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THE
ALPINE JOURNAL.

AUGUST 1872.

A VISIT TO FERNANDO PO PEAK, AND A NIGHT IN THE OPEN. By RICHARD F. BURTON.

FERNANDO PO (Portuguese, Fernão de Pao),* an island of Africa, in the Gulf of Guinea, between Point Bullen (N. lat. $3^{\circ} 10'$), and Melville Bay ($3^{\circ} 44'$), and E. long. $8^{\circ} 22'$ and $8^{\circ} 54'$. Extreme length NNE. to SSW., 40 miles; average, 30. Extreme breadth, 32 miles; average, 15. The Portuguese discovered and named it Ilha Formosa, in A.D. 1741; and, after a vain attempt to inhabit it, ceded it to Spain in 1791 (March 24, 1778?). It was at once colonised by the latter, and abandoned in A.D. 1791 (1781). In 1827 it was colonised a third time by the British, who built at the north end of the island the settlement of Clarence Town. Pop. 981, chiefly liberated Africans. In 1859 (1843–1856) it was colonised a fourth time by the Spaniards, who converted it into a local Cayenne for political prisoners, and the latter soon died off.

Such is the most authentic and modern information which our gazetteers supply touching the island. But even the name of the gentleman-of-the-king's-household discoverer is wrongly given; formerly it was written Pó, and now Poó is preferred. Whether the 'beautiful island' was explored at the time when its sister islets came to light (A.D. 1470–71), or in 1486, when João Affonso de Aveiro was sent by D. João on a special mission to the King of Senaar, which resulted in bringing the first Malaguetta—Guinea grains, or African pepper—is un-

* There is no such word in Portuguese. Pão would signify bread (*panis*). Páo wood (*palus* or *palum*). The English official writings call it Fernando Po, and popularly it has become F. Po amongst the British, and 'Nanny Po' amongst the Africans.

certain. Mr. Major* (The Life of Prince Henry of Portugal, pp. 328-9) shows that João de Santarem and Pero de Escobar, when running along the Benin, or rather the Biafra Bight, sighted on December 21st a lofty and tree-clad island, which they named St. Thomas after the invocation of that day. They gave the name of Anno Bom (Good Year) to another which they touched on January 1st, 1471; and they probably explored the Ilha do Principe on 'Antinmas,' January 17th, 1471, because it was originally called Ilha de Santo Antão (St. Anthony).

The latest authority upon the subject of Fernando Po—I will retain the old English corruption—is Mr. Thomas Hutchinson, then H.M.'s consul for the island, and now transferred to the consulate of Callao, in Peru. During his residence of ten years my friend and colleague published three books upon the subject.†

After paying this much of homage to dry geography, we will proceed to lighter matter.

The world can show few grander sights than the oceanic panorama that awaits those who approach the equator, hugging the mud-covered, monotonous and melancholy West-African coast, all mire, malaria and mosquitos. Parted by only nine-

* This most useful and laborious work requires only a few corrections in detail. For instance, *Padrão*, primarily a model or a pattern, secondarily, a memorial pillar, does not form the plural in *Padrões* (p. 325), but in *Padrões* (see *Constancio*). *Terra de Bacalhao* should take the place of *Bacalhaos* (p. 374). We do not say 'cod-fishes' but 'cod-fish'; moreover, the dictionaries give a totally different meaning to the plural *Bacalhaos*, viz., 'tiras de lençaria que trazem pendentes sobre o peito certos officiaes civis e magistrados,' certain linen bands which magistrates wear about their necks. *Algália* (p. 328) is certainly not amber; the dictionaries give it civet, but I have heard it applied to ambergris. *San Domingo* (*passim*) should be *Santo Domingo*. 'Samoudri Rajah (the king of the coast) a name which the Portuguese afterwards converted into Zamorin' (p. 400) abounds in errors. *Samudra-Rajah* would signify sea-king, but, as I have shown in 'Goa and the Blue Mountains,' *Zamorin* is a corruption of *Samiry*, the P. N. of the Calicut dynasty. And I cannot help thinking that from Jacob the Indian, who related that *Alcuzet* is a land *multum viciosa*, *Diego Gomez* did not understand a 'very vicious' but a very luxuriant land. Such is the meaning of the Portuguese *riçoso* and the Spanish *vicioso* (*vitiosus*, but signifying *luxurians, ferax*). Hence we had in *Solis* (to mention no others) 'Tierra muy viciosa es.'

† 1. 'Narrative of Niger Expedition, &c.' London: Longmans. 2. 'Impressions of Western Africa.' London: Longmans. 1858. 3. 'Ten Years' Wandering among the Ethiopians.'

teen miles of a sea that resembles a Brazilian river-mouth, tower gnomon-like two sister peaks, compared with which the Pillars of Hercules and the Gate under the Pleiades (Bab el Mandab) are tame as the southern shores of England. To the left, or upon the mainland, rises, 13,760 feet high, the Mongo ma Loba or Mount of Heaven, the south-western buttress of an unexplored inland. I cannot but hold it to be *θεῶν ὄχημα*, or Vehicle of the Gods—first log-book'd by the first Liou-King—and I resent the modern usage, which has dwarfed the name to 'Shrimps' Mountain.* Its lower folds are black-green with the densest and hugest vegetation, with domed tree-heads overtopping one another like umbrellas held by a mighty crowd. All are distance-dwarfed, and none appears to excel its neighbour. The crowning mamelon, when not clad in sullen clouds, wears a golden gleam, the effect of the thin grasses, or a glittering coat of candied hoar-frost; while sometimes, after a tornado, a rosy sheet of virgin snow, soon to disappear from the sight of the sun, looks down upon the 'red equator.' I was the first European who planted foot upon this Alp (December 27, 1861); and since that time my prediction that the volcano is not extinct has been verified by residents at Fernando Po.

The Island Peak measures some 3,000 feet† less than its sister; while, therefore, the bare apex is comparatively stunted, and has never, I believe, been seen to bear the *Alpinas nives*, yet the surface has all the varieties of temperature belonging to the tropical and temperate zones, whilst hoar-frosts on the wave-crest which rises above this ocean of arborescence approach its growth of shrubs and graminaceæ to those of the polar regions. The low lands are rich in lignum-vitæ and tamarinds, bananas and guavas, oranges, and palms, especially the *Elæis Guineënsis* and the *Raphia vinifera*, the Devil's Date of Zanzibar, whose leaf is the largest of the vege-

* The river from which Theōn Ochema derives its trivial name is called 'A pescaria dos Camarones' (shrimp-fishery, half Portuguese, half Spanish) in the map of F. Pigafetta (A.D. 1578-1587), Rome 1591, copied by Mr. Major (*loc. cit.* p. 334).

† According to Captain Owen, Captain Vidal, and Lieutenant Bedford (1836-8) the Camarones peak numbers 12,357 feet; the hydrographic charts give 13,760, and I reduced it to 13,129. Fernando Po is given by No. 1 authority as 10,950; by No. 2, 10,700—an altitude also assumed by Messrs. Pellew and Mann. I found the thermometer showing 195° 30', temperature 69° (F.), which would diminish the height to 9,400 feet. It is usually assumed at 10,000 feet in round numbers, and this calculation is probably correct enough.

table kingdom, whose flower resembles a peony, and whose fruit spike, six feet long, must be carried by two men, like the grapes of Eshcol. The Bombax is the monarch of trees, exceeding in majesty even the African cedar whose bole is often ninety feet before it parts with a single branch. The minor growths are the African cork (*Musanga Smithii*), the Kola tree (*Sterculia acuminata*), with its carmine-coloured nut; the scrubby oak of Sierra Leone (*Lophira alata*), whose fruit, with light red wings, adorns the ears and necks of the wild people, the African oak, miscalled teak, the African mahogany (*Oldfieldia africana*), the sulphur tree (*Marmora lucida Benthamii*), the grand eriodendrum, the *Monodora grandiflora*, with its splendid foliage, and the erythrina, with its glowing masses of bloom suggestive of the Brazilian *floresta florida*. Lianas bigger than ships' cables romp from bough to bough; orchids clothe the broad shoulders of the branches; moss streamers hang like giants' beards; whilst a huge growth of pink-fruited sacchara, amoma, panica and other herbaceous plants, fifteen feet high, roll down in masses to the water-edge, and clothe the sands with eternal verdure. The torrid zone extends from the shore to 1,500 feet of altitude, the temperate to 5,000, and the frigid to the summit. I will treat of the two latter when we reach them.

Throw in between these two giant portals, an expanse of mirrory blue sea, glaze earth and ocean and air, with the soft sensuous haze of an African climate, whose 'rapture of repose' is seldom broken in 'the dries' save by that mixture of thunder and lightning, flood and deluge, called a 'trovoada,' our corrupted tornado, and you have before you the picture at once grand and powerful which met the eye of Admiral Hanno, and which still charms the sight of the coasting mariner *en route* for the Equator.

The 'Madeira of the Gulf of Guinea' has been too often described to leave room for fresh description. I may however observe, that though the island is only a hundred miles in circumference, the greater part of the interior is absolutely unknown. No European, and of course no emancipated negro, has ever ventured to tread the primeval forest, and none can say whether the aborigines number 4,000 or 40,000 souls. The Spaniards have had the common sense to supply their colony with a sanitarium, and to stock it with convicts—the latter indeed is the only proper use of African possessions. We are the only European exception to the rule, and the two objections popularly urged against the step are equally futile. Whilst the 'white' philanthropist shudders at the idea of

banishing felons to the deadly regions of West Africa, the 'black' philanthropist trembles at the consequences of introducing criminals amongst the innocent blacks. So long ago as the winter of 1863, when garotting was the fashion, I was allowed by the 'Times' to propose Ambas Bay and the Camarones Mountain as a convict station,* and I remarked that, although not recognised in that category, I found Western Africa, with an occasional ticket of leave, not so dark as it is painted. We are wisely re-introducing corporal punishment for brutal injuries to life and limb; presently we shall have the sense to allow life-long hard labour and banishment to rob the gallows.

But the peak of Clarence, or, as it has lately been sanctified to Santa Isabel, the northerly apex of the chine which with a rhumb of 45° bisects Fernando Po, has not escaped visitation. The first known ascent in 1840 was by the late Mr. Consul Beecroft; the cold, which sank his thermometer to zero, killed two of his servants. The second, in 1863, was by 'Don Pelton,' Special Delegate of Public Works, accompanied by Herr G. Mann,† Botanical Collector for the Royal Gardens, Kew. After failing in the first attempt, they again set out on March 23rd, and reached the top on April 3rd, 1861. The third, by Judge Calvo and Messrs. Laughland, Wilson and Mann, very shortly followed the second, and the fourth is that which I am about to narrate.

And now to plunge at once *in medias res*.

Tuesday, March 4, 1862.—This is the end of the hot season,

* So also vol. ii. p. 229, 'Abeokuta and the Camaroon Mountain.' London: Tinsleys. 1863.

† In 1863, when I published my account of Abeokuta, &c., Dr. Joseph Hooker complained by letter to the late Sir Roderick I. Murchison, that his *protégé*, Mr. Mann, had not received due honour at my hands. It is well, therefore, that the whole truth should appear. On December 10, 1861, I met Mr. Mann at Victoria (Ambas Bay), and we agreed to attempt the mountain together ten days afterwards. I returned in H.M.S. 'Bloodhound,' Lieut.-Commander Stokes, two days before time (December 18). To my surprise, Mr. Saker, the resident Baptist missionary, informed me that Mr. Mann had set out on the 14th with much merriment, boasting that he would *devance* me. On December 19, Judge Calvo Iturburu and I caught up Mr. Mann, and the 'poor herbalist' naïvely declared that he had done his best to be first and had failed. An account of the trip was published in the 'Journal of the Proceedings of the Linnean Society,' vol. vi. 1862. A paper by Mr. Mann, describing his expedition to the Camaroon Mountains, communicated by Sir W. J. Hooker, F.R.S., F.A.S., &c., was also read June 5, 1862, and printed in the 'Journal of the Proceedings.'

if the latter term can be applied to such tropical places as Fernando Po and Zanzibar. Here tornados still last, showing an excess of electricity, and presently furious large-dropped showers will severely try the best waterproofs. All the better, we shall escape the sun. The rains, as formerly in Rio Janeiro, display a remarkable periodicity, beginning every day a little before noon.

It was a beautifully bright and clear evening, which allowed a grand view of the Peak, as at 5.30 P.M. we marched, escorted by a number of friends, up the *Calle de Armero*, the Regent Street of 'Nanny Po.' We crossed a torrent bed with pools, where sable nymphs of Arethusa were dashing to pieces dirty linen, and passed over two rickety bridges spanning Cockburn and Hay Brooks, the latter falling into Back or Goderich Bay. After a walk of 1 hour 5 minutes (=2½ statute miles), we reached the little bungalow near Banapá, where my hospitable friend, Major Teodosio Noeli y White, had asked us to dine and pass the dark hours. It is close to Banapá, the lower of the two native villages, and the aneroid showed 760 feet above sea level.*

At Major Noeli's the party was duly formed. It was composed of three whites, Commander P., his coxswain Deane, and myself. They had their Kruboyes, answering to the names of Ben Jonson, Friday and Jack Richards. I brought part of my gig's crew headed by the coxswain, Black Will, No. 1; and Messrs. Laughland and Wilson had 'loaned' me a small detachment, consisting of Black Will No. 2, Grande No. 1, Grande No. 2, Tom Bushman and Tom Pepper; whilst Spyglass, who had accompanied the last exploring party, was sent as our guide. The ten blacks were formally placed under the command of my steward and factotum, Selim Agha, who had been brought up in Scotland and who spoke English with a truly northern lisp and burr.

These Krumen have been called 'crew boys,' probably upon the principle which converted the East India sipáhi or soldier to 'sea-pie.' They are not pleasant *compagnons de voyage*, but they are inevitable, so we must make the best of them. All amply merit the African titles, 'King Lie' and 'King Chop' (glutton), but the worst are perhaps those in the Government service. They cannot be trusted inside a house, so nimble are their fingers. On the road, despite the daily dilemma of 'dash

* Before setting out, my aneroid (Cary, London) showed at the consulate 29·275, and after return, 29·500. I have therefore assumed 29·387 as a mean, and applied a correction of +0·112.

or dozen,* they throw away their axes and hatchets, they lag behind, and they steal everything, provisions and even tea, till at last you are driven from brandy to trade rum, a villanous compound. Corks are their deadly enemies till they pick them out with their sheath-knives; even the water-kegs should be placed in locked boxes, and then they would doubtless smash them.

Wednesday, March 5, 1862.—We passed a pleasant night at Major Noeli's, where, during the last three weeks, the min. thermo. (F.) showed 67° and the max. 89°. At 6 A.M. it was 74°, that is to say, a warm 'muggy' morning. We set out, after breaking our fast, up a greasy path of ochre-stained clay, wet with the heavy dews distilled by the gigantic grasses and paved with the palm kernels, whose precious contents are here wasted. In March begins the Elæis season, when the men bring home the nuts, whilst the women make and sell the oil. The industry might greatly be increased throughout Western Africa, where it is still only in its infancy. I venture to hope that a Liberal (opposed to a liberal) Government will not, out of territorial considerations for negro chiefs, miscalled kings, leave our traders exposed to every manner of difficulty by removing the ships of war.

Despite the nuts, this path is slippery as the London clay about Beulah Spa, and even the naked-footed *indigènes*, though provided with that third leg, the Alpenstock, constantly fall. We met many upon the way, who offered us excellent palm-oil, fresh and milky. The industrious were cleaning their grounds, which had been planted in February with koko (*Colocasia esculenta*), here the prop of life. 'The yamfields can hardly be considered as cultivation,' says Mr. Mann, but I would ask him, Why not? He is right, however, in saying that the best grow about the north-west bay; the eastern yam is larger but not so good. For Africans, the islanders are not a lazy race; many of them, women as well as men, set out, fire-stick in hand, for distant plantations, whence they return graveolent in the evening. And they keep their toy-fields very neat and clean; with a little fancy the koko-ground may become a vineyard.

After crossing two brooks, then dry, but soon to roll turbid streams, we entered the village of Basile, the highest 'town,' or rather 'toon,' on the 'Clarence side,'—the east part of the island. It consists of scattered hovels buried in the herbaceous growths which here, as in the Brazil (Capoeira), always take

* 'Dash' is African for a present, 'dozen' is intelligible English.

the place of felled forests. The material is mostly the *Raphia vinifera*, a palm ever preferring the lowland swamps; its fronds form the roofs, whilst the foliage mats the floors.

Here our friends the Bubés, whose war-drum we had heard, although we knew that there was to be no war, held a parade, followed by a 'sweet-mouf palaver.' They offered a curious spectacle as they squatted before us in the public 'speak-shed,' wondering what our intentions might be and thoroughly suspicious, as the savage nature is wont, about anything and everything. To the excessive scandal of our friends, the excellent missionaries at Banapá, RR. Padres Campillo and Garcia, both sexes wore nothing beyond the T-bandage of monkey skin and the Tola pomatum, which coloured them like the so-called Red Indians. Their headdress partly resembled the Wazeramo of East Africa: the hair was plastered with red-ochreish earth and palm-oil, which gathered in knots like bilberries. But these people added thereto a monstrous and huge-flapped hat made of plaited bamboo and 'country rope;' it was covered with the skin of some small deer, a tail streamed down the owner's back, and the chief ornament was a ball-like bunch of fowl's feathers. This hat acts umbrella, but its special object is to ward off falling tree-snakes; the latter are often poisonous in Africa, and a Bubé looks above not around him, when he walks the forest. The favourite decorations are bracelets, necklaces, and broad leather-lined gaiters of 'wampum,' here chipped circlets of the Achatina shell, also acting money; a dwarf dudgeon is thrust into a bit of skin surrounding the left arm, and the men rejoice in the portable dressing-case. This is a crescent-shaped sausage of goats' fat in a bit of diaphragm, hanging below the throat like an officer's gorget in the olden day. It serves, when wanted, to ruddle the body for full dress. Each has his head-scratcher, which sometimes runs through and secures the hat; it is a splint of wood like that used by the Somal, and it is somewhat longer than the bodkins with which the fair Trasteverine stab one another.

E Bubé means O man! opposed to E Apotto, O stranger! hence the racial name, usually confounded with the English 'booby.' The breed was originally produced, not from the dust, but out of the mountain top, where precisely there is a crater. The language is South African, as we may judge by the harmonious phrase 'Ko-hodi uwe lobu, lobu.'—I love you much, much. They cannot pronounce certain letters, supplying, for instance, S for T, and saying Sibakka for Tobacco. They pronounce their few words of English far better than the coast people, but they have of course preserved the coast slang, e.g. 'drop that custom,' and so forth.

The Bubé, a poor and timid race, is not a bad people. They have neither human sacrifice, nor, I believe, infanticide. For adultery they cut off the woman's hand, except about Melville Bay, where intercourse with civilization teaches them to 'go in for damages.' They never steal, and are exceptionally honest; pure ignorance made the old travellers declare them to be 'the worst blacks of all Guinea.' With the most ancient of philosophers, they believe in a Deity who is far too high and too far to hear prayer and petition, or to work except by second causes. Their 'Rupe' is a rude form of the Hindu's impersonal Brahm, who rules his logical and material triad, Brahmá, Vishnu and Shiva, the Creator, the Saviour, the Destroyer, and of the Persian Akárana-Zamán (Boundless Time), who presides over the moral duality Hormuzd, the good god, and Ahriman (Ahura Manushya), the bad god, of whom the Hebrews made Satan. It has been conjectured, and not without reason, that the philosophical dogma was buried in the mysteries of Greece and Rome; it is found in the original worship of the Scandinavian All-Father, before Odin was associated with Freya and Thor, and the ever-increasing acceptance with which it now meets has lately found bold expression in the 'Martyrdom of Man.'

The main characteristic of the Bubé after his eternal suspiciousness (the *desconfiança* of the Brazilian Caipira), is an attachment to the manners and customs of his forefathers which savours of a somewhat rigid conservatism. Even a chief would be put to death were he openly to advocate 'progress.' The women rejected with disdain the bright shirts offered by the missionaries, and persisted in flaunting their bulky charms before the face of day. The men who accompanied us refused blankets, and preferred to sleep naked, when nearly 10,000 feet above sea-level. Easily enduring hunger for two days, they lived on roots and berries, not daring to taste beef or ham, pork or rice. Of course they retain their own names for all the sites upon the island.

At Basile, the last inhabited place, we were kindly permitted by the chief to engage two guides, and we carefully chose those who were not suffering from the endemic herpes, which in some cases resembles leprosy. The 'big man' was Neno Katutté. His forehead is gashed in a double set of threes, whilst similar ornaments extend from his ears down his cheeks; his brow is sub-Semitic; his nose is not flat, and evidently he is not closely related to the traditionally exaggerated 'Sambo' of the tobacconist. His beard is the ragged 'goatee' of the Bedawi. His chocolate-coloured skin is coarse as that of the

hippopotamus, and especially about the hands and feet it is scaly as that of a black fowl's leg. His form is peculiarly long-backed; the breasts, as in most of the males, are placed very low down, and the trunk ends in the short stout legs of the true mountaineer. *Au reste*, he is a 'gentleman,' as we see by the slow way in which he sips his liquor.

Neno Katutté was presently joined by a 'small boy,' a poor relation or dependant known as Kaboteulla. He is not a pleasant companion; a single glass of spirits upsets him; he then reels about and quarrels, cries, and swears that we want to 'cut,' that is, to kill him. His favourite position is at squat, warming his hands before the scantiest of fires, whilst a wealth of wood lies all around. This is the habit of the Bubé, as it is of the North American opposed to the Brazilian 'Red Indian.'

Neither of these guides is at all professional. As usual in Africa, they follow instead of preceding the party, and, as is not usual in Africa, they are ever forgetting to bar the wrong path with a twig or a bit of 'tie-tie' (lliana). It appears, indeed, their interest to delay us as much as possible, and to base upon waste time claims for trade muskets. Our only remedy is to cut their tobacco, and worse still for them, the rum, when they behave extra-badly.

During a total march of 1 hr. 20 min. we passed two yam-clearings and four brooks, one apparently trending north-west, whilst the rest flowed to south-east. We then reached the site afterwards called Santa Cecilia. Here at a height of 400 mètres (the aneroid gave 2,500 feet), the *maison caserne* intended as a Sanitorium was opened on November 30, 1863. A little above it 'Don Pellon' of the Woods and Forests built his frame house, 'Buena Vista,' where I lived for some weeks, and which I duly commemorated in 'A Mission to the King of Dahomé.*' I still remember with pleasure the cool clear nights, the murmurs of the pretty brook singing the song of Undine, and the freedom from the vegetable exhalations which vitiate the air of the lowlands. The growth near the sea is enabled to resist the furious winds and deluges of rain by its gummy and oily nature. The volatile organic matter, concentrated by superior atmospheric weight, doubtless takes a considerable part in forming the subtle evil which we call malaria.

The path was by no means easy to find: here it is soon 'killed,' as Africans say, by the bush. Presently turning between east and north-east, we came upon a deep gully

* Vol. i. chap. i.

running north-south, and we swung ourselves down by the trees to the brook that splashed and murmured below. It was a Diana's bath, a crystal-clear rivulet of the coolest water, bounded above and below by miniature rapids, and set in a stony marge overgrown with ferns, and especially with the *Trichomanes* which flourish between 1,000 and 5,000 feet, which gave it a northern aspect. The place was charming for breakfast, the time not quite so fitting, as 11.30 A.M. indulged us with a heavy shower.

We then entered the true forest, which is pierced, however, by Bubé paths, where the wild hunters track their 'bush-beef'—a term mostly applied to deer and monkey. In the *clairières* we had glimpses of the nether world—Clarence Town a mere patch, and Point William dwarfed to the size of a man's finger: above us rose the green curtain of hill folds, below us fell ridges and valleys all robed with domed trees, and suggesting a marvellous feracity and luxuriance of nature, a mine of wealth in the days to come, whilst the sea finished and completed the panorama. Six dry torrent beds, a little bush-cutting with matchets, a steep pitch at 1 P.M., and a second shower at 2 P.M., which left a pleasant freshness in the sparkling air, were the only incidents; and at 3.45 P.M. we came to the clearing which we called 'Laughland's Camp.' Our total that day had been 5 hrs. 30 min., a short march, but hard work at the beginning of an excursion. We lost no time in building a hut with cut branches, which was rendered tight by the gig awning, and comfortable by the stick bedsteads, which the Krumen rig up. The worst of No. 1 camp is that water lies far off.

Upon this march we saw little animal life, although the Bubés assert that it abounds. There was sign of monkey and porcupine, flying squirrels jumped from tree to tree, the pigeons were too wild for shot guns, and the butterflies were those of the Camarones coast. The most remarkable of the fauna were the Philantomba (Ogilby), the antelope, and the Touraco jay. The former is the Fritamba of Sierra Leone, popularly called the 'tree-deer,' because it walks along the fallen trunks. It is a small bush antelope, which gives the best flavoured 'beef;' the back is dark grey and the belly light; in parts its earths are everywhere scattered, and we found one with its legs broken by the usual Bubé trap, a noose and a spring. The Scansor contrasts greatly with the pets of our youth, which so often come to a bad end; it is probably the 'wild peacock' of which my friend and colleague Hutchinson speaks. The head is small, the tail long, and

the ground colour is a vivid metallic green with the liveliest crimson about the wings. The Touraco is a remarkably stupid bird, it erects its crest and stares at the stranger with out-stretched neck, and allows a second, and even a third shot, to those who want its bright plumes for hats. The chatter is a loud *hoo-hoo-hoo*, which has caused sundry travellers to describe it as barking like a dog. The nest is rough, and the white egg is somewhat bigger than a pigeon's.

The height of Laughland's Camp is about 4,750 feet, yet at 6 P.M. the thermometer showed 74° Fahr., a perspiring temperature. We spent a merry evening, though our hands and faces had been flayed by the sun, and though the rumbling of thunder all around us foretold a storm. The bivouac assumed its usual picturesque aspect; it is the only domestic scene which the traveller truly enjoys, and it wanted only the horse. Fireflies sparkled through the outer gloom, and the music of the screech-owl, which I have long learned to enjoy, was as resonant in the virgin forest as in the so-called 'gardens' of Damascus. The Krumen, as usual, played and sang, and bitterly 'chaffed' the Bubés in the worst of 'nigger English.'

Thursday, March 6, 1862.—This was the first of our bad days. We had been cautioned against losing the way, and yet we lost no time in so doing. We set out at 7.15 A.M. with the thermometer at 67° Fahr., and the birds singing free from the topmost boughs, whence they were saluting the sun. An excellent path led for the first forty-five minutes through an open forest which had notably changed its aspect. Palms were unaccountably wanting. The tallest trees, *Compositæ* and *Araliaceæ*, were not fifty feet high, in fact mere dwarfs; there were fine *Cyathiæ*, clustering columns thirty feet high, a quantity of *Ericinellæ*, *Clematis*, *Liliacæ*, *Salvia*, *Rubus* (*apetalus*), *Acanthaceæ*, *Trichomanes*, *Aspleniums*, *Herbaceæ* and *Graminaceæ*, which no longer numbered fifteen feet of stature, whilst a variety of epiphytes, *Lycopodium*, and mosses, orchids, ferns, and *Bigonias*, converted the tree tops into dry timber.

We then entered a dense jungle, and worse still we found it pierced by three parallel paths. The first or easternmost, the English trail, ran up the ridge crest and gave a charming view of the lower slopes; it was still broad and well defined, having been laboriously cut by Mr. Laughland's party, and besides being the most direct it has the best camping-places and the nearest springs. The central line is the old Spanish track, taken by Mr. Beecroft, and leading to a height called 'Buenos Ayres;' it had not been used for years, as the Bubés

reported after creeping through the bush. The third or westernmost was the lowest and the most encumbered with herbaceous plants, yet Spyglass insisted that this path had been preferred by Mr. Mann.

At 8.30 A.M. we began to make what the Brazilians call a *picada*, and after 1 hr. 30 min. of hard work, we came upon a fine broad trail, which we followed for some distance, delighted with the European aspect of the forest and treading upon the crisp foliage. We hurriedly breakfasted at a place some 5,700 feet above the sea-level, the thermometer at 10 A.M. showing 74° (F.); and we derided the doubts about our losing the way expressed by former expeditionists. About noon we struck up the fine path leading to the Buenos Ayres ridge; but presently we found ourselves upon the edge of that mountaineer's curse, a deep *barranca*; its pathless sides were painfully steep, and our clothes were sopped by the water dripping from the thick jungle. A Kruman reported from a tree-top that the peak lay to the south-west, whilst we were progressing to the north-east, a rhumb which presently would have led us to the track at Cape Horatio. Spyglass however persisting that the path would presently turn to the right direction, we descended the deep ravine by a ladder of tree-roots, only to find that there was no such bend, whilst rain began to fall, accompanied by thunder.

Vexed by the *contretemps*, which dashed all our expectations, we retraced our steps, and were assured by Neno Katutté that all would be right if we struck to the south-west. He led us by an easy road down a shallow valley, where the bush was unusually thin. At 1.45 P.M. we struck a trail which presently placed us at a Bubé hut (No. 1). We fondly imagined it to be that where Mr. Mann had passed the night of March 29th; but here we were at the height of 5,700 instead of 8,500 feet. The hovel stood in a little clearing fenced by tall herbaceous growths backed by a ravine which promised water, but which did not keep its promise. It consisted of mats and uprights, wholly wanting side walls; and half a cocoa-nut proved it to be of African build as surely as a silver spoon would have shown it to be not.

After a rest of fifteen minutes, we began again at 3.40 P.M. to explore the true line, which still lay far to the south-west. A ravine filled with the densest growth, here beginning to be extra thorny, led us to a *cunette*—a deep trench bridged by a *pingela*—a fallen tree, wet and slippery. There was much of this work to be done, making us greatly envy 'Le Blondin.' Tree-blazings pointed up hill; they were however old, and probably Bubé work.

After a time, we came upon a regular and very distinct trail, trending north-west and by north, and apparently connecting two villages. We followed it for some distance, skirting on our left prodigious masses of vegetation that clothed the slopes between the projecting ridges; fallen trees barred the path, and many appeared shattered by lightning. Our course through this sea of verdure was rather of descent than of ascent, and we instinctively felt that it was not in the right direction. Black Will and a Kruboy were sent to see where it debouched. After return, they declared that they had sighted the mountain-top: we therefore resolved to follow them on the next day, and at once returned to Bubé hut (No. 1). Our hard work had produced only 1 hr. 15 min. of direct advance.

Spyglass and others were sent on purpose to find water. They did not find it, and the dinner was neither copious nor gay. Yet there were no sand-flies, the pest of the lowland forest, and we could see our breath—a great delight to the traveller in the tropics. Our camp was visited by swarms of bees, like those which we found upon Camarones Mountain, and the *angelitos* (little angels) described by Humboldt. Collected by the damp, they sometimes disappear; at this season they awake at 7 A.M.; and now and then, frightened by being entangled in our dress, they use their stings, which are of the mildest. About midnight a rushing wind announced torrents of rain, accompanied by thunder and lightning; we caught a *quant. suff.* in our waterproofs, and at once made merry. After this we stopped the leak in the canvas which we had spread over the Bubé hut, and slept soundly till 6.30 A.M.

Friday, March 7, 1862.—Saint Friday was not our friend this time. After cocoa had been served out, Factotum Selim walked up hill, and saw the summit clear of clouds. He then started with a small party to explore the path, and returned at 9 A.M. with a good account. We struck a fair trail through unusually thick masses of vegetation, which here face the rainy and windy north-easter. Crossing three chines, parted by torrents of verdure, at 10.30 A.M. we came upon a stream-bed where basalt clothed the ground, whilst ferns clothed the basalt. Water appeared in sundry distant pools, and the place got the name of 'Deane's Brook.' The weather was charming—it had become an English July. Some day, in this Paradise of pure cool air, about 6,780 feet high, there will be a sanatorial settlement.

Leaving Deane's Brook at 11.45 A.M., a quarter of an hour placed us at the old clearing which Spyglass called the Spanish

Camp. Here also we found a basaltic bed, with some fifty pools, one of them 20 feet long by 3 broad, scattered over a couple of miles. A third 'fumara' and sundry ascents and descents showed us a broad arrow blazed upon a tree, and pointing to the left. The path then became very bad, the deep slides and climbs were stiff, stiffer, and stiffest; the surface was of the densest bush where the patriarchs of the forest lay fallen, not felled. Then there were thickets of blackberries, nettles stood in walls of stingers 8 feet high, and Northern thorns formed a queer plague in intertropical Africa. The *Salvia* was exceptionally sweet, and the fruit of more than one species, waxing smaller as it rises higher, almost makes us feel faint with the perfume—we did not neglect to gather it for juleps. We remarked the pretty heath *Bleria spicata*—one of the seventeen plants already found to be peculiar to Abyssinia, the Camarones and Fernando Po, and the *Hypericum*, connecting Bourbon with the other three—a plant with beautifully green foliage and rich blossoms, at a distance resembling dog-roses. The legions of flies that followed us like wasps were not so misplaced as the nettles. The labour, which caused us to halt every thirty minutes, was relieved by the view. On the right we had glimpses of Father Ocean, framed in a mass of clouds; from the left the Peak of the Camarones frowned upon the insects that had violated his virgin head, whilst far below the deep folds falling from our feet lay a distance-dwarfed crescent, one of whose cusps was Cape Bullen, the north-westernmost point of Fernando Po.

Resuming our march at 4.55 P.M., after a total march of 4 hrs. 40 min., we came upon Bubé hut (No. 2), at an altitude of 8,100 feet. We had seen on the right a dwarf green peak, which the guide declared to be the true head. Excited by the assertion, Commander P. and I, after a few minutes' rest, set out with him, ordering the others to build a camp and to await the stragglers. We presently reached another Bubé hovel (No. 3), in an old plantation of Koko-yam. There the prospect of Clarence Peak, gleaming yellow and opening suddenly to the left, robbed us of all our prudence. At 6.15 P.M. the gloom began to deepen, the moon was hidden, and night came upon us as a shroud. My companion, who squeezed sage-juice into his mouth, and feared lest thirst might take away his senses, tried a little walking, till some heavy falls convinced him that it was labour in vain. He spoke roughly to Spyglass, who at once became, as the Hindoos say, 'ghabrá' (wild); he saw 'suffing' (something), and the whirring flight of a 'debbil-bird' (bat) completed his discomfiture.

My companion wore a waistcoat and no coat, I a coat and no waistcoat. Neither of us had tobacco or 'pocket-pistols,' and both suffered from a terrible thirst, cold feet, and wet nether garments, whilst fire was not to be thought of. Fortunately we found a tree with a hollow facing east, and warding off the cold and noxious south and south-west land breeze. We disposed ourselves with our backs to the tree, with our heads covered by my coat and with our feet upon the Kruman's naked body, which acted as a warming-pan. It was a queer night in the open, at more than 8,000 feet of altitude. Distant shots and shouts fell upon our drowsy ears till 10 P.M., followed by a dead silence. At first we dozed in the crisp dry air of early darkness; then we walked about and stamped to warm our stiffened limbs, loud gusts swept high over head, and shortly before the greying of the dawn we fell into a lethargic slumber.

Saturday, March 8, 1862.—We awoke somewhat surprised to find ourselves so well. Spyglass was still confused by remembering the bat; but, after losing the way two or three times, he led us at 7 A.M. into camp, where we wasted no time in relieving our physical wants. Little could be done after such a night, especially as the day was rich in tornados, which for a time dispersed the bees and flies. The men were sent everywhere to reconnoitre the best path to the Peak; all went wrong in the labyrinth of tracks, except Deane, who returned with a highly satisfactory report. At 2 P.M. a party of four Bubés, headed by Obotapella with two muskets, a woman and a child, brought up a basket of koko and a Touraco jay for their friend Neno Katutté—decidedly a good deed. We contented ourselves with shifting our ground to Bubé hut No. 3, an operation which took us only twenty-five minutes.

Sunday, March 9, 1862.—After a showery and thundery night and a slight breakfast of cocoa, we set out *en masse* at 8.15 A.M. to breast the last wooded hill whose trees were hung with the largest and vastest mosses. It was much like scaling a ship's side, and at times we perforce zigzagged to the east, the west, and the east again; still we were cheered by the sight of the Yellow Peak now standing clear above us. Presently, we debouched from the forest upon a growth of herbaceous plants, ericas and others, eight to ten feet high, mixed with bramble and the homely nettle, and pierced by a network of paths. Another angry zigzag, a succession of furious showers and fierce sunbursts enjoyed only by the shivering Bubés, and we came upon the end of the 'bush.' Grass now appeared in a sharply cut line extending to the summit; it was

disposed in long stripes amongst the lava beds. The principal growths, which run up to 400 and 500 feet below the summit, were *Senecio*, *Blæria spicata*, *Leucothœe*, *Helichrysum*, and *Veronica*; the *Hypericum* showed its remarkably light and vivid green, the *Cytisus* appeared to have been rained upon with gold, and we especially remarked a *Myosotis* with her eyes of blue. There were sundry rocky ravines in which rain-water had long been standing, as we saw by the number of tadpoles, whilst dragon-flies flitted over the surface. The Spaniards of the last century utilised this fine grazing country by introducing black cattle, which soon succumbed, however, to the Bubé musket, and it might still be made a first-rate rabbit warren. But the wild people are in the habit of firing the surface, and this causes the denizens of Fernando Po to quake with fear lest the crater may have broken out once more.

Around Clarence Peak (*Pico Santa Isabel*) is a *campus Phlegræus*, a *Katakekaumene*, a *pays brûlé*, abounding in cloughs and cañons, and in crevasses and 'calderas;' we did not, however, succeed in discovering as in the Camarones Peak traces of *soffione* or *soufrière*. It was useless that day to attempt the ascent. The laden men had lost the road, and few had accompanied us; our provisions were running short, there was neither bread, meat, nor cocoa, and when the Kruboy's rations of rum gave out they lagged behind to scrutinise the contents of our baskets. So we resigned ourselves, and built a screen to defend ourselves from the south and south-west winds, and styled it 'New Camp.' The only incidents of the night were the hooting of the owls, the pacing of the deer, and the bush-dog whining for a firestick. I could not but admire the hardness of the old Bubé, who slept at squat, rising at times to trim and feed the kindly flames.

Monday, March 10, 1862.—We spent the day in collecting the dispersed bearers and in wandering down the ravines and over the outlying hills. The sky above us was tolerably clear, but thunder rumbled below our feet and dense cumuli and wool-pack prevented our seeing the whole island spread like a map under our eyes. In the deeper gullies rose walls of cut vegetation and the dorsa were clothed with sweet briar and hypericum, mint and clover, cytisis and a chamomile like *immortelles*, nettles and yellow grasses. We set out at noon, and working up a 'fiumara' in places three hundred feet deep, we pitched upon an eminence, which we called 'Ridge Camp.' The Peak bore to WS. of us, and we observed very distinctly the vast crevasse seen from Camarones Peak, which lies to

the north-east of the Fernando Po apex in the clear and grassy pyramid capping the virgin forest.

Tuesday, March 11, 1862.—This day we at length reached the summit.* At dawn the thermometer stood at 43°, and about the same place Mr. Mann found his minimum representing 39°. The sky was exceedingly clear as we set out (6.25 A.M.), over grass slippery as glass under heavy dew; but at 7.45 the air became hazy and clouds banked up, obscuring the horizon of land and sea. I spare the reader all reflections concerning the frequency of such disappointments in travelling as well as elsewhere. After 1 hr. 15 min. up hill to the north ridge, we turned to the west and stood upon the highest point, which is the western lip of a crater some 350 to 400 feet deep—I wonder how Mr. Mann found it to be 40. Outside the cone there is good and deep soil, a degradation of basalt extending to the summit; inside the beautifully-modelled and unbroken cup about three-quarters of a mile in circumference there are a few ribbings and tiers of bare rock, a compact grey basalt; hanging woods of huge heaths; tussocks of sharp and wiry grass and, at the bottom, signs of sinking water in the smooth soils: it must at times form one of the tarns or mountain lakes so frequently found in volcanic highlands.

Reaching the apex or southern point of the western rim, we boiled our thermometers, which showed 195° 30' with a temperature of 69° (F.) Here also were two cairns, containing bottles and other memorials of those who had preceded us. Many craters yawned around us, and we easily counted four to the north-east and six to the west. For the most part they were regular sugar loaves rising clear and glassy from the abyss of forest. Some were egg-shaped or otherwise eccen-

* Synopsis of Marches.

| | | | hrs. | m. |
|-------|------------------|---|------|----|
| 1 | <i>Tuesday</i> | March 4, 1862, Clarence Town to Major Noeli's | 1 | 5 |
| 2 | <i>Wednesday</i> | " 5 " to Camp Laughland . . . | 5 | 30 |
| 3 | <i>Thursday</i> | " 6 " " Bubé Hut (No. 1) . . . | 1 | 15 |
| 4 | <i>Friday</i> | " 7 " " Bubé Hut (No. 2) . . . | 4 | 40 |
| 5 | <i>Saturday</i> | " 8 " " Bubé Hut (No. 3) . . . | | 25 |
| 6 | <i>Sunday</i> | " 9 " " 'New Camp' . . . | 3 | 0 |
| 7 | <i>Monday</i> | " 10 " " 'Ridge Camp' . . . | | 25 |
| 8 | <i>Tuesday</i> | " 11 " " Peak . . . | 2 | 0 |
| Total | | | 18 | 20 |

We returned in two days, the first a march of 4 hrs. 35 min.; the second of 6 hrs. 10 min., being a total of 10 hrs. 45 min. Rainy weather in Africa generally entails half marches, and thus we found that Mr. Mann took 12 days to ascend the Peak, setting out on March 23, and reaching the summit on April 3.

trically-disposed; and bearing north of the main craters was a huge feature some thousand feet high and about one mile and a quarter in circumference. Like all the others, it showed signs of having long been extinct; the basalt was old and grey, and in places it had degraded to a quantity of humus.

We passed the night at Ridge Camp, in very cold dry air: and success made us all merry, although we had wasted eight days upon a march which downwards occupied only two, although we had lost our way a dozen times at least, and although our heads had been bumped against branches, our faces had been stung by bees and nettles, our hands and wrists had been stabbed by thorns and torn by brambles, our knees had been barked by falling over roots and tripping lianas, our shoes were slogged, and our clothes were in tatters. Such is African travel, and yet to-morrow I would return to it. (N.B.—Not to-morrow, as I set out for Iceland.)

Wednesday, March 12, 1862.—The down march is proverbially easy. The Krumen, who complained 'all him body walk for cold' (*i.e.* of cramps), walked their sharpest, looking forward to 'Nanny Po' as homeward driven asses to their stables. Selim Agha was now the guide, way-losing had ceased, and the track as it descended appeared easy after the steep gradients above. As usual in these altitudes, it was Scotland in the morning, and the tropics at noon. I find in my diary the following simple notes:—

Started 7.20 A.M.; covered sky, ending in furious rain, thunder overhead from east and west, but no lightning seen. In a few minutes highest Bubé hut (No. 3). Covered successively Tree Valley and Nettle Valley. Reached Bubé hut (No. 2), and spring. Made up camp. Total march, 4 hrs. 35 min., pleasant night. Next day set off at 7 A.M. Crossed Deane's Brook, and other basaltic fumaras. Lowest Bubé hut (No. 1). Zigzagged up very steep ridge to Buenos Ayres. Camp Laughland at 2.35 P.M. Brandy stolen, salt and mustard *in locis*. Perspiration begins. At 'Don Pellon,' about 3.30 P.M.; too unclean and ragged to enter. Reach Basile at 5 P.M. already dark. Banapá, 5.20 P.M. Noeli's house shut. The Padres gave us ecclesiastical refection, bread and Spanish wine. Started in the dark, smoked our pipes, the Krumen tailed off, and the nymphs of Arethusa, who were retiring to roost, cried out, 'Good night, Sar, berry co'! Slipped, after a march of 6 hrs. 10 min., through the back-door into her Majesty's Consulate, Fernando Po.

THE DISTRICT OF AROLLA. By A. B. HAMILTON.

IT has been suggested to me that I may usefully supplement the account of an ascent of Mont Colon, which lately appeared in the 'Alpine Journal,' with some details of my own experiences in the same district. My acquaintance with the little inn at the head of the Val d'Arolla and the neighbouring mountains is a tolerably close one. During the summers of 1870 and 1871 I made there lengthened sojourns amounting in the whole to thirteen weeks. Other and older members of the Club, imbued with something of the spirit of Ulysses, and accustomed to wander on for ever from pass to pass and from range to range, will, I know, after this confession, look on me with compassion, if not with contempt. I try to console myself with the reflection that the position of a rolling stone is not always preferable to that of a '*bloc perché*,' and that in the former capacity I should never have gathered even such moss as serves to form the matter of the present paper.

At the village of Les Haudères, about an hour's walk above Evolèna,* the Val d'Hérens splits into two branches. The eastern mounts steeply to the great Ferpècle glacier and the Col d'Hérens, the other branch, steep at first, but subsequently more level, and penetrating far deeper into the heart of the Pennine chain, is the Val or Combe d'Arolla, so named from the abundance of the species of fir, so picturesque when old, known here as the *arolla*, and in the German Alps as the *arven*.

The Val d'Arolla offers in perfection the usual scenery of a high Alpine glen. A torrent, broken slopes and knolls crowned with weather-beaten trees, which tell in every limb of their hard six months' strife with winter storms, are always at hand; and it is seldom that some rocky pinnacle or icy crest does not show against the sky, and, in the eyes of the mountaineer at least, give a finishing touch of interest and suggestiveness to the landscape. At the first group of 'mayens,' called Satarne, just clear of the wood through which the path mounts, and at the junction of the stream from the Glacier des Ignea, with the main stream of the valley, the wanderer

* I follow the customary spelling, although the names are always pronounced in the valley Evolène and Arolle. A good deal of information on the nomenclature and traditions of Val d'Hérens will be found in an Article 'Über einige Ortsbenennungen und Sagen des Eringer Thals, von A. Ritz,' in the Jahrbuch of the Swiss Alpine Club for 1869-70.

from the direct path, who mounts the hillside on the left bank of the former stream, will soon light upon one of the loveliest of Alpine tarns, the Lac Bleu, a transparent, deep-blue gem, shining out of a setting of green moss and darker pines.

