{1}{2}$ hr. rest, we mounted the glacier on the S.E. side of the mountain, passing some large schrunds, and ascending by increasingly steep slopes to the bergschrund, which was crossed by a convenient bridge, and a sharp pull up a pretty straight-up wall of snow landed us on the rocky S. arête. From thence, after a 25 min. halt, we climbed by easy rocks and shale to the summit ridge, narrow and rocky, topped by a grand cornice. Here we remained from 11.15 till 1.30, enjoying a magnificent panorama, especially towards the N.W. and N., where the giants of the Rockies lie, with the Freshfield Group, Mt. Mummery and Mt. Forbes nearest to us. Our homeward way was by our morning's tracks, and the snow was fortunately still in good order, so that, with two $\frac{1}{2}$ hr. halts, we arrived in camp at seven o'clock.

6. **MT. COLLIE** (alt. c. 10,500 ft.). *August 19.*—Same party as for Mt. Habel. From a camp at the head of the main Yoho Valley, about 15 min. from the end of the Wapta glacier snout, and about 6,000 ft. in elevation, we started at 4.50, and took to the ice at its snout, ascending for about an hour by the glacier, and then by pleasant slopes on the S.W. side for another hour. Thenceforward our route was wholly over ice and snow, leading up the middle of the upper glacier on the W. of the main Wapta glacier and so to the depression below the S.E. face of the mountain. Here we turned to the left, crossing the bergschrund, and ascending steeply to the S. arête, which we struck about 400 ft. below the summit at 10.40, and halted for $\frac{3}{4}$ hr. A fairly steep snow arête, with a few traverses on the Eastern slope, took up to the top at 12 o'clock. The summit is formed by the junction of three steep ridges, and was snow-capped, except for a small space along the top of the Western precipice. Unfortunately the view was almost wholly obscured by the dense smoke of some huge forest fires, and observations were impossible. After $2\frac{1}{2}$ hrs. on the peak, we returned by the same line as was taken in the ascent, leaving the upper glacier at 4.40, and getting to the camp at 6.40.

7. **TROLLTINDERNE** (alt. c. 9,600 ft.). *August 21.*—Same party as for Mt. Collie. From the same camp we left at 7.25 to ascend this shattered ridge and peak, projecting from the massif of Mt. Balfour to the W., went to the Wapta glacier snout, which we crossed, and descended the left bank of the Yoho river for about 15 min., and then commenced climbing up on the right bank of the cascade that falls from the glacier N. of the Trolltinderne. At 8.50 we reached the top of the steep ridge, crossed the stream, and ascended by easy slopes diagonally to the base of the Trolltinderne cliffs, where we halted for 15 min. Striking to the right, we made our way up the loose shale and scree of the main ridge till at 11.20 we arrived at the foot of the square tower that crowns the mountain.

It is about 100 ft. high, with sheer precipices on three sides, and only accessible by the Western side, by which the ascent to its base is made. Here the rocks were broken sufficiently to enable us to scramble to the top by large smooth ledges, sloping slightly to the right, with vertical faces 5 ft. or 6 ft. high. The W. face of Mt. Balfour immediately in front is a fine sight, and two icefalls on our right over a perpendicular wall, uniting the upper and lower glaciers, were most interesting. We remained till 3.30, and, descending fairly rapidly, were back in camp by 6 o'clock.

8. BALFOUR PASS, between Mts. Balfour and Gordon (alt. c. 8,400 ft.). *August 22.*—With guides Pollinger and Kaufmann. We left camp (as above) at 6 A.M., and crossed the Wapta glacier snout, making our way thence along the *débris* on the E. side of the glacier, skirting the shoulder of Mt. Balfour till we reached, at 7.15, the lateral valley which separates that mountain from Mt. Gordon. We ascended by a rising succession of flats, divided by ridges from 100 ft. to 200 ft. high, to the base of the glacier at its head in half an hour more. The ice on the Gordon side offers an easy route, and a remarkable medial moraine marks out the line right, across the pass, curving under the Northern cliffs of Mt. Balfour. The summit of the pass is rather level, and, with the névé in good condition, we arrived at 8.30 (fast going). Shortly afterwards Mt. Hector and the Lower Bow Lake came into sight, and we descended the Balfour glacier to the icefall; then, crossing to the right bank, we skirted the base of the cliffs that separate the main Balfour glacier from a large tributary which joins it from the S., and descended that branch to its junction, and so to the end of the glacier, which has an enormous cavern at its apex, with a large stream issuing from it. Our time thus far was 4 hrs. The Lower Bow Lake was soon reached, and we had a rough time skirting its trackless shores. After lunch, for which we halted $\frac{3}{4}$ hr., we crossed the Bow river at 1.30, and struck the trail to Laggan at 1.50. Pushing on at our usual rapid gait, we arrived at Laggan station at 6.10, $\frac{1}{2}$ hr. of halt being allowed for refreshments *en route*.

9. CATHEDRAL MOUNTAIN (alt. c. 10,100 ft.). *August 26.*—With guides C. Klucker and J. Bossonay. Leaving Field at 5.25, we walked up the railway track for about $3\frac{1}{2}$ miles, turning up the slopes at 6.30 about 500 ft. above Field. Owing to a misunderstanding as to our route, this was too far, and we had to work across diagonally to the W. ridge, which we crossed at 8 o'clock at 7,000 ft. elevation, and traversed extremely loose slopes of rocks and scree under the shattered Cathedral crags. Crossing several gullies and rock-ribs, we reached a steep couloir, descending from the col between the crags and main summit immediately to the left of the latter's precipitous cliffs. A sharp climb up this gully, on very steep snow, with occasional détours on to the jagged rocks on one side or other, brought us to the col at 10.30, and easy snow arêtes led to the summit at 11.12. The mountain is very rotten and shattered, and stone avalanches are of constant occurrence. Two

hours were spent on the top, and after retracing our steps to the col (c. 9,900 ft.), we descended by the glacier to the N.E. into Cataract valley, and so to Hector station (3.30), from whence we walked along the railway to Field at 5.45.

10. MT. ASSINIBOINE (alt. c. 11,800 ft.). *September 8.*—With guides Chr. Häsler and Chr. Bohren. This mountain has been termed 'the Matterhorn of the Rockies,' owing mainly to the strong resemblance in form, and partly from the impression that the difficulty of climbing it would be very great. Three previous attempts had been made, by the W. arête, the N. face and arête, and the S.W. arête and face. We went by train from Field to Banff, and, under the guidance of W. Peyto, by forced marches with our pack animals, covered the forty odd miles to the N. side of the mountain in a day and a half, and camped about 7,000 ft. up.