But as Dr. Johnson and the advertisements tell us, 'the most beautiful landscape in the world is improved by an hotel in the foreground,' and I must hurry on to the point where the majestic Mont Colon is seen for the first time abruptly closing the valley.* On this spot, a little over 6,000 feet above the sea, the landlord of the present inn built in 1865 a 'mayer' or *châlet* for summer use only, to which he could retire in the heat of August. Travellers arriving from the Col de Colon or some other glacier pass, and seeing a new *châlet*, insisted upon sleeping there, and, consequently, in 1866, my friend summoned sufficient courage to try and convert his summer palace—though not on quite the same scale as that of the Chinese emperors—into an hotel. I can vouch for its having contained at least one comfortable bed, though I believe the complaints sometimes made of the further sleeping accommodation have not always been without foundation. The question has, however, only an historical interest, as the old inn will be superseded in the course of the present summer by a new hotel of similar proportions to the one at Evolèna. When the plans were being drawn out, I pressed strongly on the landlord and architect the necessity of constructing sufficiently solid walls between the rooms to deaden sound, and I have consequently some hope that sojourners at Arolla will be spared the unpleasantness common to most mountain inns of over-hearing at night their neighbours' candid opinion of their persons or intellects, and the still greater inconvenience of being completely aroused in the early hours of the morning by every enthusiastic mountaineer who may be leaving his bed in order to attack some peak or glacier pass.

During my first visit to Arolla in 1870 my chief occupation was endeavouring to shoot a chamois, but alas! fate was against me, and I was obliged to content myself with the 'pleasure of pursuing' and with the thought that I was at any rate enjoying true sport. My guides were my landlord and a friend of his. The former, being the local magistrate, is commonly known as the 'judge,' and the latter, being the local Poole, is honoured with the title of 'the tailor.'

The penalties inflicted on poachers by the laws of the

* The view of Mont Colon engraved for a frontispiece was taken from the slopes behind and above the hotel.

canton Valais are severe, fifty francs being the fine for shooting without a license (which costs ten francs), or for carrying even an unloaded gun before September 1st, the commencement of the proper hunting season. This fine is doubled if the offender is a public officer, and the latter is considered an 'accomplice after the fact,' and is liable to a double fine, if he does not report anyone he may see poaching. Notwithstanding such, at first sight, fatal hindrances, I have heard of Englishmen who have found no serious difficulty in hunting in August, although to preserve appearances they were at times driven to tricks of a transparency somewhat ludicrous. For instance, one of my friends, while engaged in unlawful pursuit of chamois, was forced down from the mountains by pouring rain which destroyed all hope of seeing game. In order to give the weather another chance, they proposed to take shelter in some cattle châteaux,—but the chief cowherd was a 'garde de chasse.' His companion, however, was ready with a means of evading the legal difficulty which did credit to his acuteness. He simply took the lock off my friend's rifle, and when it was discovered by the 'garde,' remarked that Monsieur had wanted an alpenstock, and in default of a better, had taken the gun, after removing the lock!

During the whole of August 1870, we had hardly more than one fine day, so that even had we been immoral enough to indulge prematurely in murderous intentions against the chamois, they would have been sufficiently thwarted by clouds. One lovely morning in September we sighted about 7 A.M. on a height called Mont Dolin a herd of twelve or thirteen head, which subsequently took to the rocks leading to the ridge called the Mont Rouge. After reaching the Col du Riedmatten (to the top of which, I may here state, ladies can ride on mules), we followed the rocks of the Mont Rouge to our right, keeping as close to the top as possible for the purpose of getting occasional glimpses of our game, but on the north side so as to be concealed. Presently we came upon an extraordinary chimney, being literally a four-sided shaft in the rock, with two sides coated with the most brilliant clear ice. Having ascended this, we had to cross some rather dangerous couloirs, narrow, but full of quite fresh snow into which one sank up to the waist. We could not help feeling some fear lest the whole mass should give way and carry us off bodily in an avalanche on to a small glacier beneath. Arriving at 2.30 P.M. at a Col called the Casierte, the judge and I (the tailor having gone to the other side of the herd) concealed ourselves, and anxiously awaited the report of our companion's gun, which it

had been arranged he should fire for the purpose of driving the herd towards us. If the chamois came my way at all, they would necessarily pass within very short range, so I was armed with an enormous shot-gun, much longer in the barrel than the rifles, and loaded with a very large charge of powder, thirteen slugs (each slug the quarter of a bullet), surmounted by a whole bullet. This murderous weapon, pronounced infallible at close quarters, was playfully called 'la mitrailleuse,' but, as the sequel will show, when the decisive moment came, it like the weapon from which it received its cognomen failed to do the meditated execution; and, if the case had not been too great a disappointment for words, might well have provoked the exclamation, 'nous sommes trahis.' About 5 o'clock the welcome sound of the tailor's gun was heard, and shortly afterwards I perceived four chamois coming leisurely towards me at a walk, evidently considering themselves free from all danger. When the leading chamois was barely twenty yards off, I pulled the trigger, the cap simply snapped; I put on a second, again the same result; and away scampered the chamois. It was evident that the powder must have got damp when crossing the snow, and there was nothing more to be done but to consider the moral: after crossing soft snow, always draw your charge.

My sporting failures were, however, partially redeemed by some mountaineering successes. On the whole the most satisfactory expedition of the season was our ascent of the Aiguille de la Za, an extremely sharp tooth forming part of the chain called 'Les grandes Dents,' and lying between the Dent Perroc and the Dents de Bertol. I had looked at this point with longing eyes for about six weeks, but a few remarks I had made about attempting the ascent had not been encouraged. The only previous ascent had been made three years previously by a party of guides, three of whom reached the top. They had reported it too difficult to be attempted by travellers, and consequently no one had tried it since. About this time two members of the Alpine Club visited us with Oberland guides, and one of them much wishing to attack the Aiguille a joint party was arranged, but bad weather prevented the execution of the plan. On September 16th I started with my usual guides (neither of whom had been with the first party) though the weather did not promise well. We crossed the chain at a Col de Bertol to the north of the Col which is taken when going to Zermatt. Here we encountered a most bitter southeasterly wind, which, though too intensely cold to allow us any hope of seriously attempting the Aiguille, yet softened the snow and made it heavy walking. Pushing on with the idea of at

any rate reconnoitring our peak we were rewarded on reaching its base by a burst of warm sun and a sudden fall of wind. After a hasty meal and a shortly-abandoned attempt to ascend from the south-east, we set to work seriously at the north-east corner; the rock was very smooth, and boots had almost immediately to be discarded. This expedient is, I am told by experienced mountaineers, one seldom or almost never resorted to in the high Alps. I can only say that personally I found it a great help on really difficult rock. It was adopted in the present case at the suggestion and following the example of my companions. The occasional advantage of bare feet is, I believe, more felt by chamois-hunters, accustomed to move without the security of a rope over smooth faces of rock, than by ordinary mountaineers, who seldom encounter serious difficulties where there is no snow or ice and are naturally unwilling to expose their toes to frost-bite on the latter. Chamois-hunters pique themselves upon being able to pass wherever a chamois can, and I have known a hunter arriving at a very difficult spot to throw his boots down it first, and thus increase the necessity for descending by that route, and at the same time add to his physical powers. I may perhaps venture also to quote in support of the practice, the following story, current in the Italian Tyrol.

A hunter pursuing with reckless energy a wounded chamois was led on to the top of a tower of rock, where he at last overtook and captured his victim. But to his horror, on attempting to return, he found it beyond his power; the footholds by which he had climbed were not of a nature to serve in the descent. Maddened by the horrible situation in which he found himself, thus left to choose between slow starvation and a sudden death, the wretched hunter cast on all sides eager glances after some mode of escape. The reward of his search was little calculated to diminish his alarm. On a ledge close beside him, which had at first escaped his notice, lay, or rather crouched, a still half-clothed skeleton, grasping a gun. The story of a hunter having long ago disappeared from his village, flashed across his mind, and he saw before his eyes a prophecy of his own fate. Inspired with the courage of despair, the still living man tore off his shoes, and gashing his feet with his hunting-knife in order to gain all possible power of adhesion to the crag, made a final but successful effort to descend the rocks.

On the present occasion, we were not, I am glad to say, forced to resort to the last expedient of the Tyrolese, and to use our pocket-knives for any such unpleasant purpose. The crags proved sound, and afforded a fair number of small crevices

into which the tips of the fingers could be inserted. We mounted chiefly by V-shaped 'cheminées,' and in these the toes, not being fettered by a hard boot, played a most prominent part. An hour's wriggling, if I may so term it, brought us to the top. The peculiarity of this panorama, when contrasted with the views from the neighbouring peaks, is the Glacier d'Otemma, which, looked down on from this point, has the appearance of a gigantic high road. The precipice on the west side of the Aiguille is very fine. The descent of the rock occupied an hour, and no sooner were we off it than the sky clouded, the wind rose again, and we only reached home just in time to escape a storm. The ascent has been made twice during the last year by Englishmen.* This ended the season of 1870.

In 1871, though I still failed to get a chamois (my companions, in consequence of the number of visitors, being seldom at liberty to accompany me in their pursuit), I enjoyed several most exciting 'hunts,' and made some very successful mountain expeditions.

One great disappointment I endured in the matter of chamois deserves to be mentioned, as showing the character of the guides. An Oxford doctor of divinity, who was recruiting his exhausted powers in an Alpine tour, wished to go up the Point de Vouasson. When I came down and found both judge and tailor preparing to go, I, considering this ascent not sufficiently dangerous to require two out of three of the party to be guides, said, 'No, it is not worth making "Le Monsieur" take two guides; you (to the tailor) go after chamois, and I will go to make a third on the rope.' Chamois-hunting had not been as yet very successful; however, the tailor acquiesced in the arrangement without a murmur, and virtue was rewarded by his getting in less than two hours, in a place where cattle go, a chamois with the finest pair of horns I have seen, which, as the largest known in the valley, were subsequently presented to me, and now adorn my room.

On August 22nd, I had a severe lesson of the imprudence of attempting any difficult ascent with only one guide. The tailor was away, but the weather was fine, so the judge and I determined to go up the Mont Blanc de Cheillon,† the second

* The time now occupied in the ascent is, to Col de Bertol, $3\frac{1}{2}$ hrs.; to foot of Aiguille, 1 hr.; ascent, $\frac{3}{4}$ hr.; less time being required now that the route is known.

† More correctly Seilon. The mountain takes its name from the Alp Seilon, at the head of the Val des Dix. This pasturage was once so rich that every cow at milking-time filled her pail. Hence the name Seilon, meaning milkpail.

in height of the surrounding peaks, and one which he had not before ascended. At the Col de Cheillon we, or rather I, made a light meal, and decided to make the ascent, my learned friend, who had been complaining of indisposition, pronouncing himself better. One hour cleared us of the ridge of rocks running south-east from the Col, and about forty minutes more across very hard snow, still in the shade, where occasional steps were required, brought us to a dip in the arête which joins the Mont Blanc de Cheillon and the Ruinette. Now came the real business of the ascent. The arête was formed of a very steep slope of ice, thinly covered with frozen snow, blown at the top into a cornice overhanging the precipice on the other side. Keep below this cornice, and you ran no *positive* danger; cut your steps on it, and of course the danger was very great. Unfortunately, my companion, who was now seriously out of sorts, and in whom the exertion and illness combined produced a sort of blindness, chose, despite my remonstrances, the latter course. It was not till we got to the summit (in $2\frac{1}{2}$ hours from the dip) that I found how ill he really was, and I was not sorry when we had retraversed the arête, especially as in the worst part there was a glimpse of daylight to be seen through two of our steps, which were in all 300 in number.

At the Col de Cheillon we had a discussion as to whether we should return to Arolla, or descend as we had intended, upon Mauvoisin. The judge, though he could not eat anything, wished strongly to do the latter, so I took the knapsack, and we descended by the Glacier de Giétroz, my companion remaining at the cattle châteaux on the Alp. I can strongly recommend this passage from the Val d'Hérens to the Val de Bagnes. The Glacier de Giétroz is quitted (when descending to the Val de Bagnes) on the left bank just above the fall. While crossing the Alp several fine views of the ice-fall, and down the Val de Bagnes, are obtained, and six hours' walking takes one from the inn at Arolla to the inn at Mauvoisin. At Mauvoisin the only travellers were one of the 'Sanitary Commissioners of the Lancet' and his wife, who were purposing on the morrow to go to Prarayen *en route* for Zermatt; I, however, persuaded them to go with me to Arolla instead by the Col de Mont Rouge. At the châteaux we found the poor judge, who had eaten nothing the previous evening, or that morning, but pronounced himself capable of getting over, which we did in eight hours (gaining three hours on our friends, who had no reason for hurrying), a wonderful performance on his part, as he had only touched a morsel of food once since he

left Arolla. All's well that ends well, and rest and chlorodyne restored the invalid to health in due time.

On August 31st Mr. Rickman and I started with the judge and tailor for the Dent Perroc,* which had never been ascended, a party of guides who attempted it having been driven back by bad weather. At the base of the mountain we stopped to breakfast, and I may take this opportunity of recommending to the notice of travellers the black bread of Arolla. To those who have not tried black bread and cheese for walking on, I say, Try it; and those who can speak contemptuously of mountain fare as being composed of 'coarse rye-bread and acid curds' (*vide* 'The Switzers') are, to my mind, to be pitied. Black bread varies like other things, but, as a rule at least, that found in the highest châteaux, which has generally been kept three or four months, is most nutritious, and for mountaineering purposes very portable.

From this point the ascent required all our energies, and we were glad to put on the rope. The view of the Aiguille de la Za with a hanging glacier below it is very fine, and is best seen when a little above the arête connecting the Dent Perroc and the Aiguille. The tailor once or twice exhibited some really wonderful powers when endeavouring to find a practicable route, but though great care and attention was required, when putting down one's feet, to avoid sending stones on to the heads of those below, the rocks afforded better holding than we could have hoped, looking at their general steepness. There were several places which we, the amateurs of the party, could certainly not have ascended without the aid of a rope, even had mattresses been kindly held beneath in case one fell, and the descent was considerably harder, occupying 3 hrs. 40 min., as against 3 hrs. 30 min. of ascent. The view was magnificent, embracing the Oberland, the Weisshorn, Dent Blanche, Monte Rosa, the majestic Matterhorn, and the precipitous side of Mont Blanc. Immediately below us was the junction of the Glaciers de Ferpècle and Mont Miné. The expedition is *very* stony, and will therefore probably not become popular, but the view is worth the trouble of the ascent, and the climb itself is also good practice for those who appreciate rock-work. We left Arolla at 4.30 A.M., and got home at 6.40 P.M., having spent two hours in building our stone man at the top.

The next day, whilst I was basking in the sun, and resting my shoulders, which were stiff from the effects of alternately

* Dent Perroc, or Pirroc = stony tooth, *pirra* being the local patois for a stone.

clinging to rocks or pulling at the rope, the guides came to say, that they had been talking the matter over, and that as I had been the first traveller up the Aiguille de la Za and the Dent Perroc, they considered that if it were possible I ought to secure the remaining peak of the chain, the Dent des Bouquetins, but that they would go on only one condition—namely, that they should not be paid for the expedition. Such love for their craft was not to be checked, and on the morning of September 6th we started along the familiar route of the Col de Bertol. An hour's walk from the Col, passing on the way the glacier, which comes down from the point marked in the Federal map 3,783 mètres, carried us to the base of the central peak, the highest of the three. About twenty minutes of rock brought us close to the base of a small glacier, and here we deposited my axe and our provisions, with the exception of *the* bottle of wine. This glacier abruptly terminates in a wall of some forty or fifty feet, from the upper edge of which depend large hanging icicles. We were obliged to pass under the drippings from these, which was not very pleasant, as the sun was melting them, and on a prior survey we had been much impressed by the number of falling icicles. Soon after we cut steps across a snow couloir, and had to run the gauntlet of a few falling stones. Higher up, our route led us to the edge of the glacier mentioned before, and to avoid the loss of time incidental to cutting steps on the ice, we passed what I found rather an awkward place. The rocks retaining the side of the glacier had a fault in them, and a section some eight or nine feet deep of the glacier was presented; the ice gave bad holding for the hands, whilst the small portion of moraine which remained on the steep slope of the rock, seemed to afford but an insecure foothold. With this exception our task resolved itself into rather stiff rock-work. The final ridge was three or four feet in breadth, but formed of large loose stones, which we were afraid, if once disturbed, would carry others away with them. The precipices on either side, especially on that of the Glacier d'Arolla, were splendid. The finest objects from the summit were the glaciers descending from the Dent d'Hérens. It is not, however, so good an 'all-round' view as that from the Dent Perroc, the neighbouring Italian ridges being only brown, burnt-up, grass-covered Alps. Looking down on the Mont Colon, one regrets that it has been as it were 'nipped in the bud,' having splendid proportions down below, but being ruthlessly cut off above, and having been left like an unfinished pyramid, with, roughly speaking, a large table summit. We managed our descent quicker than

we expected, and were glad that the sun had left our side of the mountain in the shade so that we were freed from falling stones. My guides considered this expedition the most difficult of the three above described; and certainly at times our chance of success looked most hopeless; but one's powers were not on the full stretch for so long a time as when on the Perroc.

I will add in conclusion a few remarks on the expeditions mentioned in the Alpine Guide. In crossing the Col de Chermontane, the Glacier de Vuibez should not be descended unless a local guide who has traversed the pass that year advises it, as the route is not easy to find, and in the afternoon there is considerable danger from falling seracs. In ascending, you take the right bank of the northern stream, work gradually across it, and when about half-way up the fall, return to the right bank again. In descending by the Glacier de Pièce, it is best to keep to the right bank till the lower part of the glacier is reached, then cross it, and keep under the rocks (called 'Luet quonda'), on the left bank. Some years one can keep to the left bank all the way. In crossing the Col de Colon the route is somewhat altered, and you now follow the lower part of the Glacier d'Arolla as long as possible, then take to the moraine or ice at the foot of Mont Colon, and skirt round it until the Col is reached. The best route from the 'flat, stone-covered plain' mentioned by Mr. A. W. Moore in his account of his first passage of the Col de Bertol, to the Glacier de l'Arolla, is quite clear of the precipitous ravine through which the stream descends, and is a little to the south of it. There is more or less of a path, and though rather steep and consequently trying to the knees, no great care is required, as is the case if the stream is followed. In going to Zermatt, the Glacier d'Arolla must be left before the fall, and the bank ascended at right angles to the glacier. Last year, a very celebrated guide kept too much to the right, and trying the Glacier de Bouquetins instead of the Glacier de Bertol, and being overtaken by bad weather, failed altogether to effect a passage.

ON THE RECENT RETREAT OF THE LOWER GRINDELWALD GLACIER, WITH SOME REMARKS ON OTHER SIMILAR OSCILLATIONS DURING MODERN TIMES. By F. F. TUCKETT.

IN the introductory chapter to the interesting volume 'Das Hochgebirge von Grindelwald,' by Dr. Aeby, Herr von Fellenberg, and Herr Pfarrer Gerwer, the last-named gentleman has devoted some pages to the local popular legends or stories bearing upon the question of the former oscillations of the glaciers of the central mountain knot of the Oberland; and still more recent changes, which I had an opportunity of examining last July, have directed my attention to the history of similar phenomena. I venture in the present paper to lay before the readers of this Journal some of the results of my investigation, merely premising that they lay little or no claim to originality, and can be only regarded as a somewhat superficial attempt to bring together a certain class of facts, in the hope that they may receive from others some of the attention which they appear to me to deserve.

In the church at Grindelwald there is still to be seen a small bell, weighing about sixty pounds, bearing on its upper moulding the inscription, 'O! Sancta Petronella, ora pro nobis,' and, on the lower, the date 1044, with wide but regular intervals between the figures. It is believed that the inhabitants of this district were first converted to Christianity in the tenth or, at earliest, in the ninth century, and it is asserted that the bell in question originally belonged to a chapel dedicated to St. Petronella, which was erected in a cave still accessible, and situated near what was at that time the end of the Lower Glacier, and on its left or west bank. It is added that this chapel, and a similar one at Viesch in the Valais, marked the beginning and end of a frequented pass across the ridge of the Viescherhörner, or Walcherhörner, as they were formerly called. No less general is the belief that on several occasions, and amongst others in 1578, children have been brought over this high pass to be baptised at Grindelwald with the Protestant rite. 'We,' says Herr Gerwer, himself at that time the pastor of the village, 'have carefully examined the local registers, and find only the following entry: "1576, den 10. Junii han ich iij Kind taufft, eins Jodeas auf Sengg von Wallis uss Sauss," without further remark, which would scarcely be the case if the youngster had inaugurated his earthly pilgrimage by a Club-tour over the Vieschergrat. A Valaisan peasant, converted to the reformed

faith and residing "auf Sengg" in the Löttschenthal, may very well have brought the child to be baptised.' One is tempted to suggest that if the chapel dedicated to St. Petronella (Peter's daughter) formed any part of the attraction at Grindelwald, the most appropriate glacier route that a Valaisan peasant could have selected would be that over the Petersgrat.

Our author proceeds as follows: 'Other grounds compel us to dissent from this widely-spread belief. It was precisely during the last quarter of the sixteenth century that this Lower Glacier advanced so considerably that about the year 1575 it destroyed this very chapel of the "Nellenbalm," according to a very probable tradition. An old MS. chronicle says: "Im 1600. Jahr ist der ynder (innere, thaleinwärts gelegene, obere) Gletscher bei der undren Bärgebrigg in den Bärgebach getrolet und hat man müssen 2 Häuser und 5 Scheuren abraumen, die Plätz hat der Gletscher auch eingenommen. *Der under Gletscher ist gangen bis an Burgbiel unter den Schopf (Fels) und ein Handwurf weit vom Schüssellauinen Graben, und die Lüttschine verlor den rechten Lauf und war vom Gletscher verschwellt, dass sie durch den Aellauinen Boden auslief. Die ganze Gemeind wollt helfen schwellen, aber es half nichts: man muss die Kälter (Gehalt, Gebäude) abraumen, 4 Häuser und viel andre Kälter; da nahm das Wasser Ueberhand und trug den ganzen Boden wäg und verwustet es. Im 1602. Jahr ging der Gletscher an zu schwienen (abnehmen) und hinter sich zu rucken.*" From this it is clear that between 1600 and 1602 the glacier attained its greatest recorded extension in historic times, *whilst in the year 1750 it had returned to its extreme upper limit, and the grass-grown terminal moraine, a stone's-throw distant from the "Graben" (ravine, or couloir), through which the "Schüssellauine" descends into the valley, to this day confirms the accuracy of the writer, and indicates the precise limit attained by the glacier.* Yet only twenty-four years before an infant, forsooth, was brought over the Vicschergrat—a simple impossibility!

'It is no doubt true that at a former period the direct intercourse between the Oberland and the Valais was much more frequent than at present, but communication *viâ* the Vicschergrat must be relegated to the mythic period rather than sought for in the sixteenth century. It appears to be proved that in the year 1712, on the outbreak of the last Swiss war of religion, some Protestants of the Valais fled across the glaciers to Grindelwald; but it is stated that it was at the cost of great labour and hardship, and that the party reached Grindelwald

in a half-dead condition.' Thus far Herr Gerwer. Let us now turn to another class of record bearing upon the proceedings of the Lower Grindelwald Glacier.

In the third volume of the 'Jahrbuch' of the Schweizer Alpenclub (1866) there is an interesting paper by Herr von Fellenberg,* of which I venture to offer the following translation:

'From writers of the last century we learn that in former times coloured marble was quarried in the valley of Grindelwald, and worked up into objects of art, although in the valley itself almost all recollection of the fact has died out. During the past summer (1865) the extraordinary melting of the glacier has strangely revived the old tale, and confirmed in the most striking manner the notices of Gruner, Altmann, Walsler, &c. Let us first hear what Altmann says on the subject: †

"Near the glacier we found a fine marble quarry; here there lay about many pieces of the most beautiful quarried marble of varied colours—white, yellow, red, and green—awaiting transport by sledges in winter to Unterseen, and from thence by the lake and the Aar to Bern, there to be manufactured. This marble owes its extreme loveliness to the variety of tints in it, so that I doubt whether there exists elsewhere any other in which the colours are at once so beautifully blended and contrasted. The slabs for tables and mantelpieces manufactured out of it are exported to foreign countries. One notices that some of the colours, such as the green and red, are harder than others, which is owing to the varieties of earthy matter of which it is formed, and their different hues." One page beyond Altmann continues: "We must not forget to note that, as we ascend, the formation on which not only the glacier, but also the entire *Eismeer* above it rests, changes in character. Below it lies on the most beautiful variegated marble; but higher up, and nearer to the surface of the ice, one sees that the marble is black, intersected by white veins, and continues thus up to the point where the level *Eismeer* commences, so that the *Eismeer* itself and the water beneath it may be said to be contained in a great basin of marble, whose beauty all the skill and might of man would vainly try to describe or imitate."

* 'Ueber den alten Marmorbruch von Grindelwald' ('On the Old Marble Quarry of Grindelwald').

† In his 'Versuch einer historischen und physischen Beschreibung der Helvetischen Eisgebirge.' Dritte Abhandlung, p. 33. Zürich, 1751.

‘Gruner says: * “This glorious mantle of ice overlies a foundation of fine black marble which, as the specimens washed out below indicate, is principally filled with the most beautiful and brilliant cubical pyrites. All around, too, it is enclosed by a band of marble. On the Mettenberg side, *hard by the glacier*, is one of the most beautiful varieties of marble anywhere to be seen, with red, yellow, bright and dull green, blue, and black shadings, which is quarried on the spot and transported to the capital, where it is used for a variety of purposes.” Again, farther on: “On the north side towards the Eiger, above the plain already alluded to, the finest black marble traversed by white veins is met with.”

‘Later writers for the most part repeat the statements of Altmann and Gruner, as, for instance, G. Walser.† In an enumeration of Swiss minerals, he remarks, under the head of marble: “In the Canton Bern, on the slope of the Mettenberg, close to the glacier, the most beautiful marble anywhere to be seen is found, with red, yellow, bright and dull green, blue, and black shadings.”

‘Gruner, too, ‡ describes the hand specimens of Grindelwald marble collected by himself, as “1. Flesh-coloured, clouded with grey (‘*grau genebelt*’); 2. Ash-coloured, with dark grey clouding; 3. Reddish-grey, spotted; 4. Dark yellow, with light yellow veins; 5. Grey, with dark stripes; 6. Rose-coloured and yellow, spotted with various colours; and, 7. Variegated marble of various colours between the Wetterhorn and Schreckhorn, and black, with white stripes, from the Gletscherberg to the Eismeer at Grindelwald.”

‘J. Wyss § repeats these statements, but gives no fresh information, as at that period the marble quarry had long lain hidden beneath the twilight of the glacier. There is little doubt that it was between the years 1770 and 1779 when the advance of the glacier was very considerable, that the quarry was filled up with rubbish and covered by the ice; and that this took place very suddenly we may conclude from the fact, to be presently further alluded to, that there was evidently not even time sufficient to remove stones already hewn to a place of safety.

* In his work on ‘*Die Eisgebirge des Schweizerlandes.*’ Erster Theil, III. Abschnitt, page 88. Bern: Wagner, Sohn, 1760.

† In his ‘*Kurzgefassten Schweizer Geographie, sammt den Merkwürdigkeiten der Alpen und hohen Berge.*’ Zürich, 1770.

‡ In his ‘*Anzeige der Schweizerischen Mineralien.*’

§ In his ‘*Beschreibung des Berner Oberlandes.*’

‘König, Wyttenbach, and Kulm* are equally silent as to the occurrence of marble in this locality.

‘During no year of the present century was the retreat of the Lower Grindelwald Glacier so rapid and continuous as in the summer of 1865. The landlord at the Gletscherhütte, who tunnels out the grotto in the ice, and had to commence a second about the middle of August, as the first had become demoralized by the continuous melting, noticed one day, on a portion of moraine just brought to light, a block of rose-coloured stone of remarkably regular form. On a closer inspection, he was in the highest degree surprised to observe that the block of flesh-coloured marble had been regularly and rectangularly hewn on all six sides; and, after having been washed and dried, there was distinctly legible, amongst the cavities produced by the pick, the mark L 150, quite clearly inscribed with some dark material. The block was removed to a safe position and shown to strangers, who, for that matter, were much less really interested in the remarkable specimen than the natives themselves.

‘During a second visit to Grindelwald last year, I heard of the discovery from Herr Pfarrer Gerwer and Herr R. Bohren, landlord of the “Adler,” and at once called on Schlunegger, the “Gletscherwirth,” who showed me the mysterious block, and remarked that several others had since come to light, most of them hewn and larger than, though not so beautiful as, this, which is two feet long, fourteen inches broad, and about seven inches thick, and is of the purest flesh-coloured marble that I have ever seen in the Alps. It is dense and very fine-grained, traversed by some crystalline veins of limestone spar, with grey and yellow specks. The six sides of the oblong parallelepiped are all worked, and exhibit deep-pointed cavities, indicating the action of a pick, whilst the surface is tolerably smooth, polished by transport and glacier action. The letter and figures L 150 are plainly to be made out, although the colour is only recognizable in the depressions of the dressing. It would have been desirable to secure this interesting specimen for a museum or an architectural collection, but Schlunegger seemed to be of opinion that he had found a lump of gold in this curiosity, and demanded an exorbitant price. We now proceeded to search the moraine in all directions, and soon came to the large block discovered by Schlunegger. This is a magnificent specimen, some three feet long by two feet five inches high, and about as thick, also rectangularly quarried, and showing on the flat sur-

* In his article in Hopfner's ‘Magazin.’

faces clear signs of dressing. At the lower right-hand corner (in the position in which it was discovered) is a portion of a blasting hole, about four inches long, a proof that at the time powder was used in quarrying. The surface of this large block exhibits far more glacier polish and rounding of the angles than that of the smaller one, so that the tool-marks have almost disappeared. The marble is very irregularly tinted; red, flesh-coloured, yellowish, grey, and white tints alternate. Dense, fine-grained, and crystalline, it here and there passes into a greenish claystone ("Thonstein"). These green deposits are somewhat characteristic of the marbles of the Alpine intercalated beds ("Zwischenbildungen"), and appear to be a dense mixture of chlorit (*sic* in orig. chlorit?) and claystone ("Thonstein"), associated largely with crystalline grained limestone. Schlunegger had seen this great block laid bare in the course of a single afternoon at the end of September. At the time of my visit twelve months later, it was already about forty feet distant from the neighbouring ice.

Our further search for other hewn blocks of marble was most successful. One, which was about three feet long, two broad, and one thick, in the form of a table, has one side completely dressed, and displays the figures IIII three inches high and half an inch deep. Another smaller block, also, has only one side dressed, whilst the remainder were still quite in the rough. All are more or less rounded and polished, and show striated surfaces. The fact that, with the exception of those specimens, even the smallest of which are more or less rectangular in form, very few blocks or fragments of coloured marble can be detected in the terminal moraine of the Lower Glacier, is a proof that the quarry or pit was worked in the solid rock, from which the glacier was unable to detach much material. The circumstance, too, that all the blocks lay on the moraine of the right or Mettenberg side of the glacier, clearly points to the existence of a marble quarry still concealed by the ice which, if the glacier continues to retreat, must come to light in a few years.

'There can, then, be no doubt that the blocks described are from the quarry which Gruner and Altmann visited a century ago, and from which various reddish, flesh-coloured, and yellow mantelpieces and pier-tables, still to be seen in many of the older houses of Bern, were clearly derived.'

Thus far Von Fellenberg.

Since the autumn of 1865—the date of the latest personal investigation above recorded—the retrograde movement of the glacier has been very considerable, if not uninterrupted, and

when I visited it at the beginning of last July (1871), it had probably retired to about the same point as in the middle of last century, when, as has been seen, Altmann (1751) refers to the quarry as being actually worked, and Gruner (1760) speaks of it as 'hard by the glacier'—a statement which would fairly describe its position when I saw it, since the ice was probably not more than 100 yards above it. About 1770 the ice appears to have again advanced and covered up the site of the workings, so that we have here interesting and trustworthy evidence of the amount and duration of a great oscillation, which has covered a period of about 120 years, reckoning from minimum to minimum—1751 to 1871. The bed of coloured marble was not of large extent (I regret that I did not make at least some rough measurements), and the traces of any old workings, which I suspect were very much limited to the removal of portions of the surface, were obscured by the moraine *débris* scattered about, as well as by a commencement of renewed operations, to which I owe the acquisition of numerous specimens. The variegated marble appeared to have a well-marked *upper* limit, both in the direction of the Mettenberg and along the trough of the valley, and between it and the ice cliff was a bed of what I take to be calcareous schist.

Nothing could be more beautiful than the rounded surfaces of exquisitely polished and variously tinted marble, every irregularity of which had been bevelled down by the great ice-plane, whilst *striæ*, rivalling in fineness the work of the most delicate etching needle, or engraver's burin, scored the surface with markings which, though as a whole they clearly indicate the forward movement of the mighty graving tool, frequently display cross-hatchings at a high angle, suggestive of local displacements or eddies in the ice.

I spent an hour or more with my brothers-in-law, Messrs. J. H. Fox and Eliot Howard, in examining this beautiful feature of the rocky beach, which the great secular tide of the mighty *Eismeer* above had once more laid bare for our inspection, and we succeeded in procuring some remarkably fine hand specimens from amongst the chippings scattered about by the workmen. Almost every attempt, however, to detach any of the marble *in situ* with our axes, or by dashing large stones against the polished surface, proved unavailing, so dense was the marble, and so completely had the ice ground away every salient angle of which advantage might have been taken. Having, in the course of many years' wanderings in the mountains, been constantly on the look-out to secure

specimens of glacier-polished rock, I can bear witness to the extreme difficulty of obtaining them of good quality. If portions of such rock be easily detachable, it is generally because the material is soft or brittle, and, in such case, almost all the finer details and striæ will have been obliterated by weathering; whilst, on the other hand, if the rock be hard enough to bid defiance to the slowly disintegrating action of frost, sun, moisture, wind, and vegetation, it generally proves also too tough for such appliances—not even excepting a geological hammer—as a traveller can usually dispose of. Let me, then, advise those mountaineers who may visit Grindelwald this year, not to turn away with, perhaps natural, disgust from the tourist-haunted path which leads to the so-called ice-cave of the Lower Glacier, but following it to within a safe distance of that modern travesty of the genuine St. Martinsloch—probably drilled by some sainted progenitor of the present *Bohren* family—devote a short time to the examination of one of the loveliest bits of glaciation, both as respects finish and material, that they are likely to meet with, let them wander as long and as widely as they may.

On the general question of the actual determination, or even estimation, of the periods of oscillation of glaciers, the time has scarcely arrived to speak with anything like precision, so far as I can judge, the data being as yet insufficient for a safe generalisation. Even a mere glance at the facts at our disposal—such, for instance, as those recorded by the celebrated M. Venetz, *ingénieur-en-chef du Valais**—suffices, I think, to show that whilst there exist ample proofs of the occurrence of great changes of climate in historical as well as in geological times, these changes have been by no means in the same direction at the same epoch throughout the Alps, the movement of many glaciers being retrograde, whilst others have been, and are, contemporaneously advancing. Even when some local custom or tenure, or legend, presupposes the fact of, or at least the belief in, such oscillation, exact details as to the year are in almost every instance wanting. Herein, it appears to me, consists the especial interest and importance of the evidence connected with one of the best known and most accessible glaciers in the Alps, which I have endeavoured to

* In his interesting and valuable memoir 'Sur la Variation de la Température dans les Alpes de la Suisse,' 1821, published in the 'Denkschriften der allgemeinen Schweizerischen Gesellschaft für die gesammten Naturwissenschaften.' Ersten Bandes zweite Abtheilung. Zürich, 1833.

detail with, I fear, somewhat wearisome minuteness. By way of comparison and further illustration, I will add a few miscellaneous facts, culled from various quarters, but for the most part derived from the rich collection in M. Venetz's able memoir.

Under the heading of 'Faits qui tendent à prouver un abaissement de la température,' M. Venetz states that 'from Praborgne (Zermatt), there was formerly a *much frequented* passage to the Val d'Hérens. At Evoléna families are found which originally belonged to Zermatt, and *vice versâ*. On April 20, 1816, this last commune (Zermatt), bought up from the cathedral chapter of Sion a quit-rent arising out of an annual procession to that town, which the commune had been in the habit of making *by the valleys of Zmutt and Hérens*. The commune of Evoléna is also said to have deeds proving that it possessed the right of free trade with Piedmont.'

The remains of an ancient paved track traversing the Moro Pass have been seen by many of us, and are constantly alluded to in guide-books, &c, but the following fuller information, collected by M. Venetz, may not be devoid of interest: 'According to a sort of MS. chronicle of the valley of Saas,* this track, as well as a similar one leading from Val Antrona to Saas, were already "ancient" in 1440. "1440 wurde von den Saasern und denen von Antrona die *uralte* Strasse über den Berg hergestellt: beyde mussten ihren Theil erhalten bis auf der Gipfel des Berges;" and again: "Auf Antrona und Makunaga passirte man vor Zeiten häufig mit Pferden, mit allerhand Vieh, und vielen Kaufmannswaaren und wurden schon im Jahr 1440 *uralte* Pässe genannt." The chronicler adds that in 1515 a law-suit arose between the inhabitants of Saas and Antrona. The judge was of Luzern, but as at that time the Swiss had occupied the Italian borders where the cardinal Schinner had appeared in arms, the decision requiring the Antronese to keep up the path took no effect. In the first half of the seventeenth century the temperature fell considerably, and the passes became very difficult, and it was at that period that the lake formed by the glacier of Distel burst its barrier for the first time. Subsequently, during the eighteenth century, more particularly in the years 1719, 1720, and 1790, great efforts were made, and at considerable expense, to repair the track to Antrona for the purpose of transporting salt and other merchan-

* 'Die Geschichte des Thales Saas; aus etlich hundert Schriften zusammengetragen.' Von Peter Josef Zurbrüggen, Beneficiat zu St. Antoni von Padua.

dise, but these repairs did not last long. We, however, know several private individuals of Saas who were acquainted with inhabitants of the valley, who have transported wine on the backs of mules from Macugnaga to Saas. It is true that latterly a glacier had to be traversed which has since so much increased that this road is abandoned for home traffic, but the spots may still be seen where the sumpter beasts were halted for food. It is evident that this road would not have been opened at great expense if a glacier had at that time existed on the pass, for it would have been foreseen that at any moment traffic might be rendered impracticable.

‘ The Glacier de Rothelsch, above the new Simplon Hospice, is not old. M. Escher, curé of Biel, and a native of the Simplon, informed us that he had found documents at the Hospice which prove that this glacier did not exist in 1732; whilst M. J. A. Escher, innkeeper at Brieg, who, when young, resided in the old Simplon Hospice, as well as many other private individuals of the neighbourhood, still remember distinctly that in their youth there was only a small mass of snow.

‘ Whilst the new Simplon road was in process of construction, roots of trees were brought to light on the summit of the pass. A spot near the summit level is called “in Lerch” (“the Larches”), but no trees now exist there. The destruction of the timber at this point appears to us to be the work of man, but the roots found on the actual summit must indicate a fall of temperature, since trees are no longer met with at that elevation, even in inaccessible positions, unless protected from cold winds, which is not the case with the Simplon.

‘ Near the parochial church of Faerbel, in the valley of Viège, the estate named “Zur Stapfen” owed annually to the principal church of Viège a certain measure of walnut-oil, produced from the trees which formerly grew in this elevated position, where there now exists only a sickly cherry-tree.

‘ At Fribusi, between the two Pontis at the entrance of the Val d’Anniviers, M. J. Salamin, an old inhabitant of Luc, has seen vines growing more than fifty years ago, as well as a large fruit-bearing cherry-tree at Luc, and a young walnut below the last-named village. At the present day no fruit-trees are found at that height, nor is any vestige of a vine to be seen at Fribusi.

‘ Many writers on the Valais cite Brieg and Moeril as wine-producing spots, and some even add that the wine is excellent. Now, however, there are only a few isolated, or rather wild vines, or some trellised ones before the houses, and the grapes ripen with difficulty. We imagine that this error is due to

Simler, who asserts that vines commence at Moeril. Were the vineyards of these parts famous in his time, or at least before him? One might suppose so from what has been stated, and the name of "Weingarten" given to a spot near Naters, and to another near Gless, to a certain extent confirm this supposition.'

The famous disaster caused by the extension of the Glacier de Giétroz in the Val de Bagnes, and the series of similar *débâcles* arising from the rapid advance of the Vernagt Glacier, by which the Oetzthal has been repeatedly ravaged, and to which it is still liable, give a practical importance to the question of the periodicity of these oscillations which, at first sight, it may scarcely appear to possess. The circumstances attending the advance of the last-named glacier have been narrated in a careful and detailed manner by Dr. M. Stotter in a very interesting pamphlet of seventy-five pages,* and in a more condensed form by Von Sonklar.† To these two publications I must refer those who may desire to acquaint themselves with the minutiae of a most remarkable phenomenon, and confine myself here to a rapid enumeration of the leading facts.

At certain periods, then, the Hoch Vernagt and Rofenthal Glaciers, combining their streams, push forwards with accelerated speed until, in the course of from two to four years having traversed a space of nearly a mile, they reach the stream in the main valley below, cross to the opposite side, and pile their masses to a height of several hundred feet against the opposite slope called the 'Zwergwand.' After maintaining this enormous development for some time, the ice very gradually melts, and the combined glacier slowly retreats until it resumes its minimum dimensions after an interval of from twenty-five to thirty-five years. Six such oscillations are recorded :

| | | | | | |
|----|---------------|------|-----------------|---------|--------------|
| 1. | Commencement, | 1599 | End of advance, | 1601 | Lake formed. |
| 2. | " | 1626 | " | unknown | " |
| 3. | " | 1677 | " | 1681 | " |
| 4. | " | 1770 | " | 1772 | " |
| 5. | " | 1820 | " | 1822 | " |
| 6. | " | 1843 | " | 1847 | " |

Of these the first, third, fourth, and sixth were of the first magnitude and importance, and terrible damage was caused on the bursting of the huge ice-barrier by the waters of the lake

* 'Die Gletscher des Vernagtthales in Tirol und ihre Geschichte.' Innsbruck : Wagner, 1846.

† In his valuable and elaborate work 'Die Oetzthaler Gebirgsgruppe.' Gotha : Perthes, 1860.

accumulated behind it. In June 1845 it was calculated that 2·297,820 cubic mètres of water escaped in the course of one hour, and raised the level of the already swollen Inn at Innsbruck to the extent of two feet.

The extraordinarily rapid advance of the ice is a fact which I think deserves more attention than it has received from most writers on the causes and modes of glacier motion. In 1770, for instance—the very year, be it remembered, of the rapid extension of the Grindelwald glaciers—the Vernagt Glacier is stated by Dr. Stotter to have descended 47·4 mètres in one week, whilst in 1845 its progress from May 20 to June 1 was at the rate of 11·7 mètres per day, and on the last-named day alone the space traversed reached the enormous amount of 45·51 mètres, or 1·89 mètres per hour. The total amount in eighteen months—from November 13, 1843, to June 1, 1845—amounted to 1331·4 mètres. The attention of the Government had been called to the impending danger, and it is on the long-continued careful observations of a specially-appointed commission that these figures, as well as those of the following tables, are based :

| | | | Mètres |
|---------------------|-------------------|-----------------------|--------|
| From Nov. 13, 1843, | to June 18, 1844, | amt. of daily motion, | 2·035 |
| „ June 19, 1844, | „ Oct. 18, 1844 | „ „ | 1·062 |
| „ Oct. 19, 1844, | „ Jan. 3, 1845 | „ „ | 2·071 |
| „ Jan. 4, 1845, | „ May 19, 1845 | „ „ | 3·305 |
| „ May 20, 1845, | „ June 1, 1845 | „ „ | 11·727 |

Setting aside the minor oscillations of 1626 and 1820, the more important ones are seen to occur at intervals of 78, 93, and 73 years, or 84 years on an average, and it would also appear that the maximum development was only attained when both branches of the glacier shared in the extension. To whatever cause the original forward impulse of such an enormous mass may be attributed—and the magnitude of the phenomenon may be inferred from the fact that it is calculated the protruded ice amounted to no less than 66·553,700 cubic mètres—it deserves to be noticed that the movement of its tongue was not slowest during the winter months, but precisely in the warmest season of the year. Thus, from November 13, 1843, to June 18, 1844, the average rate of motion was 2·03 mètres per day, but in the summer period, from June 19 to October 18, it sank to 1·06 mètres, and during the winter months, from October 19, 1844, to May 19, 1845, rose to 2·85 mètres per day. The configuration of the ground and consequent variations in the amount of friction in its valley-bed at different points of the course followed by the ice-stream, may have had

a disturbing influence, but in connection with the period of the year it is to be noted that when the Sulden Glacier, at the head of the valley of the same name, pushed down very suddenly and rapidly between 1815 and 1818 to a distance, I believe, of 500 or 600 yards—to judge from the freshly-deposited moraine matter which still marks the limit of its inroad—the movement of its tongue at Christmas, 1817, was greater than during the previous or succeeding summer. The advance of the Sulden Glacier strikingly illustrates the remarks of M. Venetz in the memoir already quoted: ‘*Les années froides de 1815–17 ont réchargé les montagnes d’une masse de neige très-considérable, qui a fait redescendre la ligne des neiges éternelles de plusieurs cent pieds. À cette époque les glaciers qui se trouvaient sur des pentes rapides, chargés d’une nouvelle masse si énorme, s’enfonçaient d’une manière étonnante dans les régions inférieures.*’

Whatever theory may finally be accepted in reference to the cause of glacier motion, it seems highly probable that the motion is at least regulated as to its intensity in the case of any given glacier by the local meteorological conditions of the season, especially in so far as they affect the pressure by the heaping up of great accumulations of snow, not only in the regions of *névé* but over the entire glacier-surface and on the bounding slopes whence, as water, or in the form of avalanches, they finally reach the glacier itself. To these considerations may be added that of greater plasticity of the ice itself—taking that word to imply power of adjustment, and of moulding itself to its bed—owing to molecular changes being facilitated by periods of combined warmth and humidity, or what we should called ‘muggy’ weather, the influence of which, especially at considerable altitudes, is, I suspect, far more energetic than that of mere hot sunshine, so frequently followed at night by keen frost, the effect of which is, as I believe, to arrest or lessen the onward progress of the glacier.

If I have travelled somewhat widely out of my brief, my excuse must be that the present seemed a suitable opportunity to call the attention of our members to some of the collateral issues of the questions raised by the reappearance of the old marble quarry of Grindelwald, as well as to the very curious and interesting mass of facts which have been collected by various writers and observers in Switzerland and Germany.

REVIEW.

SCHLAGINTWEIT'S HIMALAYAN TRAVELS.*

AFTER reading this book, I laid it down with a kind of regret that I was not to be born some thirty years hence, when it is to be hoped railways will have made the Himalayas almost as accessible to us as the Alps have been before. In spite of the many feet that tread them, our love for the Alps will never leave us; but adventure and exploration and discovery have set up their prizes elsewhere, and stories of conquered peaks and fresh passes, of glaciers explored and problems of geography solved, must come for the future from the long ridges of the Andes and Rocky mountains, and the enormous chains of Central Asia. The volume before us is the second of a series of three containing an account of the travels of the brothers Von Schlagintweit during their scientific mission in India and Central Asia in the years 1854-1858. Vol. I. relates to the plains; Vol. II., with which we are now concerned, to the Himalaya proper; and Vol. III., yet to appear, will give an account of the almost entirely unexplored regions of Thibet, and the gigantic chains of the Karakoram and Kuenluen mountains.

It is a fact not generally known that the Himalaya proper is not the watershed of Central Asia, and is not even on the whole the highest mountain chain there, though it certainly contains the highest as yet measured summit in the world, the Gaurisankar, or Mount Everest. The Karakoram range, under which the Schlagintweits include the whole chain, called by various names, which stretches north of the Himalayas, and parallel to them between the 95th and 73rd degrees of east longitude, where it merges into the Hindoo Koosh, is not only the watershed, but, with the exception of Gaurisankar, contains the highest mountains in the world. At about the 73rd degree of east longitude the Himalaya Karakoram and Kuenluen chains meet in a gigantic knot or forest of mountains some six hundred miles long, and four hundred miles deep, in which are most of the highest summits and the highest passes in the world, and the greatest part of which is utterly unexplored. At about east long. 80°, the knot unties into three enormous strands, the most northerly, the Kuenluen, runs directly east and west; the other two, the Karakoram and the Himalaya, running parallel, bend to the south-east, and do not attain an east-and-west direction again till they have reached an average distance of six or seven hundred miles south of the Kuenluen. At about east long. 82°, a watershed runs across the deep trench dividing these two parallel ranges, east of which flows the Sanpu or Dihong, by far the mightiest feeder of the Brahmaputra, till at 95° it turns abruptly to the south, and cuts clean through the Himalayas in a gorge which, even till now, I believe no European has ever seen. In fact, the whole course of this river, for seventeen degrees of longitude, with the mighty peaks and passes on each side from which it receives its

* *Reisen in Indien und Hoch-Asien.* Von Hermann von Schlagintweit. Säkülünski. Vol. II.

waters, are almost entirely unexplored. West of the watershed I have mentioned starts the Indus, like the Sanpu, still running in the trench between the Himalaya and Karakoram only in the opposite or westerly direction till about 75° east long., turns to the south-west, and cleaves the Himalaya through a gorge, where the mountain-sides rise 18,000 or 20,000 feet above the water. Such is a very general idea of the country which the three brothers Von Schlagintweit—Hermann, Adolph, and Robert—were sent out to explore. The natural difficulties, want of roads, want of provisions, and difficulty of transport, were increased by the abominable political condition of the country. Wars, suspicions, despotism, hierarchical intolerance and ‘protection,’ ignorance, and fanaticism do their best to keep Europeans from anything like free movement. Probably no frontier in the world, in spite of its enormous extent, is guarded more strictly than the Chinese, or the line of country which is governed by the Buddhist Hierarchy of Lasa in Eastern Thibet.

Hermann von Schlagintweit describes in this volume the Himalayas from east to west, as they were traversed either by himself or his brothers, Adolph and Robert. The most easterly state, Bhutan, was visited by him in January 1856. This country is inhabited by a race of Thibetan origin (*Thibet* and *Bhutan* having apparently the same derivation) under the dominion in some parts, and in all parts under the influence, of the Buddhist priest-prince at Lasa. Within the last hundred years Bhutan had only been visited on political missions, but Hermann von Schlagintweit obtained a sort of modified pass, and a Thibetan guide and interpreter, who interested himself in his plans, and a route was devised between them, following the trade road between Assam and Thibet, through Tavong, the chief town of the eastern part of Bhutan, through Narigun, and across the Himalaya to Lasa on the Sanpu in Eastern Thibet. On January 5 they left Udelguri, and crossed the Terai, or belt of swampy jungle, that extends in varying breadth along the south of the whole Himalayan chain, dividing it from the plains proper. It was a favourable time of the year to traverse it, for during the wet season, or immediately afterwards, the miasma, bred of heat out of decaying vegetable matter, is most fatal to Europeans. He found it dry, and at first sight less overgrown than he had expected, but a view from a small eminence disclosed a dense growth of jungle to a height of forty feet, with plenty of tall trees rising to heights of as much as 110 and 120 feet, among which they came across a laurel 85 feet high. Huge fallen trees, apparently sound, abounded, but, on being probed, a ramrod could be pushed into the wood the whole of its length without effort. In the wet season, the stream-beds are full, and the whole ground like a sponge. On passing the Terai proper, the ground gradually rises, and outlying abutments of the main chain come into sight, running north and south, in which direction almost the only lines of communication are found.

In the middle part of the Richu valley, before the high peaks came into sight, the views were exceedingly like the Alps, wide open valley-bottoms connected by bits of steeper ground, with closer narrowing of the bounding ranges, dense vegetation, rich green meadow-land, which

was found most strictly preserved—for cattle are kept here more generally than in any other part of the Himalayas—and groups of houses high up the hill-sides; and the Buddhist monuments and temples which appeared in many villages must have reminded the traveller of the shrines and heaps of skulls so often seen in Alpine valleys. The way became narrow beyond the first village, Amartal. In one day's march the main stream had to be crossed eight times, often by swimming, when all the loads would have to be taken off the horses. Narigun was reached in about five days' march. This is the seat of a Buddhist monastery, and though Von Schlagintweit was allowed to remain here a few days, he was absolutely forbidden to penetrate further, and returned disappointed to the plains in little more than three weeks after setting out. Sikkim he visited nine months earlier, from April to August, 1855. The Terai here and facing Nepal is the most dangerous in the Himalaya, principally on account of the enormous amount of rain, which in places reaches six or seven hundred inches in the year. The road to Darjiling rises gradually above the Terai to Pankabari, and all the hill-slopes are covered with the richest and most varied vegetation. Tropical plants are mingled with those of a colder climate, produced by the constant stream of germs from the higher region which have been brought down for thousands of years, and developed constantly fresh varieties. The road goes for some distance on the top of a ridge, and the views of the great chain are most glorious, especially from the shoulder of the Sinchal peak (about 8,000), or, better still, from its summit, where the great shining glaciers of the gigantic Kinchinjinga group, with Mount Everest far away to the left, contrast with the dark foliage of the middle distance, and the profound depths of the valleys below densely wooded to the water's edge. In Darjiling (6,900 feet) Herr Schlagintweit remained waiting for the answer to an application for leave from Tumlong to travel in the interior of Sikkim. After much patience, the reply arrived, containing, as in the case of Bhutan, an unqualified refusal. But on the advice of Dr. Campbell, whose well-known journey with Dr. Hooker ended in the imprisonment of both, he determined to follow till stopped the top of the ridge called the Singhalila chain, running north and south, which forms the boundary between Sikkim and Nepal, and to this determination we owe the drawings of Gaurisankar and Kinchinjinga which decorate our club-room. The weeks spent in waiting for a pass were employed in visiting the deep valleys, the Great Rangit, and others, and making many observations, much impeded by dangers from miasma, and some risk from tigers, which are found in the Eastern Himalaya up to 10,000 feet; proceeding westwards they diminish, and in Cashmir they have disappeared for centuries. Leeches too were a great annoyance, and the first question on waking in the morning used to be 'How many leeches have you got?' These valleys were found to be of enormous depth, a characteristic of Himalayan valleys over the whole chain, caused by the erosion produced by the tremendous rainfall.

On May 7, he started with a party of Lepchas (excellent fellows) as porters along the top of the Singhalila chain. The earlier days were constantly wet, and the winds and legs of all were severely tried by the long uphill marches in hot steaming air, surrounded by dense forest,

where the feet either sank deep into mud or slipped back as far as they advanced. The top of the Tonglo peak was reached on the evening of May 9, and huts of boughs were erected, where the party spent some days, enjoying daily the most glorious views over the whole chain, from the plains to the glistening distant summits, and down deep into the valleys, over rhododendron woods crimson with blossom. Leaving Tonglo on the 20th, they followed the range with the greatest difficulty, caused by the dense forest, which even on the top of the ridge could often only be penetrated by the axe, till, on the 22nd, they reached the top of Falut (12,042 feet), where the party spent several days of splendid weather, in full view of the great peaks, particularly Gaurisankar, for which Herr Schlagintweit found a height of 29,200 feet, 190 feet higher than the usual figure. A little beyond Falut they were turned back by a body of Nepalese troops; and in fifteen days were again in Darjiling, without once treading the upper snows. In February 1857, after his application had been considered for two years, Hermann obtained permission to visit Kathmandu, which has been the capital of Nepal since the Ghorka occupation—a small dirty town, remarkable for the fact that in about 1795 A.D. the Chinese reached it from the other side, and penetrated as low down as 1,641 feet; and in our own war with Nepal, in 1815, Sir David Ochterlony carried English troops into it from the plains: so that the crossing of the Himalaya is an accomplished military feat. Herr Von Schlagintweit remained some time in Nepal, during which he made many drawings of mountain panoramas, specially from the Karlia peak (6,977 feet). He had also to give and receive visits of ceremony from the Raja and the more than liberal prime minister, Jāng Bahadar, who had deposed one Raja and set up another, with unscrupulous removal of all obstacles, but who showed himself wonderfully interested in science and in everything European.

The Himalayan chain in Bhutan, Sikkim, and Nepal, has a character of its own quite distinct from the north-westerly portion which follows, in which the ranges deepen and groups of snow-peaks forming knots, from which other ranges radiate in all directions north and south of the watershed, are the characteristic of the country. On the contrary, the snow-range in Bhutan, Sikkim, and Nepal, is on the whole a simple one, reminding us generally of the Caucasus rather than of the Alps. Beginning from the east, the first important group of peaks, almost all of which have mythological names, is the Dal-la, a twin summit, of which the higher is 22,500 feet over the sea. It lies north of Tavong in Bhutan. The Themerri (20,500) and the Oam-la follow in a westerly direction; and then for a space of 150 miles no very conspicuous summit appears till Chamalari, about 24,000 feet, standing in front of the watershed, and something in form like the Finsteraarhorn from the Unteraar glacier; then follows the Donkia group (23,136); the Kinchinjav summits (22,750); and, following to the westward, the mighty mass of Kinchinjinga (28,156), forming from Falut the central point of the panorama; and only thirty-five miles distant, Kabru (24,015) follows on the left, but six miles nearer the observer; and the whole group is not unlike the Jungfrau from the north. Pāndim, still nearer than Kinchinjinga, and 22,000 feet high, showed on its western face an average incline

of 65°. Still further west comes the Sihsur peak (27,800), which is far overtopped by Gaurisankar (29,200) by Von Schlagintweit's measures. Gaurisankar is ninety-four miles from Falút, and looks not unlike the Mönch from Bern. It stands quite alone, towering far above its surroundings on either side. The group furthest to the west to be seen from Falút is the Sankósi, which reaches in its highest point 23,570. Seen from the Kavlia in Nepal, the next summit to westward is the Jibjibia massif, which reaches 26,306; then the Yássa peaks, the highest of which is 26,680; then Dhavalagiri (26,826); and six more Naráyani peaks, all nearly as high. The most westerly peak in sight in the Nepal panorama was only 19,413 feet high.

The views were specially characterised by the enormous extent of horizon occupied by the snowy range, and by impressions of depth and height far surpassing anything in the Alps. The south slope of the Himalaya is unusually steep, and the valleys very deeply eroded, so that from a summit like the Falút the eye seems to plunge at once from the glistening summit of Gaurisanka or Kinchinjinga into valleys whose depth is unexpected, and surprises one, as almost out of proportion. The plains of India are at times quite invisible, owing to the dust-clouds which rise from them and remain suspended in the air, and when they are seen, the apparent horizon line changes as much as six or seven degrees during the day. In every case in the Eastern Himalaya, Hermann von Schlagintweit failed through political obstacles to reach the regions of ice and snow. His brothers Adolph and Robert were more fortunate in the west, in which direction Kamaon joins Nepal, and is followed still more to the west by the State of Gharvál. Adolph and Robert were in Nainatál from the middle of April to the middle of May, during which time they took panoramas from the Chiner (8,737) and the Laria Kanta (8,342), both of which gave splendid views over the Nanda Khât and Nanda Devi (25,600).

In the middle of May they set out by different routes for Milum, from which place they intended to cross the watershed and penetrate into Thibet. Robert followed the usual trade-road by Almora, which was a constant succession of crossing transverse ridges, swimming rapid rivers, and traversing steep slippery slopes of *débris*, and occasionally patches of hard old snow, which caused the horses the greatest difficulty and danger. Adolph turned away from the main road up a side valley, the Pindari, in order to cross Traill's passes to Milum, which would be like going to Zinal by entering the Zermatt valley, and then crossing the Trift, Italy being Thibet. This is the first glacier expedition mentioned in the book. The old difficulty about guides was increased by the fact that Nanda Devi, the great mountain close to the pass, was a goddess, and would resent any violation of her pure snow home; but the promise of liberal offerings obviated this difficulty; and on the night of May 29, Adolph found himself bivouacking on a beautiful green meadow at the foot of the Pindari glacier (11,492). The next day the party reached another lair (14,180), on a ridge separating the main glacier whose lower ice-fall was too steep to traverse, from a side affluent which they had followed, and the névé of which was connected above with the névé of the main stream. Towards evening, the view

from their lofty perch was most glorious, the mists which always cloud the lower ranges of the western Himalaya after mid-day had all disappeared, and the bright peaks of the Nanda Khât range on one side, and the brilliant colouring of the long Pindari valley on the other, held them long entranced. At two o'clock next day they started. Crevasses prevented their crossing the actual head of the glacier, but a succession of couloirs up the rocky ridge to their left landed them, after several hundred steps had been cut in hard snow, at 8 o'clock, on the summit (17,770). The Nanda Khât peak was still 5,000 feet above them, but more than twelve miles off. Another great bay of névé, which took two hours to cross, lay between them and the real descent to Milum. The sun was burning hot, and the snow deep and soft. From this second pass the great Nanda Devi peak came into sight, and the offerings to her were solemnly made by the natives. The way down by the Loan glacier is easy, and after two days Adolph arrived at Milum (11,265), still on the Indian side of the watershed, where he met his brother Robert. Here they stayed some time, making various excursions in this magnificent neighbourhood.

The first excursion was the ascent of an isolated peak east of the Nanda Devi range, to which they gave the name Paju-horn (17,601). They slept out above the village, reached the top over steepish rocks and long snow slopes at 10.30. The Milum glacier, about eleven miles long, was their next expedition. They climbed a Râta Dak, or Roth-horn (16,744), which, like the Roc Noir in the Zinal glacier, rose out of the middle of the ice, and erected a tent near the top. The next day they reached the head of the glacier, about 19,000 feet, having to pass a broken ice-fall 1,000 feet high, which cost them much time and hard work at this great height, and did not reach their tent on the Roth-horn till nearly 9 o'clock, long after dark. Here they spent another day, and then returned to Milum. The views in the whole of Kamaon were very fine, the gorges and valley scenery quite equal to the finest parts of Savoy or the Oberland, and the contrast between height and depth far greater. From Milum the two brothers penetrated into Thibet by passes averaging 18,000 feet, which will be described in the third volume. On their return, they recrossed the Himalaya chain, close to the Ibi Gâmin peaks, and made a new pass, the Ibi Gâmin, the highest as yet crossed in the world (20,459 feet). On August 16 they started up the Ibi Gâmin glacier from the north. It reminded them most of the Aar glacier, but was much larger, and on the night of August 18 they pitched their tent on the moraine at a height of 19,326 feet. The night was excessively cold and stormy, but as the next day was fairly fine, they started to try how far up they could reach on the higher of the two Ibi Gâmin peaks. They started early, and climbed till nearly 2 o'clock, but immense crevasses wasted much time, and owing to the enormous height, the work was very severe. They were stopped at last by a tremendous north wind, which suddenly dashed upon them, and by a gush of blood which burst from one of their people, and took away all his strength. They had however reached the astounding height of 22,259 feet, by far the highest point attained as yet by man. The Ibi Gâmin still towered more than 3,000 feet above them, but then

it is about the tenth in height of the Himalayan peaks proper. Their view was spoilt by dense clouds, which concealed all but the immediate neighbourhood. The descent was rendered more difficult by the gradually increasing wind, but by sunset the clouds had all disappeared, the great peaks were perfectly clear, and every step of their track, owing to the transparency of the air at these enormous heights, as sharply marked as if it were close at hand. On August 21 they climbed a tributary glacier on the left, and slept again upon a moraine, at a height of 19,094 feet. The top of the pass, after several unsuccessful attempts, they reached at 2 o'clock, and found it 20,459 feet. Two days later they were in Badrinath, a celebrated place of Hindu pilgrimage. Adolph then, on September 5, turned back again to Thibet. Robert travelled from east to west, crossed several passes into the Jumna valley, which he followed down till he reached Mussuri, where Adolph had arrived a day or two before him.

In the spring of 1856 the three brothers were together at Simla, making plans for journeys in the western Himalaya and the protected Hill States. They arranged their routes so as to visit Kanawar, Balti, Spiti, Lahoul, and Cashmir, and, if possible, to penetrate across Thibet still further to the north. Want of space forbids a detailed account of their travels here, which, at least in the Himalayas, passed over ground which has been the subject of several papers in the 'Alpine Journal,' and is better known than any other part of the chain. The contrasts of depth and height are here not so marked as they are further east, and the ranges of the middle region assume a more prominent character. The wood is not so dense, but the slopes are very steep, and in places clothed to the summits with deodaras. The effects of erosion are, as in the east, tremendous; the consequence is that the walls of the principal rivers are often absolute precipices for an immense height above the water, and the road up the valley may be traversed for miles without catching sight of the roaring stream below. The brothers met once more in Cashmir, at Srinagar, reaching it from Ladak by different passes, one of which is the Suru, passing the Nun-Cun peaks. The celebrated valley of Cashmir is the bed of an old long-departed fresh-water lake. The greatest length of the flat is over seventy miles, and the breadth in places forty. The surface consists of more than 2,000 English square miles. (The surface of Lake Constance is only 200.)

They narrowly escaped unpleasantness at Srinagar, as their collector, knowing the value to them of a real native skeleton, cut down in his zeal for science a man who was hanging on a gibbet for a warning to evildoers; and when suspicion fell upon him, and the police came to search, he put the body to sleep in his own bed, and escaped discovery. The Raja was old, and his discourses turned principally on the moral justification of extortion, which he had greatly practised, and now in the evening of his days he seemed to delight in inventing ingenious pleas for its defence. This was, I think, the last time the three brothers were ever together. Shortly afterwards, Adolph set out again alone to cross the Karakoram and Kuenlun, and penetrated as far as Kashgar, where he was foully murdered, in the full prime of health and strength.

There is much in the book which in such a notice as this must be left untouched upon—discussions on Buddhism, on the complex nationalities and language affinities, on the race, characteristics, history, and political relations of all the countries visited. Then the geology and climate and meteorological phenomena of every kind are never left unnoticed. On one important point of interest, the rapid rise of the peaks surrounding the Indus gorge, where the summit of Nanga Parbat towers nearly 23,000 feet above the river bed, at a distance from it of scarcely thirty miles, I find no satisfactory information. Such an enormous difference of height in so short a distance can scarcely be paralleled elsewhere; but we shall perhaps have a description in the third volume, which is yet to come. Meantime, I can only hope that many of us will be induced to read the book for ourselves, and that real interest will be awakened, which may lead to definite glacier exploration of the whole country, and, it may be, to the ascent of many of the peaks. The knowledge that there are in the same world with us glaciers fifty or sixty miles long, as indeed there are in the Karakoram, surrounded with peaks of 25,000 to 28,000 feet and more, is enough to make us long for the unconditioned, and chafe against the barriers of time, space, and—must I add so sordid a check?—pocket, which keep us from their glories. We must hope better things for our children, or even for ourselves, if in another state of being we are ever permitted to fulfil some of the longings we have formed in this. J. STODON.

ALPINE NOTES.

THE PICO DI NAIQUATÁ, VENEZUELA.—Mr. J. Spence, a British resident in Venezuela, in company with several *savants*, accomplished in April last the first ascent of a mountain in the neighbourhood of Caracas, known as the Pico di Naiguatá. The expedition appears to be looked on in the country as a considerable feat. Not having as yet succeeded in obtaining a translation of the Spanish account, kindly forwarded by Mr. Spence, we must for the present content ourselves with a quotation from a letter, in which a member of H. B. M.'s Legation at Caracas expresses his opinion of the difficulties and importance of the ascent in the following remarkable terms:—

‘In again welcoming you back from the dizzy peak, and from the thickets amidst which the tiger prowls, and the rattlesnake, the scorpion, and many another hideous reptile lurks, I cannot but express to you my belief that it must have been most satisfactory to you, as it most certainly would have been to me, to behold the Venezuelan friends who accompanied you, devoting that intelligence, energy, power of endurance and other great qualities, which so eminently characterise their race, to the achievement of a really noble object and to the attainment of a useful end, amidst the invigorating, healthy allurements of nature’s handiwork—nowhere more successfully carried out than here—and forgetting, if but for a moment, the enervating, exhausting, poisonous allurements of civil warfare.’

MOUNTAIN EXPLORATION IN AFRICA.—Under this heading we hope soon to insert some account, from the pen of Mr. Ball, of the explorations in the Atlas range made by him, in company with Dr. Hooker, in the spring of last year. Our late President may naturally be indifferent to any increase of fame, but the Alpine Club can ill afford to lose the credit of his most recent exploit as a scientific explorer, and we have felt bound not to allow another three months to go by without putting on record so remarkable a journey. We prefer to effect this by a mere passing allusion, rather than by borrowing from letters of Dr. Hooker, which have appeared in the Proceedings of another society, since we do not doubt that, sooner or later, Mr. Ball will render to the Club the account of his doings, to which it has so long looked forward.

The following extracts describe how an adventurous missionary—the Rev. Charles New—has succeeded not only in approaching Kilima Njaro, but in ascending it to the lower limit of eternal snow.

‘Arrangements were made for ascending the mountain, but my first attempt was a failure, being driven back by the rain and fogs. A second attempt was made, and the weather being very fine, we made splendid progress. Next morning the clouds lay far beneath our feet, but at noon we were prevented from proceeding farther by the mists; we, however, made large fires to keep ourselves from freezing through the night. The next morning (the third day) we again started, but in half an hour after starting the men complained of benumbed feet and hands. In an hour we came to a stand; the Chaggas said they dared not go any farther. I left them, going forward with only Tofiki for a companion. Tofiki did very well for the first hour and a half, when he sank, scarcely being able to speak. He bid me go on—that he would wait there for me, and die if I did not return to him. I went on, reached the snow; I found it lying on ledges of rock in masses, like large sleeping sheep. I got Tofiki up to the point; the snow was frozen like rock. I broke off several large pieces and descended with them to the company below, at the sight of which they were amazed, especially when it melted in their mouths. Thus, despite all the wonderful things that have been said and believed, we know, from personal experience, that the top of Kilima Njaro is covered with snow! Yes, snow in Africa!

‘The various regions passed through on my way up the mountain’s side succeed each other as follows:—

‘1. The region of the banana, plantain, maize, &c. This is the inhabited district, or Chagga Proper. The thermometer ranges between a maximum of 85° Fah., and a minimum of 59° Fahr. Blackberries are abundant. The hills which are not cultivated are covered with a beautiful thick, close turf, exceedingly rich in clover.

‘2. Beyond this is a belt of thick jungle; it may have been cultivated in the past.

‘3. Above this is a vast forest of gigantic trees, with a dense undergrowth of great variety, all thickly covered with moss, which gives to the forest the appearance of great antiquity. Here I met with such old friends as the dock and common stinging-nettle. Vines abound in great variety. On the higher verge of this forest the thermometer descended

at night to 33° Fahr. In the morning a thick hoar-frost covered the leaves.

‘4. Higher still is a region of verdant hills, affording good pasturage for cattle. Clover plentiful.

‘5. Beyond this all is heath, which dwindles away, till you come to

‘6. The region of bare rocks, and sandy, wind-swept declivities, as clean and as smooth as a sea-beach; then you reach

‘7. The everlasting snows, which thickly cover a magnificent dome, as smooth in outline as the edge of the moon.’

The height of Kilima Njaro is, according to the most recent authority, 18,700 feet; Mr. New unfortunately does not tell us what elevation he reached. From a sketch of the mountain (lately published in the ‘Illustrated London News’) there can be little doubt that the peaks are of volcanic origin. The two summits seem to resemble, with curious exactness in their form and relative dimensions, the greater and lesser Ararat. The range, which appears to be rather a cluster of volcanoes than a continuous chain, is said to contain ‘a higher but less massive’ peak, situated further inland, and called the Doenzo Ngai.

A GUIDEBOOK TO THE SIERRA NEVADA.*—Readers who have had their interest in the mountains of California aroused by Mr. Clarence King,† will be glad to learn that Professor Whitney has condensed, and published in a popular form, much of the information contained in the ‘Report of the Geographical Survey,’ of which he was the head. ‘The Yosemite Guidebook’ is badly named, dealing as it does with a great deal more than the one valley, and being neither in form nor arrangement what is generally described as a guidebook. But it contains much valuable information, and deserves careful study from anyone intending to travel in, or even wishing to form a correct idea of, the Sierra Nevada. The volume is illustrated by a number of woodcuts. While those of the Yosemite valley itself answer to our expectations, the pictures of the higher peaks are singularly disappointing. They do not, either in size or boldness of outline, compare at all favourably with the giants of the Alps. This result, however, is probably owing, in part, to the cuts having been unskillfully engraved from photographs. The following passage deserves to be quoted entire.

‘A comparison of the Swiss and Californian mountain scenery is not easy. The much smaller quantity of snow and ice in the Sierra, as compared with regions of equal elevation in Switzerland, is the most striking feature of difference between the mountains of the two coun-

* *The Yosemite Guidebook.* A Description of the Yosemite Valley and the adjacent Region of the Sierra Nevada, and of the Big Trees of California; illustrated by maps and woodcuts. B. Westermann & Co., 471 Broadway, New York.

† By a misprint in the last number, the height of Mount Shasta was given as 11,000 instead of 14,000 feet. The reviewer was also, probably, incorrect in his explanation of Mr. King’s ‘mauvais pas’ on Mount Tyndall. On further perusal it seems clear that when the misleading word ‘iceile’ has been removed, the difficulty of the passage entirely vanishes, and the nature of the obstacle becomes sufficiently clear. It was simply a steep rock face in one of the recesses of which the snow lay piled up pyramidwise against the cliff, furnishing to the climber a natural ladder.

tries. In the Sierra we see almost exactly what would be presented to view in the Alps, if the larger portion of the ice and snowfields were melted away. The marks of the old glaciers are there, but the glaciers themselves are gone. The polished surfaces of the rocks, the moraines or long trains of detritus, and the striæ engraved on the walls of the cañons, these speak eloquently of such an icy covering once existing here as now clothes the summits of the Alps.

‘Another feature of the Sierra, as compared with the Alps, is the absence of the “Alpen,” or those grassy slopes which occur above the line of forest vegetation between that and the eternal snow, and which have given their names to the mountains themselves. In the place of these we have in the California mountains the forests extending quite up to the snowline in many places, and everywhere much higher than in the Alps. The forests of the Sierra, and especially at elevations of 5,000 to 7,000 feet, are magnificent, both in the size and beauty of the trees, and far beyond any in the Alps. They constitute one of the most attractive features in the scenery, and yet they are somewhat monotonous in their uniformity of type, and they give a sombre tone to the landscape as seen from the distance in their dark shades of green. The grassy valleys along the streams are extremely beautiful, but occupy only a small area; and, especially, they do not produce a marked effect in the distant views, since they are mostly concealed behind the ranges to one looking over the country from a high point.

‘The predominating features, then, of the High Sierra are sublimity and grandeur, rather than beauty and variety. The scenery will, perhaps, produce as much impression, at first sight, as that of the Alps, but will not invite so frequent visits, nor so long a delay among its hidden recesses.’ The climate, like that of the Alps, is bracing, and in summer even occasional storms are rare. ‘One may be reasonably sure, in setting out to climb a mountain peak, of a clear sky and a temperature which will make walking and riding a pleasure. One of the greatest drawbacks to the pleasure of travelling in the Alps is thus here almost entirely wanting.’ Yet, putting aside the loss of one of those elements of chance which conduce to the interest and variety of our favourite sport, we may fairly doubt whether a monotony of the finest weather can compensate the climber for the absence of the exquisite cloud-shapes and magic effects of light and shade, which give half its charm to Swiss scenery.

PANORAMA OF THE ALPS FROM TURIN.—Reproductions of panoramic views, the beauty of which depends in most instances rather on atmospheric effects, contrasts of light and shade, and delicate gradations of colour, than on the form or outline of the objects visible, must of necessity have more topographical than artistic interest. Whatever careful drawing and execution can do to render such a work pleasant to the eye, has been done in the case of the ‘Panorama delle Alpi viste dall’ osservatorio astronomico di Torino,’ published by the Italian Alpine Club.* Of its topographical value there can be no question. Every peak and pass within the range of vision has been most sedulously identified, and mountaineers who delight to recognise the exact spots of

* In England, by Messrs. Longman & Co., Paternoster Row.

bygone struggles and victories will gain great advantage from the possession of this sheet. When we remember that fifteen years ago the dwellers in Turin had never heard of the Grand Paradis, and were firm believers in Mont Iseran, we are rather astonished at the rapid growth of mountain knowledge than disposed to remark on the absence of a complete table of heights—an omission which the exertions of the Italian Alpine Club will, no doubt, soon supply.

A POCKET-BOOK FOR MOUNTAINEERS.—Herr Liebeskind, of Leipzig, has lately published a 'Pocket-book' for Alpine travellers. The volume, which will be republished annually, contains a diary for the summer months, with parallel columns for the entry of barometrical and other observations, followed by an attempt at a complete digest of the tariffs of Alpine guides, from Istria and Tyrol to Chamonix. Cogne and the whole of the south-western Alps are, for some unexplained reason, entirely omitted. Over the wide field which it embraces, however, the list of guides and of tariffs seems very complete, and great pains must have been taken to obtain at the first endeavour so satisfactory a result. Such a compilation will serve a useful end, if by placing the exorbitant prices of some Swiss tourist-centres in conspicuous contrast with the more modest requirements of Tyrolese guides, it leads to a reduction of the demands which threaten to render mountaineering an expensive pursuit.

The volume concludes with a sketch of the history of the five Alpine Clubs now in existence. The materials at hand for tracing the origin and rise of our own Club seem to have been meagre, and the writer in consequence has drawn rather largely on his imagination. It will be news to most of us to be told that 'this Society was originally founded under the name of "The Englishman's Playground" in 1860.'

The little volume is bound in a convenient form, but its dimensions might probably be easily and advantageously reduced by using smaller type, and omitting the rules of the various guide corporations, to which a traveller seldom needs to refer. If this is done, and any increase of bulk by means of advertisements sternly repressed, the book will become what it professes to be—a pocket-companion for mountaineers, and will, no doubt, be generally used.

THE 'COURONNE' AT AN DER LENK.—We have received from Sir R. G. Osborn the following letter, complaining of a want of honesty which used to be rare in Switzerland.

'Last summer, in the month of August, I inadvertently left behind, at the Hôtel de la Couronne, at An der Lenk, a rouleau of fifty Napoleons, the loss of which I did not discover till two hours after I had started for Thun. I immediately telegraphed from Weissenburg to the landlord, and sent back a trustworthy person to the 'Couronne,' in full conviction that the rouleau would be restored. On reaching Thun I narrated the story to Mons. Knechtenhofer, who most attentively and zealously gave me every assistance, and wrote by that post to the landlord of the 'Couronne' a polite letter to the effect that I should return to Lenk on the following day.

‘On my arrival there, instead of the landlord appearing, the landlady came out, and on my asking for her husband, coolly said that he was “not at home,” but had “gone to Kandersteg, and had left no message;” all this with the most indifferent air, no regrets being expressed for his unavoidable absence, or facilities tendered for enquiring about the lost property.

‘Finding fair means unavailing, I put the Préfet of the district on the track, but to this hour not one farthing of the money has been restored to me. The whole tone of the landlord during the correspondence I subsequently entered into was most offensive, and he ended by saying that he did not believe my story, and that I had invented it.’

PROCEEDINGS OF THE ALPINE CLUB.

Tuesday, May 7.—Mr. D. W. FRESHFIELD, *Senior Member of the Committee present, in the Chair.*

Lieut. E. Clayton and Mr. A. E. Scott were balloted for, and elected Members of the Club.

Mr. BLACKSTONE introduced to the meeting Mr. Wm. White, F.S.A., who exhibited a form of framework, invented by himself, and intended to enable mountaineers to carry a knapsack with the least possible strain and inconvenience.*

The Rev. W. H. HAWKER read a paper entitled ‘A Wolfhunt in the Maritime Alps,’ and at its conclusion displayed the skin of a fine wolf shot in the mountains behind Mentone. He subsequently added some particulars of an ascent of Monte Viso, made with local guides of Castel Delfino, of whose knowledge of the mountain he spoke highly; and gave a promise, which was warmly received, of several papers, historical and orographical, on the south-western extremity of the Alpine chain.

Mr. FRESHFIELD observed that the capabilities of various portions of the Alps for sporting purposes might, perhaps, in the dearth of new peaks, be more appreciated than hitherto by Members. In out-of-the-way districts chamois exist in far larger numbers than is popularly supposed. Bears are to be found in the wild mountains south of Zernetz, in the Lower Engadine, where a year seldom passes without one or more being killed by the hunters. Pinzolo, in the Lombard Alps, is also likely to prove good head-quarters. An old hunter of the neighbouring Val di Genova declares that he has killed with his own gun seventeen bears, besides over three hundred chamois.

A vote of thanks to Mr. HAWKER was carried unanimously.

Tuesday, June 4.—Mr. W. LONGMAN, *President, in the Chair.*

The PRESIDENT, before commencing the business of the evening, said that Members would share the sincere regret which he felt in announc-

* The ‘Alpine porte-knapsack’ may be seen at Charles Pricc’s, 33 Marylebone Street, W.

ing the death of Mr. F. Walker. It did not seem fitting that a man so well known and popular among us should pass away without some notice on the part of the meeting. In Mr. Walker the Club had lost one of its oldest and most distinguished Members, a pioneer of Alpine exploration, who, having first visited Switzerland at a time when mountaineers were few, had, during the later years of his life, ascended nearly every great peak of the Swiss Alps; had made the first ascent of Mont Blanc from the Brenva Glacier when fifty-nine years of age; and last year, at the age of sixty-five, and stricken with a mortal disease, had reached with his daughter the summit of the Matterhorn. The President went on to refer to another recent and most melancholy event which would cast a gloom over a large Alpine circle: the death of Mrs. Fowler, the sister of Mr. F. F. Tuckett, a lady esteemed by many Members as a sympathetic friend and hostess, and well known to all as the author of some very charming sketches and descriptions of mountain travel. He felt sure that the Club as a body would wish to join with him in expressing sympathy and condolence with the families and friends of those whose loss would be widely deplored.

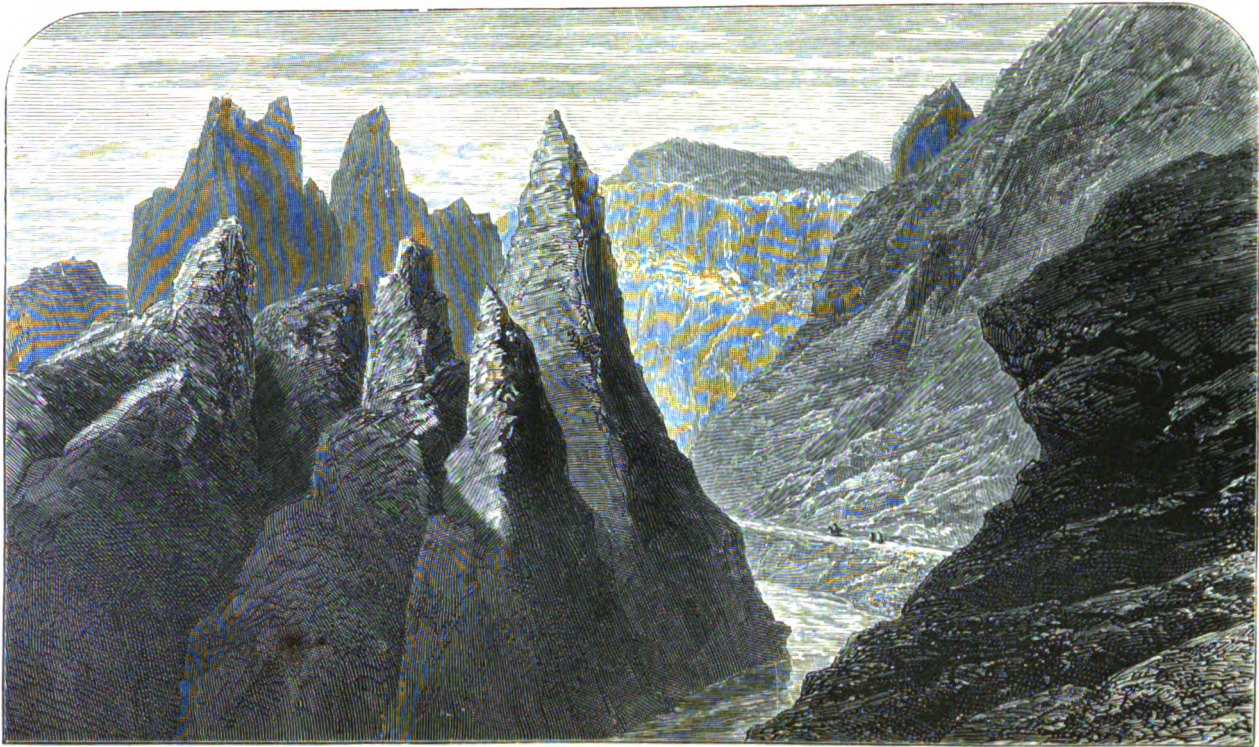
The PRESIDENT'S remarks were received with every token of assent by the Members present.

Mr. John P. Gubbins was balloted for and elected a Member of the Club.

Mr. C. C. TUCKER read a paper entitled 'A Week in the Graians,' in which he described the first ascent of the Grande Tour St. Pierre, and the passage of the Col du Grand Tétret from Ceresole to Val Savaranche. Messrs. NICHOLS and REILLY added some observations on the relative positions of the two couloirs leading from the side of Val d'Orca to the névé of the Glacier du Grand Tétret, and on the revised nomenclature of the peaks situated between the Grand Paradis and the Col de la Croix de Nivolet. A vote of thanks to Mr. TUCKER was carried unanimously.

Mons. Loppé, the eminent artist of Geneva, and an Honorary Member of the Club, having been introduced to the President, and cordially welcomed by the meeting, expressed his warm appreciation of the reception accorded him, and observed that he was indebted for many of his ideas to suggestions of mountaineers, and that it was the existence of bodies like the Alpine Club which encouraged artists to work in the High Alps, and to endeavour to reproduce those glorious scenes which might perhaps not be understood or appreciated by the general public.

June 14.—The summer dinner took place at the Crystal Palace, when fifty-one members and their friends sat down; Mr. W. Longman, President, in the Chair. Amongst the guests of the Club on the occasion were Mr. Budden, Vice-President of the Florentine Section of the Italian Alpine Club, Mons. Loppé, and Mr. George Grove. During the proceedings a congratulatory telegram was received from the Italian Alpine Club, to which a suitable response was despatched.



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THE MOUNTAINS OF SPAIN. By JOHN ORMSBY.

AS Spain is generally said to be, after Switzerland, the most mountainous country in Europe, its mountains may seem a rather comprehensive subject for a short paper. I have no intention, however, of trying to condense a complete orography of the peninsula into these limits; indeed, the materials for such a work do not exist, so little has been done in the way of mountain exploration or measurement. All I mean to attempt is a rough general sketch of the mountain features, and a few notes on some of the principal groups.

The Spanish peninsula is sometimes described as being all one mountain, and to a certain extent the description is accurate; but to get a correct notion of its conformation we must go a little further into detail. The framework of the structure, as will be seen by looking at any tolerably good map, is very simple. It may be compared to the letter T, the horizontal stroke being represented by the line of the Pyrenees (including the mountains of the Asturias and Galicia), and the vertical by that long irregular range, called by some geographers the Iberian, which, branching off from the Pyrenees near Reinosa, runs in a direction generally south down the entire length of the peninsula to the Mediterranean. The latter must be considered as the crest of the mountain, if Spain is to be regarded as one mountain; and from it spring the buttresses between which lie the basins of the Guadalquivir, Guadiana, Tagus and Duero. The most southerly of these, however, ought in strictness to be reckoned the continuation of the crest, being a part of the primary watershed of the peninsula and of Europe—the long tortuous ridge which begins at Tarifa Point, west of Gibraltar, and ends on the shore of the

Arctic Ocean, east of the Gulf of Kara, separating the Mediterranean basins from those of the Atlantic and Northern Seas. This is the Andalusian chain, the chief links of which are the Serrania of Ronda, the Sierra Tejada, between Malaga and Alhama, the Sierra Nevada, and the Sierras Sagra and Segura, enclosing the head of the Guadalquivir basin. The most interesting of these, in respect of scenery as well as height, is the Sierra Nevada, containing the culminating point of the peninsula, which, however, has been already too fully dealt with in the pages of this 'Journal' to require any further notice here. North of the Sierra Segura is the Sierra de Alcaraz, where Andalusia joins New Castile and Murcia. From this the Iberian range runs north, passing by Cuenca, as far as Molina; there it makes an elbow to the west at Medinaceli, and then another to the east at the Moncayo, after which it runs in a NW. direction, separating the basin of the Duero from that of the Ebro, until it joins the Pyrenean chain at the Peña Labra, just above the source of the last-named river. In several places its continuity as a mountain-chain is, on the western, or Castilian side, at least, nearly imperceptible to the eye. This is due not so much to a falling off in height—for at its lowest depression the ridge is still some 2,500 feet above the sea—as to the elevation of central Spain. All that portion of the peninsula which comprises the two Castiles, Estremadura and Leon, forms one great table-land or plateau, with a mean height above the sea-level of more than 2,000 feet, or about three times the mean height of the continent of Europe. It is to this conformation that many of the peculiarities which strike the traveller's eye in Spain are due. The westerly and south-westerly winds from the Atlantic are robbed of the greater portion of their moisture before they can reach the level of this elevated tract. While the districts along the Atlantic coasts have an annual rainfall of from 40 to 50 inches, and Valencia and Catalonia from 20 to 25, the central table-land has one of from 8 to 10 only; and even this scanty supply is in a great degree lost. There are no woods or forests, and hardly any coating of vegetation to catch, retain, and distribute the rainfall slowly, and it rolls back off the plateau much as it might off a house-top. Hence the 'tawny Spain' of the poets—the bare, brown, sunburnt country that has been so often described, with its soil of brickdust, and its glaring cloudless sky overhead, its fierce noontide heat and chill night wind. Hence, too, that grim monotony of landscape of which travellers complain so unceasingly, from the time they lose sight of the Pyrenees until they descend into the basin of the Guadalquivir

or the Huerta of Valencia. Central Spain is to any ordinary hill and dale country what a block of marble is to a statue. The raw material of hills and valleys is there, but the water forces that should have carved it have been wanting. It is, in fact, on a smaller scale just such a region as Mr. Shaw describes High Tartary, and from the same causes.