September 2 was spent on the mountain in thick mist and sleet from 9 o'clock onwards. Starting at 6.25, a mile and a half up the valley brought us to the snow slopes and cliffs at the base of the glacier; we climbed these, and traversed the easy sloping glacier to the col to the N.W. of the mountain (alt. c. 9,000 ft.: 2 hrs. from camp). This we crossed, and dropped to another glacier 250 ft. below, which we ascended to a second col, from the W. spur of the mountain, about 9,500 ft., in 50 min., and halted for $\frac{1}{4}$ hr. Taking now to the mountain itself, we traversed below steep cliffs on *débris* and across gullies and rock ribs, striking the S.W. arête at 10.15, at a point slightly lower than the col. The mist was now very bad, and soon narrowed our horizon to a circle of frequently less than 50 yds., but we made our way steadily upwards by loose shale, rocks, and broken cliffs to a formidable wall 70 or 80 ft. high, rather more than 1,000 ft. from our starting point on this arête. Never having had any opportunity of seeing the mountain from this side, we were at a loss to know whereabouts the summit lay, and could see nothing but the wall of cliffs, so we skirted its base to the right (the wrong direction, as was afterwards proved) till we came to a crack up which we could clamber, and then continued by ledges till, to our astonishment, we reached a peak nearly 11,000 ft. high, evidently not the summit, but the identity of which perplexed us much until, on the following day, the broken S.E. arête was for the first time disclosed to us, with this lofty pinnacle projecting above a deep gap between it and the main peak. We arrived at 12.50, and remained 1 hr. in cold fog and sleet, hoping for a glimpse that would reveal our position, and help us to take some notes that would aid us in making out a feasible route to the summit, but in vain. So we descended at 2 o'clock, and, after prospecting a little below the big cliffs, left the S.W. arête at 6, and reached camp at 8.35 in the dark. The night proved clear and cold, the moon and stars were brilliant, and all looked well for a second attempt on the morrow. We got off in grand weather at 6.10, and followed the route of the previous day, arriving at the S.W. arête at 9.25. The big cliffs were reached at 10.25, and we then turned to our left on to the S.W. face, and had

some rough work on broken ledges, up steep couloirs, skirting cliff bases on hard ice slopes which necessitated a good deal of step-cutting. The rocks were loose, friable, and treacherous, and much covered with 'verglas,' which compelled great caution. At 12.20 we arrived, by way of a very steep icy gully, at the main S. ridge, about 800 ft. below the summit, and *for the first time saw the highest point*. An easy snow arête led to the top at 12.30. The summit is a double one, snow-crowned, with magnificent cornices overhanging the tremendous Eastern precipice. That on the Northern point was cloven by a large fissure, and was very near its fall. Crossing this twin summit, we descended in a few minutes along the top of the rocky N. arête to the point where it bends sharply down, an angle which in almost all the views from the N. appears to be the actual highest peak. Here we lunched, and remained for a full hour ere we commenced the descent by the N. side. This had a double attraction, as it would provide a traverse and second route, and also because it promised a distinctly difficult and interesting bit of climbing. And so it proved. The ridge is extremely steep, with a sheer precipice on the E., the Northern face falling away at an abrupt angle with glistening ice slopes and rocky belts, and the rocks we had to climb down broken, steep, and occasionally overhanging. The looseness of the formation and the hardness of the icy slopes made it a careful and rather slow progress, and even for our usually quick-going trio 2½ hrs. were needed to descend 1,000 ft. Lower down we were able to go faster, and one snow slope, soft enough to evade step-cutting, permitted us to reach continuous rocks and unrope at 6.10. Forty minutes more landed us on the glacier, and at 7.45 we were in camp, having accomplished the half-circuit of the mountain and a complete traverse in 13½ hrs., inclusive of halts, and enjoyed a grand panorama and the most interesting and difficult climb as yet on record in the Rockies. The next morning found us under snow, and our return to Field was mostly through driving snow, with Mt. Assiniboine clothed anew with her winter mantle, and impossible of ascent again this season.

[Rev. J. Outram, whose address till June is Pacific Grove, California, U.S.A., asks us to state that he proposes to visit next year the region of the unclimbed giants N. of the C. P. R., and will be glad to hear from any good climber who may wish to join him.—E.D. A.J.]

ALPINE NOTES.

'THE ALPINE GUIDE.'—Copies of Vol. I. of the new edition of this work, price 12s. net, and of 'Hints and Notes, Practical and Scientific, for Travellers in the Alps' (being a new edition of the General Introduction, price 3s., can be obtained from all book-sellers, or from Messrs. Stanford, Charing Cross.

THE LIBRARY CATALOGUE is now printed and may be obtained, bound in cloth, on application to the Assistant Secretary, 23 Savile Row. Price 3s. ; postage, 3d.

THE ALPINE CLUB OBITUARY.—William Mathews. One of the founders of the Club. President 1868–71.

DR. SVEN HEDIN.—We take the following from 'Nature' of October 17, 1901 :—

'A Reuter telegram from St. Petersburg states that a letter has been published in the "Turkestanskiya Viedomosti" giving the following information concerning Dr. Sven Hedin, the Swedish traveller, based upon a letter from him, dated July 10. It appears that Dr. Sven Hedin, at the time of the despatch of the letter, was at the foot of the Akka Tagh, in Northern Tibet, and intended to proceed in the direction of Ladak, in order to survey accurately the region about the source of the Indus. Next spring he proposes to return to Osh *via* Kashgar. Meanwhile a caravan of fifteen horses has arrived at Kashgar, bringing the results of two years of the traveller's work in the shape of scientific collections, maps, photographs, and diaries. Dr. Sven Hedin speaks in the highest terms of his Cossack escort, and extols their courage, endurance, and resource in critical situations. Up to the time of writing he had been in no way molested by the Chinese.'

CIMA FORNEI.—On July 16 J. H. Doncaster, with Maurice and Joseph Gaspoz, of Evolena, ascended the arête from the Bocca di Fornei direct to the summit. They found the rocks unusually firm for the neighbourhood.

KIRCHALPHORN.—On July 22 the same party left Kanal Alp, and crossed the nameless col between the St. Lorenzhorn and the Rothhorn, which is a much more convenient means of access to the Fanella Glacier than the Fanella Pass for those who start from Kanal Alp instead of from Zervreila (the inn at Zervreila is not opened until the last week in July). They ascended the W. arête of the Kirchalphorn, and found the rocks firm and interesting. From the col to the summit they took 1½ hr.

PIZZO TAMBO.—The 'Climbers' Guide' is obscure as to the route from the W. The above party found it perfectly easy to ascend the E. arête direct from the Lattenhorn, whilst the route described in the 'Climbers' Guide' would involve a long descent, followed by a steep ascent up the stone-swept rocks. Possibly for 'N. glacier' we should read 'S. glacier,' in which case the description would be correct.

LA VIERGE (3,222 m. = 10,571 ft. [Kurz]).—This conspicuous rock in the midst of the great Géant ice-field, about which the 'Climbers' Guide' says, 'No information,' was climbed on August 14 by Mr. G. Yeld, with Sylvain and Abel Pession, of Val Tournanche. They found three stones on the topmost crag in such a position as to indicate that some one had previously visited the summit, though no ascent seems to have been recorded. It is quite true that ascents of La Vierge or the Aiguille Vierge are frequently recorded in the visitors' book at the Rifugio Torino by ladies and even by

children, but the point meant is that marked 3,435 m., and bearing the name Petit Flambeau on Kurz's map. We followed the ridge, step-cutting being necessary in places, from this point to the true La Vierge. We found a beaten track to the top of 3,435 m., but there footsteps ended. The last bit of rock-climbing was decidedly interesting. A tuft of *Ranunculus glacialis* with twenty-four flowers was found not far from the top. The time from the Col du Géant to the top was 2 hrs. 15 min., leisurely walking, halts included.