The Iberian range, which from the coast between Alicante and Barcelona looks like a well-defined mountain ridge, is in reality in many places merely the scarp of this table-land; and, as Bruguère observes in his 'Orographie de l'Europe,' the traveller from Valencia to Madrid is surprised, on reaching the crest of these mountains, to find no descent corresponding to the steep and toilsome ascent from the sea. The village of Minaya, which is almost on the watershed, is 2,362 feet, while Madrid, which is nearly the centre of the plateau, is 2,148. Near Cuenca, however, the character of the range changes. It there forms the complicated knot of the Albarracin mountains, rising in the Cerro de San Felipe to about 6,000 feet. Here are the sources of the Tagus, the Jucar, the Guadalaviar, and several minor streams; and so intricate are the windings of the watershed, that the Tagus, flowing west, rises south and east of the source of the Jucar, which runs into the Mediterranean below Valencia. From this knot, too, a secondary range, through which the Ebro cuts its way above Tortosa, branches off to the north-east and runs parallel to the coast up through Catalonia to the Pyrenees, with which it is connected by the long Sierra de Cadi, south of Puycerda. The most important summit, however, next to those of the Sierra Nevada, is the classic Moncayo, the Mons Caunus of Livy and Calvus of Martial, at the elbow which the chain makes to the east, near Zaragoza. Owing probably to its commanding and almost isolated position, its height has been generally very much over-estimated, some geographers claiming for it as much as 10,000 feet. Coello gives 7,696, which I have no doubt is as nearly as possible the true height. It is scarcely necessary to say that with such an elevation not a vestige of snow remains on the mountain in summer. But apparently it was not so eighteen centuries ago, if Martial was accurate in mentioning (I. 50) the 'sterile Calvum nivibus' as one of the things to be seen during a summer visit to the neighbourhood of Bilbilis. This would argue a great difference of climate in central Spain, but perhaps not too great to be accounted for by the denudation the face of the country has since undergone. From the same poet, *passim*, it would appear that all this mountain region was in his day clothed with forests, of which the sole remains now

are the pine-woods of the Albarracin and those on the Guadarrama, above La Granja. Besides, we have it on record that Madrid, which now stands on an absolutely treeless plain, was surrounded by forest only three hundred years ago; and it is not improbable that the whole or the greater part of the vast plateau was thickly wooded in the first century, and that central Spain had a climate no warmer than that of central Europe at the present. But the Moncayo deserves notice for another reason. It is not much of a mountain to look at, being indeed rather a very big hill than a mountain; but it affords, I think, the finest panoramic view of the Pyrenees to be obtained from any point north or south. I confess to a weakness for panoramic views of mountains, especially for those which, besides their merits as views, help out the imagination, and realise to the eye some great geographical feature, some map-idea, so to speak. Such a view, for instance, is that grand one of the northern slope of the Alps from the Feldberg in the Black Forest, where the eye takes in at one sweep the loftiest portion of the great dorsal ridge of Europe, from the Diablerets away into the Vorarlberg. The view of the Pyrenees from the Moncayo will bear comparison with this. There is nothing, it is true, in it so grand as the Oberland group seen from the Feldberg, but it has its own particular charms, especially if seen, as I strongly recommend, at or shortly after sunrise. The axis of the Pyrenees runs from WNW. to ESE., and to a spectator on the Moncayo the sun therefore rises well behind the chain. Consequently, for a couple of hours after sunrise, the whole range shows in silhouette of a deep indigo tint against a bright sky. It is scarcely any exaggeration to say the whole range, even using the phrase in its most literal sense; for, owing to the position of the Moncayo with the broad basin of the Ebro for a foreground, the entire line of the Pyrenees is in view, from the mountains that separate the Basque Provinces from Navarre to those rising on the north side of Andorre; the only part wanting being the comparatively low portion between Puycerda and the Mediterranean, which is, I imagine, hidden by the projecting Sierra de Cadi above mentioned. So distinctly traced is the outline of the chain, that the notch of the Brèche de Roland, and even the Fausse Brèche and the truncated pillar of rock to the west of it, are plainly discernible, although at a distance of about 110 miles as the crow flies. But as the sun mounts higher and the light falls upon the southern slope, the view changes as completely and almost as suddenly as a slide in a magic-lantern. The dark jagged profile projected

strongly against the sky behind fades away, and in its place stands the glittering crest of snow stretching from the Pic de Néthou to the Vignemâle. The Pyrenees are unfortunately a rather cloudy chain, and it is not every morning, when there is a bright blue sky overhead in the valley of the Ebro, that such a view as this is to be had from the top of the Moncayo. But if there is a reasonable prospect of it, I think it is worth trying for; and it can be easily managed *viâ* Tudela and Tarazona, from which latter place it is about five hours to the top, or about four to the shrine of 'Our Lady of the Moncayo,' just below the summit where there is a sort of caravanserai for the pilgrims, which will afford night-quarters, and, I believe, even food. The rest of the range from the Moncayo to its junction with the Pyrenees is very uninteresting, being little more than a bare bleak chain of hills, rising at its highest point in the Sierra de Oca, east of Burgos, to 7,555 feet.

So far for the central ridge of the peninsula. We now come to the secondary ranges which branch westward from the central stem. The first of these, commencing from the south, is that which is best known as the Sierra Morena, and which branches off at the Sierra de Alcaraz, separating the basins of the Guadalquivir and Guadiana. It is more owing to Cervantes than to nature that this is perhaps the most famous of all the mountain ranges of Spain. Its elevation is everywhere insignificant. It is, indeed, rather the southern escarpment of the central plateau than an actual range of mountains. From the plain of La Mancha it seems hardly more than a long line of hills; and though from Cordova, owing to the much lower level of the Guadalquivir basin, it looks far more lofty, still even there it is a very moderate mountain chain. It has been credited by M. Bory de St. Vincent with a height of about 5,500 feet at the Cumbre de Aracena, north-west of Seville, but Coello's map of 1863 gives no such elevation. According to that authority, at the gorge of the Despeña-perros (the part described in 'Don Quixote'), the height is 2,427 feet, and 2,142 north of Cordova. The Serra de Monchique, in Portugal, which may be considered a portion of the Sierra Morena, cut off by the sudden bend the Guadiana makes to the south, contains, according to Coello, the highest point, the Foya (3,828 feet), near Cape St. Vincent.

The next ridge is that which, branching off from the Cerro de San Felipe, north of Cuenca, separates the basins of the Guadiana and the Tagus, and which Bruguière, in his 'Orographie,' calls the 'Oréto-Herminienne.' The range is scarcely as lofty as the title. It is only to the south-west of Toledo

that it shows a well-defined crest, and a little further west, in the Sierra de Guadalupe, in Estremadura, it reaches its highest elevation, 5,114 feet, after which it loses itself in the hilly region of Alemtejo, in Portugal.

The third range is called by Bruguière the 'Carpéto-Vettonique'; but a far simpler, apter, and more practical designation would be the Castilian chain. It is the principal geographical feature of the Castiles, separating the New from the Old, Estremadura from Leon, and the basin of the Tagus from that of the Duero. It springs from the central range near Medinaceli, where it has a height of about 4,000 feet. Further towards the west it takes the name of the Sierra de Guadarrama, a name which puzzles Ford a little, being the Spanish form of the Arabic 'Wad-er-raml,' 'the river of sand'—an obvious misnomer for a massive wall of granite. But there is a Guadarrama River, rising in the chain and flowing into the Tagus near Toledo.* The river gave the name to the town of Guadarrama, and that again, no doubt, to the Sierra at the foot of which it stands. This is the fine bold range which forms such a striking feature in the view to the north from Madrid. The highest point there visible is the cluster of the Siete Picos, overhanging the puerto leading to La Granja and Segovia; but the highest point of all is the Peñalara (7,874 feet) on the other side, over La Granja. On the southern side, about 3,000 feet above the sea, is the colossal palace of the Escorial, immediately west of which begins the grim tract of the Parameras, across which the railway works its way. This curious break in the chain almost suggests the action of some crushing pressure from above, which has broken down the crest, and flattened out the range, so as to leave a broad stony plateau, some 4,000 feet in height, stretching nearly all the way from the Escorial to Avila.

West of the Parameras the range takes the name of the Sierra de Gredos, and there reaches its greatest height. On this point there has been a good deal of confusion. Most of the authorities, even the most careful and trustworthy, such as Keith Johnston, and Lavallée, in his 'Géographie physique,' have given this group a height of more than 10,500 feet, while Coello gives nearly 2,000 feet less—viz., 8,694 feet. I have no doubt, however, that Coello's measurement is the correct

* There is also the river 'Jarama,' which is no doubt the same word. 'Rambla,' indeed, is a common name in Spain for a very common feature in that land of general drought and occasional torrents—a thread of stream trickling along a bed of gravel, such as gave its name to what is now the principal street of Barcelona.

one, though I did not verify his figures here, as I was enabled to do in some other cases afterwards. Another statement, which has crept into such books as Malte-Brun's 'Geography,' is that the Tormes, the river of Salamanca, issues from a glacier at a place called the Palacio de Almanzor. These statements I have traced through Bruguière up to M. Bory de St. Vincent, whose geographical facts in connection with Spain I have frequently found to be largely adulterated with fancy. There is no glacier in the Sierra de Gredos, nor are there the materials or conditions for one. Permanent snow there is, but it is in the form of isolated patches and banks in sheltered positions, some of which, it is true, help to feed a chain of small tarns, the highest, but not the principal, source of the river Tormes. The highest part of the Sierra is a curious bit of mountain scenery. The crest is scooped out and honeycombed into a series of deep basins, around and between which rise a dozen or so of granite peaks, some of them to the eye almost as sharp and slim as a church steeple. 'Palacio' or 'Plaza' de Almanzor I found to be names unknown to the natives, but the highest of these peaks they called the Risco de Almanzor. 'Risco,' in the Academy Dictionary, is explained to be 'a lofty, scarp'd rock, difficult and hazardous to ascend'—the word is in fact cognate with our 'risk'; and this was entirely the view which my guide took of it: for when we had reached the crest, or rather narrow plateau, from which the peaks spring, he sat down, rolled a cigarette, and, like a man whose troubles were over, remarked that we were 'here.' This truism, of course, I had to cap by another to the effect that we were not 'there,' pointing to the highest peak; to which he replied, with a pitying whistle, that no man ever had been, or ever would be, 'there.' Unfortunately for his assertion and prediction, I had just then with the telescope caught sight of an unmistakable pole on the top of the peak in question, set up, I afterwards learned, by the engineers the year before, which proved an argument he could not get over. These Gredos peaks are of a very curious formation. I suppose there is a solid core of rock in each, but all those that I examined had the appearance at least of being built of huge detached blocks of granite, piled and poised one upon the other. Disrupted granite is intelligible, but what force could it have been that piled up these blocks in such a fashion? Rocks of this sort are not the very pleasantest or easiest climbing, but they have generally the merit of being practicable, and a rough scramble brought us to the desired point, rather, I think, to the disappointment of my guide. It is hard, after you have, at the cost of some

trouble and hardship, explored some unknown region, to find yourself unable to recommend it to future travellers; but I cannot in honesty advise any one in quest of scenery or pleasure, or with any object in view unless it be to study the eccentricities of granite, to try the Sierra de Gredos. Nothing, indeed, can well be more savage or weird than the scenery in the immediate neighbourhood of the top, and I can easily understand the wild legends Borrow heard ('Bible in Spain,' chap. xi.) about the monsters lurking among these crags; but, on the other hand, nothing can well be more monotonous than the general view. To the south there is nothing but the bare, broad basin of the Tagus, backed by the Toledo and Guadalupe mountains, and to the north nothing but the, if possible, barer plain of Salamanca, backed by nothing. To a Briton the view is in one respect a highly interesting one. On one side you have the hard fought field of Talavera, and on the other, to the north, you may make out with the glass the twin hills of the Arapiles, marking the site of the battle of Salamanca. To the naturalist, the Sierra de Gredos may be interesting as the principal remaining habitat of the cabra montes, the Spanish variety of the ibex. Link, in his travels in Portugal in 1798, mentions what seems to be the same animal as being found on the Gerez mountains, north of Oporto, and it exists, I believe, in small numbers in the Toledo and Guadalupe mountains, and in the Sierra Nevada; but I have never heard of it elsewhere in Spain. On the Sierra de Gredos it seems to be not at all uncommon. I saw two or three specimens in the course of my ramblings. One my guide (who had been recommended to me as the mightiest hunter of the Sierra) missed handsomely at about forty yards, at which I rejoiced, for it was a young thing not fully grown; but I shall never forget the style in which another, a fine buck with a good pair of horns, went up the face of what seemed at least to be an absolute precipice. In size, form, and habits, it resembles the bouquetin as closely as possible. In the Museum of Natural History at Madrid there is a good specimen, by the side of which stands an equally fine bouquetin, and to the eye at least, there is scarcely any difference between the two, except in the form of the horns. These in the cabra montes have not the single scimitar-like curve so characteristic of the bouquetin. They bend backwards, outwards, and upwards, following very much the curves of Hogarth's 'line of beauty.' They are, I think, too, more tapering and somewhat longer. A pair that I brought back measure $21\frac{1}{2}$ inches, following the curve, just the length of the horns of the bouquetin men-

tioned by Mr. Whymper as belonging to the Italian Alpine Club; but I have seen several considerably exceeding this length, and one or two which could not have been less than two feet and a half. There is a fine specimen of this animal in the British Museum, there described as '*Pyrenean Tur—Ægoceros Pyrenaica.*' To judge by the horns occasionally exhibited for sale, the bouquetin of the Pyrenees seems to have been identical with that of the Alps; but I remember seeing in a curiosity shop at Caunterets a pair of the form I have described which could scarcely have been brought up there from Central Spain. If this variety did exist in the Pyrenees, it is, I think, pretty certain that both it and the other have now been for some time extinct. In Ramond's time the bouquetin was already '*devenu si rare que les chasseurs ne le connaissent presque plus.*' I never met any smuggler or izard-hunter on the Spanish side who had ever seen one, or knew of one having been seen; and the veteran Chapelle of Heas, who has killed more izards than any man in the Pyrenees, has never come across one in the course of fifty years' hunting. If the King of Italy's attempt to preserve the bouquetin does not succeed, probably the last home of the ibex in Europe, except Elbruz, will be the Sierra de Gredos.

The next link in the chain is the Sierra de Bejar, which rises north-west, separated from the Gredos by the Puerto de Tornavacas. El Trampal, its highest part, not much inferior to the Sierra de Gredos, is one of the most curious mountain-tops I ever saw. The Gredos peaks are uncommonly like a cluster of skittles, but this is like the corresponding skittle-ground. It is a narrow flat, a couple of miles long, and as level as a table, with nearly precipitous sides all round. It looks as if Nature, having roughly blocked out a mountain, had been unluckily called off to attend to some more pressing job elsewhere, just as she was going to carve the top into peaks, pinnacles, and ridges, according to pattern, and either has not had leisure since to return to El Trampal, or else has forgotten all about it, which is not unlikely, seeing that the region is perhaps the most out-of-the-way in all Europe. In the very next group of mountains, the Sierra de Gata, on the borders of Portugal, is the valley of Las Batuecas, of the existence of which nobody knew anything till the reign of Philip II., when it was discovered, so the story goes, to be inhabited by a curious prehistoric people. A bishop, I believe, was immediately sent to them, and they became extinct. The last section of this Castilian range is the Serra da Estrella,

of which, with its culminating point, also the culminating point of Portugal, the Canariz (7,526 feet), Mr. Eden gave an interesting account in the 'Journal' (vol. v. p. 122).

The Pyrenean chain is the only one that remains to be noticed. As far as Spain is concerned, it may be considered as divided into three sections—viz., the Spanish slope of the Pyrenees proper, from the Mediterranean to the valley of Bastan; the continuation through the Basque Provinces from the valley of Bastan, and the Bidasoa, to the Peña Labra and the source of the Ebro; and the western portion, from the Peña Labra to the Atlantic. This latter, which figures in works on Spain under a variety of names, such as Asturian Pyrenees, Cantabrian Mountains, &c., is perhaps, of all the ranges in the peninsula, the one about which the least is known, and most mistakes have been made. It deserves better treatment; for, on the whole, I am inclined to think it contains finer scenery than any other. There is as may be seen by any map which traces the chains, a remarkable knot of mountains a little to the west of the source of the Ebro, where the provinces of Palencia, Leon, Santander, and the Asturias join. From the Peña Labra the crest of the Pyrenees rises gradually westward till it reaches its highest point in the Peña Prieta (8,297 feet), a sort of nucleus from which several spurs radiate north and south. Those to the south form the wild and picturesque highland country, generally known as the Montañas de Leon, from which the Pisuerga, the Carrion, the Esla, and several other affluents of the Duero issue. These mountains are not high, but their forms are exceedingly bold and abrupt. A more striking little mountain than the Peña Espigüete between the Carrion and Esla valleys it would not be easy to find in any country. It is a very sharp and symmetrical lancet-shaped 'spike' (as the name implies) of pale blue limestone, in form something like a shark's tooth, or one of those flakes of flint which served our ancestors of the Stone age for such a variety of purposes. From many points of view it has a decidedly unscalable look, and for its inches—it is not quite 8,000 feet—it certainly gives trouble; but it is worth it, if only for the view it gives of the Picos de Europa. These are a group of peaks on the north side of the main chain, and joined to the Peña Prieta by the col called the Puerto de Remonio. On the east side of this rises the river Deva, and on the other the Cares, the two streams uniting near the coast, and enclosing between them a space some twenty miles long by twelve wide. Almost the whole of this space is filled up by the Picos de

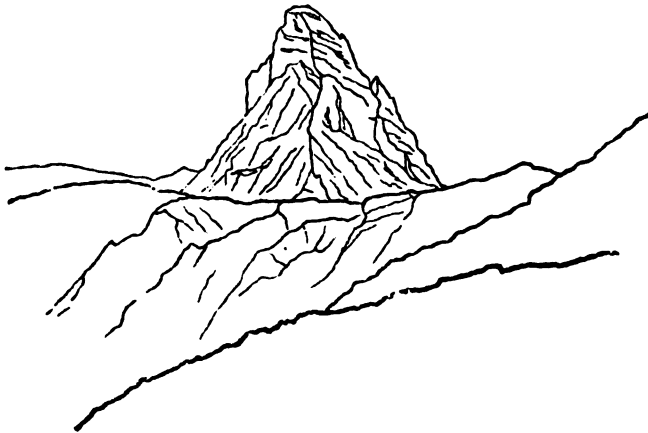
Europa, a compact mass of limestone rising in most places like a wall out of the valley below, and crowned by an array of peaks the like of which I have never seen out of the Dolomite country. Nor is the resemblance confined to form alone, the pale colour of the rocks helping materially to give a Dolomite character to the group. In Malte-Brun and other authorities the height is put at 9,593 English feet, but Coello gives 8,786 only. At first sight the former would appear to be probably nearer to the truth. The peaks rise so high and in such a lordly style above the valleys on either side, that it is difficult to believe they can be much under 10,000 feet; besides, without being actually snow-capped, they preserve a good deal of snow all through the summer; and then one is apt to fancy the valleys from which they spring much higher than they really are. But in this instance, as in every other in which I had the means of testing them, I found Coello's figures to be trustworthy.* To the eye, looking at the Picos de Europa from any elevation, it would appear about as hopeless to go in search of the highest peak as it would to try to determine which is absolutely the tallest spine on the back of a hedgehog. My first attempt was on the fine bold crest which rises south-west of the town of Potes, in the Liébana, and overhangs those great zinc mines about which there has been so much talk of late. This, notwithstanding the assertions of the Potes people, I soon found to be inferior to several other ridges further south; and subsequently I learned that the Government engineers had, after some hard work, discovered the highest point to be the Torre de Lambrion, a peak at the southern end, not far from the Puerto de Remonio before mentioned. My informant, one Eusebio, of Santa Marina, in Valdeon, having been of the party himself, undertook to show me the way, but he either overrated his memory or underrated the intricacy of the Picos de Europa. The interior of the massif is something in form like a very dilapidated honeycomb; a labyrinth of crater-like basins separated by walls bristling with aiguilles, all bearing the strongest possible family likeness one to the other. As long as we could keep the top of the Torre de Lambrion and the cairn on it in view it was all plain sailing; but after climbing one or two ridges, it became, so to speak, shuffled with a multitude

* I carried one of Cary's pocket aneroids, which whenever fairly tested, gave very good results—as, for example, at Madrid, where the mean of a week's readings gave the height within two feet of the latest measurement. I found it agree always substantially, and often very closely, with the heights given on Coello's map.

of other peaks, and Eusebio began to be at fault, at one moment confessing that the track was strange to him, then coming upon some landmark he thought he recollected, then giving way to a conviction that he had *equivocado*—the Spanish euphemism for being completely at sea. I must say of him that, if his organ of locality was defective, he showed himself to be as active and plucky a rock-climber as anyone could desire for a guide. And there were abundant opportunities for proving his quality, for the rocks were often difficult and—without being actually dangerous to anyone fairly furnished with head, heart, and hands—were in places decidedly ugly to look at. So, at least, the man carrying my knapsack thought; for he, when the work grew serious, fairly struck, declined to go farther, and owned to *miedo*—the only time I have ever known a Spanish mountaineer to confess bodily fear. Eusebio, however, persevered, and at last he hailed me to come on; we were all right this time; he could see the cairn, and it was only a little way above us. A quarter of an hour's stiff climbing brought us to the top, and Eusebio sat down upon it and groaned. We had gone up the wrong peak. Right opposite to us was the real Simon Pure only 200 or 300 yards away, but cut off from us by a mighty cleft some 1,500 feet deep. The very same accident had happened to me in the Sierra de Gredos owing to the two points being seen in the same line; but here it was irremediable, as it would have cost a couple of hours to turn the chasm in front of us, involving a night among the rocks, and altogether too much honour for a mountain not 9,000 feet. Eusebio tried to administer consolation by saying it came to very nearly the same thing, as the other point was only thirty or forty feet higher than ours. Taking a rough level, I guessed the difference to be at least twice as much, and the verdict of the aneroid was rather more than 100, assuming that the height given on Coello's map was that of the peak before us.

To any one with an indomitable passion for scrambling, the Picos de Europa may be safely recommended as a rich and unworked field; and whenever virgin peaks of between eight and nine thousand feet come to have an appreciable value in the climbing market, as I suppose some day they must, this district should not be overlooked by the enterprising speculator. In the meantime it is at least worth the notice of those who are retreating before the advancing hordes of irrepressible tourists and all the plagues they bring in their train. The scenery is as fine as scenery can be without snow-mountain or glacier. The valley, or rather congeries of valleys, called the Liébana,

in the eastern angle between the Picos de Europa and the main chain, is as charming a retreat as any one in want of a retreat could desire. Ford calls it 'Swiss-like,' but to my mind it is far more like some of the retired nooks in the South Tyrol. Among the more striking features of the scenery in this country are the deep narrow gorges, something like the cañons of California, through which the waters of these upland basins force their way. On the south side there is a very fine one near Riaño, where the Esla has carved a passage for itself through the limestone out into the great Leon plain. But the finest, grandest, and boldest of all is that of the Cillorigo, by which the Deva issues at the north corner of the Liébana. The frontispiece shows the gateway by which the river enters, but it would be difficult either by sketch or description to convey a correct idea of the interior of the gorge. It is, perhaps, best described as a mixture of the gorge of Gondo and the Via Mala, but in one respect it surpasses them and everything of the kind in the Alps. It is longer than all the Alpine gorges put together, being some fifteen miles from end to end, or probably, allowing for the windings of the road, more nearly twenty. For the greater part of this distance the rocks rise up like walls at each side, crowned above with fantastic battlements and pinnacles that look sometimes as if the first breeze must inevitably send them down on the head of the hapless



PICO DE PEÑAMELLERA.

traveller. The twin river, the Cares, escapes from Valdeon on the west side of the Picos, by a similar gorge, equally beau-

tiful, but on a much smaller scale. In the jaws of the broad valley where the two streams unite stands the curious rock called the Pico de Peñamellera, the outline of which is given here. I remember well the first time I saw it, waking up from a doze in the little diligence which plies between Torre la Vega and Potes. The sun had just set behind the Cobadonga Sierra, and the whole valley was filled with a deep plum-coloured haze, out of which rose up, exaggerated in the failing light, what seemed to be the very ghost of the old Matterhorn. In the rough sketch I made then the resemblance is most absurd, but I prefer the one given here, as it was taken more carefully, and in the prosaic light of noonday. Lest it should fire any member of the Club to rush off to the Asturias in quest of fresh laurels, I think it right to mention that the peak is probably not more than 600 or 700 feet in height, and that it is not a virgin summit, being, I fancy, pretty nearly every day reached by the goats of the neighbourhood. Potes, the chief place of the Liébana, is a very picturesque and very snug little town, and affords fairly comfortable quarters. Indeed almost everywhere in the Asturias country the traveller is far better off in the matter of comfort than in the other out-of-the-way parts of Spain; and the contrast between the clean, well-to-do villages in the Northern valleys, and the miserable, poverty-stricken hamlets on the Leon side of the mountains, is very marked. There there is seldom any regular posada or auberge of any kind, or anything in the way of food procurable, except black bread and perhaps a few eggs. 'Swarming with fleas and children' is the pithy description I find in my note-book of the last Leonese house I put up at (that of Eusebio, above mentioned, in Valdeon, which, by the way, is geographically an Asturian valley, though it belongs to the province of Leon), and if memory serves me, it is no exaggeration. The last-named creatures, I remember, were so numerous that, the house being dark and smoky, it was hardly possible to move without treading upon one of them; in which case, I noticed, Mrs. Eusebio always caught up the sufferer and stopped its mouth by attaching it to her person in the place of the recognised baby. So far as I could see there appeared to be no limit of age; all enjoyed equally the right to draw refreshment from the maternal fountain.

No one should venture into these wilds without a trout-rod and tackle. The trout are not large, but they are fairly abundant in most of the streams, and on them not unfrequently the traveller must depend for his supper. In spring and early summer there is salmon and sea-trout fishing to

be had in the rivers that run into the Bay of Biscay, and for shooting there are partridges, roe-deer (*corzos*), and it is said an occasional stag; and on the Picos de Europa, the Peña Espigüete, and wherever the mountains are high and precipitous enough, the rebecco, as the chamois or izard is called here, is to be found in considerable numbers; besides which there are, in winter at least, plenty of bears, and in some places wolves. The finest and grandest of the scenery is round the Picos de Europa and the mountain knot I have spoken of before; but all through the Asturias westward, as far as the borders of Galicia, the valleys are very beautiful, resembling not a little in character and richness of vegetation those on the Italian side of the Alps. The chain from which these valleys descend is not, however, particularly interesting. None of the summits are remarkable for form, and west of the Peña Prieta there is only one which exceeds 8,000 feet in height. Nevertheless, in almost every work which touches on the subject, even in such standard works as Bruguère's '*Orographie*,' Malte-Brun, Keith Johnston, Lavallée's and Mrs. Somerville's *Physical Geographies*, and others of the highest authority, we find this portion of the Pyrenean chain described as containing summits very nearly equal in height to those of the Central Pyrenees. This I have found to be, as usual, traceable to the imagination of M. Bory de St. Vincent. I own to a grudge against this ingenious gentleman, for to his unscrupulous invention I owe two of the very hardest and roughest journeys I ever made in Spain. On his authority a mountain in the north-west corner of Leon, called the Peña de Peñaranda, over 11,000 feet in height, has gained a place in most maps and books among the mountains of Spain. There was something fascinating in the idea of finding stowed away in this remote nook of the peninsula a rival of the Pic de Néthou, and I went at it with a will, notwithstanding that all the natives professed entire ignorance of its existence. But M. Bory de St. Vincent's description was so precise and circumstantial, and the position he gave such a likely one, just where the long spur separating the Miño basin from the Duero branches off southward, that I continued to believe until ocular demonstration removed all doubt. The whole thing is a myth, compared with which the Iseran case is a feeble instance of invention; for here everything has been invented—height, mountain, and name. The alleged site is a ridge of perhaps 5,000 feet in height, and the highest points within a radius of fifty miles are the Peña Ubiña on the east, 8,202 feet, and the Cueto Albo, 6,332 feet, on the west. Farther west, between

Galicia and Leon, the same geographer has invented another mountain, the Sierra de Peñamarella, with a height of 9,500 feet, which Mr. Packe's sound instinct has led him to mark as doubtful in the list of heights given in his 'Guide to the Pyrenees.' He must expunge it in his next edition, for there is no such Sierra and no such height, the highest points at the part in question being the Picos de Cuiña and Miravalles, which are only a trifle over 6,000 feet. M. Bory de St. Vincent, in fact, seems to have set down heights and mountains in his description of Spain in precisely the same bold, unhesitating way in which the London correspondent of a Paris newspaper, writing from 'Leicester Square,' describes the manners and customs of English society.

Of the two remaining sections of the Pyrenean chain little need be said here. East of Reinosa and the source of the Ebro the crest falls away in height, and all through the Basque Provinces preserves a very moderate elevation, its highest point being the Peña de Gorbea, north of Vittoria, which is only a trifle above 5,000 feet. What these mountains want in height, however, they make up in extent and intricacy; and no one who has ever crossed that picturesque, tortuous Basque country will feel any surprise that regular troops should have always found Carlist hunting a well-nigh hopeless task. The Pyrenees proper, from the Bidasoa to the Mediterranean, have been described nearly as often as the Alps, and from the mountaineering point of view have been so fully dealt with by Mr. Packe and Count Henri Russell, that, in a paper of these limits, it would be, in the strict sense of the word, impertinent to enter into their topography, however strong the temptation may be to dwell upon the glorious scenery of the Spanish side, of which so little is ever seen by the ordinary traveller.*

* As one of the bugbears which help to frighten travellers from the Spanish side of the Pyrenees is, no doubt, the fear of brigands, it may not be amiss to point out that the Spanish Government is by no means so careless about the repression of brigandage as it is generally accused of being. Five out of the seven men who made the attack on Count Henri Russell, of which he gave such a graphic account in the 'Journal' for November 1871, are now in gaol undergoing a sentence of ten years' imprisonment with hard labour. The other two, it was supposed, had got across the frontier. At any rate, they had not been caught last August. This, however, was not properly a case of brigandage. Every one in the neighbourhood ridiculed the idea of regarding it in that light. The men, so the story goes, were simply shepherds, whose cupidity was excited by a legend of a vast sum in gold which Count Russell was said to carry about him. Of course, if

The altitudes of the Spanish peninsula are in general so incorrectly given in works which touch on the subject, that a table of the principal heights, taken from the best sources, and reduced to English feet, may not be out of place here. Where no authority is mentioned, they are taken from the map by Don Francisco Coello, Madrid, 1863:—

| | Feet |
|---|--------|
| Gibraltar | 1,407 |
| Sierra Bermeja: <i>Serrania of Ronda</i> | 4,757 |
| Sierra Pinar: <i>Serrania of Ronda, W. of Ronda</i> | 5,626 |
| Sierra Tejada: <i>S. of Alhama</i> | 7,001 |
| Cerro del Caballo: <i>Sierra Nevada. (PACKE)</i> | 10,430 |
| Cerro de los Machos: <i>Sierra Nevada. (PACKE-CLEMENTE, 11,106)</i> | 10,788 |
| La Veleta: <i>Sierra Nevada. (BOISSIER)</i> | 11,432 |
| Mulahacen: <i>Sierra Nevada. (BOISSIER)</i> | 11,701 |
| Cerro de Alcazaba: <i>Sierra Nevada. (ROJAS CLEMENTE*)</i> | 11,254 |
| Pico Lobo: <i>Sierra Nevada. (BORY DE ST. VINCENT)</i> | 9,163 |
| Sierra Sagra: <i>between Granada and Murcia</i> | 7,867 |
| Sierra Segura: <i>N. of S. Sagra</i> | 5,436 |
| Sierra de Alcaraz: <i>junction of the Sierra Morena</i> | 5,905 |
| Watershed near Minaya | 2,362 |
| Cerro de San Felipe: <i>N. of Cuenca</i> | 5,918 |
| Pico de Javalambre: <i>S. of Teruel</i> | 6,568 |
| Peñagolosa: <i>E. of Teruel</i> | 5,941 |
| Moncayo: <i>W. of Zaragoza</i> | 7,696 |
| Pico de Urbion: <i>source of the Duero</i> | 6,712 |
| Cerro de San Lorenzo: <i>E. of Burgos</i> | 7,555 |
| Sierra Morena: <i>Despeña-perros</i> | 2,427 |
| —: <i>N. of Cordova</i> | 2,142 |
| La Foya: <i>Sierra de Monchique, Portugal</i> | 3,828 |
| Altos de Cabrejos: <i>eastern end of Montes de Toledo</i> | 3,792 |
| Sierra de Guadalupe: <i>Montes de Toledo</i> | 5,114 |
| La Cebollera: <i>Sierra de Guadarrama</i> | 6,975 |
| Peñalara: <i>Sierra de Guadarrama</i> | 7,874 |
| Puerto de Navacerrada: <i>road from Madrid to Segovia</i> | 5,833 |
| Siete Picos: <i>Sierra de Guadarrama</i> | 7,298 |
| Las Parameras: <i>between the Escorial and Avila</i> | 4,448 |

you are robbed or murdered, it matters very little whether it was by a professional or an amateur, but the chances of meeting such a fate are much less if there are no regular practitioners about.

* Owing to an error in reducing Spanish feet to English, I made Rojas Clemente's measurements rather too high in a paper on the Sierra Nevada in vol. iii. of the 'Journal.' Corrected, they agree much more closely with those of Boissier and Mr. Packe.

| | Feet |
|---|--------|
| Sierra de Gredos: <i>Risco de Almanzor</i> . . . | 8,694 |
| El Trampal: <i>Sierra de Bejar</i> . . . | 8,023 |
| Peña de Francia: <i>SE. of Ciudad Rodrigo</i> . . . | 5,688 |
| Canariz: <i>Serra Estrella, Portugal</i> . . . | 7,526 |
| Peña Labra: <i>W. of Reinosa</i> . . . | 6,568 |
| Peña Prieta: <i>junction of Palencia, Leon, and Santander</i> . . . | 8,297 |
| Peña Espigüete: <i>between the Esla and Carrion</i> . . . | 7,982 |
| Picos de Europa: <i>Torre de Lambrian</i> . . . | 8,786 |
| Picos de Mampodre: <i>source of the Esla</i> . . . | 6,834 |
| Puerto de Pajares: <i>road from Oviedo to Leon</i> . . . | 4,471 |
| Peña Ubiña: <i>W. of Puerto de Pajares</i> . . . | 8,202 |
| Cueto Albo: <i>source of river Sil</i> . . . | 6,332 |
| Pico de Miravalles: <i>between Leon and Galicia</i> . . . | 6,361 |
| Pico de Cuiña: <i>S. of P. de Miravailes</i> . . . | 6,551 |
| El Teleno: <i>S. of Poferrada</i> . . . | 6,233 |
| Peña de Gorbea: <i>N. of Vittoria</i> . . . | 5,042 |
| Peña de Oroel: <i>S. of Jaca, Aragon</i> . . . | 5,418 |
| Peña Colorada: <i>NE. of Jaca (9,186, ПАККЕ)</i> . . . | 9,477 |
| Mont Perdu . . . | 10,994 |
| Coticilla: <i>S. of El Plan</i> . . . | 9,547 |
| Pic des Posets . . . | 11,047 |
| Pic de Néthou . . . | 11,168 |
| Sierra de Cadi: <i>S. of Andorre</i> . . . | 8,316 |
| Monserrat: <i>NW. of Barcelona</i> . . . | 4,386 |
| Madrid. (MORALES, 'Geografía') . . . | 2,148 |
| Valladolid . . . | 2,230 |
| Burgos . . . | 2,755 |
| Avila . . . | 3,608 |
| Salamanca . . . | 2,459 |
| Leon . . . | 2,631 |
| Segovia . . . | 3,147 |
| Toledo . . . | 1,476 |
| Guadalajara . . . | 2,214 |
| Cuenca . . . | 2,962 |
| Pamplona . . . | 1,377 |
| Zaragoza . . . | 603 |
| Granada . . . | 2,198 |
| Ronda . . . | 2,450 |

ABOUT ENGELBERG. By THOMAS BROOKSBANK.

FOR a time, now so long as to be reckoned by years, there has been from the mightier members of our Club

a doleful song

Steaming up, a lamentation;

though, if it be also 'an ancient tale of wrong,' their own broad

shoulders must almost alone bear the weight of blame. And the burden of that song is that the peaks have all been scaled, that every pass has been crossed, that not a valley recess has been left unpenetrated—that Switzerland is, in a word, exhausted. I cannot boast (I wish I could) that I am one of this noble band, or have any right to join in this choric lament; a humble member of the Club only, I yet, in turning my attention to lesser things, have found consolation which perhaps my betters would not find; and holding, as for twenty years I have now held, that Switzerland must be really inexhaustible to the end of time, I am glad to have it in my power to speak of a few glorious excursions in a well-known neighbourhood—that of Engelberg, namely—which, though not one of them could, perhaps, be called new when I made it, have been made but rarely, and have not, I am pretty sure, been described up to this time.

And whilst I am about it, I wish to say a few words in praise of Engelberg generally, where it has been my lot to be weather-bound on more than one occasion—once for twelve whole days, and where, moreover, I have now and then spent a day or two under less trying circumstances; and although I have called this a well-known neighbourhood, I think that considering its position so near to the Lake of Luzern, and to the Brünig and St. Gothard roads, and the thousands who in each year rush along them, the great number of tracks by which it may be reached, its splendid and various beauty, the infinite diversity of its lesser walks and strolls, its true mountain air, and its excellent accommodation, the probably disparaging epithet is hardly applicable. Indeed, until the summer of 1871 there was but one hotel of the size and character for which in these later days of luxury the ‘tourist’ looks—I mean the *Hôtel du Titlis*; the very house which, if one could only choose where to be weather-bound, would be one’s choice, with its billiard-room, baths, the ‘Times,’ and plenty of French, German, Swiss, and Belgian papers each afternoon, its moderate charges, and numberless walks of two or three hours when the day holds up for awhile—as in long spells of bad weather almost every Swiss day, in my experience, does. Where are there more exquisite walks than into the *Horbis Thal* to the foot of its cirque of rocks; or, better still, to the head of that same cirque on the track to the *Blanken Alpe* and the *Rothgrätli*; or to the *Unter* and *Ober Schwand*; or up the main valley itself, past the *Tätschbach* and the herds of *Herrenrüti*, till, as you turn back, you look upon the *Titlis* face to face; or, most charming of them all, to the *Gerstni Alpe*, on the path to the

Joch, and thence, turning at right angles to the west, over the little plain and through the pine-wood till you come into the Jöchli track, and so return to the village? Yet three or four hours are enough for the longest of these.

There is, indeed, a comparative paucity of visitors at Engelberg; especially is there a paucity of our dear fellow-countrymen, an English chaplaincy notwithstanding, and an almost complete absence of French, Germans and Swiss constituting the majority of the visitors. This is probably due to the fact that there is but one carriage-road into the valley, which for the last four or five miles is so steep, so ill made, and so ill kept, that the Solider Post-Wagen himself comes no further than Grafenort, and sends on his mails by a man on foot. The present road above the village last named lies wholly on the right bank of the Aa, on which bank the hill-side rises everywhere precipitously from the stream itself; but the Canton Obwalden is about to construct a new road which will cross the water just above Grafenort, and then, almost to Engelberg itself, keep to the left bank, where the rise of the mountain is far less immediate—in fact, along the outer side of the curve which the stream makes. When this is constructed the chief obstacle to a stay in Engelberg (i.e. the getting there) will be removed, although those who can neither ride nor walk will for all time have nothing for it but to sleep ultimately in the quiet Friedhof of its plain old abbey, or to return along the way by which they came.

If there is but a single carriage-road from Engelberg, however, there are few places which present to the robuster traveller, who may have had enough of it, a greater choice of mountain ways for his departure. Let me refer to these in their order, starting eastward from the carriage-road. There are (1) the Rothgätli Pass already mentioned, leading to Isenthal and the Lake of Luzern, which I was permitted to describe in 'Alpine Journal,' vol. ii. p. 365; (2) the Surenen to Altorf, with 'bifurcation facultative' to Amstäg; (3) the Erstfelder Joch, to the St. Gothard road, half way between the two last named villages; (4) the pass between the Great and Little Spannörter, which, as I believe, has been crossed but once—namely, by Mr. Jacomb, and is noticed by him in 'Central Alps,' ed. 1869, p. 175, and see 'Alpine Journal,' vol. i. p. 453—high, long, and arduous enough to be worthy of such a mountaineer; (5) the Grassen, leading into the Mayenthal, first made, I think, by Mr. Tuckett, and noticed in Ball's 'Central Alps,' ed. 1869, p. 138; (6) the noble Wenden Joch, with its wondrous view of the Titlis hardly to be excelled by

passes of greater fame, rendering it one of the most splendid I have ever made—a pass of great usefulness, with its two objective points, Meiringen and the Stein Alpe; (7) the Joch, best known of all; (8) the Jöchli, that deep cleft down into the line of the hills south of the Widderfeld, a pass well worth making into the rich and beautiful Melchthal, with a grand view towards the Oberland from the châteaux on the west, which are unusually near its summit; and (9) the Storegg, which leads to a point lower down than same Melchthal, and is, I believe, only a lower Jöchli with narrower views.

I have crossed them all except the fourth and the ninth, and I can only say that I should like to cross them all again. Of most of them it would be impertinent to add a word, but I venture to think that of those which I have numbered 3, 5, and 6 some further account will be useful, and not uninteresting.

The *Grassen*.—Although Mr. Tuckett has stated the time this pass took him ('Central Alps,' ed. 1869, p. 138), no description of it exists. I crossed it on August 19, 1866, after I had been so long laid up in ordinary at Engelberg; but I went there expressly to make the pass, which I then believed to be unknown, and having been disappointed of it in the previous year, I was resolved to wait till it could be done. The weather, too, was so outrageous that one must have waited somewhere. On that day we (Mr. Hayward Kaspar Blatter, Fritz Ogi, of Kandersteg, and myself, with Leodegar Feierband, of Engelberg, to lead us to the top, where we dismissed him) started at 4 A.M., and after crossing the Aa just above Herrenrüti, began our ascent, first over moderate slopes of grass and geröll, then by steep rocks, often very smooth and affording poor foothold, repeatedly crossing the streams pouring down from the glaciers. When rather above the level of the foot of the glacier on our right, we bent towards the left, and there, on a narrow strip of bare rock and earth between the snow and a lofty cliff, we halted for breakfast; and while we sat here, our feet all but touching the snow, chamois were at play on the higher ground on our right, and many a time came to the edge of the cliffs to wonder at us. But they were in perfect safety; so far above us that we should but just have seen them if they had not stood out so boldly against the cloudless sky. Breaking up, we skirted the rocks just beneath the word 'Scheidegg' on the Federal map, and ascended to the highest ridge, passing by the very spot whence the chamois had looked down on us more than an hour before. For another hour the ascent was toilsome, and even dangerous at times; it was partly grass and partly rock, but

the rock was almost always of a most detestable character, smooth slabs at an incline too gentle to let the hand touch it; and the grass was of a broad, coarse kind, from which the masses of snow that had fallen so copiously in the preceding fortnight slid off bodily under the pressure of our weight, while on our left the slope was mostly so steep that after half-a-dozen feet we saw nothing below us but the valley depths. At length we trod upon the Grassen glacier as nearly as possible at the boundary line between Obwalden and Uri, just an hour below the col, and the rest of the ascent lay over it; its incline is very gentle, and there were few crevasses; on our right and behind us stretched a brilliant snow-field, which seemed to the eye unbroken to the very precipices of the Titlis. We gained the top, and passed between the rocks called the Bärengrube (8,918 feet) in $5\frac{1}{2}$ hrs. of walking from Engelberg.

The descent is by a broad but short glacier, the Kühpfadfirn, so called on the old *lucus* principle, I suppose, for no bovine beast but a mad bull would use it as a path; it is steep, and the snow was deeper and softer than on the north side. We kept, by Feierabend's advice, as much to the left as we could, and reached the Kleinalpthal in $2\frac{1}{2}$ hrs. from the summit, and Gurezmettlen in 40 min. more. Wasen can be reached from this in about $1\frac{1}{2}$ hr., but our course was over the Susten to the Stein Alpe. This made a long day, the ascents being in all about 8,100 ft., and the descents 5,300.

The *Wenden Joch*.—On August 20, 1871, after five days' enforced idleness at Engelberg, Kaspar Blatter and I left our hotel for Imhof by this pass, which lies between that last described and the Titlis, immediately beneath the eastern face of the mountain, and, as a general indication, as near to that face as you can keep. In 1 hr. 5 min. we reached the bridge below Herrenrüti, and the ascent forthwith began. For nearly an hour there is a 'Wegeli,' which is hardly more than gentle, but it ceases at the Ober Furren Alpe, a single wooden hut built in an excavation in the hill-side, and rising little above the ground. After this, the ascent becomes and continues very rapid, chiefly over rocks interspersed on that day with long and extremely steep fields of snow. A narrow tongue of glacier lay between us and the Titlis, which presents itself here as a wall of rock, unbroken save by one long precipitous couloir that descends upon the glacier. Indeed, both in ascending on this side and descending over the Wenden glacier, the mountain is a gigantic wall above you, which at the highest point of the pass bends backward at a right angle, and when, in exactly 4 hrs. from the bridge, we gained that point, the

two walls themselves, converging towards us, were hidden; their sharp junction only was seen, and the apex of the mountain towered 2,000 feet above—a mere obelisk of naked yellow rock, which, as the sun pierced thin films of mist that now and then floated across it, stood in shape and colour a majestic flame.

It was indeed a more than perfect day, for these mists, more like slight puffs of steam than cloud, gave us variety, without the smallest apprehension of worse. For nearly two hours we rested on the Pass-Höhe in sunshine, at an elevation of quite 8,500 feet; on our left the Blackenstock, the Surenen Pass, the Schlossberg, the Erstfelder Joch, the two Spannörter; facing us the Thierberg and the Wasenhorn; on our right the gentle slope of the Wenden glacier in perfect purity of snow, blending at once with the deep green of the Wenden and Gadmenthäger; athwart these valleys the Wetterhörner and the Berglistock, and again, beyond them, the Schreckhorn, the Lauteraar-hörner, and the Finsteraarhorn; and, still more distant, glimpses of the Mönch and Jungfrau. The Wenden glacier, in descending which we had a striking view, up a pure snow valley, of the sharp black cock's-comb of the Urathhorn, is as innocent as it looks; its descent required about 40 min., but we kept too close under the Titlis, and were compelled to work our way back to the left in order to get down the somewhat troublesome cliffs which the lamentable shrinking away of the glacier has left bare. We finally quitted these cliffs at about the centre of the glacier, and stood in the Thalboden some 2½ hrs. after leaving the col; in somewhat more than half an hour we reached the large and flourishing Wenden Alpe, which has better sleeping accommodation than I have ever seen in a mere chalet. With quick walking, we passed the Bär at Gadmen in three-quarters of an hour from the huts, and arrived at Imhof in 2 hrs. 15 min. more, something before 7 o'clock.

On September 11 I had the good fortune to cross this pass again, and again in very fine weather; this time in company with Mr. Hayward, and Kaspar and Jakob Blatter. The three weeks of bright summer days had diminished the snow-fields by, I should say, fully one-half, and the ascent required an additional half-hour. We saw not a single herdsman; the cattle had left the hill-sides, the FÜRREN hovel was pulled to pieces, and in the excavation where it had stood three weeks before its beams and barks of timber were carefully piled up side by side, parallel to the mountain slope; so that the snow and water might be beaten in their coming nine months' struggle to wash them down the hill.

The Wenden Joch is clearly the most direct route between Engelberg and the Stein Alpe, and this time our course lay thither. From the top of the pass we accordingly kept as much towards the left bank of the glacier as possible; we found no difficulty whatever; on the glacier there was still an abundant depth of snow, and we left it easily for the hill-side in less than an hour. Gradually mounting diagonally along the face of the hill separating the Wenden and the upper Gadmen valleys, we reached in some 2 hrs. from the pass our highest point near a pool, which, notwithstanding its ridiculous tininess, is yet immortalised on the Federal map; but the greater part of our way was over very rough ground, alleviated only by the magnificent view of the whole length of the Gadmenflühe,

Grey as the rocks which o'ertop Cenchreæ,
than which there is scarcely anywhere a grander line of rock. The Titlis is greater as a wall, and as a wall the Selbsanft as you come down the higher Linththal is greater than the Titlis—possibly; but a 'sierra' excels a wall as much in beauty as in variety, and I cannot recollect any sierra so fine as the Gadmenflühe, seen from the ridge we had just surmounted. Fifty sharp minutes brought us from that ridge to the Susten path, nearly at the top of the zigzags, and another hour's walking to the inn at Stein.

On the 12th we only crossed the Susten to Amstäg, and took up our quarters, not for the first time by any means, at the 'Golden Star,' which, after an absence of five years, we found as clean and excellent as ever, though, alas! like all the good things of this world, somewhat more costly than in the simpler old times. We were bound to return to Engelberg, and our object was to do so by the Erstfelder Valley, and the village folks and inn Knechts vaguely surmised (for no one *knew*) that it was a twelve or thirteen hours' walk, without rests; and certainly the Erstfelderthal is long, and certainly the height of the col above Amstäg is over 7,000 feet; and so, I think, we nursed ourselves into the notion that we were weary; but I fancy that our real object was again to pass some hours by that gem of gems, the Golzern See; and on its green bank, opposite the Oberalpstock and the Bristenstock, rising above the near foreground of swarthy pines, Wednesday, the 13th, slipped all too swiftly by. But if there is one rule in the Alps needing stricter observance than all others, it is to clutch at each fine day, regardless of head, stomach, legs, or even laziness—most potent of them all; and on Thursday morning, when we rose soon after three, we had a *mauvais quart d'heure*

indeed, for our journey was to be across the *Erstfelder Joch*, while the whole Reussthal, and, as far as we could judge, the universe itself, was filled with a mass of cotton-wool which seemed to have been long exposed to London smoke before it migrated to fairer scenes. But the guides, and especially Trösch of Bristen (not the well-known Johann Maria, but a much younger man, whose Christian names I have forgotten), whom we had engaged to accompany us to the col, were to us what Madame von Schulenberg—'Hanoverian improper female,' in the powerful words of Mr. Carlyle—was to his late Majesty King George II.—'much of a comfort'—and *und voce* they protested that it was only 'Trockener Nebel.' So we started soon after 4.30, and bowled along the carriage-road ankle deep in dust, at four statute miles per hour, till in some 75 minutes we reached Erstfeld Church. And here we were compelled to make a halt of a long half-hour; for, like a greater and a fairer climber of these recent days, we had with us on these expeditions of 1871 a small canine gentleman rejoicing in the name of Pilår, belonging to Blatter, and greatly cherished by him; and this gentleman had spent his leisure day, not in the elevating contemplation of an '*imposante Natur*' (as the Germans have it), but in cultivating doggish friendships at Amstäg, which did much delay his departure in the morning, and, in fact, detained his good master hunting him up near an hour after we had left our inn.

The long valley of Erstfeld opens almost immediately behind the church, and, as in most valleys, there is a steep rise before you get well into it. The stream was on our left hand, but in forty-five minutes we crossed to the right bank. We passed, but did not cross, a second bridge; but by the third which we saw we went back again to the left, and on this side we continued for the remainder of the ascent so long as there was any stream at all. The valley becomes narrower and steeper, and near the last huts where Mr. Sowerby and his friends* must have slept before climbing the Great Spannort it contracts to a mere gorge. Before reaching this, however, our guides were justified; we climbed up through the smoke-steeped wool, got clear of it, and found an unclouded sun overhead, the same dense fog still beneath us; but very soon it vanished with the suddenness and completeness of a dream—yet no puff of wind was perceptible. Then first we saw the whole of the varied and beautiful valley, the rocky range on the north being especially grand and bold. Across

* See 'Alpine Journal,' vol. iv. p. 53.

the valley was a high and graceful fall from the Fülen See, on the copper-green waters of which we ere long looked down, while beyond the Reuss the two Windgellen and the Scheerhorn formed a most symmetrical group.

Near the huts the way might easily be missed; in fact, being alone somewhat in front of my companions, I did miss it, and was going laboriously up the slope straight before me. But the true track leads over rocks into the gorge, up the ascent into which the hands are nearly as useful as the feet; and hereabouts there is a bridge over the stream, by which Mr. Sowerby's party must, I presume, have crossed, as their way took them past the Fülen See on the opposite ledge. We, however, left the bridge on our left, and as we rose in the gorge the Schlossberg glacier lay before us, descending with its tributaries from a wide amphitheatre of snow-peaks, chief amongst which are the fantastic spires of the Great Spannort, with the col right in front of us, between them and the Schlossberg. In 3 hrs. 30 min. from the church, 4 hrs. 45 min. from Amstäg (actual walking) we touched this glacier, and made our first halt—always excepting that which we owed to Pilâr—and when we had 'strengthened the gastric juices with lunch,' the rest of our route to the Höhe was on the glacier for upwards of 2 hrs., but the névé was considerably crevassed, and the snow was soft and slippery. We were much on the left side of the glacier, and some of us thought it practicable to ascend to the col by the very centre of the glacier from the head of the Erstfelderthal; but to others of us that lower and narrower part of the glacier looked very steep, very much split about, and unpromising.

The summit of the pass, which is immediately under the Schlossberg, up whose precipitous sides a big chamois went bounding as we approached, is 8,635 feet; it certainly appeared to me somewhat higher than the Wenden Joch, which Mr. Ball puts at 8,694 feet; from it again the grand object is the Titlis, but we looked through the gap of the Wenden to the Oberland, while all the upper valley of Engelberg was at our feet. In descending bear much to the right at first, on which side there is hereabouts no glacier; the mountain is of exceedingly steep but fine *débris* for full an hour; then comes another hour of very steep turf, twisting to and fro so as to avoid the cliffs which everywhere thrust forth their bare faces; then through a brief space of scattered firs, and the Engelberg Aa is crossed a good 2 hrs. above the village.

It is said to be possible to go from the foot of the Schlossberg glacier to the left of the rocks which divide it, and

thence, by descending on the west side of the Krönlet into the Gurtzellen, or Gorneren, Thal, to return to the St. Gothard road. And this must be the way by which Mr. Sowerby got home, after his successful ascent of the Great Spannort.

A WEEK IN THE GRAIANS IN 1867. By C. C. TUCKER.
Read before the Alpine Club, June 4, 1872.

THE limits of the central Graians are well defined. Bounded on one side by the broad valley of Aosta, and on the other by the deep trench of Val d'Orca, they are cut off from the district of the Ruitor by the Val Savaranche and the comparatively low Col de la Croix de Nivolet, while on the south-east they gradually sink into the plain which stretches without a break from their lower slopes to the Adriatic.

This cluster of mountains has long been known to contain valleys of exquisite beauty, and peaks the highest points of which exceed in height the Eiger and the Wetterhorn. It has not been neglected by the English Alpine Club, the names of some members of which are as household words in the valleys which lie around the Grivola and the Grand Paradis. Our countrymen are not, however, the only persons who have taken an interest in this group. The Graians of Cogne form one of the most noticeable features in the grand panorama of peaks visible from Turin; and as soon as the mountaineering spirit awoke in Piedmont, it was natural that they should be among the first to receive attention, both from their geographical position, and from the fact that Victor Emmanuel had adopted them as his favourite hunting-grounds. It is not surprising, therefore, that the one considerable peak of the district which had escaped the ravages of earlier travellers should become the object of careful study and serious effort on the part of the Italian Alpine Club. Four times at least was the Grand Tour St. Pierre assailed by members of that body, and four times did they encounter a series of mishaps and bad weather combined sufficient to damp their ardour. On the last of these occasions the explorers went so far as to bivouac on the Col di Telleccio, on the eastern side of the peak, and less than (as will be seen) 3 hours' climb from the actual summit; but on reaching the arête, and essaying to scale the formidable-looking bastion which forms the final peak, they were met by a hurlyburly of thunder and lightning, snow, and vapour, which made it impossible to advance, and difficult even to retreat. I need

hardly say they adopted the least hopeless alternative, and the Grand Tour survived till 1867.

In that year Messrs. Mathews and Morshead crossed the Col di Telleccio, and cast a longing glance at the peak, then fully, as they thought, within their reach. With such talent in the neighbourhood the Grand Tour was again in a parlous state, but time pressed and the enemy passed on. On their arrival at Zermatt these gentlemen found a party consisting of Messrs. Freshfield, Carson, and myself, with Balley of St. Pierre as guide, just smarting under a repulse inflicted upon us by the Dent Blanche, and not half consoled by the Lys Jochs and the Weiss Thors, with which we strove to soothe our wounded self-esteem. With the unselfishness so characteristic of mountaineers our friends descanted eloquently to us on the desirable nature of the mountains of Cogne in general and of the Grand Tour St. Pierre in particular, with the result that within twenty-four hours our party, reinforced by the late Mr. J. M. W. Backhouse and his guide Michel Payod, disappeared from the eyes of the Zermatt world by the Matter-Joch.

We found the Gouffre de Buserailles not less deliciously cool and the lower Val Tournanche not less Texan than usual, nor did we escape from the hotel beside the bridge at Châtillon without experiencing the difficulties always thrown in the way of those who prefer Jean Tairraz's well-known establishment at Aosta to the doubtful attractions of his Italian rival.

I never knew anyone who started from Zermatt in the morning, and slept at Tairraz's inn at night, who succeeded in getting off at an early hour the next day; and we were all, I rejoice to say, free from the dangerous modern conceit of wishing to prove a good rule by becoming exceptions to it. It was mid-day, therefore, before we tore ourselves away from the too pleasant balcony and the late prolonged breakfast, and in the full blaze of an Italian afternoon sun addressed ourselves to the task of mounting the long and toilsome valley that leads up to Cogne.

We had heard evil reports of the resources of that village, and the same mule which bore our little all was also charged with some of the luxuries which even in less habitable regions than a Graian valley proverbially place men beyond the reach of destiny. In spite, however, of the fact that we bore our burdens vicariously, and had practically secured ourselves against starvation, it was not till the shadows began to stretch across the valley, and some keenness to mingle with the sleepy softness of the air, that we ceased to be depressed and contra-

dictory, and became in a fit mood to do justice to the upland basin, which at last almost suddenly opened out before us.

The position of the village of Cogne is indeed one of singular beauty. At first sight little meets the eye but a stretch of sunny meadowland set about with bold and heavily-wooded spurs, between which, like fingers radiating from a central hand, lie the shadowy valleys which lead to the cold and quiet world above. But the influence of such a scene is not to be measured entirely by that which meets the eye. The mind is affected by the knowledge of what lies beyond, and the foreground, however cheerful, cannot banish for an instant the thought of those high summits of which, though far withdrawn, the presence is felt here and now. It may be admitted, however, that the influence exercised by the mountains in such a case is, though real, somewhat less direct; and it is for this reason that some of us, at any rate for a prolonged sojourn, would prefer an Alpine village where the merest glimpses of the upper world are visible, to places where the majesty of the mountains is revealed from base to cope. Grindelwald and (as regards the Matterhorn) Zermatt are too overpowering, because too much is disclosed. It is in the sense of grand beauty, half hidden, yet constantly suggested, that the spell must be sought alike of the Tyrolese Pinzolo and of the Graian Cogne.

As we approached the village some excitement was visible. Groups of peasants clad in their best clustered round every door, and we began to think that the fame of the Alpine Club had preceded us, and that an ovation might be in preparation for even some of its most unworthy members. It was not so, however; it was merely the expected visit of an Italian Count, who was coming to inspect the condition of the royal hunting-paths, that created such a furore; and, somewhat humbled, we marched up the street to a sort of tea, coffee, tobacco, and snuff establishment (we had been warned against the most obvious public-house at Cogne), where, in spite of an unpromising outside, we found civil and clean people, a snug upper room, and a plentiful supply of fresh meat. Whether the latter had been provided in the expectation that the Count would prove carnivorous I know not, but in any case we felt it our duty to discourage his savage propensities, and I have reason to believe that on his arrival he found the cupboard bare. The only feature of the house worth a passing notice was a huge genealogical tree sprouting from a gentleman lying upon his back, who, though evidently a great man, seemed somewhat scared at

the prospect of the tremendous family of which he was to become successively founder, patron, and hero.

We then discussed our plans. The Grand Tour is, as has been said, not visible from Cogne, and none of us, indeed, had the slightest idea where it was, except that it lay somewhere behind the massive promontory which divides the Combe di Valeiglia from the Combe di Val Nontè. As we had therefore first to find our peak and then to get up it, we concluded that it would be advisable to sleep as near as possible to its base, and a bivouac in the Combe di Valeiglia suggested itself as not less romantic than necessary. Not quite sure that our guides took the same view, we were relieved to find them firm believers in the existence of a *châlet* at the head of the valley, and we had too much consideration for their peace of mind to disturb the blissful ignorance which was also advantageous to our plans. As soon, therefore, as we had sufficiently defeated the carnal expectations of the Italian Count, we marched off. In mounting the main valley we kept somewhat too much to the left. We did not, however, regret the slight *détour*, as it gave us the opportunity of seeing that which can never be beheld without emotion—the glow of a perfect sunset on Mont Blanc, lifted to an immeasurable height of calm above the tumults and distresses of a sombre earth. When at length we turned our backs on the splendid vision, and plunged into the wild and darkening glen which was to be our abode for the night, it was not without feeling the momentary depression which attends the act of leaving light and the homes of men for solitude and growing gloom.

For some time we plodded solemnly on; the guides at first good-tempered enough in the prospect of a hay *châlet*, then dubious and discouraging, and at last—when reach after reach in the interminable valley was passed without revealing the wished-for haven—positively sepulchral. Two-and-a-half hours from Cogne, at a spot where a small rivulet crossed the path, a halt was called, and it was arranged that the men should employ themselves in collecting fire-wood and making preparations for a bivouac, while I made a last effort to discover the whereabouts of the mythical *châlet*. As I had never been a believer in its existence originally, it did not require a lengthened search to convince me that it was not there; and in ten minutes I returned with the report that within a few hundred yards of the place where we had halted, the path, hitherto our companion, vanished into nothingness, and that I had little reason in this instance to doubt the truth of the phrase which associates the act of going farther with faring worse. My conclusion was

accepted as probable, and with various energy we set about making the best of our situation.

My recollections of the hours which followed are none of the clearest. I look back upon our quiet night in the Combe di Valeiglia through a mist of Eastern experiences—bivouacs on the flanks of Ararat—encampments in the still wilder recesses of the Caucasus, which somewhat dim the glory of what we then doubtless considered a highly romantic situation. There was a moon, of course; but I think it was quite of the ordinary character. Our feelings, I fancy, were cheerful; we had gained much ground by our resolute start; we had successfully cheated the guides into an uncomfortable position (always a satisfactory performance), food was plenty, the fire good, and the sense of utter ignorance of even the whereabouts of a peak which had been assailed with deliberation at least four times without success, gave a feeling of uncertainty to our adventure which was not otherwise than pleasurable. Seated on a soft path, with our backs planted against an undeniably solid hill-side, and our eyes amply filled with accommodating smoke, we occupied a position in which little was left to be desired; and I think, though I speak with diffidence, that I must have slept. A slight feeling of monotony, perhaps unavoidable, induced us to rouse ourselves at about 2 o'clock, and we were quickly again on the war trail. The night had not agreed with all of us, and the appearance of Freshfield in particular was indescribable; indeed, had I not known that his afternoon powers are generally in direct proportion to his morning melancholy, I should certainly have predicted for him the fate of our Italian predecessors.

Before we quit the comfortable path which had served us so well during the hours of darkness, it may be as well to say something of the agency by which these valleys are, in point of commodiousness at least, lifted high above their fellows in the Alpine chain. I am told, and therefore I believe, that there is no royal road to mountaineering. The next best thing is to have royal roads to the mountains. The district of Cogne is undoubtedly that in which mountaineering is divested of its most objectionable features. The peaks themselves are scrupulously left alone; no ladders, no stanchions, no ropes are there to banish the element of difficulty or to smooth the path of the incompetent mountaineer; but the preliminary—that horrid preliminary stage which ordinarily consists of slopes of *débris* and boulders by the mile, unbridged torrents and insidious stumps of ancient trees—is a thing of the past. In the Graians we get an approach to that Walhalla of mountaineering

where the best sort of work remains, where the excitement is left unimpaired, where the moments of triumph are not less frequent or less ecstatic than before, which was doubtless in the mind of my old friend François when he spoke in the spirit of prophecy of the expeditions he and I should take together 'sur l'autre côté,' where porters should cease from troubling and even moraines be at rest.

But I must not forget that we have by this time left the path and are scrambling up the tail end of a considerable glacier. When one sleeps high, a little time, even with slow-going (and we had gone slowly), seems to take one a surprisingly long way, and it was still early when we first caught sight of the upper world we desired to explore. Again my recollections are vague, but the impression left on my mind is that of a largish snow-field, pretty flat and round, set about with various peaks, very black and very sharp. The only thing we did *not* see was the Tour St. Pierre; for though some one suggested that an unpromising-looking brute just opposite was the peak we sought, not one of us at heart believed that so truculent, and yet so ordinary a rock, could be the summit with which the country-side had connected the name and dignity of the great apostle of the Roman Church.

A huge bastion of rock and a smooth cataract of névé to our right concealed the view in that direction; and after some hesitation we decided upon surmounting the latter before we plumped for any of the unprepossessing candidates that had already presented themselves. This decision was judicious, and a very brief space of time revealed to us the broad gap of the Col di Telleccio quite away to the right, on the further side of a higher snow-plain, and the grand mass of what was indisputably the Tour St. Pierre, breaking steeply down upon it. As we drew near the level of the pass the sharp peaks of the Cottians cut the curving lines of the snow-ridge, and we rejoiced in the thought that for to-day at least the Italian side was clear. But we were not going to cross the pass, and our work was still before us. Freshfield, still sad and wishing to be slow, suggested a division of the party. Backhouse and I, with Payod, were to push on and secure the peak; the rest would follow at their own pace.

The nature of the work before us was abundantly clear. We had first to strike the arête that runs in a northerly direction from the peak towards Cogne, as near as possible to the base of the final tower, and then, turning to the left, to deal with that on its merits. The first part of the business was soon accomplished. Working our way upwards, now by couloirs of

hard snow, now by ribs of rock, which we courted as long as they proved accommodating, and as soon as they showed temper threw over for the most attractive rival within reach, an hour's climb landed us on the crest of alternate snow-links and rock-teeth which separates the Glacier de Monei from that of Telleccio. A moment's breathing space, and we turned to the final peak with a will. A steep snow-bank led up to smooth slabs, or rather (so solid was the mass) to a smooth slab, of granite, tilted up at an excessive angle, and curving steeply over to great precipices on this side and that. The climbing here might have beaten us after all had it not been for the minute fissures, so kindly provided by most granite mountains in critical places, and which, though not so deep as a well or as wide as a church door, suffice for a party who are running a new peak to its last available earth. We climbed fast, but still the bare ribs of rock rose above us and in front, cutting off the view we chiefly wished to see, till at last, the slope sensibly lessening, and the native granite giving place to heaps of huge boulders, we felt the top to be close at hand. In a few moments Italy lay at our feet. Not a cloud! only tiny fragments of blue haze sleeping here and there in the hollows till some little gust would waft them from their resting-place to die in the pitiless sunlight of the open plain. And so away to the far Apennines cut clear against the sky which vaults the Mediterranean.

The second party had speedily joined us, and we sat for more than an hour dreaming the time away in the pleasant nooks we had discovered for ourselves—perfectly happy, had it not been for the dread ever growing in force of the inevitable suggestion that it was time to go. It came at last, and we turned to descend. We cut our parting short, rendered a brief homage to the snowy head and flowing outlines of the Paradis, grandly seen across the glacier basin of the Grancrou, briefly settled that the Pennines were everything that the most captious could desire, bemoaned somewhat the discovery that the beautiful Grivola was from this side little less than hideous, and immediately addressed ourselves to our work. That there was some real difficulty may be judged from the fact that we were far longer in effecting our descent than in ascending, and that we took the precaution (as far as my experience goes, very rarely necessary) of letting each man down separately. Here we all agreed that it was, to say the least, advisable, the smoothness of the rock and the distances of the landing-places from each other, combined with that unlucky force of gravity which exerts itself so energetically

during a descent, making a slip too irrevocable to be indulged in without serious consideration beforehand. From the foot of the final tower it was obviously possible, by turning down to the left, to reach the névé of the Monei glacier, and to return to Cogne by the Combe di Val Nontè. We had, however, left some of our effects in the Combe di Valeiglia, and were reluctant to divide our party. Besides, we should in all probability have ample opportunity of studying the Val Nontè in crossing the Grancrou. In a word, we decided to return by the way we came. We descended the snow-slopes rapidly, and soon reached the belt of *débris* and terminal moraine which it was necessary to cross to regain the pleasant path of the morning. Racing across this bit of rough ground, Freshfield, who was a little ahead, suddenly found himself face to face with a majestic bouquetin. Most fortunately for my friend's sporting reputation, he had no more deadly weapon in his hand than an ice-axe. On the other hand, confident as are the wild animals in these parts, a 'wild goat' may be excused for not wishing to be 'caught by the hair' by an excited man armed with an instrument bearing a strong family resemblance to a poleaxe. Before, therefore, my friend could perform the feat described in the Laureate's early ballad, the bouquetin turned and fled. It was still early when we reached Cogne, where our account of the happy dispatch of the Tour St. Pierre was received by our hostess with an air of pleased surprise, which she explained by saying that all the earlier explorers who had started with a similar object in view had been absent for several days at a time. How in a shorter time we could have achieved a more decided success was a problem too difficult for the good lady to solve. Our night beneath the stars, followed by the long day's walk, had produced the usual result, and when M. Chamoin arrived to congratulate us on our victory, he found but one of the party awake, and prepared to 'reciprocate his felicitations.'

(*To be continued.*)

NEW EXPEDITIONS IN 1872.

WESTERN ALPS.

MONT BLANC, July 1.—Mr. T. S. Kennedy, with Johann Fischer, of Meiringen, and J. A. Carrel, of Val Tournanche, bivouacked on the rocks on the right bank of the most southerly tributary of the Miage Glacier, which descends between the Aiguille Grise and the Mont Brouillard, at about $4\frac{1}{2}$ hrs. from Courmayeur. Starting at 8.0 A.M.

on the 2nd, they reached the névé of the glacier, and thence climbing directly upwards, struck the ridge of Mont Blanc towards the Bosse du Dromadaire, a few minutes below the summit, which was attained at 1.30 P.M. The descent was made to Chamouni by the ordinary route.

THE SAAS-GRAT, July 2.—Lieut. E. Clayton and the Rev. J. W. Bell adopted the following very ingenious method of seeing something of the three principal passes over the Saas-grat:—Having bivouacked by the side of the Findelen Glacier, they ascended to the Adler Pass, skirted the base of the Rymfischhorn to the Allalin Pass, by which they regained the W. side of the chain; and descending the Mellichen Glacier so far as was necessary, finally turned up to the Alphubel-joch, and so reached Saas. Guides, Franz Andermatten and Bürgener.

AIGUILLE DE LÉCHAUD, July 14.—Messrs. J. A. G. Marshall and T. S. Kennedy, with Johann Fischer and Julien Grange, of Courmayeur, ascended the Aiguille de Léchaud from that place. The ascent was effected by the Glacier de Freboutzie and the ridge connecting the Aiguille with Mont Gruetta; but the descent was made by an easier route directly to the head of the glacier. The whole expedition from Courmayeur took about 14 hrs.

MONTE ROSA FROM MACUGNAGA, July 22.—Messrs. R. and W. M. Pendlebury and the Rev. C. Taylor, with Gabriel Spechtenhauser, of Fend, and Ferdinand Imseng and Giovanni Oberto, of Macugnaga, left their bivouac, 5 hrs. from that place, on a ridge of rocks locally known as the 'Jäger-Rücki,' which runs down a little to the right of the Höchste Spitze, at 2.30 A.M., and ascended by rocks lying directly under the summit, and visible from Macugnaga, which took them in comparative safety through the most dangerous part of the ice fall. From the point where these rocks sink into the snow they mounted as straight as possible towards the summit, though forced a little to the left, and finally reached the base of the rocks of the Höchste Spitze at 10.30. Thence they kept on, or near, the ridge to the summit, which was attained at 3.30, after passing over the E. tooth of the mountain, reached by Professor Ulrich's guides from Zermatt in 1848. The descent was made by the usual route to the Riff.

STRAHLHORN, August 10.—Mr. George E. Foster, with Hans Baumann, of Grindelwald, left Mattmark See at 3.30 A.M. Shortly after reaching the glacier they turned from the usual Adler-joch route towards the Fluchthorn, and struck the connecting ridge between it and the Strahlhorn, near the latter peak. After following the ridge for a short distance they crossed over to the southern face of the Strahlhorn by the rocks, and reached the summit at 10.10, descending from it to the Adler Pass by the usual route.

GRAND PARADIS FROM COGNE, August 19.—Messrs. F. Pratt Barlow and S. F. Still, with Jakob Anderegg, Laurent Lasnier, of Courmayeur, and Elysée Jeantet, of Cogne, left a bivouac about two hours from Cogne at 1.45 A.M., and ascending by the moraine, at 2.38 reached the

foot of the rocks dividing the ice-fall of the Glacier de la Tribulation. These were found easy; and bearing always to the left, they got on to the ice with some little difficulty at 5.15, and at 6.5 reached the foot of the final peak, the snow being in very good order. The last ascent was commenced by the third couloir to the right of the actual summit of the Paradis, as seen from the glacier; and climbing sometimes by couloirs, sometimes by the rocks between them, the party eventually struck a very sharp snow arête, which led them in about ten minutes to the top, at 8.45 A.M. They remained there one hour, and descending by the same route, reached Cogne very easily at 5.0 P.M. The first and only previous ascent of the Grand Paradis from the side of Cogne was made on September 15, 1869, by Signor P. J. Frassej, of the Italian Alpine Club, who left Cogne at midnight, reached the summit at 6.30 P.M., slept there, and descended on the following day to Val Savaranche.

VÉLAN, September 3.—Messrs. W. and H. J. Leaf, with Hans Baumann and Daniel Bich, of Val Tournanche, left St. Rémy, on the St. Bernard road, at 4.15 A.M., by a well-marked path which starts close behind the inn, and after winding round the buttresses of the hills above Étroubles, struck a 'Wasser-leite,' which led them, in 2¼ hrs. from St. Rémy, nearly to the head of the Val d'Étroubles, at a convenient spot for crossing its main stream. From this point they aimed straight at the highest point of the Vélan, which they proposed to reach by a well-marked and tempting couloir right in front. On reaching it, after a steep climb, it proved to be so infested with falling stones, that they took to the rocks on the right, which were steep, but nowhere really difficult, and finally reached the top of the mountain in about six hours' actual walking from St. Rémy. In descending to the Glacier de Valsorey the arête overlooking the Glacier de Tzeudet was followed, from want of local knowledge. The rocks being rotten and difficult, it became necessary to descend a very steep and well-swept couloir—where, however, the snow was good—succeeded by slopes of avalanche *débris* along the base of a line of cliffs to the left, where their second guide narrowly escaped being carried off by a great block from above. There was some slight difficulty in getting on to the glacier, but the party finally reached St. Pierre in less than four hours' actual walking from the top. This line of descent is, perhaps, shorter than the usual route by the arête overlooking the Val d'Ollomont, but the abundant falling stones are a serious drawback.

CENTRAL ALPS.

CIMA TOSA (NEW ROUTE) AND BOCCA DI TOSA, June 22.—Mr. Tuckett, with C. Lauener and Santo Siorpæa, left Molveno, and proceeding up the Val delle Seghe, reached, after two hours' easy walking, the foot of a snow-filled couloir at the head of the NW. branch of the valley. The snow being in bad order and very treacherous, 1½ hr. was occupied in reaching the basin into which the couloir expands beneath

the NE. cliff of the Cima Tosa, and three-quarters of an hour more to the Col, or 'Bocca,' which is almost as well marked and striking as that of the Brenta, further to the W., whilst its height is probably about the same. Striking off to the left, up rather steep slopes of snow, where some step-cutting was necessary, and keeping close to the E. side of a small overhanging glacier of the second order, the summit of the Cima Tosa was gained in $1\frac{1}{2}$ hr. Returning to the Col in twenty minutes by the new route, and proceeding down the valley on the W. side of the pass, which it is proposed to call the Bocca di Tosa, the party reached the beautifully situated *malga* of Val Asinella in $1\frac{1}{2}$ hr., mostly over snow, and Pinzolo in 3 hrs. more, taking it very leisurely. For those who may desire to ascend the Cima Tosa from Molveno, the route just described is probably the best and quickest; but that followed by Mr. D. W. Freshfield is undoubtedly to be preferred when Madonna di Campiglio or l'inzolo is the point of departure. For a traveller bound from Molveno to Pinzolo or Campiglio, and desirous of taking the Cima Tosa *en route*, it is almost immaterial whether the Bocca di Tosa route is adopted, both for the ascent and descent, or the descent effected by Mr. Freshfield's line of attack; but in the reverse case, the traveller starting from the W. side would gain much time if he adopted the latter course for the ascent, and then descended direct to the Bocca di Tosa, and thence to the Seghe ravine and Molveno.

STUDERHORN, *June 29.*—Messrs. Moore and H. Walker, with Melchior and Jakob Anderegg, left the Grimsel at 2.45 A.M., intending to cross the Studer-joch to the Eggischhorn. The glacier leading directly to the pass seemed to be so dangerously exposed to avalanches, that after following it for a short distance they turned up on to the ridge forming its left bank, and followed it to the top of the Studerhorn, which was reached at 11.55. They went straight down the snow-covered western face of the mountain to the head of the Studer-firn; and eventually striking the route of the Oberaarjoch, arrived at the Eggischhorn at 7.40 P.M. Actual walking, $15\frac{1}{4}$ hrs.

GROSS NESTHORN AND GREDETSCH PASS, *July 1.*—The same party left the Bell Alp at 3.5 A.M., and reached the summit of the Gross Nesthorn by the usual route at 10.25. Having returned to very nearly the lowest point of the ridge above the Gredetsch glacier (height about 11,275), they found an easy way down on to that glacier, and by it descended to the head of the Gredetsch Thal in two hours from the col, leaving the glacier (which is not well laid down on the map) on the right bank. They followed the Gredetsch Thal to the village of Mund, and reached Visp by a very bad path at 5.40 P.M. Actual walking, $12\frac{1}{4}$ hrs. Owing to the enormous quantity of snow the descent of the Gredetsch Glacier was quite easy, and at no time is any very serious difficulty likely to be encountered. This route is therefore recommended to travellers bound from the Bell Alp to Zermatt, combining the ascent of one of the finest panoramic points in the Alps with an interesting pass.

JUNGFRAU.—FAULBERG TO WENGERN ALP, *July 5.*—Messrs. E. R.

Whitwell and F. F. Tuckett, with Ulrich, Christian, and Peter Lauener, left the Faulberg hut at 2.10 A.M., halted at 5.17 for breakfast till 5.45, gained the Roththal-sattel at 6.30, and the summit of the Jungfrau at 7.40. Quitting it at 8, and dropping down upon the first and highest plateau on the N. side, they subsequently encountered considerable difficulties owing to the arête towards the Silber-lücke being almost completely buried in snow, so that $3\frac{1}{4}$ hrs. cautious work were required to reach that point at 11.15. After a halt of half an hour on the second plateau below, the head of the Guggi glacier was gained at 2.10, the usual point for quitting the ice at 3.45 ($1\frac{3}{4}$ hr. halt), and the Wengern Scheideck at 5.15.

PASSO D'AVIO, *July 11.*—Messrs. Taylor, Hudson, and W. M. and R. Pendlebury, with Spechtenhauser alone as guide, leaving the Bedole Alp at 3 A.M., ascended the Adamello by the E. arête, and thence descended from a point on the W. ridge, just under the summit, to the Lago d'Avio, and so on to the Val Camonica. The descent of the precipice took 3 hours, much time being lost by a hail-storm and other causes. The first part consisted of steep rocks and ice couloirs, and was succeeded by much crevassed glacier.

TRÜTZI PASS, *July 19.*—Mr. P. L. Sclater and the Rev. Dr. Millard, with Andreas Jaun, made a pass from Münster in the Rhone valley to the Grimsel by the Trützi-thal. The route is the same as for the ascent of the Löffelhorn, until about an hour's distance from its summit. Here it diverges to the right, and after crossing the ridge descends very rapidly to the Ober-aar glacier, and ends in the same way as the Ober-aarjoch. This pass is a short and easy day's work of about eight hours, and at the same time very beautiful and interesting.

MÖNCH FROM THE WENGERN ALP, *July 23.*—Mr. Moore, with Melchior and Jakob Anderegg, made the third ascent (first by English travellers) of the Mönch from the Wengern Alp. Leaving the Hôtel Bellevue at 1.5 A.M., they reached the summit at 10.0, and Grindelwald by the Mönchjoch at 6.10 P.M. Actual walking, $14\frac{3}{4}$ hrs. The first ascent from this side was made in 1866 by Herr von Fellenberg, of Bern; and the second, last year, by Herr Bischoff, of Basel. The first-named gentleman passed three nights on the mountain between the Wengern Alp and Grindelwald; and Herr Bischoff, having bivouacked the first night at a considerable height, was compelled to pass the second night at the Mönchjoch hut. This year the snow was in such an exceptionally favourable state, that the ascent was free from serious difficulty, and was several times repeated.

TSCHIERVA PASS, *Sept. 13.*—Dr. Paul Güssfeldt, of Berlin, with Hans Grass, Peter Jenni, and a porter, left the Misuna Alp in the Roseg Thal on Sept. 12, to try and reach the very well-marked col at the head of the Tschierva glacier, between Piz Bernina and Piz Roseg. They crossed a very large bergschrund with difficulty, and proceeded to cut steps up the ice-wall above it, but found it impossible to reach the top in the day, and accordingly returned to the Alp for a

second night. Starting at day-break next morning, they resumed the work which had been left unfinished, and reached the col at 12.30 P.M. The descent on to the névé of the Scerscen glacier was found comparatively easy, and the party regained Pontresina, by the Sella Pass, the same evening.

EASTERN ALPS.

MARMOLATA. NEW ROUTE, June 17.—Mr. Tuckett, with Christian Lauener and Santo Siorpaes, after a reconnaissance of the S. and SW. sides of the Marmolata, whilst crossing the Passo d'Ombretta, quitted Campidello in Val Fassa, and effected an ascent of that peak by Canazei, Alba, the glen of Contrin, and a broad couloir leading up to a well-marked gap forming the lowest point in the ridge extending W. from the Marmolata to the Vernel of Herr Grobmann, the height of which last is very little inferior to that of the former peak. Owing to the great quantity of snow and its hard frozen condition, it was possible to scale the smooth but masked rocks to the right of the gap, and nearly follow the 'Kamm' to the summit, but even under ordinary circumstances a slight détour to the left would avoid the rocks altogether. Time—Campidello to foot of Ombretta pass, $2\frac{1}{2}$ hrs., thence to the gap in the W. arête, $1\frac{1}{2}$ hr. and to the summit 1 hr. more. After remaining there $2\frac{1}{2}$ hrs., Mr. Tuckett descended direct to the W. end of the Fedaya Plateau, in 1 hr. fast going, and in $2\frac{1}{4}$ hrs. more returned to Campidello.

LÖFFEL JOCH, June 20.—The Rev. C. Taylor, Messrs. Hudson, and W. M. and R. Pendlebury, with Spechtenhauser, made a pass direct from the Floiten Grund (in the Zillertal) to the Ahren Thal by passing over the ridge a little west of the Löffel Spitze, which was ascended *en route*. This pass, spoken of by Ball as apparently hopeless, was found comparatively easy. Time—Left Franzens Hütte at 2.30 P.M., and reached summit of the Löffel Spitz in 7 hrs., halts included. Halted on summit $\frac{3}{4}$ hr., and reached first châteaux in the Trippach Thal at 1 P.M., having waited $\frac{3}{4}$ hr. more on the col to let the clouds clear up.

THURNERKAMP, June 25.—The same party, with the addition of a local guide (Joull), made the first ascent of the Thurnerkamp. Leaving the Waxegg Alp in the Schwarzenstein Thal at 3.30, the summit was attained by the sattel on the west (between it and the Rosaruck Spitze), and the SW. face, in just under 5 hrs. Later in the year the ascent would demand far longer time. After returning to the above-mentioned sattel, Mr. R. Pendlebury, with Joull, descended southwards into the Weissenbach Thal and Taufers, thus making a new pass which may be called the *Thurnerkamper Joch*. Height of the peak, 11,189 feet.

BECCO DI MEZZO DI, July 5.—Mr. Utterson Kelso, with Santo Siorpaes, made the first recognised ascent of this peak. 'Starting at 5 A.M. from Ghedina's Inn, at Cortina, we reached the foot of the "Croda" (local for bare rock) after about $2\frac{1}{4}$ hrs. walking. The

eastern face of it appeared impracticable, so passing round by the northern to the southern side, we found a little gorge opening out opposite the Pelmo. Nearly at the top of this gorge Santo discovered that the rocks were thence practicable to the summit, which we attained at 9.45, after a short but steep climb, and there erected a "Steinmann." Height about 9,000 feet.'

LANG KOFEL, *July 11.*—The same party, with the addition of Antonio Kaslatler, of the Grödner-thal, made the second ascent of the highest peak of this mountain. 'We slept at the Solchner chalet, on the Seisser Alp, between Santa Maria and Ratzesbad. Owing to unfavourable weather we did not leave our night quarters before 5.30 A.M. In about four hours from the Solchner chalet we reached the foot of the glacier, seen from the Seisser Alp, and went up a snow couloir and rocks to the right of it, by which, after some stiff climbing, we gained a point upon the ridge, where we found Mr. Whitwell's card, left in 1870; but as the clouds broke we saw a higher point, crowned with a cairn and flagstaff, utterly impracticable from the ridge on which we stood. We had consequently to return; and when we again arrived at the top of the couloir we descended slightly on its N. side, and crossed a snow-slope and some steep rocks into a long, steep couloir leading in a NNE. direction, from the top of which we reached the summit of the mountain in about ten minutes, at 2.0 P.M., and found there Herr Grohmann's cairn, built in 1869. We left the summit at 2.30, reached the bottom of the rocks at 6.0, and Santa Maria about 8.30.'

MARMAROLE, *July 19.*—The same party, with the addition of Mr. C. J. Truman, a young German, son of the innkeeper at Landro, and the guide Luigi Orsolina the younger, of Auronzo, succeeded in making the ascent of the highest peak of the Marmarole, from the valley of Auronzo, having passed the previous night in one of the hay-barns of Stabiciansi, on the road between the pass of the Tre Croci and the village of Auronzo. 'Mr. Ball says, in his guide-book to the Eastern Alps, that the Marmarole was ascended in 1867 by Cav. Somano, an Italian gentleman; but most probably not the highest peak, as we were unable to discover any trace whatever of a previous ascent. Upon a much lower point, however, stood a well-marked cairn, which probably records the ascent alluded to in Ball. Indeed, Santo told us of the ascent beforehand, while the people of Stabiciansi denied that the highest peak of the Marmarole had been previously ascended. There could not be the slightest doubt that the point we had just attained was the highest of the group. I had no means of registering its real height; but judging from other summits around, of known height, I should not suppose it above, at least much above, 10,000 English feet. This ascent might be made in six or seven hours from Stabiciansi, or in less time by quick walkers.'

KESSEL KOGEL, *August 31.*—Messrs. J. H. Carson and C. C. Tucker started from Campidello with Anton Bernard as porter, for the ascent of the Kessel Kogel (the N. peak of the Rosengarten range). Leaving Campidello at 4 A.M., they ascended the Duron Thal nearly to its head

before they crossed the ridge which divides that valley from the glen of the Antermoja See. Following that glen to its head, the party reached the base of the actual peak in 3 hrs. from Campidello. By a steep but short rock-climb a ledge was gained extending diagonally across the face of the peak from right to left. The inclination of this ledge was steep; and the snow lying but thinly over the rocks, caution was necessary throughout. The upper part of the peak once attained, the rest of the ascent presented no difficulty, and the top was reached in about 5 hrs. walking from Campidello. The party descended to Mazin, in the Fassa Thal, by the fine glen of Vajol, and returned to Campidello shortly after 3 o'clock. Owing to bad weather no view was gained from the top, and no opinion could therefore be formed whether this peak, or the Federer Kogel, farther to the S., is the highest of the Rosengarten summits. Young Bernard proved himself a fair cragman, but was obviously nervous on ice and snow. The inn of Al Mulino, at Campidello, is now both comfortable and reasonable, and offers the best head-quarters for the district of the Seisser Alp and the Rosengarten.

CIMA DI VEZZANA AND PASSO DI TRAVIGNOLO, Sept. 5.—Messrs. D. W. Freshfield and C. C. Tucker left Paneveggio at 5 A.M. for the ascent of the Cima di Vezzana, the second in height of the Primiero dolomitea. An hour's walk sufficed to reach the fine cirque at the head of Val Travignolo. A small but steep glacier descending from the deep gap between the cliffs of the Cimcn della Pala and those of the Vezzana offered the most obvious line for the attack of the latter peak. On reaching the glacier the guides engaged at Paneveggio declined to go farther, and Messrs. Freshfield and Tucker were compelled to continue the ascent alone. Having crossed a considerable bergschrund without serious difficulty, they attacked the steep and hard slope leading to the gap or col above-mentioned. Much step-cutting was necessary, and it took 2 hrs. of hard work to reach the col. Above easy rocks and snow-slopes led up to the highest point, which was attained at 11 o'clock. The peak seemed to be but little inferior in height to the Cimon della Pala, and commands a superb view. Among the nearer objects visible the town of Primiero and the Lake of Alleghe were well seen. Returning to the col, the party descended by easy snow slopes to the head of the ravine leading from the Primiero plateau to Gares, and crossed the Passo delle Cornelle. By a tedious traverse the high road was gained at a point considerably above San Martino di Castrozza, and by it Paneveggio was reached at 6.30 P.M.

ALPINE NOTES.

FATAL ACCIDENT ON THE JUNGFRAU.—On July 24 Herr Merz, school-master of Moos-Affoltern, in company with Von Allmen, of Trachsell-auenen, and the guide Johann Bischoff, left Trachsellauenen at 1.0 A.M. for an excursion to the Roth-thal, intending, if so disposed, to cross the Roththal-sattel to the Eggischhorn. Nothing was heard of the party

until the 28th, when Merz was found at the Stufenstein Alp much injured, and half dead with exhaustion. He gave the following account of what had occurred :—‘ Our journey to the Roth-thal was prosperous ; arrived there, we were so fresh, and the weather was so enticing, that we resolved to cross the Roththal-sattel. We had already a considerable distance below us, and were in the couloir, which has been described as so difficult by Professors Obi and *Æbi*, who made the passage in 1871, when suddenly an avalanche from above fell straight upon us. When I returned to consciousness, I found myself on a rock whither I had been hurled by the avalanche, the mass of which had carried away my companions. The rope by which we were fastened must have been rent asunder, otherwise I should have been hurried to sudden destruction as well as the others. A loud cry from all of us—then silence ; and of my unfortunate companions I saw and heard no more. A second avalanche passed by me without injury ; I remained safe on my rock, where also I passed the night horror-struck. Next day I succeeded in descending to the “ Clubhütte ” in the Roth-thal, where I remained the night with my feet frozen. A little chocolate, some hard cheese-rind, and cold water, were my only nourishment during these days. On Friday, painfully and with bare feet, for they could no longer endure the pressure of shoes, I crawled a little way further to the Roth-thal glacier. On Saturday I managed to leave the Roth-thal, and to-day I came with unspeakable toil to the Stufenstein Alp.’ On news of the disaster reaching Lauterbrunnen, a band of guides set off, and eventually recovered the bodies of Von Allmen and Bischoff. Both of the unfortunate men left large families almost entirely unprovided for.