G. Y.

MONT EMILIUS (3,559 m.=11,677 ft.).—On July 27 Messrs. A. G. Whitting and A. A. Booth, with Johann Aufdenblatten, of Zermatt, and Felix Abbet, of Zinal, made the ascent of this peak by the W. ridge. The climb begins at the col between Mont Emilius and the peak marked 3,068 m. on the Italian map, which can be reached in 2 hrs. from the Comboe huts. The time from the col to the summit was 2½ hrs. The rocks are loose, but not otherwise difficult. This climb is much more interesting than the usual circuitous route through the Arbole Glen.

SOUTHERN AIGUILLE D'ARVES (3,509 m.=11,513 ft.).—On August 8 Messrs. A. G. Whitting and A. A. Booth, with Johann Aufdenblatten, of Zermatt, and Felix Abbet, of Zinal, climbed this peak by its S.E. ridge. Having spent the night at the highest chalet in the Vallon des Aiguilles d'Arves, they mounted to the Col des Trois Pointes, and thence followed the ridge which leads straight up to the summit of the Aiguille, joining the usual route just below the *mauvais pas*. One or two gendarmes were turned on the Valloire side. The time to the summit from the Col de Jean Jean, where the schist of the Pointe Salvador suddenly changes to the conglomerate of the Aiguille, was 4 hrs. of excellent climbing.

COL DE LA VANOISE.—The Lyon section of the C.A.F. is rapidly pushing forward the work on the new chalet hotel, which is to take the place of the old hut on this pass. A fine situation has been chosen on the N. side of the pass, within a stone's throw of the summit. The house is expected to be ready for use next season.

A. A. B.

MEIJE.—A new hut is to be built at the foot of the Pyramide Duhamel, which will be useful for parties climbing the Meije from the La Bélarde side. On August 10 a fair amount of timber had been carried up, but no actual building had been done. A. A. B.

THE GRIVOLA BY THE SOUTH ARÊTE AND EAST FACE.—On August 28, 1901, with Johann Kalbermatten, of Ried, Lötschenthal, as guide, I ascended the Grivola by this route. We left Cogne at 3.15 A.M., and proceeded by the usual route to the Upper Pousset chalets. We then bore to the left, leaving the ordinary track to the Glacier del Trajo on our right. The weather then became thick, and snow began to fall, but we pushed on to the col marked 3,192 m. on the Italian military map (Col de Pian Tsalende), and then crossed to another small col on the ridge immediately opposite. We then traversed the Punta Nera and the Punta Bianca, and found ourselves on a narrow ridge, partly rock and partly ice,

leading up to the Grivola, which towered up before us through the mist.

We followed this ridge, though with great difficulty, on account of the blinding snow and the wind, which by this time had got up considerably. The arête proved difficult in places, owing to glazed rocks and to patches of extremely hard ice, which necessitated step-cutting, and made our progress somewhat slow. When about 150 or 200 ft. from the summit the wind had become so violent that we began to fear that we should be unable to complete the ascent. However after a consultation we decided to traverse along the east face and then try to make our way straight up the face to the top. This traverse we successfully accomplished for some distance, thanks to Kalbermatten's skilful leading, and after crossing a large rib of whitish grey rock, which runs nearly to the summit, and which proved our greatest difficulty, we climbed in a diagonal line from the rib to the top, which we gained at 8 P.M. After a short halt we descended by the usual route and reached Cogne at 8.45 P.M. Under more favourable conditions the ascent by this route could, I have no doubt, be made in a much shorter time.

S. R. HOBDAV.

[The first ascent of the Grivola by the S. arête was made by Signor G. Bobba on July 17, 1890, 'Boll. C.A.I.,' 1891, pp. 10-17.]

NEW HUT IN THE ORTLER GROUP.—By the enterprise of the Berlin Section of the D.Ö.A.V. an excellent hut has just been added to the ten already existing in this favourite district of the Eastern Alps. Situated on the summit of the Ortler Hochjoch, between the Ortler and Monte Zebro, at a height of over 11,500 ft., it will afford increased facilities for such climbs as the ascent of the Ortler by the Hochjoch Grat, that of the Thurwieserspitze from the Thurwieserjoch, and that of the Königspitze over Monte Zebro and the Suldengrat. The building was begun in 1898, the materials being conveyed by the easiest of the three approaches to the Hochjoch, that which ascends from the Capanna Milano, on the S.W. The hut contains comfortable sleeping accommodation for eight climbers, with their guides, an ample supply of fire wood, preserved foods, and other requisites, and the internal fittings generally are admirable both for completeness and for economy of space. The 'Einweihung' took place on August 28, in somewhat unfavourable weather. The erection of this building in a position so exposed and so difficult of access was, undoubtedly, a considerable undertaking, and reflects great credit on the resource and resolution of its builders.

THE SIMPLON TUNNEL.—We take the following from the 'Morning Post' of November 2, 1901:—'Our Rome correspondent states that the unfortunate rush of water in the Simplon Tunnel that has for the moment stopped progress on the Italian side still continues. At the end of September 10 164 mètres out of the 19,790 had been bored, 5,784 on the Swiss and 4,430 on the Italian side. More than 9½ kilomètres still remain to be bored. If the 10,164 mètres already completed have required 3 years (the operations were

begun in November 1898) it is clear that the contractors have none too much time for the completion of the whole tunnel, which must be ready by the end of May 1904—little more than $2\frac{1}{2}$ years hence. For every day required beyond the end of May 1904 the contractors, Messrs. Brandt, Brandau, & Co., will be liable to a heavy fine. The stoppage of the work on the Italian side by the water is, therefore, a serious affair. On the night of September 30 the water began to rush out at the rate of 600 litres a second, transforming the tunnel into a regular canal. The Simplon Tunnel, instead of consisting of a single boring large enough for two lines of railway, consists of two parallel tunnels large enough for one line each, the two tunnels being connected by oblique transversal cuttings every 200 mètres. Thus ventilation becomes easier, and the removal of the débris is facilitated. Besides it is easier to turn off outbursts of water into one of the borings while work is pushed forward in the other. Hitherto it has not been found possible to stop the present rush of water, nor even to find out whence it comes. At first it was supposed that a mountain lake situated at a considerable height above the tunnel was the source of the water, but it was found that the level of the lake had not been affected by the supposed drainage, as it would have been if it had really been the source of the trouble. It is, therefore, supposed that the water must come from a neighbouring torrent through some unknown channel, and, in order to test this hypothesis, quantities of colouring matter have been thrown into the torrent, so as to see if the colour of the water in the tunnel is affected. Should it be the torrent will be diverted from its bed. The contractors are not yet alarmed at the mishap, because the stone through which they have recently been cutting is soft free-stone, through which they can bore at the rate of 9 yards a day, whereas until lately they had met with nothing but gneiss on the Italian side and were only able to proceed slowly.'

ACCIDENT ON THE WETTERHORN.—We regret to hear that Fritz Boss was killed early in November, when chamois-hunting on the Wetterhorn.

REVIEWS AND NOTICES.

The Bolivian Andes: a Record of Climbing and Exploration in the Cordillera Real in the Years 1898 and 1900. By Sir Martin Conway. (Harper & Brothers. 1901.)