The guide Bischoff, who was known to several English mountaineers, was well acquainted with the formidable pass on which he perished, having crossed it with Mr. Stephen’s party in 1864, and with Messrs. Moore and Tucker in 1870. There must always be on it a certain amount of danger from avalanches, as the ascent is made for some hours by a couloir the head of which is filled by a very steep hanging glacier, descending from the Roththal-sattel itself. In 1870 the final tongue of ice was found to be almost entirely dissociated from the parent glacier, so that it was a mere question of time when it might break loose altogether. Whether such a thing occurred upon this occasion, or whether the avalanche was composed of the superficial snow from the glacier, is doubtful. The latter supposition is, however, probable enough, as the week in which the accident happened was in Switzerland, as in England, signalled by intense heat, not only during the day, but also at night ; and the enormous masses of snow which still encumbered the higher slopes of the Bernese Alps melted, during its course, with astonishing rapidity.

With regard to this pass, which will henceforth have such a melancholy interest, there is a mistake in the lately published ‘ *Jahrbuch* ’ of the Swiss Alpine Club, which it appears desirable to correct. As a prelude to an account of the passage effected on August 22, 1871, by Professor *Æbi* and others, it is stated that the only previous passage since that by Messrs. Grove, Macdonald, and Stephen in 1864, had

been one by the German Professors Voigt and Liebeskind on August 21, 1871. This is certainly not the case, as the pass was crossed on July 12, 1869, by Messrs. G. E. Foster and H. Walker, from the Stufenstein Alp to the Faulberg; and on July 6, 1870, by Messrs. Moore and Tucker, from the Stufenstein Alp to the Eggischhorn. On each occasion the peak of the Jungfrau was ascended from the col.

THE ETYMOLOGY OF 'AVALANCHE.'—We have received the following note from Mr. R. C. Nichols:—"I offer the following remarks as a supplement to the interesting observations on the word *Lavine*, &c., by Mr. Tuckett in the May number of the 'Journal.'

'Ebel, in his "Manuel des Voyageurs en Suisse" (1818), heads his article on this subject thus: "LAVANGES (ou *Avalanches*; en allemand, *Lauinen* ou *Lauwen*)." Note.—"En Tyrol *Schneelähnen*; dans la Rhétie *Lavine*; dans le patois de la Suisse Romande *Lévantré* ou *Valantre*; dans les Pyrénées *Congères*, ou *Lydt de terre* et *Lydt de vent*."

'It seems evident that *Lawine*, *Lauine*, *Labine*, *Lavine*, *Lavage*, *Avalanche*, and probably also *Lévantré*, *Valantre* (according to Scheuchzer, *Levanze*, *Vallantze*) are only different forms of one and the same word. *Lavage* scarcely differs from *Lavine*, and *Lavage*, *Avalanche*, bear the same relation to each other as *Lévantré*, *Valantre*. The only question is whence the whole class of name is derived.

'The conjecture of Berlepsch, which would derive it from *Lau* (warm), will hardly be regarded as satisfactory. The idea is too far-fetched and only a shade less improbable, if at all so, than the suggestion that the mythical *Löwinn* has stood godmother to the group.

'Two other distinct etymologies alone present themselves, *advallars* and *labi*. That the Romansch form is *Labine* renders it extremely probable that the word (under either supposition of Latin origin) has come from the Latin through this channel, and from *labi*, to slip, not from *advallars*, to descend.

'This is further confirmed by finding that the German *Schneeschlüpfen* is synonymous with *Schneelauinen*; the one being a translation, the other an adoption of the Romansch word *Labine*.

'Nevertheless one cannot feel certain that we have not here an instance of those double derivations which are so puzzling to etymologists. The word *Lavage* may have been assisted in its transformation to *Avalanche* by the suggestion of *avaler*; or the word *Avalanche* independently derived from *avaler*, *advallars*, may have the more readily been converted to *Lavage* on account of the similarity of the latter to *Lavine*.'

STRANGE DISCOVERY ON THE VERRA GLACIER.—On the morning of July 16, Messrs. G. G. C. and T. Middlemore and F. Gardiner left Ayas to make the ascent of Pollux and cross the Zwillinge Joch to the Riff. At about 8.15 A.M. the large plateau of snow immediately above the seracs of the Verra Glacier was reached, when the notice of Johann Jaun, the leading guide, was attracted by what he at first thought was either a dead chamois or a large stone. He mentioned it to the other guides, one of whom (Peter Knubel) detached himself

from the rope and descended to the object, when, to the surprise of everyone, he called out 'It is a dead man!' The whole party then at once went down and found the dead body of a young man of about eighteen or twenty years of age, lying on his back, with his arms stretched out at each side and head thrown back; he wore a large red woollen cap, a blue coat and waistcoat with white metal buttons, trowsers of a large check pattern, no stockings, and leather shoes. In his right hand he held a blue bag containing a quantity of clothing, a large key, a prayer-book, and a religious paper, signed by the curé of Chatillon, and with the name of Gorret Marie Ursule, which was presumed to be his name; also the portrait of a soldier. The key, prayer-book, paper, and portrait were taken to help identification, and placed in the hands of Monsieur Alex Seiler, of Zermatt. There was neither money nor food found about his person, and he had no stick. The position in which he was found was quite that of repose, and it may be presumed, that being tired, and probably hungry, he lay down to rest, fell asleep, and was frozen to death. Judging from his dress and the papers found in his bag, he must have been in the Italian army. It is impossible to conjecture what he was doing in such a place without either food, a stick, or any of the necessaries for such an expedition.

THE MARJÉLEN SEE.—The following letter, signed 'J. T.' appeared in the 'Times,' and gives an account of a subsidence of the Marjélen See, a phenomenon of not unfrequent occurrence, but which is not known to have been before described by an eye-witness:—

'On August 2, a party of three of us descended to the glacier and walked downwards along the ice to the savagely-picturesque gorge in which the Aletsch glacier ends. Our way at one place lay along the hollow, between the glacier and the mountain, which hollow three hours later was to be filled by a furious torrent. We crossed a wooden bridge which spans the Massa, and ascended thence, mainly along the moraine of an extinct glacier to the Bel Alp. It was half-past 4 p.m. when we arrived. The domestics drew our attention to a sound like the roar of a cataract, which seemed to descend the Aletsch. For a time the sound was sub-glacial, but a yellow torrent at length appeared at the opposite side of the glacier, smoking and roaring as it tumbled down the declivities of ice. The front of the torrent soon appeared opposite to the Bel Alp, carrying every movable thing along with it. The ice-barrier which had dammed the Marjélen See had manifestly given way, and this was the result. Wishing to get near the torrent, I descended rapidly to the glacier, crossed it and succeeded in getting quite close to the rushing water. Everywhere impetuous, it was divided into spaces of tolerably uniform slope, separated from each other by steep and broken declivities, down which the water plunged with tremendous fury. At the base of one of these falls it was met by a kind of reflecting surface, by which the rhythmic character of its motion was finely revealed. The water here was tossed upwards in a series of vast parallel fans, carrying with them ice-blocks and stones, and breaking above into a spray as fine as smoke. A bend of the glacier came in for the lateral portion of this spray, and over it the

rounded blocks of ice and the stones were showered like projectiles. The sound of the torrent had not abated at bedtime, but this morning all is quiet, and no water is to be seen in the temporary channel. The Rhone at Brieg rose, I am told, considerably, but no loss of life has been reported.'

MONT ISERAN.—In the 'Times' of September 24 appeared a letter under this heading, signed 'H. L. R.,' purporting to give an account of the first ascent of this mythical peak, which was demolished years ago by Mr. W. Mathews and the late Mr. Cowell. The details given of the ascent were of the most thrilling and exciting character, but could leave, it might have been supposed, no doubt on the mind of any one at all acquainted with the subject that the whole story was a hoax. Not only, however, did the leading journal, ordinarily wide-awake, and the confiding public, accept the tale as genuine, but a few old-stagers, who ought to have known better, were taken in, and wrote seriously either to the 'Times' or the Secretary of the Club, controverting the ingenious 'Mr. Ryder's' statements; one sympathising correspondent going so far as to condole with him on having been deceived by his guides, and probably heavily charged for a new ascent. Further comment appears unnecessary; but it is to be regretted that such a considerable amount of literary talent and liveliness of imagination should have been expended (evidently by a mountaineer—possibly by a member of the Club) in a narrative of a fictitious ascent of a non-existent peak.

KRUKELI PASS.—Mr. Sclater sends us the following note with reference to this pass, which is a very pleasant one, and deserves to be more frequented. We have a promise from Mr. Sowerby of a paper on this and the numerous other interesting expeditions which can be made from the Maderaner Thal, with which he is probably better acquainted than any other English mountaineer:—The pass leading from the Upper Maderaner Thal to Unterschachen, in the Schachenthal, deserves to be better known, now that the Swiss Alpine Club Hotel, in the former valley, is so much resorted to. In Ball's Guide it is merely alluded to as a hunter's pass called '*Krukeli*.' I believe, however, its correct name is *Ruchen-kali*—i.e. 'Shales of the Ruchen'—the pass lying close under the mountain known as the Greater and Lesser Ruchen, and the descent into the Unterschachen-thal being effected by the shales descending from the former. The whole pass, from the Alpine Club Hotel to Unterschachen, may be easily accomplished in about eight hours. There is no difficulty for the practised mountaineer, though the slopes high above the right bank of the Hüfi Glacier, by which the ascent from the hotel is made, are rather precipitous, and require a steady head. There is a good hotel at Unterschachen (Hôtel et Pension Clausen).

THE PEAK OF NAIGUATÁ, VENEZUELA.—We have been favoured by Mr. James M. Spence of Manchester with the following particulars of the first ascent of this mountain, which was briefly alluded to in our last number:—

'The range of mountains which strikes off at right angles from the Andes, near Barquisimeto, is about 180 miles long, and presents two peaks near Caracas, the capital of Venezuela. They are seven miles apart, and lie to the north of the Valley of Caracas, near the sea. The Silla of Caracas was first climbed by Humboldt, who gives an account of it, though he does not even mention the higher one—viz., the Peak of Niaguatá—which I was fortunate enough to ascend. On April 6, 7, and 8, I climbed the Silla; and as the rise and track are well known in Venezuela, I need not describe them, but merely state that I found its summit was 8,833 ft. above the sea. It was during this ascent that I resolved to essay the Peak of Niaguatá, the view from the Silla being intercepted by it. I had done many a day's stiff climbing in California, Arizona, and Norway, and here at last was a feat which promised to be worth the trouble. Humboldt had ignored its very existence; and well might the walled flanks of its ridges make it seem to him more like a Titan fortress than a mountain. When I told my determination in Caracas I was laughed at, and the most experienced mountaineers said I might as well plan an expedition to the moon. But I had carefully scanned it with my glass; and had conjectured, from the form of its longest ridge, which was a high, jagged precipice, slightly inclining towards the foot of the Peak, that by traversing this we could get farther up than by any other route, and could determine our course as we found it practicable. Gradually I succeeded in inspiring a number of my friends with a desire to attempt this ascent. The fact of the summit never having before been trod by human foot gave a zest to our plans, and we decided to leave Caracas on April 27. My party consisted of General Terrero, M. Bolet, M. Goëring, M. Hübel, Señor Lisboa, Dr. Vaamonde, and our attendants. We reached Dr. Vaamonde's house, 3,000 ft. above the sea, the first evening, and started at four o'clock the next morning. Striking N. across the valley on our mules, and up a bridle-path on a shoulder of the mountain, we arrived at the estate of Tócome, 3,325 ft. above the sea. Temperature, 69°. By 6 a.m. we got another rise, and were 4,255 ft. Temperature lowered to 62. We had frequently to descend to lead our mules (which soon had to be abandoned) over the dangerous gullies, and passed a precipice where a man had been killed a fortnight before in his attempt to cross it. Ascending we caught a glimpse of the sharp peak of the Silla, to the left, all roseate with rays from the rising sun, while we were still in the last shades of the expiring night. At eight o'clock we arrived at Cerro Duarte, a precipice which separates Naiguatá from the Silla, and here we had made 5,375 ft. The sun was now getting up in strength, for the thermometer marked 75° when we were 6,550 ft. At ten o'clock we lost all track, and came upon a spring which proved to be our last chance of obtaining water. Three flasks were filled, which, alas! was too scanty a supply for such need as we experienced. Now began our real hardships. We had to cut and break down branches to get through an almost impassable wood, and the ascent all the time was steep and trying. When we got out to the open the heat was intense, the thermometer indicating 78°. At length we came upon the place where the great fire of 1868 had devas-

tated this side of the mountain, and the dry grass which covered the almost perpendicular rise made the climbing as difficult and slippery as if on ice. At eleven o'clock my friends had breakfast; I preferred to refresh myself with sleep. Half-an-hour after starting again we arrived at the foot of the first rock, which had to be surmounted with hands and feet, as there were no places where we could even stand, unless we held fast to the rocks. We accomplished this—of course using ropes—in an hour, and then had to descend through a wood, where we found recent traces of tigers. Ascending again, by two o'clock we had gained 8,175 ft., and the temperature was 83°. 340 ft. higher we found the dry bed of a small lake, which in winter would be filled with waters from the Peak, but was now covered with a delicate straw. It was here we decided to encamp for the night, our greatest hardship being the scarcity of water; and as we had no prospect of getting any more till we returned to the well from whence we had last drank, we offered a large sum to three of our attendants to go back to *La Fuente de la Vida* and bring us a supply early in the morning. We gathered sticks for firewood; and then, mounting the highest point near, surveyed the jagged, rocky eminences around, as well as the distant panorama, all of which are indescribable in a short space, but were magnificent in extent and variety. The thermometer had now fallen to 43°, and we suffered greatly from the cold all night. We slept by turns till six in the morning, and soon after the men arrived with water. Leaving them in charge of all blankets, provisions, &c., we did not need, we marched on. Vegetation was now becoming scarce; quartz was very abundant, and here and there in wild confusion lay enormous isolated masses of rock, which gave a most fantastic appearance to the scene. At last we reached an eminence from which we had to descend ere the next peak could be climbed, and on our way had to leap a horrible chasm, over which I had first to go ere I could induce anyone else to venture. At length we came to a steep incline of solid rock which we supposed was the object of our expedition, and the sight of it filled our minds with despair. For a time we could discover no possibility of even scrambling up to the top; but at length descrying a sort of slope, in a crevice of which there was sufficient vegetation to offer resistance to our feet, while with sticks and knives we could make clambering practicable, we decided to attempt it, and succeeded in gaining the summit, when we found that the veritable Peak was far ahead, formed of great columns of rock, and looking at this distance like a gigantic ruined temple. The barometer now marked 9,340 ft., and the thermometer 72°. Fortunately this rock we had surmounted was the abrupt end of a ridge which led to the Peak; but we had to crawl along a kind of gallery, flanked on each side by terrible precipices, and in no part was the ridge wider than 3 ft., and it was with the utmost difficulty we could become accustomed to its dizzy height. After we had crossed it we arrived in a wilderness of rocks, jagged and tortuous in form, bewildering and chaotic in extent; and we found growing in the gulches great masses of a gramineous plant, which, being new to science, has since been named the *Chusquea Spencei*. We climbed

the needle by twelve o'clock, and discovered its height to be 9,439 ft. above the sea, and apparently rising straight out of it, for down in the port of La Guaira we could count the ships! In a limited space it would be impossible to describe the magnificence of the scene. We remained on the Peak but half an hour, for the thermometer was at 82°, and we were suffering intensely from physical as well as mental exhaustion. During the descent I was in agony from thirst. We could not speak, for our tongues and lips were swollen and parched. Suddenly Bolet remembered his painting-flask, and approached me with Samaritan eagerness. I drank, but could not swallow, for the water had mixed with the turpentine with which the thing had been painted a few days before. We pressed on to the encampment, with aching limbs under a burning sky. I reached it but to fall senseless to the ground, though when water was given me I soon recovered. There is much still in my memory to tell of that perilous ascent of the Peak of Naiguatá, which I hope to do in a work I am now writing on Venezuela. It may not, however, be unfit to mention here that the President gave me the only decoration ever awarded by the Republic, in recognition of being the first man who had ventured to the summit of that terribly precipitous mountain.'

THE PIZ MUNTERATSCH OR JULIER.—Baron Albert Rothschild calls attention to the merits, as a point of view, of this peak, which rises above the Julier Pass to a height of 3,380 metres. He states that it is accessible in five hours from the pass, and has been ascended five or six times, but never by an Englishman, although the panorama is much finer than from the Piz Corvatsch, Piz Languard, and other frequented points in the neighbourhood.



THE TOUR DU GRAND ST. PIERRE
FROM THE COL DE DROSA.

THE
ALPINE JOURNAL.

FEBRUARY 1873.

A WEEK IN THE GRAIANS IN 1867. By C. C. TUCKER.
Read before the Alpine Club, June 4, 1872.—(*Continued.*)

THE first half of our week in the Graians having been turned to good account, it remained to settle our plans for the Thursday, Friday, and Saturday—our imagination being limited by the necessity of reaching Cormayeur on the evening of the day last named. Two schemes were proposed, each of which found its supporters. The first, and perhaps the most generally-favoured suggestion, was to betake ourselves on the Thursday to the chalets of Le Poucet, and to ascend the Grivola on the Friday. The second was to cross the Col de Grancrou to Ceresole, and find our way back to the Val Savaranche by a new pass over a glacier marked in the map as the Glacier du Grand Tetre. There was much to be said for the first plan. There was a specious air of nobility about it which was attractive. We had Mr. Ball's authority for holding the Grivola to be the first object of the aspiring mountaineer in the district of Cogne, while the proposal appealed to the less exalted side of our nature by involving a walk on Thursday of three or four hours only, and thus making it possible to combine ultimate glory with the present delights of a long lie in bed.

On the other hand, it was urged with undeniable force that it was a shame to waste what promised to be a glorious day in a somewhat dull walk to a mere chalet, while a fine view from the Col de Grancrou was morally certain. An ascent of the Grivola, too, on Friday, would leave us no good expedition for the Saturday consistent with reaching Cormayeur on the same evening; a new pass was quite as exciting as an old peak, if not more so; after all, we need not start so very early for the Col de Grancrou, since Mr. Tuckett had started at 9 o'clock, and had succeeded in making his way across (the special pleader

forgot to add that he had also succeeded in being benighted, and did not reach Ceresole till the following morning). Lastly, it was urged, the path of duty ultimately coincided with that of pleasure, inasmuch as our rest-day would be spent at Ceresole, which there was reason to believe was a land flowing with milk and honey, and amply provided with that Asti Spumante which was denied to the severer climate or more ascetic habits of Cogne. An argument pushed to so fascinating a climax carried conviction with it; and at six o'clock on Thursday morning we turned our backs upon Cogne and its Grivola, and trudged steadily up the Combe de Valnontey. It was a charming walk of some two hours to the foot of the glacier; a perfect morning, meadows steeped in dew, groups of timber, with the pure fall of the Grancrou, and the massive shelves of snow and ice that lead up to the Grand Paradis gleaming through every interval.

The Col de Grancrou is a long, but certainly a worthy pass. The difficulties on the north side fall strictly within the limit of mountaineering science. An icefall, much addicted to sending down showers of falling stones; above, a labyrinth of crevasses requiring careful steering; and close to the very summit an icebank of exceeding hardness, defended, when we were there (and I suspect always), by a formidable bergschrund, are obstacles sufficient to try the patience and exercise the skill of a party led by good guides.

It took us nearly seven hours, not including halts, to reach the summit from Cogne. Time, however, might doubtless be gained by keeping well to the left (i.e. the true right of the glacier) all the way up. We had received a hint to this effect from Mr. Tuckett, and so long as we followed his instructions all went easily.

The difficulties on the other side of the pass are of quite a different order, and resolve themselves into a problem of path-finding. In order to reach Ceresole, which lies a good deal to the west of the Col, it is necessary to bear constantly from left to right, and to descend into Val d'Orco at a point far higher up the stream than would be reached by a direct descent. On the other hand, all the lateral ravines descending from the neighbourhood of the Col to the main valley trend from right to left. The consequence is, that the traveller making for Ceresole has to cross a series of spurs, and the walking becomes fatiguing enough. Our chief dilemma was at a place where a broad and easy way plunged down through a gorge to our left, and a toilsome-looking zigzag led up to a notch visible in the high and rocky spur that bounded our view on the right. We adopted the latter course, confident that a track so well made

(it was one of the king's paths) could lead us into no difficulty. We reckoned, however, without our host, for on reaching the gap the path abruptly came to an end at a sort of hunting-lair, leaving us disconsolate at the top of some awkward-looking rocks with the wished-for pastures visible far below. It was annoying, but too late to turn back; and the rocks, on inspection, looked possible, so we chanced it. Suffice it to say that we got down with less difficulty than we had expected, and were soon racing over the pastures beneath the eye of a fierce afternoon sun—Freshfield far ahead, followed by Carson at top speed, followed at a respectful distance by Backhouse, sorely grumbling, followed at a still more respectful distance by the guides and myself. The lower end of the Scalare, or ladder-gorge, down the steps of which the main stream of the Orco tumbles from its mountain-reservoir, was quickly entered. The shades of evening were already gathering in the deep-cut channel, when, at a more moderate pace, we again began to mount, and it was with surprised delight that when we reached the top of the ascent we found the sun still sending a slanting beam across the upper valley, rich with forest, and grandly ruled by the triple-crowned Levanna. In a few moments the ray had disappeared, and night had fairly set in before we actually reached our destination—the little *stabilimento* of Ceresole.

When we were within a few yards of the door, I saw a startling change come over the face of one of my companions, who had been till this moment in a state of supreme contentment at the success of our day, and the prospect of more than Egyptian fleshpots at the end of it. A few steps more, and the mystery was solved. Garlic is a plant to which I myself am not over partial; though, like everything else which I have met with, I can eat it when I am hungry. But with my friend it is otherwise. So exquisite is his sensitiveness to the most delicate approaches of this particular herb, and so apparent are his feelings on each such occasion in his face, that he had acquired among us the endearing title of 'the garlic barometer.' The storm-drum was not hoisted without a cause. Meat and bread, knives and plates, glasses—and, I believe, even the Asti Spumante of our aspirations—were all more or less tainted by the subtle perfume, and I fear my friend went well-nigh supperless to bed.

The few pale-faced invalids who were at the little mountain-station for the benefit of the waters looked upon us as simply incomprehensible, and made few advances towards us in consequence; but we found amusement enough in studying the

garrulous little waiter—the figure which, when I try to recall the distinctive features of Ceresole, presents itself to my mind's eye to the almost total exclusion of any other impression. Whether this worthy thought to practise the art of conversation when he had a chance, or was merely glad of an opportunity of blowing off at our expense the steam generated during months of silence, he treated us during our whole stay to torrents of Italian dashed with ingenious combinations of the four or five French words known to him, and in this fashion managed, I believe, to express nearly all he had to say—(a really remarkable achievement, and a comparatively easy task)—and about twenty times more than we were able to comprehend.

The whole of the next day was occupied by a stroll to the mineral spring to which Ceresole owes its being. We found the water slightly effervescing, deliciously cool, and acidulated—in short, better than mineral springs in general, and, as my friend remarked, wholly free from any vegetable taint when drunk in your own glass. The weather was again clear, but all day long there blew a furious gale of wind, bending the foliage of the valley, and whirling the snow from the horns of the Levanna. When we went to bed it was still roaring over the roof, and bursting against the windows, in a manner anything but suggestive of a happy day for the close of our Graian week. Meantime we congratulated ourselves that we had been all day in the valley, and not fighting with the mountaineer's most implacable foe among the wild ridges and couloirs of the Grivola.

We had laid severe injunctions on the little waiter to call us early. He dared not disobey, and rattled noisily at our doors at about two o'clock; but minded, if it were possible, to secure our custom for another day, he mingled his ministrations with a torrent of warnings against the tempest, which he affected to believe was still raging outside. In the midst of one's dreaming it was difficult to believe that his 'vento orribile,' his 'inutile di levarsi,' his 'impossibile di partire,' had no foundation in facts; and it was only when Freshfield assured himself by inspection that the storm-cloud was represented by bright starlight, and the hurricane by a faint and refreshing breeze of dawn, that we became conscious that our path of duty was the mountain-side, and that if we wished to make a new pass, and reach Cormayeur that evening, the sooner we entered upon it the better. One more shock awaited us before we left the inn. The waiter, unable to detain us, thought to speed the parting guest with a graceful compliment, and presented each of us with his ice-axe, neatly branded with the

word 'Ceresole'! Luckily, the hardness of the wood stood in the way of a satisfactory impression, but, even as it was, I fear the poor little man was somewhat chilled by the disapprobation which greeted his humble effort to please.

Our programme for the day requires a few words of explanation. From the peak of *La Tresenta*, lying south of the *Grand Paradis*, there runs west and south-west a bold line of summits, broken in more than one place by deep and well-defined depressions. These summits, according to the latest cartographic authorities, are the *Cima di Charforon*, *Pointe de Monciair*, *Pointe de Breuil*, *Mare Perci*, *Punta Fourà*, and, lastly, the *Pointe de Nivolet*, close to the comparatively low gap of the *Col de la Croix de Nivolet*, the limit on the west of the *Stabilimento of Ceresole* to the head of *Val Savaranche* would, we found, pass directly between the *Pointe de Breuil* on the east and the *Mare Perci* and *Punta Fourà* on the west, and would, if we calculated right, bisect the glacier of the *Grand Tetre* from end to end. And yet this pass, commanding splendid views as it must, and on the map far the shortest route to *Val d'Aosta*, had, till the year 1867, uniformly been rejected in favour of the lower, more circuitous, and in every way inferior *Col de la Croix de Nivolet*. Fortunately, mountaineers are proof against the superstition that the longest way round is the shortest way there; and we determined, if it were possible, to dethrone the *Col de la Croix de Nivolet* by a route more attractive to pedestrians, though not, perhaps, so well adapted to the less enterprising mule.

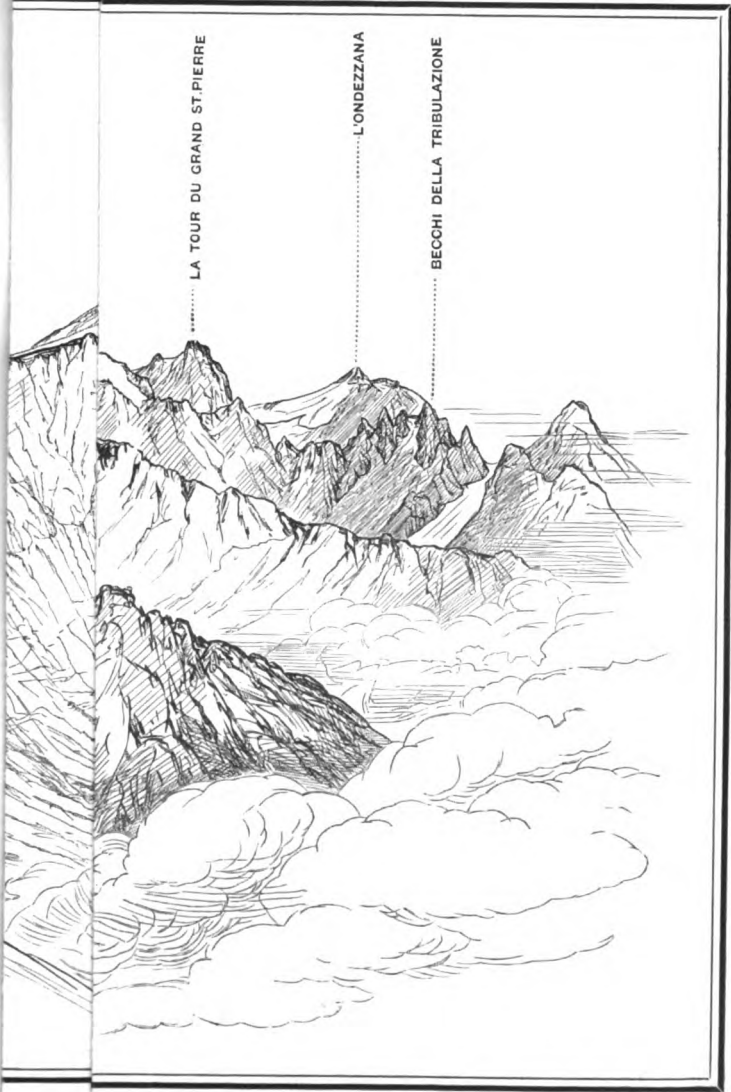
By three o'clock we were away and marching up the valley by the light of the fast-fading stars. Past the church of *Ceresole*, founded on a 'roche moutonnée,' and just at the spot where a brawling stream comes down the hill side on the right, we began the ascent. For some three hours the climb was severe, first along the course of the little torrent—where every stream-side flower was adorned by the night's frost with delicate filagree of crystals—and then away to the left to escape the temptation of a well-made and enticing path leading in the opposite direction. Soon we started a bouquetin, who had been taking advantage of the hours of darkness to crop the delicious herbage of the lower slopes forbidden to his tribe during the day. The *Levanna* increased in grandeur as we mounted; and a little after six, having made good progress, we sat down to enjoy the view, to breakfast, and discuss our further route. We had by this time entered a recess or shallow valley of smooth and water-worn rocks, interspersed

with occasional patches of grass. Little tarns formed by the meltings of the snow-beds that lay here and there filled the hollows. A miniature glacier appeared on our left, and we agreed that we were not probably more than an hour distant from our Col, which could be none other than the obvious depression which lay straight ahead. There were, however, appearances which caused me a slight uneasiness. The rocks which bounded our valley on the left were indeed high and rugged enough to stand for the mass of the Punta Fourà and his fellows; but could the mild crest to our right, only a few hundred feet higher than the level at which we were, really be part of the main ridge, or the insignificant peak in which it culminates * really stand for the comparatively lofty mass of the Pointes de Breuil and Monciair? I had a horrid suspicion that our real way lay somewhere over the great wall of rock and couloir to our left; but in the meantime it was agreed to push on to our supposed Col, and settle the question of identity with fuller knowledge of the ground.

In $4\frac{1}{2}$ hrs. from the baths we found ourselves on the top. It is annoying to find on a wholly untrodden peak a substantial stone man. More humiliating still is the sensation, on proudly surmounting an original pass, of finding on the reverse side a broad and well-made path zigzagging up to one's very feet. Yet so it was. It was evident at a glance to every one of us that we were not on the north side of the chain at all, but looking down on a glen curving back to Val d'Orco, and that the secret of the Grand Tetre still lay untouched behind the rugged ridge to the left which had aroused my suspicions during the ascent.

Abraham Lincoln once, when asked his opinion of the earlier and unsuccessful siege operations of General Grant against Vicksburg, made use of a little apologue which will

* This peak, from which the panoramic sketch by Mr. Reilly is taken, is the highest point of a spur which diverges from the main chain in a SE. direction, and is called by Signor Baretto, in accordance with local usage, the Cocagna, in his paper entitled 'Studi sul Gruppo del Gran Paradiso,' in the 'Bullettino del Club Alpino Italiano,' vol. ii. This name is erroneously marked on the main chain in the Sardinian map, Mont Iséran sheet, nearly in the position occupied by the Pointe de Breuil, but is repeated somewhat smaller on the spur, and nearly in its true position, on the Cogne sheet of the map. The name of Cormaûun, which is also marked on the main chain in the same map, and belongs to a lower point of the same spur, is similarly repeated. The gap first reached by Mr. Tucker is now distinguished as the Col de la Porta Nuova.—R. C. NICHOLS.



..... LA TOUR DU GRAND ST. PIERRE

..... L'ONDEZZANA

..... BECCHI DELLA TRIBULAZIONE

serve to illustrate our present position. A certain garden suffered much from the depredations of a little pig, who used nightly to make his way into the cabbage-bed, in spite of the formidable worm-fence which had been erected to keep out intruders. Puzzled at the success of the pig, the owner of the garden made a closer search, when it was discovered that one of the logs forming the fence was hollow, and that the pig, entering from the outside by a hole at one end of the log, made his way into the cabbage-plot by a similar hole opening inside at the other. By a simple re-arrangement of the log, the owner brought both the holes to the outside of the fence, and watched the result. At his usual dinner-hour the little pig appeared, his tail absolutely curling with excitement at the prospect of the approaching meal, and entered his customary hole at the trot. His look of blank amazement when he emerged at the other end of the log and found himself still on the outside was left by the veteran rail-splitter to the imagination of his hearers. 'General Grant,' added he, 'is always running in like the little pig, but he always comes out on the same side.'

Emulating the perseverance which finally enabled the Federal commander to come out on the other side, we at once determined to repair our error while the day was still young. Our position with regard to the true watershed will be understood at a glance on reference to Mr. Reilly's admirable sketch. On our left and right as we faced the wall of rock were two slight depressions. We had a double inducement to select that on the right. It was to be reached by a rock-climb, while the other seemed to be defended by an ice couloir; it also dispensed us from returning on our tracks, always an odious necessity.* We accordingly descended a few feet into the glen, and crossed some broad banks of *débris* towards the base of the wall at the place where a funnel-shaped pile of snow seemed to indicate a gully. As we approached the spot, we were further encouraged by the sight of a couple of chamois, who took to the rocks just at the point selected by us. The climb proved stiff, although not sufficiently so to induce us to use the rope, and in two hours from the false col we drove our ice-axes through the corniche of snow which roofed the top of the ridge, and clambering through the hole thus made, found ourselves on the *névé* of the Glacier du Grand Tetre. There was

* An Italian party subsequently crossed the gap we had passed by, and thereby created a second Col du Grand Tetre, the most direct from the hamlet of Ceresole; our pass (numbered 1 in the woodcut) is preferable for those bound for the lower Val d'Orco.

no mistake this time ; the ridge separating us from the Glacier du Mont Corvé on our right, the Mare Perci, with its top strangely pierced and showing a patch of blue sky through its solid granite, on our left, and the broad and easy glacier stretching away at our feet, with the châteaux of Pont and the green pasturages of the Val Savaranche just showing over its white and ample folds.

Foreground and distance were alike enchanting. The rocks among which we sat were a-blaze with pink stonecrop. We had only to glance downwards to take in the whole length of Val d'Orco, till its bounding ridges melted into the Italian plain, or to raise our eyes to encounter the huge form of Mont Blanc towering above the nearer ranges. We had thought it impossible to have a clearer view of Italy than that gained from the Tour St. Pierre, but the atmosphere to-day was so pure that we could not only follow the golden threads of the rivers in their windings to join the Po, but clearly distinguish hedges, and even single trees upon the plain.

Our descent was very rapid, half run, half glissade. When we were half-way down the glacier, two chamois started from the moraine, and crossed in front of us, circling round within easy shot, or even stone's throw, in their endeavour to take refuge as soon as possible in the higher regions of the snow-field. They were instantly followed by thirty-four others, of every age and size, some indeed so young that one almost fancied they might have been captured by a fast runner. The guides were wild with excitement, and perhaps, in spite of penalties and gardes de chasse, two or three of the herd would have fallen, had Balley's gun been in his hands instead of safely stowed away with his eleven children in the cottage at St. Pierre. Immediately afterwards we came upon the bones of a bouquetin, apparently long dead. Further search was rewarded by the discovery of the horns, lying some distance below the skeleton, in one of the little runnels by which the surface-water of the glacier is carried off. They were a good deal damaged by the wet and exposure, but we were glad to carry them off as a remembrance of the beautiful, and hitherto unvisited, glacier of the Grand Tetre.

We quitted the glacier by its left bank, and reached Pont in some hour and a quarter from the Col, by a good cow-path. We walked sharply on to Val Savaranche, where the absurd individual who kept—and I trust (for the sake of those who study Nature in her most varied forms) still keeps—the inn, was livelier even than usual. The poor man was aware of the sobriquet of 'Marmot' which he had acquired, and

resented it greatly. He had, indeed, accused Payod on a previous visit of having been the author of the 'mauvaise plaisanterie,' and complained that he could no longer go down to Villeneuve without being chaffed. This, no one who was acquainted with his manners (those of a rather superior and very festive crétin) would find any difficulty in believing. He had been warned of our approach by the porter whom we had despatched the day before over the Col de Nivolet to secure us a carriage from Aosta, and had provided a fair luncheon for us in consequence.

Three hours more brought us to Villeneuve, where we found quite a panic prevailing; a man apparently having just died of cholera, and others lying ill. It is an ill wind however that blows no one any good, and the commercial spirit of the English saw in the unfortunate occurrence an opportunity of transferring to their vehicle the available fruit-stock of Villeneuve at greatly-reduced prices. The guides however partook of the cholera scare, and, though offered a share in the spoil, superstitiously refrained until the carriage had surmounted the great step in the Val d'Aosta, and they were full in sight of their native snows. Then their scruples vanished, and with the scruples the larger portion of the pears and apricots.

The glorious pass over the chain of Mont Blanc with which we closed this chapter of our tour does not come within the scope of a paper on the Graians. The latter are now too well known to need a panegyric. Suffice it to say that, what with the exceeding beauty of the region explored by us, the glorious weather we met with during those expeditions—and, I may add, the good fellowship which prevailed amongst our party—no summer tour ever afforded (to me, at least) more pleasant or brighter memories than are recalled by the title which stands at the head of this paper. One member of that party (Mr. Backhouse) died in England in the summer of 1869, almost at the moment when Mr. Whitwell and I at Grindelwald were making preparations for an ascent of the Eiger, which we hoped he would arrive in time to share. We were on the way to the Wengern Alp, wondering at his non-arrival, when we received the news of his death. As one who took part in his last considerable expeditions, and might perhaps have shared in some of the more ambitious projects contemplated by him at the time he fell ill, I may be excused for this slight reference to one whose least claim perhaps to the affection of his friends consisted in his being a genial comrade and a bold and successful mountaineer.

A DAY AND NIGHT ON THE BIETSCHHORN.

By W. A. B. COOLIDGE.

FIVE years ago, as we stood on the summit of the Nesthorn, we had gazed both admiringly and longingly at the Bietschhorn, whose magnificent outline and exquisitely-beautiful details form one of the most prominent features of that perfect view. At once we expressed a wish to attempt it, and were not a little disappointed at Almer's most discouraging reply that it was too *schwer* for us. Though only too right, as we have since found out, he did not stick long to his opinion; so that for several years we had put down the Bietschhorn on our list of summer projects without ever having actually attacked it. Nor when we left Zermatt on the morning of the 18th of September 1871, did there appear to be much hope of our then accomplishing it. The weather seemed to have fairly gone to pieces. Dark and lowering from the first, we had not reached Randa before the rain began to come down in a gradually-increasing deliberate way, which gave no hope of mending for that day at least. So, as we jolted along in our rattling little conveyance, seeking for as much shelter as we could get from a huge red cotton umbrella, borrowed for us by the driver from some *châlet* on the road, we began recasting our plans to suit altered circumstances. As we were within easy reach of our friends at the Bel-Alp, it was only turning towards Brieg instead of Gampel, on our arrival at Visp.

I cannot say that we felt very despondent at the prospect of rest and ease which this change of plans implied, for we had been working very hard indeed for the past fortnight. Almer was equally inclined to view matters cheerfully, as he would now be able to visit a great cattle-fair at Meyringen, where he hoped to have an opportunity of buying 'the last sweet thing' in the way of cows and pigs—a prospect seemingly as charming to him as a day's shopping in Paris would be to most ladies. 'And the Bietschhorn will be for next year;' and it seemed to float away dreamily with all the other 'unvisited Yarrows' of our experience. At St. Nicolas we had to give up our little carriage, and being burdened with a tent and more baggage than the two Almers could conveniently carry, we took as porter to Visp the youngest of the three brothers Knubel, Peter Joseph by name, with whom we had only parted a day or two before. But as we journeyed on the weather began to show most decided symptoms of improvement. The rain ceased, the low hanging mist, which had hitherto enveloped the whole

valley, as with a veil, gradually dispersed, the clouds broke away, and the sun shining out in the most brilliant mood imaginable, soon lent life, colour, and cheerfulness to the whole landscape. This was irresistible. We all agreed that it would be trifling with Fortune to slight such manifest tokens of her favour; and giving up all thoughts of inglorious ease and fat cattle, the Bietschhorn again became our motive and hope. We were to push on to Ried that night, but the usual delays at Visp—a place one is always glad to leave, and where, notwithstanding, one is always detained in the most unaccountable manner—made it quite 3 o'clock when we at last drove off, and 4·20 P.M. by the time we arrived at Gampel, at the entrance of the Lötsch-thal, where another delay occurred in procuring a horse for the lady of the party. At Gampel we engaged a man called Peter Siegen, who had taken part in M. de Fellenberg's ascent of the Bietschhorn, to accompany us. The sun had set by the time we had finished the endless zig-zags on the first part of our road, and darkness overtook us as we left the deserted little village, or rather group of buildings, once used for smelting the silver ore brought down from the mines above. Not a pleasant road this to traverse in the dark on horseback, thought the unfortunate equestrian. The horse apparently shared the general aversion to water of most natives of the Rhone valley, and shied and backed whenever he was made to step into one of the many streamlets and small torrents hurrying across the path. Nor was it reassuring to hear the men caution one another, lest the poor animal should step between the disjointed planks of the crazy little bridges which occurred now and then. Add to this the frightful state of the road—a mass of loose rolling stones made slippery by the morning's rain, and by the streams running over them—which caused frequent and alarming stumbles and slips of men and horse. Besides all this, one could not but remember that a fall might possibly end in the wild torrent of the Lonza, which we heard rushing along ever so many feet below the precipitous sides of the road, over which we were travelling in what would have been complete darkness but for the glimmer of a few faint stars. It was a rapturous sight when the still far-distant light of Kippel suddenly appeared. Some of us were for seeking the curé's hospitality for the night; but more magnanimous counsels prevailing, we jogged past the friendly light towards Ried, where we were very glad to arrive at a quarter to nine. The host of the little inn received us most hospitably—rather too hospitably indeed—for so anxious was he to get us a good supper, that we all but died of hunger

before it was ready, although we assured him that in our famished condition it mattered very little what he set on the table. Most unheard-of delicacies were at length spread out before us—brains, livers, and the interiors of all sorts of wild animals, culminating in an entire squirrel! which looked in the dish so very like an obese snake, that, the edge of our hunger having by this time been taken off, we could not make up our minds to taste it, although no doubt it was capital.

Next morning was beautiful, and as we gazed upwards at our peak, which just showed its summit above the darkly-wooded hills which wall in the valley, we longed to be off at once; but one of our party being a slow walker, and the days already very short, we knew it would be impossible to reach the top at any decent hour unless we started from some higher point than the inn. The first day's walk would necessarily be a short one, as we could go no farther than the base of the mountain, and there pass the night in a tent, setting off early the next morning.

As there was no use in leaving Ried before noon, we amused ourselves with looking over the 'livre des voyageurs,' and in trying to make out, as well as we could with an imperfect knowledge of German, the account given in the Swiss 'Jahrbuch' for 1869-70 by M. de Fellenberg of his ascent of our mountain. Whether it was that we did not arrive at the true meaning of the text, or that we were in a very reckless and absurd frame of mind, I know not; but there were parts of the narrative which made us shout with laughter, although I think they were intended to excite very different feelings in the reader. From it we gathered that at one time the luckless narrator and his companions were obliged to descend an arête literally *à califourchon*. Instead of compassionating their most uncomfortable position, a spirit of madness seized us, and we laughed till we were tired as we imagined them. But '*rira bien qui rira le dernier*' proved a true proverb in our case, for the time came when we fully realized what the difficulties of that same ridge were, and when they no longer affected our risible faculties. Meanwhile, unconscious of our approaching doom, we laughed, feeling quite positive that *we* should never ascend or descend in that fashion.

Our host looked as if he had once seen a ghost, and had never quite recovered from his fright. He really was so devoted to our comfort that we felt quite grateful to him, until he informed us that he made no money at all by his inn, and kept it from purely philanthropic motives. After that, we considered him as only following a strong natural vocation for

hospitality—in fact, a sort of lay monk of the order of St. Bernard on a mission in the wilderness of the Lötschthal. He appeared to think that we must feel hungry every half-hour, and was constantly coming in to propose some new kind of refreshment, as well as to report progress concerning the provisions being got ready below; and thus let us into the secret of the ‘wildness,’ if one may so call it, of his larder. It was the result of the hunting propensities of a very profitable lodger he was entertaining for the summer, who spent all his time in the woods shooting, accompanied by a curious dumb dog, whose acquaintance we also made. This dog could not bark, and wore a bell that his master might know his whereabouts. As our dog Tschingel, who was with us, came originally from the Lötschthal, and very much resembled our new friend (except in his dumbness), we tried to persuade him to fraternise with one who was probably some near connection; but Tschingel indignantly repudiated the theory, and showed the most worldly-wise contempt for his poor relation, not suffering him to enter the dining-room. We were also much interested, and indulged in sundry speculations as to the origin and history of a very ancient pike and part of a suit of armour, both of gigantic size, which our host told us had been found in a neighbouring village, while clearing away the ruins of some cottages which had been burnt down. A dagger, found at the same time, and of equally wonderful proportions, he had given, he said, to M. de Fellenberg.