IN the latter part of 1898 Sir Martin Conway first visited the very interesting part of the Bolivian Andes, which is described in his recently published volume. His journey had three objects—to ascend one or two of the highest peaks, to study the topography of the Eastern Cordillera, and to ascertain how far the country admitted of development. To readers of the 'Alpine Journal' the order of enumeration will be that of their interest, so of the last we shall say little. Accompanied by Antoine Maquignaz, who led

the Duke of the Abruzzi in the first ascent of Mount St. Elias, and by Louis Pellissier, both of Val Tournanche, the author went from England *via* the 'Isthmus of Panama,' touching at Barbados, Hayti, and Jamaica, and spending a few days in the town of Panama. It was, no doubt, dull, as one of its inhabitants asserted with unparliamentary emphasis, but this was better—at any rate for the studiously minded traveller—than a revolution, in the middle of which Sir Martin had entered it eight years before. From Panama they went by sea to Callao, the port of Lima, the capital of Peru. There Sir Martin made his first mountain ascent, in a way more than pardonable under the circumstances, but not to be generally commended by the Alpine Club. From Lima a mountain railway has been constructed across the chain of the Andes, crossing the crest at an altitude greater than Mont Blanc. He went up to the watershed by train and came back in a hand car, being thus introduced to some fine scenery and novel sensations. After this glimpse of the Peruvian Andes, he resumed his sea journey, and arrived in due course at the little port of Mollendo. From this place an interesting run by railway took him to Arequipa, and gave him distant views *en route* of a snowy giant known to some as Ampato, to others as Coropuna, which is said to be 22,800 ft. high, or a rival of Aconcagua. Arequipa itself is 7,550 ft. above sea-level, and from it, had time allowed, he might have readily ascended either the volcanic Misti (18,650 ft.) or the more lofty Chachani, which is certainly not less than 19,000 ft., and may be higher.

The Bolivian Andes afford an example of a type of mountain structure which is exhibited on a grand scale in both the northern and southern continents of America—namely, a great upland plateau enclosed by two lofty mountain chains, which form an elongated loop, and thus make it a basin of inland drainage. Some geographers, we are told, regard the Andes as composed of five distinct ranges, but Sir Martin thinks the simpler structure already mentioned to be sufficiently accurate, so that the basin, including the waters of Lake Titicaca, is guarded on the eastern side by the Cordillera Real, or Bolivian Andes, as generally understood, and on the other by the less imposing Western Cordillera, usually called in the country Cordillera de los Andes. Between the two lies the great and generally rather arid plateau, or Puna, at a height of from 12,000 ft. to 13,000 ft. above sea-level. Everything is on a large scale; the two principal peaks in the Cordillera Real both exceed 21,000 ft., and are 64 miles apart. Lake Titicaca (12,516 ft.) is a hundred miles long, and averages 30 miles wide—fourteen times as big as Lac Lemán. Twenty streams discharge themselves into it; the Rio Desaguadero flows but sluggishly from it, and empties itself into Lake Poopo, from which there is no exit, at any rate on the surface. Thus the basin of Titicaca (except that its waters are fresh) corresponds in its chief physical features with the Great Salt Lake region of Utah, and it too exhibits signs of desiccation, though not to the same extent. The railway reaches

the shore of Titicaca by crossing a pass in the Western Cordillera about 2,000 ft. above it, and a steamer plies on its waters; from the southern end a rough carriage road leads to La Paz, a well-built and attractive town, the capital of Bolivia, about 12,000 ft. above sea-level. Its situation is remarkable, for it is built in a gigantic corrie, carved out of the comparatively level plateau by the headwaters of a river which runs to the south, so that La Paz lies at the foot of a steep descent of about 1,600 ft. in the vast alluvial mass by which the original area of Lake Titicaca has been restricted and the plateau built up.

The grandest portion of the Cordillera Real extends from Sorata on the N. to Illimani on the S., and as the latter peak is but a short distance from La Paz Sir Martin Conway first turned his attention to it. Its height is about 21,200 ft., but it is necessary to make a considerable descent from La Paz to reach the base. The route they followed on the lower slopes proved not to be the most direct, and three days were occupied from a farmhouse at 11,800 ft. in reaching a spot 16,500 ft. above the sea, from which the real climbing began. The delay, however, and a further one at their camp, was partly due to the inefficiency of their Indian porters, who all deserted long before the last camp was reached. This was 18,500 ft. above the sea, beyond 'the outworks of the mountain fortress,' on the edge of a lofty shelf, which commanded a wonderful view over the great plateau of Bolivia, with the volcanoes of the Western Cordillera rising in the distance beyond it. To reach the summit of Illimani from this point they had to pass over a lower eminence named the Pico del Indio, but the direct way to this was barred by a snow cornice, so they were obliged to cut steps along a great snow-slope forming its southern face. This, fortunately, was in good condition, so after a couple of hours' work they gained a saddle, which led them on to a snowy plateau at the foot of the actual summit, and about 1,200 ft. below it. Here also the snow was good, and the remainder of the ascent was merely a laborious walk across the plateau, up slopes, and along an easy snow-ridge. They reached the summit in rather more than 10 hrs. from their camp, for all had felt the effects of rarefied air. Clouds hid most of the lower region, but the view of the great snow-peaks towering above them was singularly grand. On the descent they followed a more direct route from the Pico del Indio, till they again struck their line of ascent. This peak gets its name from a story that an Indian had the audacity to invade the home of the Deity—, for that his countrymen believe the mountain to be—and was never seen again. Strange to say, Sir Martin picked up a small piece of cord such as Indians make near the top of this peak, so that, unless it was carried there by a bird—which is not very probable—there is some truth in the story.

Sorata was next attacked. This loftier mass is a group of peaks rather than a single summit, the nomenclature of which, as far as it exists, is in some confusion. The peak most conspicuous from Titicaca, 'a majestic rock tower not unlike the Matterhorn.' Sir

Martin designates Illampu, and the highest of all—'a noble crest of snow'—Ancohuma—giving the name Sorata to the mountain as a whole. Observations made on the way to La Paz had suggested that Ancohuma could be reached from an elevated snow plateau at the head of a glacier, the lower part of which was considerably crevassed. A rather tiresome journey took them in two days to the foot of the mountain. Two days more, with the help of Indian porters, enabled them to camp at a height of 18,000 ft., and another laborious day on the glacier brought them 2,000 ft. nearer the summit. Then bad weather came on and drove them off the mountain, keeping them at bay for more than a fortnight. So much snow had fallen that success was now less hopeful, but on October 10 they once more regained their highest camp. Next morning, after an early start, they reached in a couple of hours the foot of the final peak. The snow was in bad condition, the slope steepened as they ascended, and the cold was intense. At last they arrived at the edge of a huge crevasse, which extended across the slope about 300 ft. below the summit. Here they turned, for beyond that chasm they must have climbed the slope diagonally, and with the snow in that condition would almost certainly have started an avalanche, which would have put an end to the excursion and their lives. So after an attempt to find a different route, they reluctantly left the actual summit of Ancohuma untouched, though they had climbed rather higher than that of Illimani—probably to about 21,400 ft. above sea-level. But the next comer, if he finds the snow in good condition, will easily complete the ascent.

Other great peaks await the climber in the Cordillera Real. Illampu is about the same height as that which they reached. A little to the S. are three more, averaging about 20,000 ft. About half-way to Illimani is Cacaaca, about 20,500 ft., and one or two between these, though lower, overtop the highest in the Caucasus. La Paz affords an excellent base for supplies, and its authorities and the white population of Bolivia, as a rule, were kindly and helpful. The familiar difficulty about porters exists here, for the Indians, from whom they must be recruited, seem to be rather more worthless than the coolies of the Karakoram-Himalayas, and may be aggressive. In these parts the white population is very sparse and finds some difficulty in keeping the Indians under control. The latter are generally superstitious and very suspicious of strangers. Both these feelings were excited by the surveying instruments, so that attacks were more than once only just avoided, and a party of men, while Sir Martin and his guides were at the highest camp on Sorata, came to the one below with the declared intention of murdering him. Thus, in the more remote parts of the country life is not quite safe, and there is apparently no real security without a strong and well-armed party.

Besides these ascents, Sir Martin Conway succeeded in making a good sketch-map of the West side of the Cordillera Real. Two portions of this are given in his book, but the reader would have

been thankful had it included a general map of the region, such as that which the author published in the 'Journal of the Royal Geographical Society' (May, 1900). He also brought back a considerable number of mineralogical, geological, and botanical specimens. The minerals have been described in an appendix to the volume by Mr. L. J. Spencer, and they show that Bolivia possesses some that are valuable as well as interesting. The rocks, which the present writer has investigated, prove (what was previously very uncertain) that the backbone of the Cordillera Real is not volcanic, as in Ecuador and Chili, or, indeed, in the Western Cordillera, but consists of more deep-seated igneous rocks, which apparently have been intruded into and have locally metamorphosed the sedimentary deposits of which a very large part of the chain is composed. The fossils—few in number—have been described by Mr. R. B. Newton. These confirm the late Mr. D. Forbes's* identification of Devonian rocks. The author gives us some interesting geological notes, as, for instance, on the course of the La Paz river, which cuts completely through the Cordillera Real to the S. of Illimani, so that its water ultimately reaches the Amazon. Of this apparent anomaly two explanations may be offered. Either the Western Cordillera is the older chain of the two, and the river has been able to deepen its channel as fast as the Eastern one was upheaved, or the original source was on the Eastern slope of the Cordillera Real, and the river, in the course of ages, has eaten its way back through the chain and into the heart of the Puna. Of these explanations Sir Martin Conway adopts the latter. For one who has never seen the country it is difficult to pronounce an opinion, and, no doubt, rivers are sometimes guilty of trespass, as in the case of the Val Bregaglia, which has been carried back through the original watershed into the head of the Inn Valley; but, on the whole, I incline to the former view, and think the history of the Cordillera Real to be more probably a repetition of that of the Bernese Oberland and of the Himalayas. Be this as it may, the upland of Bolivia is now buried deep in débris from the Cordilleras. This in more than one place exhibits remarkable earth-pillars, concerning which there is a double slip of the pen in a sentence on p. 93, 'Alpine travellers are acquainted with earth pyramids in the Val de Bagnes and in the neighbourhood of Meran.' For the one read 'Val d'Hérens,' for the other, 'Botzen.'

On another point—the effect of diminished atmospheric pressure—Sir Martin Conway's remarks are of much interest. His experiences in Bolivia confirmed the opinion which he formed in the Karakoram-Himalayas—that after passing a level of about 16,000 ft. the climber becomes gradually conscious of an increasing difficulty in ascending or in making any other effort, but to what extent depends on the individual, the state of the weather, and other circumstances. He doubts, indeed, whether on the higher

* *Quart. Journ. Geol. Soc.*, vol. xvii. (1861), p. 7.

part of a very lofty peak climbers can expect to advance daily more than about 2,000 ft. vertical. If so, it will be a long climb to the top of Everest. In the Andes he and his guides also suffered from a kind of temporary whooping-cough at about 20,000 ft. (p. 140.) But he twice felt discomfort at a considerably lower level. On reaching a height of about 13,500 ft., in ascending by railway from Lima to the crest of the Andes, he became conscious of a slight dizziness, a tension across the crown of the head, a disagreeable excitement, a little difficulty in directing his steps, and a tingling in the soles of the feet, while many of the passengers at some distance lower down began to suffer from mountain sickness—which seems as familiar on that journey as another kind is on the Channel passage. Though he felt no discomfort in the ascent to Titicaca from the coast, ‘sorocche,’ as the complaint is called, attacked him the day after he reached La Paz. It disappeared after about twenty-four hours, but some people, he says, never get acclimatised. Hence he concludes that diminished atmospheric pressure produces, even at moderate elevations, rather more effect than is generally supposed.

But we must lay down this interesting volume. That it is well written is a matter of course; it is illustrated by many reproduced photographs, which enable us to realise not only the ice-world, but also the general scenery of the Bolivian Andes; it is excellently printed and not too large; it contains much useful information, and is a valuable addition not only to our records of mountain climbing, but also of scientific travel. T. G. BONNEY.

Mr. H. F. B. Lynch's Map of Armenia.

We are glad to note that Mr. Lynch, following the example of Mr. D. Freshfield with regard to his map of the Caucasus, has placed the map which accompanies his work on Armenia, reviewed in our last number, on sale separately.

It is a geographical document of very great value. Although portions of the country have been mapped by the Russian staff there are many districts, and some of the most important mountain ones, in which Mr. Lynch has been able to add fresh detail and corrections. No traveller will be able to dispense with Mr. Lynch's sheet. It is a careful compilation of material derived from various sources, including the author's own travels. We do not know if he has had the advantage of the unpublished surveys said to have been made by British officers within the Turkish frontier. Our only general criticism is that had any of the modern systems of distinguishing elevations by colour been followed a much more graphic physical representation of the boundaries of the highlands and of the river basins, and more particularly of the deep trench of the Araxes, would have been obtained; otherwise the engraving is clear and intelligible.

Highland of Asiatic Turkey. By Earl Percy. (London: Arnold, 1901. 14s. net.)

The author passed through the alpine region of Hakkari, in the north of Kurdistan, and gives good photographs of the peak of Jelu and the mountains near it—a district still little known by Europeans. The book is principally historical and political.

The River Katun and its Sources. By V. V. Sapojnikof. (Tomsk: Makushin, 1901.)

Between 1895 and 1899 Professor Sapojnikof, of the Imperial University of Tomsk, made four exploratory journeys in the range of the Altai. The journal of the first expedition was published in Tomsk in 1897, and in the present volume (in Russian) the results and discoveries of the three later expeditions are given. The Altai range, in which the Katun has its sources, is formed of gneiss and schist, and is consequently pointed and steep. The average height is about 3,000 metres. The chief summit, Belouha, was found to reach 4,540 metres (14,800 ft.), according to the author's calculations, as compared with the previous calculation by Gebler of 11,000 ft. This summit has two peaks, and in 1899 Professor Sapojnikof made an attempt to reach the saddle between them, but was driven back by a snow storm when 400 metres below it.

The book is well illustrated, and accompanied by a bibliography and careful maps, on which are shown many previously unknown glaciers.

After Wild Sheep in the Altai and Mongolia. By E. Demidoff. (London: Rowland Ward, 1900.) 21s.

The frontispiece of this work is an excellent coloured illustration of the fine mountain sheep, the *Ovis ammon*, the pursuit of which was the chief object of the author's trip. The account will interest all sportsmen, and the descriptions of the country and of the mountaineering difficulties met with in following sheep and ibex should prove interesting reading for all climbers. We think it is regrettable that the author and his friends should have slaughtered so many noble animals merely for the sake of sport, and cannot but believe that the two photographs of thirty and of seventeen heads—only part of the total bag—will give pain to every reader of the book. The text is accompanied by fairly good photographs.