At noon we set off—a funny-looking party. Christian and Ulrich Almer carried the ropes and provisions, Knubel the tent, Siegen some blankets, a Ried porter a *hotte* full of nondescript articles for the cuisine; and, lastly, an Oberlander, who had asked Almer to employ him, was loaded with a huge bundle of straw, which made him look like a walking haystack, and which was intended for those who were to sleep outside the tent. Nothing could be more beautiful in its way than was our walk to the camping-place. After crossing the little stream in front of the inn, and going through some meadows, we entered the most solemn old pine-woods. The brilliant sunshine which streamed here and there through their sombre branches dispelled all gloom, but could not banish the feeling of quietness and mystery peculiar to them. We were sorry to leave their shade for steep, stony grass-slopes. The men here began to gather firewood as they strolled along. We climbed slowly, looking back continually at the various new peaks now showing themselves on the opposite side of the valley. Among these the Breithorn was conspicuous, and the

broad, level summit of the Petersgrat became plainer every moment. Siegen and the Ried porter, who was his servant, soon showed symptoms of fatigue, and were continually suggesting that it was time to set up the tent, as, if we went too far, it might be inconvenient to get water. Almer lent a deaf ear for a long while to all their remarks, until we had got on to the lower end of the great rocky mass which divides the Nest and Birch glaciers, and culminates in a point marked 3,320 on the Federal map. Here he proposed that we should halt, whilst he pushed on alone to reconnoitre. Away he went, climbing up some very steep rocks in his usual rapid manner, and was soon out of sight. This seemed a favourable opportunity for examining Siegen with more attention than we could give him whilst walking. And he really was worth inspection, somewhat resembling one of Salvator Rosa's brigands, but still more the conventional stage representation of Mephistopheles. His dark eyes, heavy eyebrows, long black hair, and still longer moustaches, with that peculiar twist in them remarkable in those of the chief personage in 'Faust,' were most picturesquely set off by a slouched hat, ornamented with a long trailing bunch of cock's feathers. It was impossible not to attempt a sketch of him, and to this he lent himself very complacently, recounting the while various details of M. de Fellenberg's ascent, and dwelling especially on the really amazing quantity of wine he had helped to consume on that occasion. We were much edified, when, as he pulled out his handkerchief, two or three sets of beads came out with it, which, he laughingly said, were none too many for the Bietschhorn.

In about an hour Almer returned, having found exactly the place for our camp; and, much to Siegen's regret, we all set off to reach it, and arrived there at 4 P.M., the whole ascent from Ried, with numerous halts, having only occupied $3\frac{1}{4}$ hrs. The two porters were sent back somewhat later. Our position was a commanding one. Looking back towards Ried (which we could not actually see), the Nest glacier was on our left, far below us, the rocks on which we were standing rising very precipitously above it. On our right were wild savage cliffs, which rose higher and higher behind us, until, far above, we could see the sharp summit of our peak looking down upon them. It seemed almost to beckon us on to attempt it, as it shone out gloriously in the light of the setting sun, the rays of which made the snowy range on the opposite side of the valley glow with new beauty. In the midst of this splendid scene, and after a much-enjoyed supper, we retired to rest, full of hope

for the morrow, though somewhat chilled by the cold September night air.

The night proved sharp and frosty, and we did not start the next morning till after 5.30 A.M., when the sun had gained a little strength. The party consisted of a lady, myself, the two Almers, Knubel, and Siegen. It was thought best to leave Tschingel, our faithful dog, behind in the tent, *not* because of any supposed incapacity on his part, as he was perhaps the most accomplished mountaineer of the party, but because Almer feared that he would throw down stones from above upon us, as he always chooses his own route on the ascent and insists upon leading.

We began at once to climb the steep rocks immediately behind our camp, and at 6.50 A.M. got on to the Nest glacier, near a large cave or hole formed by the rocks overhanging the glacier at their point of junction, on the side of the rocky mass mentioned above. With this cave, which we scarcely noticed at the time, we afterwards became rather intimately acquainted. Mounting the glacier gradually, meeting with a few crevasses, we soon reached the centre of the semicircle plainly visible on the map, and at the very foot of the mountain, which we now saw for the first time from tip to toe, being even able to distinguish one of the stone men on the summit.

It may not be out of place here to give a slight sketch of the peak of the Bietschhorn. It is formed by the union of three principal arêtes, running roughly towards the north, south, and west. The summit is a long and extremely shattered ridge, out of which rise three rocky towers, nearly equal in height. The southern arête falls away precipitously towards the valley of the Rhone, but the two others are more practicable. Mr. Leslie Stephen, when he made the first ascent of the mountain, in 1859, seems to have followed the northern arête on his ascent and descent. When the mountain was climbed for the second time, in 1867, by M. de Fellenberg, the ascent was effected, I believe, by the western, and the descent by the northern arête. Several attempts to ascend the peak failed, and ours was the next successful ascent. As will be seen, we exactly reversed M. de Fellenberg's route.

It was after 7.30 A.M. when we halted for breakfast in the centre of the semicircle mentioned above, after which repast we parted with Siegen, who showed no unwillingness to return to the tent, Knubel having petitioned to be allowed to go to the top, and Almer thinking that as Ulrich was also with us we could very well dispense with Mephistopheles. Turning to the left, our party of five marched over the glacier to the

base of the northern arête, which we began slowly to ascend. The rocks were very rotten, and fell down at the slightest touch, so that we had to be very cautious in our movements. We gained the crest of the arête, after a good deal of trouble, at 10.30 A.M., and followed it henceforth, with slight deviations, to the summit. It very soon changed into a very sharp snow-ridge, which had a threatening cornice overhanging the Jägi-firn of the Federal map.* The weather up to this time had been perfect, and whenever we could afford the time, we had been only too glad to pause and gaze at the magnificent prospect which began to unfold itself before us. But now a change came over the fair scene. A strong icy wind began to whistle about our ears, and rising clouds to surround us. The ridge along which we were cautiously stepping was already quite difficult enough, without this most unpleasant companion, and now became utterly impracticable. Abandoning it, therefore, for a while, we crept along the projecting rocks just below it, overhanging the Nest glacier, until it became somewhat wider, and we were able once more to return to it. But the snow here turned into ice, and many a weary step had to be cut before the first stone man was reached at 12.30 P.M. The wind was still howling and nipping our noses, ears, and fingers pitilessly; but, although there was now no hope of a view, we *could* not give up our summit. It was with difficulty that we made our way along the shattered ridge, trying, whenever we could, to keep below it. At length we reached the top at 1.10 P.M., the ascent having occupied $7\frac{1}{2}$ hrs., including all halts. We could see nothing beyond the rocks immediately around us, as we were enveloped in clouds, which the wind drove about tumultuously. But, although we regretted the magnificent prospect from the top, we were struck with the grandeur of what we could see—jagged rocks, splintered into every conceivable shape, piled up or strewn out in fantastic confusion. The drifting clouds also enabled us occasionally to form some idea of the startling precipices on all sides.

After a very slender and hurried repast, we turned to descend at 1.30 P.M., leaving our names in a bottle, carefully placed in the cairn. It was shortly after that a startling sight greeted us. The sun was glaring through the clouds, like a smouldering ball of fire. Suddenly we perceived a rainbow

* This point on N. ridge was gained in 1866 by an English party from the Baltschieder Joch without serious difficulty; but, owing to the retreat of the ice, this mode of approach to the mountain is said to have become difficult.

around us, and in the space between it and the sun our shadows were distinctly projected. It was almost unearthly to see these figures of gigantic proportions moving as we moved.

We had now got back to the first stone man, and the clouds were becoming more broken every moment, so that there was a chance of our being seen in the valley. We therefore tied an old red handkerchief, which our host at Ried had asked us to use as a flag, to a stick, which was planted in the cairn, and was in a few minutes distinctly seen at Ried and at Kippel. We had no time to spare, and I rather believe the unexpressed wish of each of us was to get safely down again.

According to our original plan, we were to have descended direct to Raron, between Turtmann and Visp in the Rhone valley, at the opening of the Bietsch Thal—a route which some of us still think would have been the best to adopt. Siegen, however, had so opposed it, that Almer had given it up before starting. We then determined to return the same way by which we had ascended. That way, however, had proved so dangerous towards the top, that Almer, with his usual prudence, altered our course. The upper part of the western arête being impracticable, he therefore led us down the great rock couloir, which opens out near the first cairn, and is well shown on the Federal map, being the space between the western arête and a spur of the southern. It was very steep, and the rocks, as everywhere else on this mountain, were of the most treacherous and unstable description, with no fixed principles to speak of. Almer meant, after descending this couloir for some distance, to mount to the right, in order to gain the crest of the arête, and to descend by the northern face to the Nest glacier—an excellent plan, had it not proved impracticable, owing to the many little ridges which shot out from the main ridge, and had every one to be crossed to gain the crest at a practicable point. At first we were very cheerful about it, expecting every one of these contradictory obstacles to be the last, but no sooner had we surmounted one than another cropped up before our disappointed eyes, and we began to lose patience. It would have been bearable, of course, however fatiguing, had we had any time to spare, but the light was fast fading, and, hurry as much as we could, we felt that night was approaching without any sign of a deliverance. So here we were, *we* who had felt so confident that we should never follow M. de Fellenberg's route, descending the very way he went up! And such rocks as they were! In the morning

there had been some pretence at cohesion, owing to the night's frost, but now they had only too completely recovered their independence. They rolled down if one did but look at them. One immense fragment suddenly broke loose from a ledge which we had just descended, and falling on the rope between Almer, who was leading, and his immediate follower, dragged them both off their feet. They went rolling over and over, pulling down Ulrich, who came next, so that the three executed several prodigious somersaults before they were stopped by the last two of the party. The rope was found to be almost cut through where the boulder had struck it. A second occurrence of the kind, only a little less alarming, followed soon after; and what with Almer's continual 'Geben sie acht,' 'Dieses ist nicht fest,' 'Dieses ist ganz locker,' and the continual rattling of stones about us, we became quite bewildered, and began at times to fancy that the whole mountain was coming down about our ears like a card-house. The twilight was fading away when we crossed the last little ridge, and at length set foot on the arête at its extreme western end. The moon had risen, but our old enemy, the wind, which had never ceased to blow, drove the clouds over her face, only allowing us occasional faint glimmers of light as we stumbled along, with many a fall on the cruel hard rocks, which, touch them never so lightly with foot or hand, set off at once with an avalanche of smaller stones in their wake. At length, bruised, weary, and sleepy, we reached the snow-field forming the summit-level of the Bietsch joch at 8.20 P.M., after a most painful descent of 6½ hrs., the like of which we had never experienced, and hope never to experience again. The wind had now completely buried the moon in a bank of clouds, and the only light we had was that of a faintly-twinkling star or two. This mattered little so long as we were on the snow, through which we plunged rapidly, keeping to the right, until in 25 minutes we arrived at the exact spot where we had breakfasted in the morning. We knew this, because we here found a precious little barrel of wine, left buried in the snow, the recovery of which we had been for some time anticipating, as we had had nothing to drink since quitting the summit.

After this our difficulties began again. The glacier which still lay between us and the rocky mass, on the lower part of which stood our tent (our tent!), which had become to us the very embodiment of home comforts and safety, had been traversed without much difficulty in the morning, but to descend it in almost total darkness was a very different thing.

We groped along after Almer, who guided himself in a

wonderful manner, occasionally even recovering for a few minutes our morning's track by feeling with his hands for the steps cut in the ice, literally going *à tâtons*! Whenever we came to a crevasse, Ulrich sat down, and held his father by the rope, that he might creep over to find a safe way, and then direct us how to follow him. It was of course impossible, even with his consummate skill, to make rapid progress, and indeed we could not tell that we were not going backward instead of forward. We lost all hope of getting off the glacier for the night, but it was so bitterly cold that Almer would not allow us to make any halt, fearing lest we should freeze. A pleasant prospect this, of creeping almost on all fours about a glacier, with the wind whistling around us in the most derisive manner! Now and then the men would speak to one another, and in the midst of the incomprehensible patois gibberish which they always adopt on trying occasions, we could hear the word 'loch,' and remembered a cave at the edge of the glacier which we had passed in the morning. It seemed so utterly improbable that we should ever find it again, that we gave no thought to the subject. What, then, was our delight when Almer exclaimed (this time in comprehensible German) that he felt sure that we were near that cave. Untying himself, he went off to reconnoitre, and joyfully called out to us to follow his track, as he had found it. It showed how closely he must, on the whole, have kept to the straight road, that in spite of occasional wanderings, we actually came out at the *very* place where we had taken to the ice in the morning. It was entirely due to his marvellous skill and sagacity that we did not spend the night on the ice. It was now a few minutes past 11 P.M., as we found out by striking one of a few precious matches which we had brought. Our tent was not very far off, but we were too thoroughly tired out to think of any more scrambling down the rocks which lay between us and it. So we thankfully descended one by one into the cave, which was large enough to contain us all, though not the most comfortable of places. However, we were only too glad of the shelter which it afforded us from the cold wind which howled outside, and too delighted to be off the ice and able to sit down to complain of anything. We had no more provisions, not having expected to be out so long, so that the satisfaction of eating was denied to us. We still had a very little wine, but that little was in a spiteful cask, out of which it was very difficult for an unpractised person to drink, and pouring it out into a leather cup in the dark was altogether too wasteful a process. Matches were now and then struck to find out the time. In spite of cold, hunger, and

discomfort, we would drop off to sleep for a few minutes; but whenever a dead silence showed this to be the case, Almer would jump up and begin jodelling in the most aggravating manner, or else he would circulate the hateful little cask, addressing us in the liveliest manner, and thus to our disgust effectually rousing us up from our slumbers, which the cold rendered very dangerous.

Before daylight the wind ceased and snow began to fall. We were not able to leave the hospitable hole till nearly 5 A.M., after a stay of 6 hrs. We then followed our previous day's route down the rocks, amid the falling snow, and regained the tent at 6.30 A.M. Siegen came to meet us with a bottle of champagne, provided by our philanthropic host, for which we heartily blessed him. The thoughtful man had sent up two porters to the tent, to find out what had become of us; and seeing us afar, they lit a great fire, the very sight of which was cheering on that wintry-looking morning. Tschingel, who had threatened to devour poor Siegen when he first tried to enter the tent on his return the day before, and was only pacified by the most abject advances from him, gave us an uproarious welcome. The kettle soon boiled, and we had some hot tea and coffee, after which we took a good rest in the tent, and descended to Ried in rain later on in the day. Our host received us with the choicest hospitality in his power—a dish of brains for dinner.

Thus ended an adventure which was not far from having a serious end, since, in all probability, had we spent the night on the ice, this paper would never have been written.

THE COL VICENTINO, BOSCO DEL CONSIGLIO, AND MONTE
CAVALLO. By F. F. TUCKETT.

MOST mountaineers of any considerable experience will, I think, at least in their hearts, join in the confession of one whose triumphs in the Alps are as numerous, as his pluck and skill and hearty enjoyment of a good scramble are undoubted, and his 'regrets' short-lived—that there comes sooner or later a period in their existence, even whilst spirits are still high and muscles vigorous as ever, when they welcome an occasional variation in the bill of fare; not because the appetite is cloyed or needs coaxing, but because their palate has gradually become educated to appreciate a well-arranged *ménu*, and to prefer it to the mere process of devouring space and height, which, during an earlier stage of their passion, assumed in

their eyes, when out for a holiday, the character of the whole duty of man. Let me, at any rate, admit that, after a few weeks 'roughing it' in châteaux, I no longer—if ever I did—turn up my nose at good quarters, and even—*horresco referens*—have been known to endure philosophically the life of a temporary idler at Bellagio or Venice, when the Pennines or the Dolomites have turned sulky, and, like their betters under similar circumstances, are just as well left to themselves till they return to 'the even tenor of their way.'

It does not, however, follow that a man should be idle even at Capua; and it has long been my practice and delight to attempt to explore Lilliput when kicked out of Brobdingnag, and to devote such occasions of temporary exile from the world of ice and snow to cultivating the acquaintance of minor sub-alpine summits, upon which some of the happiest moments of my life have been passed.

How few of us have, after all, really spent in a *leisurely* manner any considerable number of hours above 10,000 ft.; not, indeed, for lack of the will, but because want of time, threatened change of weather, cold, wind, failure to light the meditated pipe, sudden theories as to being able to compress three days' work into two if one only gets back by a certain hour, and could have a pleasant drive down a valley in the cool of the evening—a real luxury after a frizzling day on snow—an indisposition on somebody's part to feed at that particular time, the discovery that the food, and, still worse, the wine, have been left at the foot of the final peak, exposed to the tender attentions of an omnivorous porter;—these, and fifty other reasons, generally limit the occupation of the perhaps hardly-won goal to an hour or less. Should everything be favourable to a longer stay, how long is it before the guides are asleep? how much longer ere their employers follow their example, or become morose, monosyllabic, or misanthropical, as they

'Look down on the hate of those below!'

Now, on those minor peaks that I have alluded to you may spend half-a-day if you please—there is no compulsion, remember—and drink your fill of the glories of the view, and watch the varying play of light and shade as the sun works round, and the crystal clearness of early morning is followed by flocking clouds, which so often double the charm of mountain scenery; and, finally, carry away no fleeting image of the scene, but a carefully composed picture, around which those numerous little incidents cling which suggest the 'I say, old

fellow, do you remember how?' &c. in the long winter evenings, calling up a host of pleasant memories and details which—empty nothings to the uninitiated—are, to a quondam comrade, stamped with a Mint-mark that will always give them currency. Amidst the more sensational reminiscences of the higher Alps such days stand out with peculiar distinctness and charm, as the eye dwells restfully on the soft sheen of pearls amidst the flash and glitter of more brilliant jewels; and as I look back to many a pleasant leisurely lounge on such points as the Buet, Dent de Midi de Bex, Cramont, Mettelhorn, Piz Languard, Monte Confinale, Pilatus, Becca di Nona, Monte Monterone, Monte Generoso, Monte Salvatore, Monte Genaro, Monte Cavo, Vesuvius, Monte Epomeo, the Apennine behind Vallombrosa, the Superga, and some still smaller fry, I often congratulate myself that whenever the time shall arrive for me to hang up axe and rope there will still remain a practically boundless field—a sort of old hunter's paddock—in which my aged limbs may continue for a while to toddle uphill.

Let me not be misunderstood, however. One must first have wrestled with the giants thoroughly to enjoy the luxury of bowling over the dwarfs like ninepins; and let none who have no nearer acquaintance with the glories and the charms of the *haut-monde*, the 'over ten thousand,' of the High Alps, than that Frenchman who confessed that though he had 'fait l'ascension du Mont Blanc,' he had mounted 'pas tout-à-fait sur la cime, mais jusqu'au Montanvert'—let none such, I say, suppose that they are capable of appreciating to the full the noble prospect which a lower panoramic summit affords to the initiated. Half the charm consists in the recognition—as the eye glances along or across a hundred leagues of snowy range or billowy sea of peaks—of details which intimate near association has rendered almost as familiar and dear as the features of some old and beloved friend. There, in that defile yonder, you were stopped by an avalanche of snow in the dead of night, and had to turn out from the diligence and run the gauntlet of the falling stones; that peak just behind is where your Almer, or Lauener, or Anderegg, immortalised himself in the eyes of all right-thinking folk by cutting 1,579 steps in four hours fifty-seven minutes; to the left, again, just below that patch of snow, is the exquisite Alp where we had such a jolly picnic; and so on—every fresh recognition bringing up some green spot in the past, till the whole scene is instinct with happy memories. Therefore, sneer not at my confession, nor contemptuously remark that there is a chance even of a

mountaineer coming to his senses at last, and being compelled to admit that all his past achievements have been merely a straining after that which might have been purchased of better quality, and at a more reasonable figure, still nearer to earth.

Some years ago—when enjoying, from the campanile of St. Mark's, an exceptionally grand and clear morning view of the

‘ Alpine height
Of blue Friuli's mountains—’

that noble barrier which fills the northern horizon, sweeping round from Trieste on the E., to where the lovely outline of the Euganean hills glows purple and roseate with the tints of sunrise—a longing seized me to reverse the point of view and gaze upon Venice, and the sea, and the town-studded plain, from some favourably situated peak of the Dolomites or their outliers. Many a time did I stand upon one or other of these summits, but only to find this particular desire baulked by cloud or the intervening haze which so constantly conceals all details of the lower country to the S. of the Alps. In planning, however, a campaign in the Dolomites with Mr. E. R. Whitwell, for the summer of 1870, I proposed to include, if possible, a visit to the Bosco del Consiglio, above Serravalle, as to which my friend Mr. Gilbert's beautiful and, at that time, recently published volume, ‘Cadore, or Titian's Country,’ had excited in me a lively interest and curiosity, and to combine with it, on our way to Barcis, Cimolais, and Pieve di Cadore, an ascent of Monte Cavallo, whence, if the weather were but favourable, I promised myself that my hopes of an extensive panoramic view over land, sea, mountain, plain, and city would be realised. It is, however, always well to have a second string to one's bow; and as my eye carefully scanned sheet F 3 of the great map of Lombardo-Venetia, I perceived a point named ‘Col Vicentino’ (‘Col’ being derived from ‘collis,’ and having no connection with ‘col,’ a pass), the highest summit of the long outlying ridge forming the southern boundary of the noble Val di Mel, where stand pleasant Feltre and fair Belluno, and over which our route might probably most conveniently lie, as it is nearly in a line between Belluno and Serravalle, through both which places we proposed to pass. Its height (5,859 ft. Ball, 5,788 ft. Trinker) far overtopping anything to the south, and its position—at a sufficient distance from the chief peaks of the Dolomites to give to the northern view quite a panoramic character—were alike full of promise, whilst the intervening deep, broad trench of the Val di Mel not only ensured a beautiful middle-distance, but could

not fail, by contrast, to render more impressive the wild, fantastic ranges beyond it. In short, everything indicated that it possessed all the special requisites for which I had so long been in search.

We had entered the mountains almost immediately after quitting Verona, on May 19, and had devoted the second half of that month and the first week of June to the Baths of Recoaro, the Sette Comuni, Bassano, Feltre, Primiero, and the neighbourhood of the Vals Fassa and Livinalongo; but, owing to the variable weather, our bag—with the exception of Whitwell's great achievement, the ascent of the redoubtable Cimon della Pala—had as yet been confined to rather a mild order of game, such as the Cima di Posta, Monte Pavione (Colle di Luna), Monte Fradusta, Monte Boche, the Sasso dei Mugoni, and the Cima di Mezzodi above the Lago d'Alleghe.

It was nearly midnight on June 9, after a hard day's grind through soft snow beneath the mighty western cliffs of the Civita, and a dark and rather chilly drive from Agordo, that we reached the comfortable Albergo del Cappello at Belluno (1,256 ft.), fully prepared to appreciate the luxury of spacious apartments, clean beds, good cookery, and excellent baths—not to mention a charming outlook from one of the old towers of the city-wall—all of which the house and its garden afford. To get up late and to spend a pleasant lounging morning partly in visiting my excellent friend, Signor Sperti, formerly of Pieve di Cadore, but now holding a judgeship at Belluno—whose acquaintance I owe to the thoughtful kindness, so often experienced, of Messrs. Gilbert and Churchill—and partly in seeing something of the town; to enjoy to the full that greatest of luxuries after a few weeks of a rough mountain life, a prolonged overhauling of one's unkempt locks by a skilful Italian barber; and, finally, to lay hands on and devour the fresh fruit for which we had been thirsting for some days past—such was our programme for the morrow. We hoped to get such information about the Col Vicentino as would supplement the general indications of the map, and supposed that by starting very early on the 10th we should reach the summit in comfortable time to ensure a clear view, if the weather should prove fine. Signor Sperti, however, strongly advised us to take advantage of a certain upland farm-house high up on the flank of the mountain, to which his introduction would procure us admittance.

Accordingly, at four in the afternoon, bidding adieu to our kind and polite friend, Whitwell and I, with Christian Lauener and Santo Siorpaes, of Cortina d'Ampezzo, started in a carriage-

and-pair; and, rattling across the bridge which spans the Piave, commenced the ascent of the gently undulating ground beyond. Winding up by country lanes embosomed in greenery, through which, as we looked back, we obtained from time to time charming views of the picturesque city, perched on the promontory occupying the angle between the ravines of the Ardo and Piave, and crowned with its noble diadem of Dolomite peaks, and passing through the village of Faverga, we reached in less than an hour-and-a-half the still higher hamlet of Cervoi. It was interesting to note in both of them, as well as amongst the scattered houses passed on the road, numerous specimens of those old thatched, moss-grown buildings which, as Mr. Gilbert has remarked, Titian was so fond of introducing into his pictures, and which are so rarely met with elsewhere in Italy, for this Val di Mel was one of the great painter's favourite sketching-grounds. 'The valley is soft with rural beauty, a beauty half Italian and half English. White buildings, country-houses of the pleasantest sort, partly villa and partly farmstead, sparkle on every side, surrounded by trim-cut alleys of beech and hornbeam. Bowery lanes wander amongst careless orchards (where the friendly folks insist upon filling your hands and pockets with apricots or walnuts), and lose themselves in a network of green fields, or enter upon bits of open common; and there are considerable tracts of woodland. On the S. the valley is shut in by a long range of downlike hills, open and tempting to the foot; but upon these the eye will seldom rest, by reason of the excelling grandeur of the N. side, where the broad valley is fenced in by romantic forms, chiefly Dolomite, towering peak behind peak, crag on crag, in grand array, and fading into distance both E. and W. . . . Now, though Titian might owe much of this feeling (for nature) to his native Cadore, and the lower Ceneda country is not without the charm, yet to this Belluno scenery he was, I think, most indebted for his genuine farmstead life. Cadore is too Alpine; Ceneda too near the level, sultry, and perhaps unsafe plains. The Val di Mel, on the contrary, midway, lapped among the hills, sheltered from war, sweetly open to the sun and breeze, verdant, broken, bright with orchards and with glossy bluffs, was the very scene for all that loving intercourse with nature which makes the bliss of country life.*

At Cervoi we quitted our carriage and set out on foot for Valdart, an easy stroll of 1½ hour, by a path mounting gently

* Gilbert's 'Cadore.'

upwards, or zigzagging round a succession of narrow but deep ravines, affording some striking examples of the erosive action of water. A heavy storm of rain caught us when about half the distance had been accomplished; but though the prospects of the weather were not altogether encouraging, it was really a most fortunate circumstance for us, as the air was thus thoroughly cleared, and a much finer view by this means ensured for the following morning than we should otherwise have obtained.

The good man and his wife who occupied the finely situated farm-house of Valdart, were somewhat taken aback at the sudden appearance in the dusk of the evening of four strangers, armed with ice-axes; but on learning our object, and whence we came, they received us hospitably, and prepared for Whitwell and me a comfortable bedroom, whilst apologising to our guides for being compelled to lodge them in a loft, where, however, they had little need of pity, as there was a good supply of hay. After the rain, the air was fresh and sharp, and we gladly gathered round the bright, crackling fire in the small smoke-encrusted kitchen, and ate our supper and smoked the evening pipe before retiring to rest at an early hour.

Next morning we were up at two, and off at three for the Col Vicentino, just as the bright moonlight began to fade before the early dawn. The air was keen and invigorating; and though here and there light fleecy clouds that seemed to have lost their way and to have been walking in their sleep, hung motionless above the valley of the Piave,—

‘ With wings folded they rest on their airy nest,
As still as a brooding dove,’

there was every indication of a magnificent day. The cows and sheep were still dozing around the ‘ casera ’ Costa—a chalet or *malga*, on the spur of the mountain within half an hour of the summit—as we passed it at 3.40, and, pushing rapidly on, we gained the highest point at 4.10, just before the sun emerged from behind the Friuli mountains with the greatest splendour, and lit up with rosy tints of exquisite beauty the mighty array of Dolomite peaks, and the more distant giants of the central snowy chain. In the opposite direction a light mist at first obscured the atmosphere, and interrupted the view of the vast expanse of plain and of the open sea; but in less than a quarter of an hour it gradually yielded to the increasing power of the sun’s rays, and one after another the great cities, with Venice as their queen, lay spread out before us as on a map, shining like opals in the glowing morning light.

It would be tedious, if not impossible, to name all the well-known spots which we recognized; and I will merely say that Serravalle, Ceneda, Conegliano, Treviso, Cittadella, Castelfranco, Venice and the sea, Padua, Vicenza with the church of Sta. Maria del Monte—each arch of the arcade leading up the side of Monte Berico clearly to be distinguished, though distant about 47 miles as the crow flies—and many another town and village far beyond towards Verona, which was itself hidden by intervening hills,—all were so distinctly visible, that at Venice, for instance, 40 miles off, every building, the ships in the port, the railway causeway, &c., could be clearly made out with a small telescope. Between us and Treviso lay the great ‘Bosco del Montello’ (which Santo told us that he had, when a soldier, helped to clear of supposed brigands or *mauvais sujets*), stretching dark and fungus-like over the plain for many a league, its sombre surface forming a striking contrast with the brilliant sunlight-flooded houses and *campanili*, and great breadths of golden grain, amid which wound many a silvery thread of water.

Turning once more, in the opposite quarter, to the glorious valley of the Piave, which forms the middle distance of the picture, with Belluno shining like a gem in its bosom, the eye ranged over such an array of peaks, clear, sharp, and cloudless, as might stir the heart of even the most *blasé* mountaineer. First to the left or west came, as an outpost, the great plateau of the Sette Comuni, which we had visited with great interest two or three weeks before, with the Cime delle Dodici and delle Undici. Next followed the ridge of the Monte Pavione (Colle di Luna), the highest point of which I had twice ascended (the second time with Whitwell a fortnight previously), the Cima d’Asta, the Orteler group, the Sasso Maggiore, Palle di S. Martino, Cima di Fradusta, Cimon della Pala, Cima della Vezzana, Monte Agner, the Marmolata, Picco Serra, Monte Pramper, Monte Pelfs, the wonderful obelisk aiguille of the Gusella di Vescova, the Civita, Pelmo, Sorapis, Antelao, Marmarole, the peaks of Cimolais, and Monte Cavallo—to name only some of the principal summits—and finally, the bounding ridge of the ‘Bosco del Consiglio,’ which we hoped to pass ere nightfall. It was a rarely beautiful view—one of the finest I ever beheld—combining almost every element of loveliness, variety, and grandeur, and I longed that some of the worthy citizens of Belluno might be stirred up to follow in our steps, and those of our probably not very numerous predecessors.

We were naturally in no haste to quit such a scene; but at

length, about 7.30, after three-and-a-half hours of keen enjoyment, and careful study with map and telescope, we collected our things, and following the ridge for a short distance in a S.S.W. direction, till a sort of col was reached, traversed by a track of some sort, dropped down some 5,000 feet by the S.E. flank of the mountain, upon Serravalle, which we reached at 9.50, after a very warm walk, during which all attempts to discover water fit to drink proved futile, though the ravines and dry torrent-beds gave evidence enough of its destructive force at certain periods. To those who, like ourselves, had been breathing the fresher air of the mountains, the heat at Serravalle (512 feet above the sea) was most oppressive; but the hospitable roof of 'La Giraffa' proved a very refreshing refuge; and the excellent host and hostess, who are models of courtesy, made us so comfortable that we at once decided to defer our departure for the Bosco del Consiglio until the afternoon, and to devote the interval to rest, dinner, and a visit to the local objects of interest, prominent amongst which is Titian's grand picture of the Madonna and Child in glory, with SS. Peter and Andrew beneath—the gem of the so-called Duomo.

This last is indeed a noble work of art, and would alone amply repay a visit to Serravalle, even from Venice. A curious interest attaches to it, which is thus referred to by Mr. Gilbert*: 'Upon at least one occasion Titian visited Serravalle when on his way to Cadore. He went to take instructions for a large picture of the Virgin with St. Andrew and St. Vincent. This was in November of 1542, and it was not finished till five years afterwards, when he wrote requesting that it should be sent for; and, on the ground of having substituted St. Peter for St. Vincent, demanded an addition of 25 ducats to the payment. The Serravallians, failing to appreciate so highly the Prince of the Apostles, declined the extra charge, and moreover insisted that the picture should be forwarded at the painter's own expense. Much litigation ensued, and six more years elapsed before a compromise was effected. The incident amusingly illustrates the very business-like character of Titian, while it is by no means a solitary instance of the contemporary haggling over a work that posterity deems priceless.' † I will not

* 'Cadore,' pp. 42, 43.

† This statement reminds me, especially in one point, of a story of Turner which I heard the late Mr. B. G. Windus, of Tottenham, tell when, as a boy, now nearly twenty years ago, I went with my father

attempt to repeat in other words what Mr. Gilbert has already so well expressed ; but referring my readers to his charming volume for a multitude of details, and some of the most felicitous descriptions of scenery with which I am acquainted, I may venture to mention one or two points which are either unnamed or barely alluded to by him. In the landscape beneath the Virgin, and between the figures of St. Peter and St. Andrew—the latter of whom carries a square cross instead of the usual diagonal one—is introduced the ship tossed by the waves of the sea of Galilee, the mountains surrounding which are certainly not dolomitic in character. On a sculptured fragment introduced in the foreground is painted in capital letters TITIAN. The picture is gorgeously framed, and admirably hung, and I should guess its dimensions at 12 feet in height by 8 in width. On either side are paintings by Carpaccio—locally assigned to Pordenone—an Annunciation, and SS. Peter, Bartholomew, Agatha, Catherine, and, I think, a third female saint. These are interesting, but suffer by comparison with the Titian, and have been much restored, I fancy.

The small Gothic chapel of S. Lorenzo is completely covered internally with frescoes, possibly of the fifteenth century, but mostly in so ruinous a condition that, being no expert, I do not venture to pronounce an opinion ; especially as Messrs. Crowe and Cavalcaselle have, with their usual indefatigable diligence,

to see his magnificent collection of works by our great colourist. Halting before a very fine landscape, he said, nearly in the following words, as far as my memory serves me : ‘ Thereby hangs a tale which is curiously illustrative of the eccentricities of genius in general and of Turner in particular. That picture was a commission for which I agreed to give him so many hundred pounds. In due time, I received a note informing me that it was finished, and asking how I would have it sent ; to which I replied, “ Come and dine with me, and bring it yourself.” To this he assented ; and, knowing his business-like appreciation of prompt payment, I drew a cheque beforehand for the sum agreed upon, and, after dinner as we sat over our wine, handed it to him. He looked at it ; folded it up ; put it in his pocket ; and, at last, thanked me ; but with a certain effort, and a reserve of manner which satisfied me that something must be wrong, though what it could be I could not at first guess. I was certain that the cheque had been drawn for the right amount, but suddenly it flashed across my mind that he possibly at the moment *imagined* he had stated the price in guineas whilst I had paid it in pounds. Wishing at once to clear up the doubt, I said, “ I think, Turner, that *was* the sum ; I can’t surely have been so stupid as to mistake guineas for pounds ? ” “ Oh no, it’s right enough ; *but I paid 5s. for the fly.* ” I have never seen this in print, but it certainly deserves to be recorded.

routed out almost everything worthy of note in this district, and carefully catalogued and described it in their admirable 'History of Painting in North Italy'—at least as respects those painters who lived during the period embraced in the two volumes already published. One picture in S. Lorenzo is pronounced by them to be possibly a youthful work of Basaiti; and they note, though with little praise, another over an altar, representing SS. Jerome, Agatha, and Lucy, with a hill-city and landscape in the background, which I rather took a fancy to, partly perhaps because the head of St. Agatha reminded me of some old favourites by Sandro Botticelli. There are two or three handsome Palazzi in the town, some of which, I believe, date from the fifteenth century, and are claimed by Dario of Treviso as his own work. Altogether there is a good deal to repay the visitor, in addition to the romantic situation, and I was surprised to find a place of so much importance. Under the Italian rule, Serravalle has been united to its neighbour Ceneda, under the name of Vittoria, and we were told that the combined population amounts to 17,000; but I suspect that this number is not far from double the correct one.

At 3.15 we started in a carriage for Fregona, calling on the way at Ceneda to see the 'Annunciation' by Previtali, the early associate of Titian—'Andrea Bergomensis, Johannis Bellini Discipulus,' as he signs himself—in the church of Santa Maria del Mesco. Ridolfi relates that Titian frequently stopped at Ceneda on his way to Cadore, in order to visit this picture, and that he always looked at it with rapture. However much truth there may be in Messrs. Crowe and Cavalcasselle's remark that the artist is 'at best a second-rate painter, who copied from Bellini, Carpaccio, and Cima,' there is great tenderness and grace in the composition and colouring of this picture, which deserves a passing visit.

There are at least five or six ways of reaching the 'Bosco' from the N., W., and S. Mr. Gilbert describes,* with his accustomed felicity and accuracy, what may perhaps be considered the principal one, as it follows the course of the natural outlet of the drainage of the plateau. In the '*Zeitschrift des Deutschen Alpenvereins*,' Vol. I. Part 4, will be found a paper by Dr. Wellenthal, who, starting from Serravalle, mounted in a N.E. direction by way of Monte Augusta, Lanigo, (Sonago?), and Monte Pizzoc, and thence followed the ridge overlooking the Lago Morto as far as Monte Prese. Here the

* 'Cadore,' pp. 45–8.

path turned nearly due E. and descended to the central meadow of the Bosco. In returning, they struck the ridge to the north of the Monte Prese, and reached the Lago di Santa Croce by a short cut on a sledge down steep slopes of débris.

We selected another of the southern approaches—the next, in fact, to the east of that followed by Dr. Wellenthal—by way of Fregona and Piai, to which place the carriage-road extends, and then by the ‘casera’ Cadolten, our object being to enjoy to the utmost the marvellous view over the Venetian plain, which is obtained throughout the ascent, and resembles in character, though its extent is greater, that from the fine new road to the somewhat similar plateau of the Sette Comuni, which zigzags up from Cogolo in the valley of the Astico.

Fregona was reached, *viâ* Ceneda and Anzano, in little more than an hour. The road traverses a most charmingly undulating country, richly wooded and cultivated, and with a wealth and luxuriance of vegetation I have rarely seen equalled. Devonshire-like lanes, worn deep in the fat loamy soil, were bordered by hedgerows of hazel and other bushes half smothered and strangled in the embrace of perfect tangles of ‘travellers’ joy’ and rampant vines, which, after climbing to the top of the nearest trees—often fifty to sixty feet high—were not satisfied until they had also covered the banks on either hand with their trailing greenery.

At Piai we engaged a porter to carry a portion of our traps as far as the ‘casera’ Cadolten, near the rim of the central plateau or basin, and at 5.15 set out, not without some fears of a ducking, as several sharp drenching storms of rain had already overtaken us, and the sky to the S. and S. W. looked very threatening. At every foot of ascent the view behind us and on our right increased in extent and beauty, and if the storms that were now chasing each other in quick succession across the plain did not allow of our seeing it in anything like the same perfection as in the morning, they at least treated us to some most extraordinary atmospheric effects, the more interesting as they seem to be peculiarly characteristic of this neighbourhood, and to have been frequently represented by Titian, especially in his drawings. Mr. Gilbert* has so admirably said all that is needful on this subject that I will not attempt to repeat the same thing in a less satisfactory manner: suffice it here to say that I allude to those sharply defined, blue-black, torrential discharges of rain moving in solid blocks

* ‘Cadore,’ pp. 35–9.

over the face of the country, and blotting out for a time every feature of land and sky during their passage, like so many waterspouts. As the vivid lightning flashes from their murky bosoms, and rival peals of thunder crash amongst the hills, one could almost fancy them to be the ghosts of those lumbering old galleons of ancient days engaged in a running fight with some buccaneering rascal who little thought at the time that he was founding the British navy. For a quarter of an hour or so, one would lose sight of some dozen quiet little 'paesi' here, there, and further away, that had been simmering in the sunshine, as the various isolated deluges enshrouded them, each sharply circumscribed, but coming down, not as the poet remarks,

'As if the lid were off
The universal teapot,'

but as though nature in those parts were indulging in several local 'kettledrums'—it was a little after five o'clock—and something was wrong in each separate brewing.

Watching this atmospheric display, and loath to turn our backs upon it, we made slow progress up the outer barrier, which, barren, rocky, and in itself uninteresting, forms the setting to such a paradise of greenery within its circling rim. At every turn we met peasants, mostly charcoal-burners, hastening down, before night should overtake them, from their work in the forest above to the lower villages cozily resting in the folds of the hills, each individual almost invariably trailing a log of wood, which, by some mysterious means, he contrived to keep from perpetually hitting his heels as it came sliding down behind him over the rough stony track.

Suddenly mists swept over us, the wind moaned dismally, it grew instantly chilly, and we began to speculate whether we should get that night to the 'Palazzo,' as the central establishment on the 'Piau del Bosco' is called.

'Noi andavam per lo vespero attenti
Oltre, quanto potèn gli occhi allungarsi,
Contra i raggi serotini e lucenti :
Ed ecco a poco a poco un fumo farsi
Verso di noi, come la notte, oscuro,
Nè da quello era loco da cansarsi ;
Questo ne tolse gli occhi e l' aer puro.'

Purg. xv. 140-5.

The track now bore away to the left, and, turning from the plain, struck inwards along the side of a dry ravine till it emerged upon a sort of open upland, where, as far as the mist would permit us to see anything, there appeared to be a

fair amount of pasture. Here are the 'casera' of Cadolten and some smaller dwellings, whose occupants supplied us with water—a scarce article in these parts—and gave us some directions as to our further course, our porter having to return in order to get home before darkness set in. It was now 7.45, so that we had occupied two-and-a-half hours in ascending from Piai, a distance which might very easily be accomplished in two-thirds of the time.

Soon lashing rain came tearing through the mist as we pushed rapidly on, and suddenly we found ourselves face to face with some vague but monstrous forms towering up against the grey background which, on a nearer approach, proved to be grand old beeches, the outliers or advanced picket of the mighty forest which stretches away over hill and dale for many a league beyond. We were speedily in the thick of them, though still mounting gently; but presently a sort of col appeared, the rim of the happy valley was reached, and the path sloped downwards to the N. Amidst the deepening gloom, but with occasional glimpses of the moon between the cloud-rifts, we threaded our way along muddy, rain-soaked paths over a gently undulating surface densely wooded—here, I think entirely with beech, which, we were afterwards told, attain their greatest dimensions in this section of the forest. Always descending on the whole, sometimes puzzled by diverging tracks, once getting a hint from a woodcutter, we finally, at 8.30, three-quarters of an hour after leaving the 'casera,' emerged upon the central plain or meadow after about two-and-a-half miles of wood-walk. At 8.45 we reached the substantial building, of hospice-like exterior, called the 'Palazzo,' situated on a knoll a little S. of the centre, where reside the head inspector or 'Guardia Generale,' Signor d'Oro (or Doro) with fourteen subordinate 'guardia-boschi,' and a sort of innkeeper who does the cooking, &c., and entertains such travellers as chance to come here—for the most part confined to wood contractors and charcoal merchants, I should imagine. The fare and accommodation are homely, but quite sufficient for the requirements of mountaineers; and as the air was rather chilly after the heat of the morning, and the only fire in the place seemed to be the one in the great kitchen chimney, around which the household was assembled on our arrival, we were not long in retiring to our room upstairs, one of several opening out of a corridor, and very similar in character to those of an ordinary hospice, though more deficient in the furniture and washing department.

The day had been a long one, and as we proposed to spend

the greater part, if not the whole, of the following one (Sunday) quietly at the 'Palazzo,' or in its immediate neighbourhood, the sun was already high when we were at length roused by the hum of many voices; and, on looking out, found the house surrounded by an orderly and well-dressed but very talkative crowd, consisting mostly of shepherds, woodcutters, carbonari, and so forth, with a sprinkling of women, lads, and girls, who had assembled from many a hidden nook in the ample folds of the great forest to attend mass, which is celebrated in a chapel at one end of the 'Palazzo' by a priest who, I believe, comes up for that purpose from the lower outside world. As may be supposed, the religious ceremony, which all seemed to join in with much earnestness and devotion, was preceded and followed by an immense amount of gossip, and I strongly suspect that many a hard bargain is struck on these occasions. Indeed, the 'Guardia Generale,' in full uniform, sat for hours in his private bureau giving audience to a succession of clients, with whom he appeared to transact a considerable amount of business, as many of the dealers from the plain select Sunday for their visit, since it brings them into contact with all the various classes of the forest folk with whom they may have business relations. Mass was over before we had finished our breakfast, and as the men lounged on the green sward outside, or laid siege to the *vino nostrano* of our host, we joined some of the groups, and talked about wood and charcoal as a preliminary to extracting more general information, especially in connection with a meditated ascent of Monte Cavallo on the morrow, and the selection of the best point of attack. As they gradually swarmed into the 'Palazzo,' Whitwell and I sauntered off across the green undulations—like a bit of the Roman *campagna*—of the central meadow, towards the wooded slopes on the eastern side, and, stretched beneath the shade of pines, in this part constituting the principal growth, whose ancestors may have served

' to be the mast
Of some great ammiral '

of the republic in her former days, whilst the gentle breeze

' Made in the levis grene a noisè soft,
Accordant to the foulis song on loft,'

enjoyed our own quiet little service, and lounged away the mid-day hours in talk and reverie.