PROCEEDINGS OF THE ALPINE CLUB.

A GENERAL MEETING of the Alpine Club was held in the Hall of the Club on Tuesday evening, June 11, at 8.30 P.M., the Right Hon. James Bryce (President) in the chair.

Mr. G. T. Walker was balloted for, and elected a member of the Club.

The PRESIDENT announced that Mr. W. Mathews had presented to the Club a collection of photographs belonging to the earlier

days of mountaineering, taken by the brothers Bisson; that two photographs exhibited at the recent Exhibition in the Club rooms had also been presented—'Latsga' by Mr. Woolley, and 'Alagna' by Mr. Henry Speyer; that Mr. Henry Wagner had presented a very interesting water-colour sketch of the Wetterhorn by R. P. Bonington, one of the early English landscape painters.

A vote of thanks to those who had made these presentations was agreed to.

The PRESIDENT then announced that a circular had been received giving information as to the formation in Moscow of a Russian Alpine Club. He was sure that members would receive this news with very friendly interest, as travellers in the Caucasus had always received from the Russians every possible assistance, and the newly formed club also trusted that it would be able to afford information and help to climbers.

Mr. HUGH E. M. STUTFIELD read a paper entitled 'Mountain Travel and Climbs in British Columbia,' which was illustrated by lantern-slides and also by a large number of photographs which were hung on the walls.

Mr. SPENCER said that during a brief stay at Glacier House he had intended to make the ascent of Mount Sir Donald, but was persuaded by an American gentleman to join him in an attempt to make the first ascent of Peak Swanzy, a fine summit about 10,200 ft. high, situated at the S.W. end of Mount Bonney.

The ascent was made *via* Mount Abbott and the Little Glacier, from which the party ascended the peak on the south side by steep but easy snow-slopes to a rock cap, which gave them a short piece of good climbing. Owing to the bad condition of the snow the descent to the glacier was made by a long rib of steep rocks of moderate difficulty.

Mr. Spencer exhibited a few slides illustrating the climb, and showing the magnificent view which Peak Swanzy affords.

Dr. NORMAN COLLIE also exhibited some slides, taken by Mr. Thomson, of Chicago, who had explored a pass to the south of Mount Bryce, which Dr. Collie had noted in the previous year. Dr. Collie thought it well worth anyone's while exploring in the mountains of British Columbia, as there was still much work to be done and many virgin peaks to be climbed.

Mr. WOOLLEY thought that the right way to approach Mount Columbia would be from the east, as it was impossible from the west for a party with only five or six weeks. It might become possible when a great deal of the timber had been removed. Assistance might be had, perhaps, from taking a collapsible boat.

The PRESIDENT found it satisfactory to know that there was still so large an amount of unexplored country. Though he had only a slight knowledge of the district, yet it appeared to him that it would be best to approach the mountains from the east, as the valleys were higher on that side and the rain came from the west, making the growth of trees greater on the west side. No one who had not tried exploring in the region could have really any idea of what an

obstacle the forests were to progress. He noted as curious that there was very little space between the upper edge of the forest zone and the commencement of the snowfields, unlike the pastures which are found on the Alps.

A hearty vote of thanks to Mr. Stutfield brought the meeting to a close.

JOSEF SPECHTENHAUSER.

WE regret to learn from Mr. A. J. Butler that the health of this well-known guide has completely broken down, and that, as, unlike most Tyrolese, he is without private means, his case is a serious one. Any contributions for his benefit will be gladly taken charge of and forwarded by A. J. Butler, Esq., Wood End, Weybridge.

Corrigenda in 'Alpine Journal,' No. 153.

Illustration of Pizzo Columbe to face p. 454, *for Brooke read Broke.*

Page 471, line 4, *for C. H. Nettleton read C. W.*

Page 478, line 4, *for Catbels read Catbells.*

Page 479, line 11, *for Langkofel read Langkofel.*

Page 471, line 19, page 486, line 7 from bottom, and page 487, line 19, *for Deasey, read Deasy.*

INDEX.

ABB

ABBA, G. O., book by, noticed, 220
Abelle, Col de l', descent from, 263
Aconagua, 81-2
Air, rarity of, in Himalayas, 182-3
Alpetto, Becco dell', 817
Alpine accidents, 81, 254-6*, 292-4, 490, 532-6; in Eastern Alps, 292-4, 333-5
Alpine climbers at the front in S. Africa, 217
Alpine Club:—
 Address to the King and his Majesty's gracious reply, 259-60
 Exhibitions (Equipment), 36-44; photographic, 212-5, 468-71; winter, 327-8
 Foundation of, 525
 Future of the, 295-305
 Gifts to, 49, 128, 279, 442, 477, 557
 Journal, corrections in, 50-1, 148, 341, 558
 Library, Catalogue of books in, 35, 49, 128, 216, 279, 320, 412, 477, 547
 Library, 54-60, 139-42, 219-23, 282-5, 328-41, 496-10, 471-7, 527-33
 Obituary, 48, 330, 412, 547
 Proceedings, 77-80, 152-60, 232-6, 262-8, 431-41, 489, 556-8
Alpine Club, French, 81, 128; Honours at the Paris Exhibition, 330
Alpine Congress, International (C.A.F.), 81, 128
Alpine flora, preservation of, 320
Alpine flowers, 519, 521
 'Alpine Guide' (Ball), 48, 49, 128, 216, 79, 320, 412, 477, 546; new edition of Vol. 2, 404
Alpine guide-books, recent, 527-8
Alitudes, high, the influence of, in mountaineering, 268-92
Ancouma, 553
Andes, the Bolivian, 550-5

AND

Andes, the Highest, 60-63
Andes, the Southern, an orographical sketch, 81-7
Andorra, 90
Ararat ascended, 226, 247
Argentiere, Aiguille d', ascended, 45
Arnae, Col d', crossed, 314
Arolla district, 328
Arves, d. Aiguille d', ascended, 548
Asia, central mounts of, 279
Asko'e, 4
Assiniboine, Mt., ascended, 545-6
Avalanche camp, 6

BAGNES, Val de, chamois hunting in, 241-2
Baillie-Grohman, W. A., book by, revl wed, 419-20
Balaitous, the, ascended, 101
Balfour Pass crossed, 544
Ball's 'Alpine Guide,' 49
Balistan, 2-10
Baschin, Otto, book by, noticed, 153
Bel Alp, shorter expeditions from, 52
Benesch, H. Fritz, book by, reviewed, 63-5
Berlepech, H. A., book by reviewed, 423
Bernard, Great St., Hospice, 217
Bernina District, 539
Bes-anese, 316; ascended, 321
Bhot Khol Pass, 212
Biafo Glacier, 4
Bignami-S rmani, E., book by, reviewed, 250
Binn, climbs from, 484
Blanc, Mont, by S.W. ridge, ascended, 537
Blanc, Mont, District, 46, 263, 537-9
Blinden Glacier descended, 458
Blindenhorn ascended, 207; view from, 208
Bockberg, 30, 32
Boeck, Dr. Kurt, book by, reviewed, 286

COL

Ronney, Prof., ice axe of, 147-4
Bouquetins, the Dents des, fully described, 110-116
Brubin, 4
Broglio, Punta del, traverse of ridge of, 262-3
Bryce, Mt., 498
Bullock-Workman, Mt., ascended, 9
Bullock-Workman, Fanny, work by, reviewed, 902
Bush River, 492 f.

CAOACA, 553
Campanario, Mount, 83
Campo Tencia, 282
Canada, mountaineering in, 427-8
Carlite, Pic, ascended, 89-90
Castelli, C., book by, noticed, 231
Catedral, the, ascended, 62
Cathedral, Mt., ascended, 544-5
Caucasus, Central, 410-12
Caucasus, nub, 320
Cedel, La, ascended, 529-40
Cer sole, 217
Cervandone, Pizzo, accident on the, 525
Chamois hunting, kinds of, 229-40
Chancellor, Mt., ascended, 541
Chapman, Abel, book by, reviewed, 231
Charinda ascended, 410
Choongerma, 178
Chortenima La, 172, 412-4
Ciau, the Punta di, 517-21
Claronnet, La, from Mauvoisin, 263-4, 320
Cignana, 517
Clark, W. A., book by, reviewed, 291
Climb, most N., in Europe, 54; rock, earliest, 428-31
Cobbold, Ba pli, book by, reviewed, 221
Cockin, Mr. J. G., In Memoriam notice of, 263-4
Colorado River, grand cañon of the, 250-8

- COL**
- Collie, Mt., ascended, 543
 Columbe, Pizzo, ascended, 451-2
 Columbia, British, mountain travel and climbs in, 491-504, 557
 Conway, Sir Martin, book by, reviewed, 550-5
 Corrections in 'A. J.', No. 146, 50, 148; in No. 150, 341; in No. 153, 558; and addenda, 442
 Crater Lake, in Oregon, 366-7
 Creton, Tour de, 186
 Crastallina, 292
 Crola, Grande, adventure on, 217-9
- D'ALMEIDA, P.** Camena, book by, reviewed, 230
 Dames Anglaises ascended, 534
 Dames, Château des, 186
 Daullia, Emile, book by noticed, 292
 Demilloff, M. E., book by, noticed, 556
 Deasy, Capt. P. H., book by, noticed, 486
 Dent Blanche, N.E.-E. ridges, 53-4
 Derwentwater, 478
 Devero, 455
 D'Hérens, the Dent d', 184-96; ascended from Breuil, 189-91
 Dictionnaire Géographique de la Suisse noticed, 423
 Dolomite District, 529-40
 Donald, Mt. Sir, ascended, 503; history of, 502
 Doves Blanches, Col and Pointe des, 49
 Dreieckjoch first crossed, 321-6
 Dru, Grindelwald, the, ascended, 466-8
 Duparc, L., book by, noticed, 422
 Durand, Col. A., book by, reviewed, 231
- EAGLE Peak** ascended, 501
 Eagle's Nest, the, 52
 Eerins, accident on, 259-60, 281-2
 Eiger ascended, 516
 Eiger Hörn ascended 266-7, 414
 Eiger, Little, ascended, 513
 Elias, Mt. St., 142
 Emerald Group ascended, 512
 Emilius, Mt., by W. ridge, ascended, 518
 Eufar, Pic d', ascended, 101
 Equipment Exhibition of A. C., 36-44
 Etret, Grand Col du (W.), crossed, 318
 Everst, Mt., 178
- FER**
- FERRAND, Henri**, book by, reviewed, 485
 Filippi, Filippo de, book by, reviewed, 224
 Finsteraarhorn ascended, 142-3
 Fitzgerald, Mr. A. E., book by, review, 60-3
 Fletschhorn, ascended, 142-3
 Fond, Pointe du Grand, ascended, 321
 Forbes, J. D., the late, book by, reviewed, 227
 Formosa, mountainering in, 217
 Forci, 'lma, ascended, 547
 Fourcanelle, the, ascended, 94-7
 Fuchs, J., book by, noticed, 488
 Fünfingstöße, 22-9; point 3,036 m. fr. N., 31, 46-7; point 2,900 m. ascended, 267; described and discussed 116-1
 Gurggen Ridge of Matterhorn, 17-20
 Fusio and Veglia, between, 204-12
 Fuschörner, peak of, ascended, 45, 266; pt. 3,106 m. ascended, 45
- GALISE, Pointe de la**, ascended, 320
 Gantok, 166
 Gaube, couloir de, 250
 Gavarrie, 93, 247 f.
 Géant, the, ascent from N. and traverse, 263, 334-8
 Gennargentu, Club hut on, 217
 'Geographical Journal,' January 1901, 352
 Ghinza, 177-8
 Gincla, La, 179
 Gschlene, Alp, 35
 Graians, Eastern District, 262-3, 537
 Graians, excursions in, 313-21
 Grande Casse, by E. arête, descended, 536-7
 Grödsch, Piz, accident on the, 534
 Gries Pass, incident on, 456
 Grivola, by N. face, ascended, 330-2; by S. arête and E. face, ascended, 548-9
 Grosan, E. S., book by, reviewed, 485
 G-paltenhorn ascended, 507
 Guibe, a very old, 51-2; death of a St. Niklaus, 414
 Guin, Bec de, 186
 Gwacht horn, fr. N.E., ascended, 30, 46
- HABEL, Mt.**, ascended, 542-3
 Hahn, N., book by, reviewed, 426
 Harrook, ascended, 122-7
- MAD**
- Hawkins, Rev. Charles Fabr. In Memoriam notices of, 52
 Hedlin, Dr. Sven, 347
 Heer, J. C., books by, noticed 5
 Heuberjoch, 25
 Himalayas, mountainering a the, 305-13
 Hissar Pass, 4
 Hilstock, ascended, 290-1
 Huber, F., book by, noticed, 426
 Hüf Glacier, 49
 Hühnerguts Glacier, 467
 Hunza, 309
 Huxey, Professor, 232-3
- LLAMPU, 553**
 Illimani ascended, 552
 Inkersley, A., article by, noticed, 424
- JÄGERKARSPITZ**, accident a the, 535
 Jannu, 177
 Janjac, the Coupe de, 404-7
 Jongri, 179
 Jumeaux de Valtoornasac ascended, 186-7
- KABUR** ascended, 179
 Kambachen, 177
 Kanchinjanga, 1-3; road, 161-84; season for attempting, 181; name of, 182
 Keaya, Mount, 102-10; name of, 103; climbed, 109
 Kirchalphorn ascended, 547
 Kiwetinok Peak ascended, 542
 Kohlenhar peaks, 312
 Koser Gange, Mt., first ascent of, 11-7
 Kupultung, Mt., 308
- LACHEN, 167**
 Langkofel Hüte, 479
 La Suisse au XIX^e Sièc. e, 426
 Lechner, Ernst, book by, noticed, 350
 Lei a Pass crossed, 411-2
 Lendlefeld, von, Herr R., book by, reviewed, 152-3
 Lechmatter, Ruolph, accident a, 217
 Lommtjaar, 446
 Louzahörner ascended, 46
 Lynch, Mr., book by, reviewed, 488; map by, reviewed, 356
- MAASPLANKJACH, N. rh.** cr. asc. 579
 Mader, Fritz, book by, noticed, 486

MAK

- Makalu, 178
 Marock, Dr. William, In Memoriam notice of, 130-3
 Marr, John E., book by, reviewed, 424
 Mathewa, Mr. William, In Memoriam notice of, 521-6
 Matterhorn, accident on, 259, 490, 534; Farg es, ridge of, explored, 17-20
 Mazama, 424
 M-ije, new hut on, 548
 Members of the Stock Exchange, book by, noticed 487
 Meyer, Hans, book by, reviewed, 414
 Mönch from Wengern Alp, 50
 Mountain sport, 237-46
 Mrasec, L., book by, noticed, 422
 Murerau, Petit, a.cident on the, 533

- NAMES**, giving of, to newly discovered places, 413
 Nanga Parbat, 308
 Nantillons Glacier, icefall of, 147
 National Trust, appeal of 477-9
 Nethou ascended, 91-2
 N-yrac-le-Bains, 504
 Nouachetta, Becca di, ascended, 318
 Noire, La, ascended 538
 Norman-Nevada, book by Mrs., reviewed, 65-9
 North Cape ascended, 54
 Norway, 47-8, 267-74, 540-1
 * Nuova Antologia' noticed, 424

- OBERTLAND**, Bernese, district 45-6, 266-7, 439; August 1901 in the, 507-17
 Ortler Group, new hut in the, 549
 Ostinder, 273-6

- PAILLA**, Petit Pic Rouge de, ascended, 248-9
 Pamionchi, 180
 Paradis, Grand, accident on, 51; ascended, 319
 Patternkof, by W. face, 53
 Pennines, Central, district, 263
 Perdu, Mont, ascended, 249, 251-2
 Percy, Earl, book by, noticed 556
 Pfeiffer, G., books by, noticed, 422, 425
 Photography in W. Italian Alps, 216-7
 Piora, 451
 Posets, Pic de, ascended, 99
 Prievelusa, Piz, ascended, 539

PUG

- Puget Sound, 268
 Purtscheller, Herr Ludwig, In Memoriam notice of, 133-6
 Pyrenean centre, a, 246-53
 Pyreeces, the High, 87-102

- LABOT**, C., book by, reviewed 352
 Rainier, Mt., accident on, 144-7; ascended, 424
 Ref., J. J., book by, reviewed, 153
 Richer E., books by, noticed, 351, 425
 Rock climb, the earliest, 428-31
 Rockies, a a ian, Mr. Whympers expedition to, 413; sport in, 244-5; n-w expeditions in, 541-6
 Rosa, Monte, ascended, 517
 Roseg, Piz, accident on toe 534-5
 Rossi, Virgile, book by, noticed, 231
 Rosso, Cima di, accident on, 260-2
 Rothorn, Blümlis Alp, ascended, 335
 Roththal Sattel, accident on the 535
 Rotondo, Pizzo, ascended, 201-3
 Rouges d'arolla, Aiguilles, 50; central peak, by E. face, ascended, 328-9
 Rouges, Les, ascended, 538
 Ruskin, John, In Memoriam notice of, 127-9

- SAAS** district, 329
 Saashorn ascended, 459 f.
 Sapojnikof, Prof. V. V., book by, noticed, 556
 Sat ima range climb d, 109
 Sauvegarde Pic climbed, 91
 Schallhorn, first traverse of, 264
 Scolari, C. book by, reviewed, 350
 Segantini's Mountain landscapes, 279-80
 Selkirks, the, 278, 503
 Sharp, A. H., book by, reviewed, 485
 Fhigar, 4, 11
 Sho-on's Falls visited, 365
 Siegfried-Horn ascended, 7
 Sikhim, forest paths in, 165
 Simplon Tunnel, the, 549-50
 Sintolohum, 170
 Ska gästolinder, 281
 Skjuranostind ascended, 148
 Sk ro La, 5
 Sorata attempt 1, 552
 Sprehtenhauser, Josef, 558
 Stein, 21; expeditions from, 21 f.; week at, 29-35
 Steinberg ascended, see Gwächtenhorn
 Stein-Limni, 33

VER

- Still, Mr. S F., In Memoriam notice of, 35-6
 Strasser, G., book by, reviewed, 350
 Stratz, R. books by, noticed, 351
 Stülcklis'ock ascended, 200
 Sullenz-pitz, by S.W. face, ascended, 336
 Sulitelma, 276-8, 443-9, 479
 Sust-horn ascended, 199
 Sust-horn, by N.W. face, 32
 Sust-horn, Hinter, ascended, 198-9
 Swanzy Peak ascended, 278, 557

- TACUL**, Aiguille du, an accident on the, 534
 Tambor, Pizzo, ascended, 547
 T'angchung La, 171
 Tarentaise, chamois hunting in, 242
 Tarentaise district, 536-7
 Favé, Grand, ascended, 264
 Teesta river, 166
 Telephotography, 393-403; views taken by, 403
 Terschak, Emil, book by, noticed, 230
 Tersiva, by E. ridge, ascended, 537
 Thé La, 171
 Thierberg, by E. face, descended, 47
 Thompson, Rev. C. H., In Memoriam notice of, 36
 Titlis, at the back of the, 196 f.
 Titlis district, 46-7, 267
 Torell, Prof. Otto, 412-3
 Toro, Col de, crossed, 98
 Toro, Trou de, 98
 Totan ascended, 411
 Tribulation, Tête de la, by S. ridge, ascended, 319
 Trift hut, 34
 Trolltindene ascended, 543
 Trumble, Mt., ascended, 364
 Trutat, E., book by, noticed, 230
 Tyndall, Professor, 332-3

- VALLOT**, Joseph and Henri, book by, reviewed, 287
 Valpellina, in, 138; chamois-hunting in, 243
 Valtournanche-Valpelline ridge, notes on, 184-96
 Vanoise, Col de la, hut on, 548
 Vaux, Mt., ascended, 541
 Veglia, 455, 457
 Veglia and Fusio, between, 204-12
 Vereschaguin's Mountain landscapes, 279-80

- | VER | WHY | ZUR |
|---|--|--|
| Verte, Col de l'Aiguille, crossed, 538 | Whympcr, Mr. E., books by, reviewed, 152, 422 | Y ELD, George, book by, reviewed, 227 |
| Vierge, La, ascended, 547-8 | Wilcox, W. D., book by, reviewed, 417 | 'Yorkshire Ramblers' Club 'Journal' reviewed, 182 |
| Vignemale ascended, 93, 249-51 | Wiley, W. H. and S. K., book by, reviewed, 485 | |
| Vorder-Thierberg ascended, 197 | Workman, F. B. and H. W., book by, reviewed, 290 | Z ALMAG ascended, 410-1 |
| W AHLENBERG on Saliteima, 444 f. | Wrubel, F., book by, noticed, 350 | 'Zeitschrift D.Ö.A.,' vol. xxx. reviewed, 148; vol. xxx. reviewed, 479 |
| Weishorn, accident on, 216, 255-9; from W., 264 | Wundt, Maud, book by, reviewed, 483 | Zemu Glacier, 167-9 |
| Welsamles, 335-6 | Wundt, Theodor, books by, reviewed, 483 | Zermatt district, 264-5 |
| Wetterhorn, accident on the, 535, 550 | Wyttcnwasserstock, 452 | Zinne, Westliche, by B. K. face, 55 |
| White Fates, 7 | | Zurbriggen, Herr Matthias, book by, reviewed, 150-1 |

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