The 'Bosco' is famous for its strawberries, which are gathered in vast quantities by the children, and taken by them to Serravalle, Ceneda, and other towns or villages; but, un-

fortunately, our visit was a little too early for us to enjoy this luxury. The circumference of the extreme verge of the plateau, sloping inwards crater-like on every side but the north, must be about twenty miles, and the diameter about five miles from W. to E., and perhaps six from N. to S., whilst I should guess the elevation of the 'Palazzo' to be not very far from 3,500 feet. The central meadow, roughly circular in form, may be about $1\frac{1}{4}$ mile across in every direction, and from it the girdle of forest—mostly beech, but including a large amount of pine, and from $1\frac{1}{2}$ to $2\frac{1}{2}$ miles in breadth—rises in gentle undulations,

'Shade above shade, a woody theatre
Of stateliest view,'

to where

'Yet higher than their tops
The verdurous wall upsprung,'

cutting off all the outer world, save where, to the NW., the Dolomites of the lower Val di Zoldo, or to the NE., the nearer group of Monte Cavallo, reared their varied forms above the partial depression in the bounding rim. Some six or seven isolated 'casere'—cattle-stalls, with house attached for the shepherd—dot the surface of the central meadow, or 'Pian del Consiglio,' whose generally even floor is broken by numerous hollows, such as characterise the district of the Karst between Trieste and Adelsberg, though of inferior dimensions. Some of them were dry, and others more or less filled with stagnant-looking water, covered with slimy scum of water-plants, algæ, and confervæ, &c., whence came the ceaseless croaking of myriads of frogs, and sundry emanations, more visible to the eye after sunset than during the day, which must I think render their neighbourhood by no means desirable for constant sleeping quarters. The great want of all this district, both in an æsthetical and practical point of view, is water. No babbling brooks trace their lines of silver amidst the brown beech leaves, or burst into daylight from rocky crannies, as in the more favoured limestone ranges N. of the central zone. After heavy rain, indeed, improvised streams converge from all directions towards the central area; but, arrived there, they merely convert its circumference into a temporary morass, and then drain away into the cavernous limestone beneath, filling the basins already described, but carrying their music and their coolness to the hot and thirsty plain below through subterranean channels, like that most remarkable one at Oliero, in the gorge of the Brenta above Bassano, by which the drainage of the 'Sette Comuni' plateau is discharged. The wine of

the country being often of that description which, as the poet feelingly remarks, would

‘Rive the gizzard of an ancient cock,
Or make a brazen monkey weep,’

the position of a teetotaller at the Palazzo, unless he be a Dutchman and accustomed to the flavour of ditch-water and chickweed, would be a painful one, for I doubt whether the liquid furnished by the ponds, and rich in froggy extract, is really safe for those unaccustomed to it, though boiling may possibly improve it in a sanitary point of view, even if it does not remove that suspicion of ‘body’ which its appearance and *bouquet* suggest.

After dinner we heard from some of the latest lingerers of the morning gathering that they were inhabitants of a certain little settlement called Canaje, lying to the E. of N. at a distance of $1\frac{1}{2}$ hour in the direction of Monte Cavallo, and as they were starting to return, and offered to lodge us for the night and show us the way, we gladly availed ourselves of so promising a proposal, which would save us a tedious addition to the next day’s work. We accordingly set off together at 4.15, after a friendly parting with our host, and leaving a message for the courteous ‘Guardia Generale,’ who was still busy with his contractors and men over books, contracts, and measurements. His fourteen subordinates are all armed with gun and revolver; for, besides their duties as foresters in the ordinary sense, they practically constitute the police of a district which, from its position and character, might otherwise become the resort of *mauvais sujets*. Our new companions informed us that none but the ‘guardie boschi’ are allowed in theory to carry, or even possess, firearms, yet that everybody had them, and moreover used them, for casual sporting purposes, so that game had naturally ceased to exist throughout the whole extent of the forest. A year or two before, indeed, an event had occurred in the shape of the visit of a she-bear and her cub, who, however, merely strolled through the district *en touriste*, and, I believe, gave no one a chance of a shot.

On the northern bounding rim we halted for a quarter of an hour, and then dived downwards through charming glades of beech, past Valmanera and the ‘casera’ Costalta to the ‘Pian Canaje,’ and so to the little wooden huts of the quiet settlement above. These are very diminutive and closely grouped together on a small space of tolerably level ground, partially cleared from trees, and from which the woods slope upwards and downwards in dense masses of greenery.

Seating ourselves on a bench at the door of one of the first

houses, which proved to be a sort of *osteria*, we soon found ourselves surrounded by, and in lively chat with, almost the entire population, who turned out to examine the strangers—the first English they had ever seen. A little magnesium wire and ‘drawing-room lightning,’ supplemented by a few simple conjuring tricks, and the gift of some packets of needles, delighted the women and children, whilst the men were nothing loath to try our tobacco and relate stories over their pipes of the good old times to fresh, and presumably sympathizing, ears. Under the old Austrian *régime*, a man might have as much wood as he pleased; at least, if he might not cut down a tree at his own absolute discretion—at Canaje they are all woodcutters—he had only to indicate his wishes to the central authority, or ‘Forst Inspektor,’ at the ‘Palazzo,’ and the required permission was rarely withheld by the representative of the Imperial ‘Ærarium’—the ‘Bosco’ constituting what is called ‘*ärarisches Gut.*’ But ‘now, if you so much as break a bough for firewood off a decaying or fallen stem; nay, if you even collect the chips after cutting down a tree according to contract, the ‘*guardie*’ are down upon you. They ain’t bad fellows; but what can they do? No, the times are changed, —*ecco signori!*’ and so on. It must be rather hard lines to live surrounded by timber and yet have to pay, and dearly too, for every stick of firewood, especially if such a state of things is of quite recent origin.

These people appeared to us to be of a decidedly superior type, both as to manners and intelligence, many of them speaking both German and Italian; and it was with no little interest that we heard from one of their number that they were originally of the Sette Comuni stock, and had migrated when the gradual destruction of their own forests had put an end to their means of livelihood as woodcutters. The first emigrants consisted only of five families; but as these increased and multiplied, they split up into as many little settlements, of which three are in the neighbourhood of the Palazzo, and one near Osigo, whilst Canaje is the fifth. At present they number in all about 280 souls, and have quite abandoned their old ‘Zembro’ dialect—a sort of Suabian patois, many words of which would be intelligible to the peasantry of the N.E. of Switzerland—though one old man could still speak it. Our informant, who was really a very superior and intelligent man, had first attracted our attention by asking, after learning that we were English, whether we knew the works of ‘un certo Miltoni,’ or the ‘Storia di Ser Gualterio Scott,’ both of which he said he had read in translations with great interest!

Meanwhile our supper had been preparing, and we were now summoned to enter the *barraque*, which, thoroughly smoke-grimed and of Lilliputian dimensions, served as the inn. What was our astonishment to find, in strange contrast with the surroundings, a table-cloth and napkins of spotless purity, clean plates and cups, and brightly-polished spoons and cutlery, whilst an attentive hostess was at hand to supply all our wants, so far as her modest stores would admit of. The roof was, indeed, sooty enough; but that was merely an almost inevitable condition of the locality, arising from the nature of the fuel, and the discouragements thrown by the authorities in the way of constructing more commodious and substantial buildings; whilst, as far as depended on the population itself, the race, with German instincts, in spite of Italian surroundings and limited means, asserted its preference for cleanliness and propriety. When, about ten o'clock, we suggested that it was time to retire, in ignorance and great doubt as to the probable character of the sleeping accommodation, no less a surprise awaited us. We were led to another small hut of by no means very promising external appearance, but were ushered into a wooden room, of small proportions it is true, but exquisitely neat, and containing a bed of ample dimensions, well provided with really snowy linen, equal to anything that the best Swiss mountain inns could furnish, and doubly welcome for its spotless cleanliness. Altogether, the time spent amongst these kindly, hearty, simple people, is a very pleasant spot in our memory, and we should like to have seen more of them had time permitted; but we had an appointment for the 14th at Pieve di Cadore, with the rest of our party, and in order to keep it, it was necessary to leave Canaje very early on the morning of the 13th, if we meant to ascend Monte Cavallo, and, passing over its summit, reach Cimolais viâ Barcis the same evening.

We roused at 2.45, got some coffee, paid a nominal bill, and at 3.30 started with one of our friends to put us in the way, and a porter who was to carry our *rucksacks* over a low pass S. of Monte Cavallo to the '*malga*,' or '*casera*,' of 'Pian del Cavallo,' to which we proposed to descend after bagging our peak. We struck up through the wood on the south side of the village, a course which ultimately involved some detour, and I believe loss of time, so that it was 4.45 when we reached the Palentina alp. A ridge descending from Monte Cavallo had next to be traversed, in order to reach the north branch of the Val di Piera, and then our course lay up a narrow ravine leading right into the heart of the *massif*. At

its head was a depression, the peak to the south of which appeared to be the highest, though still further to the right there was another summit seemingly of about the same altitude. We decided to gain the 'sattel,' follow the ridge to the nearest point, and reconnoitre from thence; and, after half an hour's halt for breakfast, resumed our march. One hour's easy walking from the Palentina alp placed us on the ridge, and twenty minutes' ascent of the broad arête to the south of it sufficed to gain the peak, which we at once perceived was overtopped, though but slightly, by its southern rival. Fortunately, it appeared practicable to pass from one to the other, so, without lingering, we walked or clambered along the easy but picturesque connecting arête; and, after a short but more interesting scramble up the steep final rocks, reached our goal in twenty minutes, at 6.50. Its height is 7,377 feet, and though the view was by no means so clear as from the Col Vicentino, it was yet very extensive and full of interest. Behind us the great green crater of the 'Bosco' lay spread out in all its beauty, whilst far away the Dolomites on one hand, and the rich plain and flashing sea on the other, each lent a special and contrasted charm to the picture. To the east the atmosphere was hazy, and we failed to make out Trieste—which indeed may very possibly be concealed by intervening hills—or to obtain more than glimpses of the ranges stretching away southwards from it towards Pola.

After spending an hour here most enjoyably, we dropped down in one more on the opposite or east face of the mountain, over steep rocky slopes, every cranny of which was filled with luxuriant vegetation—the mountain is one of several scattered along the south border of the Alps, well known for their botanical treasures—and along a sort of dry lake bed, almost straight upon the huts of the 'Pian del Cavallo,' where milk and other châlet luxuries were forthcoming, and had ample justice done to them, delaying us till 9.50. The porter had duly arrived, so, shouldering our 'rucksachs,' we strolled leisurely downwards in a northerly direction through the Val Isola della Stura, charmingly wooded in its middle and lower portion, to Barcis in Val Zelline, about six miles above its termination in the plain of Friuli. Here we encountered an obstacle the very last for which our waterless experience of the previous two days had prepared us. Between us and the village flowed the broad but rapid Zelline, rivalling in its exquisite purity and delicate tints of green, brown, and blue, those lovely streams of the Salzkammergut and Styria; but the bridge was gone! and there was nothing for it but to wade, an operation which was by no means disagreeable, except that

our delicate consideration for our boots—not shared in by our two men—induced us to carry them carefully, and surrender our bare feet to the tender mercies of angular dolomite pebbles. The water came in places nearly to mid-thigh, and was deliciously refreshing, though a trifle too forcible here and there for perfect luxury.

We lounged, dined, and dozed away the heat of the day at Cilli's quaint and very fair inn, and at 4.15 started off once more up the picturesque valley for Cimolais, which we reached at 7.45, after a very agreeable walk through much interesting and varied scenery, of which the beautiful Zelline was the constant and special charm. There is a very fair char road for some distance, but it has never been completed, and has gone to ruin in many places, so that Cimolais is not very unlike Primiero used to be before the new road from the Val Fassa by Paneveggio, the Costonzella Pass, and S. Martino di Castrozza, was constructed. O. Brescha's (or Brescia's) inn furnished us with very fair quarters; but I will not dwell longer on this region, which has been so fully described by Mr. Gilbert,* and does not come within the special scope of this paper. Suffice it to say, that on the morning of the 14th we proceeded up the gradually narrowing valley, through gorges of really great grandeur, to the opening of the northern lateral Val di Fontane—a walk of two hours—and turning into the latter, and striking off up its northern branch, the Val di S. Maria, reached a col at its head in two hours more. Glorious views of Monte Cridola, and the fantastic chain of aiguilles between it and our position, here opened out; but a heavy storm was brewing to the N.W., and already the Marmarole and Antelao were hidden by dense clouds, from which darted flash after flash of forked lightning, so we did not long delay, but bearing away to the left, followed the ridge of Monte Vedorchia; and after sundry halts in hay châteaux to seek refuge from torrents of rain, reached Pieve di Cadore in two hours' walking from the Pass, thoroughly soaked, and quite prepared to do full justice to the good fare which, thanks to the exertions of the ladies of our party, who had preceded us by some hours, was soon in readiness.

* 'Cadore,' pp. 63–66.

NEW EXPEDITIONS.

Notes of the following expeditions—believed to be in part or wholly new, or not made before by English mountaineers—were received too late for insertion in the last number.

WESTERN ALPS.

NORD END OF MONTE ROSA, July 5.—Mr. Coolidge, with the two Almers, made the second recorded ascent of this peak, from the Riffel. Keeping to the north of 'Ob dem See' and ascending a steep snow-wall, they emerged on the upper snow-fields, and only struck the ridge at the base of the final rocks. The cairn built round a pole by the party of 1861 was in excellent preservation. The expedition occupied seventeen hours, including all halts, owing to the extremely soft snow.

A NEW COL DES BOUQUETINS, July 2.—Messrs. W. B. Rickman and A. B. Hamilton ascended to the Col de Mont Brulé by the ordinary route from Arolla. When half way between that Col and the Col de la Valpelline, they turned off to the left, and reached without difficulty the snow plateau at the head of the Glacier de Montminé, at the point marked Col des Bouquetins in the Federal map. The view of the Val Peline, Italian ranges and Graians, from a deep fosse round the base of the rocks on the right, was very fine. Skirting the base of the northern peak of the Bouquetins, they made for the gap in the ridge from which descends on the other side the glacier called in the Swiss Club map Glacier des Bouquetins. An overhanging cornice of about 10 feet in height had to be cut through on the southern side. The descent to the Glacier d'Arolla is very steep, and later in the season would probably require some step-cutting, but on this occasion there was no difficulty, owing to the quantity of snow. The times occupied, exclusive of halts, were, from Arolla to top of first col six hours, to top of second col two hours, and the return to Arolla two hours and a quarter.

THE MOMING PASS, August 27.—The Misses A. and E. Pigeon, with Jean Martin of Sierre and Johann Schaller of Randa, crossed this pass by a route different from that ordinarily taken. Leaving the highest chalet on the Arpitetta Alp at 4.15, they ascended the ice-fall of the Moming glacier under Lo Besso, and then followed the snow-field which circles round at the base of the ridge called 'Le Blanc,' to the foot of the final ice-cliffs leading to the pass, which was reached in five hours and three quarters from the Alp, halts included. The weather being very bad, and the guides unacquainted with the way to Zermatt by the Hohlicht and Rothhorn glaciers, they kept to the left from the pass and descended to Randa by the buttress of the Schallhorn between the Hohlicht and Schallenberg glaciers, partly by an ice couloir much exposed to avalanches, partly by rocks and snow-slopes, the whole route being very steep and difficult. Zermatt was reached at 8 p.m. This line of descent had previously been taken by Martin on July 8, with Monsieur Javelle of Lausanne, but is not likely to be generally preferred to the direct route to Zermatt usually followed.

CENTRAL ALPS.

UNTERBACHHORN (circ. 11,800 feet), *September 2.*—Miss Brevoort, Messrs. A. Fairbanks and W. A. B. Coolidge, with Christian and Ulrich Almer, made the first ascent of this peak from the Belalp hotel. The party reached without difficulty the ridge connecting the Unterbachhorn with the Hohstock. Then ascending a steep rocky face, which looks quite hopeless from below, but is comparatively easy, the point marked 3,542 mètres (11,621 feet) in the Federal Map was reached in fifty minutes from the ridge. A very much shattered arête led thence to the 'Allerhöchste Spitze,' for which an aneroid gave an approximate height of 11,800 feet. The view was extremely fine, especially over the Pennine Alps.

AGASSIZJOCH, *September 7.*—The last-named party, with the addition of Christian Inabnit, having reached the Agassizjoch from the Faulberg, descended the great couloir to the Finsteraarjoch in fifty minutes, the snow being in capital order, and reached the Ober Eismeer by the great ice-fall of the Finsteraar glacier. It is not known whether the couloir has been descended before this. From the top of the Agassizjoch Mr. Coolidge with U. Almer and Inabnit ascended the Agassizhorn in twenty minutes, returning in seven minutes. This peak commands an extraordinarily fine view, the village of Grindelwald and Hospice of the Grimsel, with all the intervening district, being clearly distinguished. The guides knew of no previous ascent, and M. Studer, in 'Ueber Eis und Schnee' does not mention one, so that this may be counted as the first ascent. The whole expedition (including the ascent of the peak) was repeated a few days later by a party comprising two English ladies.

WELLHORN, *September 12.*—The same party, after passing the night on the saddle between the Wetterhorn proper and the Mittelhorn, and witnessing the sunset from the former and the sunrise from the latter peak, descended by the usual route to the upper plateau of the Rosenloui glacier. Mr. Coolidge and the two Almers, leaving the rest of the party, struck up to the left, traversed the lower rocks of the Wellhorn at a level, and, crossing a small hanging glacier, reached the ridge running due east from the summit. Following this, they attained the summit—a long ridge capped with snow at its culminating point—without difficulty, in forty-five minutes from the Rosenloui glacier. Here the cairn and card of the only previous ascender, M. de Fellenberg, in 1866, were found. The view was confined to the valleys, but was very extensive. Bern was clearly seen, and the Rigi less distinctly. The rocks look most formidable from below, but are perfectly easy, though rather fatiguing from their loose condition. Rejoining the others on the glacier, the whole party, with extreme difficulty, owing to the lateness of the season, effected the descent of the upper ice-fall of the Rosenloui glacier, an operation which consumed no less than three hours. The arm of ice under the Engelhörner no longer exists. It may be worth mention, as a singular instance of the decline of peaks, that the same party, a few days later, climbed the Gspaltenhorn (first ascended in 1869 by Mr. G. E. Foster), under exceptionally favourable circumstances, there being but little snow on the arête. Starting from the

gite of Messrs. Hornby and George in 1867, they reached the summit in little more than four hours, and returned in little more than two hours, excluding halts. The great slope of névé leading up to the *sattel* between the *Gspaltenhorn* and the *Büttlüssen*, as well as that leading from thence to the *Leitergrat*, had almost entirely disappeared, their place being taken by banks of shale and *débris*.

GROSS DOLDENHORN, *September 18*.—The same party, with the substitution of Franz Ogi for Ulrich Almer, made the second recorded ascent of this peak. Starting from a bivouac on the terrace above the *Byberg Alp*, the party ascended a steep moraine and gained the upper plateau of the glacier by a *couloir* just under the point named '*Doldenstock*' by M. de Fellenberg in his interesting book '*Doldenhorn and Weisse Frau*.' Easy snow-slopes led to the saddle between the two *Doldenhörner*, and the party then taking to the N. *arête*, which turned out to be hard ice in great part, reached the summit, where fragments of the Swiss flag left in 1862 were found. The view was very fine, the *Bietschhorn* in particular towering up most grandly. On the way down the party kept more to the right, reached the *Spitzstein* (2,973 mètres), descended a slope of loose rocks, took to the long tongue of ice well marked on the Federal Map, followed it to its termination, and then, striking to the left, rejoined the morning's track.

'Our faithful dog *Tschingel* accompanied us over the *Breche de la Meije*, *Col de la Tempe* and *Agassizjoch*, and up the *Wetterhorn* and *Doldenhorn*, besides several other expeditions.'—W. B. C.

GROSS VIESCHERHORN, *September 6*.—The same party ascended this peak from the *Faulberg* by a route supposed to be new. Forcing their way up the ice-fall of the *Ewigschneefeld*, they struck up snow-slopes to the right, crossed a small *bergschrund*, and ascending the *couloir* farthest to the right, without any difficulty reached the *sattel* between the *Gross* and *Hinter Viescherhörner*. A short half hour up a steep rocky ridge led to the top, in just over four hours walking from the *Faulberg*. The descent occupied little more than two-and-a-half hours' walking. The view was perfect.

NORTH SIDE OF ALETSCHHORN AND DREIECKHORN, *August 17*.—W. Leaf, F. Pollock and J. H. Pratt, with Peter Baumann as chief guide, started from the *Faulberg* to attempt the ascent of the *Aletschhorn* from the north side. The névé on that face of the mountain is steep and much broken, and it seemed preferable to ascend by the northern *arête* of the *Dreieckhorn*. This, however, turned out more troublesome than it looked, the rocks being difficult and interrupted by a *couloir*. The top of the *Dreieckhorn* was reached in six hours from the *Faulberg*, being a few minutes longer than had been taken to climb the *Finsteraarhorn* from the same place the day before. The passage along the crest connecting the *Dreieckhorn* with the *Aletschhorn* looked possible as far as could be seen, but would have required much step-cutting, and was clearly too long to be done in the remaining time. The party accordingly descended on the south side, joining the route usually taken in ascending the *Aletschhorn* from the *Æggischhorn*. There appears to be no reason why, with an early start and favourable conditions, a way should not be made straight up the north face of the

Altschhorn. It might very possibly be shorter than the détour by way of the Dreieckhorn: but anyhow it would be a long piece of work. The Dreieckhorn was ascended for the first time, in 1868, by Mr. Murray Browne, by a route apparently somewhat different to either of those taken on the present occasion.

BRENTA ALTA, *July 6, 1872.*—An ascent was made from Molveno by W. M. and R. Pendlebury, Rev. C. Taylor, and W. H. H. Hudson, with Gabriel Spechtenhauser and Bonifazio Nicolosi. The wall of rock some little way below the summit had in former ascents been surmounted with the help of a gully. On this occasion, however, the face of the rock was climbed. Two gullies were observed. The ascent was made to the right of both, and the descent between them. Nicolosi climbed well.

‘It appears that the descent from the summit might have been effected by means of a couloir leading to a point W. of the Bocca di Brenta, the Cima itself being on the S.’—W. H. H.

EASTERN ALPS.

WILDSPITZE AND TASCACH GLETSCHER, 1870.—W. M. and R. Pendlebury, and Herr Bereiter of Innsbruck, with Alois Ennemoser and Joseph Gstrein of Fend, ascended the Wildspitze from Fend, and descended by the Taschach Gletscher to Planggeros. The bergschrund gave some trouble in the descent. There is some good rock scenery at a point where the Gletscher makes a sharp turn to the left, appearing from above to be shut in. Ennemoser repeated the expedition near the end of July 1871. A day or two later it was made by W. M. Pendlebury, R. Pendlebury, C. Taylor, and Gabriel Spechtenhauser: it then took about twelve hours in all, of which five and a quarter were occupied in the ascent.

THE VERPEIL-SATTEL, *August 1, 1871.*—The same party, taking Joseph Santhaler as porter, started from Planggeros to ascend the Verpeil Spitze. The Verpeiljoch, leading to Feuchten, was at first followed. The course then inclined to the left, in the direction of a sattel between which and the joch lies the Verpeil Spitze. The crevasses were well bridged. Towards the sattel the slope gradually became very steep. On the ridge was a formidable cornice, which had to be cut through. The rock kamm on the right, leading from the sattel to the Spitze, presented no great difficulty except to the porter's dog, which had overtaken the party on the glacier, two hours or more from the start. The ascent took in all about five hours and three quarters, to the best of the writer's recollection. The descent from the sattel was by a new route, inclining still more to the left (or away from the Verpeiljoch) than the ascent. Lower down three routes were open to trial. 1. The ice-fall, lying below a much crevassed glacier. 2. Rocks on the left. 3. Rocks on the right. The third route was finally chosen. One difficulty was encountered, in the shape of a precipitous cleft in the rock. The first man having been let down 10 or 12 feet, contrived to land himself on the ledge at the head of the cleft. The rest followed

in like manner, except Spechtenhauser, who however came down safely with help from below. A steep but low wall on the further side was then climbed, and all serious difficulty was over. From the glacier below, the rocks which had been descended looked quite impracticable. From this point a small side valley, debouching perhaps an hour above Feuchten, was followed. Until this present year Spechtenhauser regarded this as his most considerable expedition.

Ennemoser was said to have ascended the Verpeil Spitze alone in 1870. It seems, however, that he only reconnoitred it, without quite reaching the summit. Later in 1870 Herr Statzer of Vienna made the ascent with Ennemoser and Spechtenhauser, returning to Planggeros.

The real name of the local guide mentioned as Joull in the account of the ascent of the Thurnerkamp in the last number, is Georg Samer.

MARMOLATA, *July 2, 1872.*—R. Pendlebury, Rev. C. Taylor, and W. H. H. Hudson, with Gabriel Spechtenhauser of Fend, and Georg Bernard of Campidello, ascended the Marmolata by Mr. Tuckett's route, described on p. 95. The start was made at 2.32 a.m. from the inn at Campidello. The top of the couloir, where the rope was put on, was reached at 6.52. The course was now to the right, up hard snow, and shortly afterwards to the left, over rounded rocks with a loose crumbling surface, which in their then state, bare of the good snow which enabled Mr. Tuckett to ascend without difficulty, were neither easy nor safe. The rocks having been passed, the remainder of the ascent was uneventful. The top was reached at 9.37. The descent by the Fedaya to Campidello took from 10.24 to 1.52. Bernard deserves commendation for his rock climbing. Spechtenhauser was, as usual, good.

ALPINE NOTES.

The following note has been received from Mr. Ormsby:—

THE MOUNTAINS OF SPAIN.—The paper on the mountains of Spain, in the last number of the *Journal*, would perhaps convey the impression that Coello's is the only trustworthy map of Spain in existence. This, however, is not the case now that the map of the Spanish Peninsula (four sheets) by Karl Vogel, in Dr. Petermann's new edition of 'Stieler's Hand-Atlas,' has been completed. The latter is unquestionably in every respect the best general map of Spain as yet published; indeed, it is difficult to see how a map on the scale (1 : 1,500,000) could be better. The chief merit of Coello's map is, that it lays down the physical features of the country, the mountain-chains and river-systems, with great general accuracy. But in these respects Karl Vogel's map is at least equally accurate, while in execution, fullness of detail, and clearness, it is immeasurably superior. At first sight, indeed, it would seem open to an objection the opposite of that to which Coello's is liable—that it is over-elaborate, and too much crowded with names; but the workmanship is so neat, and the printing so distinct, that there is in reality no confusion. The heights, which are given in Paris feet, agree closely with those in Coello's map, and the figures are far more legible. There are, perhaps,

one or two instances of doubtful nomenclature, such as giving the title of 'Montañas de Leon' to the range on the *west* of the city of Leon. In local parlance the title is generally given to the mountains in the north-east corner of the province—the Leonese portion, in fact, of the mountain region, the other parts of which are called the 'Montañas de Burgos' and 'Montañas de Santander.' Again, why should 'El Escorial' be printed in the smallest character and in brackets, as if it was a sobriquet, while "S. Lorenzo" is given as if it were the name of the place? The full title of the huge building commonly called the Escorial is certainly the monastery of S. Lorenzo of the Escorial, but the name of the place is El Escorial, and that should have had the precedence on a map. Such trifles, however, even if they are oversights of the cartographer, do not diminish the value of the work, which is a real boon to the traveller in Spain.

THE PASSO DI RITORTO.—The most direct, and perhaps the most beautiful way, from San Nicolo in Val di Zoldo to San Vito, is not marked in the large Government map or mentioned in the Alpine Guide. A path mounts from the church of San Nicolo—where the inn is very comfortable—to Coi, a hamlet perched on the ridge dividing the main eastern head of Val di Zoldo from the Brusadaz branch of the valley. Having followed a sledge-track along the crest of this grassy brow until it merges in a broad down at the southern base of the Pelmo, the traveller bears to the right towards the S.E. angle of the mountain, where a huge wedge of stone shooting out from the cliff overhangs its base to an alarming extent, and from a distance might be taken for a gigantic gurgoyle. Hugging closely the cliffs, the track crosses with very slight variations of level the Campo di Ritorto—the name given on the map to the open head of the Zoppé valley—and gains, in three hours from San Nicolo, the green saddle from which the ascent of the Pelmo itself is usually undertaken. The descent through Val Ruton to San Vito is a pleasant stroll of two hours. Further details as to this pass and the Pelmo will be given in a future number.—D. W. F.

The following note has been received from the Rev. T. G. Bonney:—

THE GROSS GLOCKNER.—The Johannishütte is now rebuilt, comfortably furnished and well provided for a stopping-place. The name has been changed to the Hoffmannshütte, in honour of the eminent explorer of the Austrian Alps who lost his life in the late war, and a tablet of white marble, with an inscription, has been erected on the Franz Josef's Höhe to his memory.

The new route up the Gross Glockner from the Pasterze Glacier is also known as the Hoffmannsweg. It must be infinitely superior to the old way by the Leiterthal. You go straight up the glacier opposite to the Adlersruhe, and then up the peak. The glacier is steep in the lower part, but not difficult to anyone accustomed to ice; later in the year possibly crevasses might give trouble, but never, I conceive, anything serious. A wire rope is now fixed on the descent from the lower peak. The last 300 feet of the mountain require care; the rest is very easy. Times—ascend from hut, 3¼ hours; return, 1.40 min.; of each of these about 20 min. were spent in crossing the Pasterze Glacier.

There are now four ways up the Gross Glockner. From Heiligen-

blut:—1. The Hoffmannsweg; 2. The old route by the Leiterthal. From Kals:—1. By snow slopes to Adlersruhe and so to peak; 2. Straight up rocks to final peak (used only late in the year). The charge of the Heiligenblut guides for the ascent is 8 florins 50 kreuzer, that of the Kals guides 7 florins 50 kreuzer. The latter, however, insist on two guides being taken by each traveller, a precaution perhaps advisable for the many Austrian tourists—perfect strangers to snow and icework—who now attempt the mountain, but ludicrous and vexatious when applied with Tyrolean stubbornness to practised climbers.

We have received from another member of the Club a description of an ascent made in company with some Kals guides, which suggests that in many respects they still live in a dark age, which it should be the task of the Austrian Alpine Club to enlighten.

‘Mountaineering in the Oberland and the Pennines has almost obtained the rigidity of an exact science, guided by rules which are only disregarded by a genius or a fool. It may be interesting to consider a phase of mountaineering very far indeed from any ‘positive stage,’ and in which the simple enthusiasm of the tourist-patriot has not yet been replaced by the hard and fast system of the professional mountaineer. For the contemplation of the rapidly dying species referred to, there is no need to have recourse to the Antipodes. On the slopes of the Gross Glockner, within 60 leagues of Grindelwald, the Dodo mountaineer (though somewhat weakly now) may still be studied, and every facility exists for a comparison of the modern type of ‘homo scandens’ with his Pleiocene predecessor. In one respect, indeed, no development has taken place. The antediluvian aims at reaching the top of his peak, and often does what he aims at, and the modern can go no higher. The only difference between them is in the method adopted for getting there. Let us for a moment “assist” at an ascent of the Gross Glockner—old style. A roomy hut has been built within three hours’ climb of the summit. To this repair five travellers and seven guides, the latter furnished with one ice-axe and five short lengths of rope. Though late in August, the hour for departure is fixed for two o’clock—why, heaven knows; and it is only through the resistance of one who has been corrupted by modern ideas that the start is delayed till near three. Darkness still broods over the mountain when the upper snows are gained. At half-past four a halt is called, and the upper slope of the mountain is regarded with an earnestness which might well thaw it if the hour were not so early. It is evident that there is ice there, and the modern philosopher begins to chuckle. Too soon, however. A thin tall man, in whom is soon recognised the owner of the single ice-axe, leaps forward and is introduced as the “vorgeher” who will relieve the travellers from their difficulties. He hacks away with a will, while his fellows, breakfasting, regard him placidly from below. Soon he returns discomfited, and requests the loan of an English axe, as his own is already blunted. The person addressed answers by a cold statement that on principle the mountaineer never parts from his ice-axe: surely those who are amply provided with *steig-eisen* can be in no need of an axe. The owner of

the envied weapon becomes an object of interest; the party gather round him, and one elderly enthusiast becomes almost pathetic in his pleading. He does well to be pressing. It is his eleventh attempt on the peak, and he feels that it is now or never. The modern, however, will not betray his principles, but offers, if assistance is really needed, to cut the steps himself. The "vorgeher" is charmed; but the whole troop of antediluvians are, on a sudden, seized with jealousy and charge up the mountain, each tourist tied to his special guide—and to him alone—by a piece of rope four feet long, passed over the guide's shoulder.

'The study becomes interesting; and the observer having no wish to reach the summit first, has time to make a note of the true Gross Glockner method. Presently a formidable gap appears, lying between the two highest peaks. The passage of this duly excites the minds without endangering the bodies of the climbers; for stanchions are driven into the rocks, and a stout iron wire forms an admirable balustrade. Soon the top is reached; it is but 6 A.M.; and the triumph is intense. He who had persevered through ten failures is well-nigh overcome as his comrades present their congratulations one by one. The return is tumultuously joyful, though the critic shudders at the thought of what might happen if two men tied by a four-foot rope were to fall foul of a covered crevasse of 10 or 15 feet wide. In fact, however, the antediluvians well deserved their success: walking stoutly, talking cheerily, and parting good friends, even with the 'chiel' who had been 'among them taking notes.'—C. C. T.

A NEW SCHOOL FOR CHAMOUNI.—A Bolivian gentleman, Mr. H. Meggs, together with other members of his family, has placed in the hands of the Corporation of Chamouni Guides the sum of 200*l.*, for the purpose of providing a school at which the youth of the valley may receive a better education than the very imperfect one now obtainable in the communal schools. It is intended that instruction shall be given in the new schools in modern languages and such other subjects as are most likely to be useful to the pupils in their future profession of guides, and to render them intelligent and valuable companions to their employers.

Mr. Meggs' very liberal gift will not suffice by itself for the construction and maintenance of the school; but a certain sum having been subscribed amongst the guides themselves, the school-rooms will be got ready in the course of next summer. Further subscriptions are necessary to provide for the furniture of the building and the payment of teachers. We are asked to make this fact known to the Alpine public, many of whom it is thought probable may be disposed to assist in assuring the success of the scheme which has been set on foot by Mr. Meggs' liberality. The President of the Association of Guides at Chamouni will furnish further information, and receive subscriptions, which may also be sent to the Editor of the 'Alpine Journal,' care of Messrs. Longman & Co., Paternoster Row, E.C.

REVIEWS.

POCKET GUIDE-BOOKS.*

It is interesting now and then to look up at the long array of old Alpine Guides, which fills a shelf of the book-case. There is the dapper Baedeker, not altogether comfortable at finding himself 'verengländert,' a practical adviser of prudent youth on its travels, careful alike of their pockets and their necks; a steady goer, allowing time for many a roadside halt, and one whom we could always give a start to, and catch up before the inn-door was reached. We speak of an old edition: now we hear a young and fast Baedeker reigns in its stead.

Deep in an obscure corner the 'Practical Guide' hides his shabby, brickdust coat; a cockney humourist, whose wit, unrepressed even among the noblest scenes of nature, fits exactly with that of the tourist abroad for the first time, and ignorant of any foreign tongue, whom we have all met at the *tables d'hôte* of the Bernese Oberland. But if we shudder at the jokes we must often smile at the presumably serious portion of the book, in which the tourist receives some very remarkable bits of practical advice and warning. If a pedestrian, he is told that amongst the objects which 'common comfort' compels him to carry are a pair of polished leather boots, and that in every case 'goloshes are indispensable.' For his benefit the stories told about Mont Blanc by Alpine climbers are authoritatively contradicted. 'New paths up are reported every season to English newspapers at a safe distance. They gratify the sensational and stimulate young ambition. *But the formation of the mountain renders any really new paths a physical impossibility,*' (sic). And to crown all, the anonymous writer furnishes an altogether original 'table of heights,' in which the careful and hitherto accepted conclusions of the engineers of the Swiss survey give way to the random shots of a guesser as reckless as any undergraduate in his Littlego. Mont Blanc for the first time in history scores his full 16,000 feet; but the Oberland peaks suffer, on the other hand, cruel injury. The Wetterhorn falls from 12,149 to 11,500 feet; the Schreckhorn from 13,394 to 12,500 feet; the Eiger from 13,045 to 12,300 feet; and, worst of all, the Äggischhorn from 9,649 to 7,700 feet. But enough of such facts and figures. One service rendered by our fellow-countryman to the Alpine Club we most willingly and gratefully acknowledge. For some reason—we do not care to inquire what—he has passed over in silence our most favourite haunts, the 'Adler,' at Grindelwald, the 'Monte Rosa,' at Zermatt, the 'Mont Blanc,' at Aosta. We part in peace, but on the condition that none of his followers' goloshes find their way across the forbidden thresholds where every mountaineer is at home.

Next stands 'Murray,' the romantic friend of our early days, apt in

* 1. Iwan Tschudi's *Schweizerführer*. St. Gallen: Scheitlin und Zollikofer.
2. *Wegwiser durch Südbaiern, Nord- und Mittel-Tirol und angrenzende Theile von Salzburg und Kärnten*. Von Th. Trautwein. Dritte Auflage. München: 1870, Verlag des Lindauer'schen Buchhandlung.

quotations, and well suited for the mule-path and the bag which dangles at the side-saddle. An intelligent, if somewhat unadventurous, gentleman, always anxious to move with the age, but somehow never quite able to keep up with it. Take down that faded copy, dated fifteen or twenty years ago, and we are at once carried back amongst a generation which knew very little of mountains, and still less of mountain-climbing. We find ourselves in the period when the snowy Alps were looked on with feelings of mingled terror and admiration—terror holding the first place—such as those inspired in children by a wild-beast show. The great peaks are all labelled ‘dangerous’ in the largest letters. Even on the Great Scheideck the shadow of the Wetterhorn seems to impend too closely, and the traveller feels happier with a good barrier, such as the Trümleten Thal, between his mule and the avalanches, which, as he firmly believes, an unwary shout or even gasp for breath may at any moment bring down on his head.

Only a few of the glacier passes frequented by natives of the country are inserted under a kind of protest. The use of the rope is still little understood, and consequently the smooth snow-field is with justice almost as much dreaded as the broken precipice. The St. Theodule is only fit for ‘hardy and adventurous persons.’ The Col d’Herens is scarcely known. The passage of the Col du Géant is an ‘adventure requiring three or four guides;’ while with regard to Mont Blanc we are seriously told that ‘it is a somewhat remarkable fact that a large proportion of those who have made this ascent have been persons of unsound mind!’ A guide-book put together on such principles naturally did not trouble itself about the eccentricities of the few who even then were beginning to find for themselves new paths above the snow level; while, with less reason, it declined even to mention the byeways of the lower region. At this time whole groups were left almost, if not entirely, unnoticed; Dauphiné, the Graians, the central Pennines, the whole of south-eastern Switzerland, and the adjacent Lombard Alps, were still virtually unknown lands. Englishmen who believed themselves tolerably well acquainted with Switzerland had never heard of the Aletsch Glacier; and their Guide had so little to say about it, that he did not think its name worth inserting in an index.

Thus, owing both to the comparatively small portion of the Swiss Alps described at all, and the very imperfect manner in which even that portion was dealt with, space was left for other matter than mere bare statistics of distances and inns. The editor endeavoured to offer himself not only as the guide in the simpler sense but as the moral leader or Mr. Barlow of his flock of grown-up Sandfords and Mertons. Where possible he slipped in a piece of historical information, or he suggested to the tourist the emotions appropriate to each spot of his sojourn, and in some cases even went so far as to furnish him with the fitting means of expressing them in a long quotation from ‘Manfred’ or ‘Childe Harold.’

The completion of railroads to the very foot of the Alps gave an immense impulse to Alpine adventure. Englishmen realised for the first time that in central Europe, and within forty-eight hours of London, there was a region almost as unknown, and in parts quite as badly mapped, as the interior of Africa. The luxury of discovery, the excite-

ment of treading on virgin ground, and encountering and overcoming strange and at first sight insurmountable obstacles, was brought suddenly within the reach of men of moderate means and leisure.

The three volumes of 'Peaks, Passes, and Glaciers' were among the first literary results of this new-found pursuit. But the most complete record and summary of the labours of the Alpine Club is to be found in Mr. Ball's work. It is superfluous to dilate to the readers of this Journal on the merits of the 'Alpine Guide.' But it may perhaps be desirable to remind a younger generation of climbers of the enormous advance in Alpine exploration which was marked by its publication—an advance to which, looking either to the extent or character of their labours, English Alpine Clubmen have certainly made the most important contributions.

In another respect Mr. Ball's pages bear witness to the new spirit in which mountains have been of late years regarded by intelligent Englishmen. The place occupied in older volumes by disjointed scraps of history or poetry is filled with geological and botanical information. It is to the mountain itself, its rocky ribs or flowery garment, rather than to the human stories or emotions which may have gathered round its base, that our interest is directed.

The publication of a work of so complete and exhaustive a character might have naturally been expected to put a stop for some time at least to the production of any more Swiss Guides. That this has not proved the case is probably chiefly owing to a sudden growth of the tendency amongst travellers to look on condensation as the first merit in a hand-book, and to call for pocket companions of the most compact and portable form. In obedience to this demand, an enterprising American has succeeded in carrying compression to perhaps its utmost limit by forcing all Europe and the Levant into the compass of a single volume. No similar feat has, so far as we know, been performed on our side of the Atlantic. Yet the call for brevity has met with a response in quarters where it might have been least looked for. It has induced Joanne to issue a series of tiny 'livres de poche,' which contrast ludicrously with the swollen bulk of his ordinary volumes, and has persuaded even the conservative 'Murray' to reveal himself to the world under the new form of a 'Knapsack Guide.' We do not at present intend to speak of these, or of some other less worthy products of the same demand. The little volumes which have suggested the foregoing somewhat desultory remarks are both written in German, and are published respectively at St. Gall and Munich.

Herr von Tschudi's 'Schweizerführer' first appeared some years ago. Foreign publishers, however, seem to find it not only possible but profitable to bring out successive corrected editions of works of this class with a rapidity quite unknown in England. By this means Tschudi has been enabled steadily to advance with the times, and the last edition under our notice (1872) is in many respects a new book. The 'Schweizerführer' bears the same semi-official relation to the Swiss Alpine Club that Mr. Ball's book bears to the English. It also resembles the 'Alpine Guide' in being divided into three volumes, although it may also be had in one of very moderate dimensions. The Swiss work is distinguished

from the English by the comparative narrowness of its field—of which more hereafter—but above all by the determination of its author to subordinate every consideration but accuracy in order to secure the compactness of form preferred by the foot-traveller. Herr Tschudi's is in short the first carefully worked-out attempt by a competent hand to reduce into the smallest possible compass all the information absolutely necessary for a mountaineer in the Central Alps. In order to attain this end he has been content to give up any attempt at literary form, and to frame his work on the model of a dictionary, cataloguing every known Alpine expedition, and adding in as few words as possible a description of its nature and merits—the qualifying epithets being fastened on peaks and passes much as they are elsewhere on inns.

Formerly we were able to point to one inconsistency in Herr Tschudi's pursuit of brevity. Half the space devoted to the account of some peak or pass was sometimes occupied in chronicling the names of the first successful climbers. But in the last edition even this amiable concession to human weakness has been withdrawn, and mountaineers must for the future content themselves with the record of their exploits contained in Herr Studer's 'Höchste Gipfel der Schweiz.'

It will be seen, that where Mr. Ball proves himself an intelligent encyclopædic friend, Herr Tschudi is content to play the part of a plain guide. But the limited task which the Swiss writer has set himself has been most perfectly accomplished: he seems to possess a complete Alpine library, and to have formed a thorough digest of it. He has, besides, taken advantage of whatever information could be gleaned from the best guides and hotel-book entries. The 'Schweizerführer' is as thorough in the most remote and little-visited district as in the heart of the Bernese Oberland. No bye-path or once-traversed glacier col is left unnoticed. Take as an example the account of the mountains of Val Masino, where there is not only a sufficient notice of the numerous first-rate passes leading over into the Bregaglia and Val Malenco, but some interesting suggestions of routes from the Bagni di Masino to the head of Lago di Como, hitherto utterly unknown to travellers. In the important matter of inns, and with regard to the relative difficulty of excursions, we can, as far as our experience goes, bear witness to Herr Tschudi's trustworthiness. One statement, however—that there are many first-rate guides at Pontresina—he will hardly find English climbers willing to endorse. The men of that village have more than once during the last few years, when employed by Englishmen, shown a want of energy and a determination to halt at the first obstacle, attributed by themselves to a sudden sentiment for their wives or grandmothers, but by their employers to a dislike to do a fair day's work for less than two days' pay. At other times they have refused, except on the most exorbitant conditions, to go in company with an Oberland man, with whom it would have been an honour for them to be associated. It is some consolation to remember that such conduct resulted in their losing any share in the first ascent of the most formidable peak in their valley, the Piz Roseg.

Herr Trautwein, who is the editor of the publications of the youngest

Alpine Club, the 'Deutschen Alpen-Verein,' has evidently taken Tschudi as a model, and in many respects what has been said of the one book will apply to the other. His 'Wegweiser durch Südbaiern, Nord- und Mittel-Tyrol' is a useful little volume, and contains a great deal of information difficult to be found elsewhere. We have tested in particular the sections relating to the Zillerthaler Ferner and Orteler groups, and found them carefully compiled. In the latter, however, where immediate comparison is possible between the German and Swiss writers, the second has a decided advantage in the number of small topographical details, which make up the greater part of his description of each ascent, and to the intelligent climber take the place of finger-posts, often enabling him to dispense entirely with local assistance.

We have one criticism to make which applies, although unequally, to both volumes. Now that the barriers to free intercourse between nations are so universally removed, it is surely time for all writers of hand books to follow the example set by Mr. Ball, and to select natural rather than political boundaries for their works. Herr Tschudi labours under the disadvantage of having started with the territory of the Swiss Republic for his subject, and although his practical good sense has led him everywhere to cross the frontiers, we hardly think he has yet solved satisfactorily the problem of 'where to stop.' On the west, the country commonly visited during a Swiss tour is fairly bounded by the Val d'Aosta and the Little St. Bernard; but in the east the line of severance is less easy to select. Herr Tschudi seems still uncertain how to solve the difficulty; for while in his three-volume edition of 1871 he includes an imperfect notice of the Val Rendena and the Adamello group, and a very complete account of the Bergamasque valleys, in the condensed edition of 1872 the Orteler group is dealt with, but the country to the south is omitted. The traveller anxious to go southwards from Eastern Switzerland will find his journey more complete and easy of arrangement, if from the Engadine he makes a circuit including both these groups than if he visits one; and we think the omission of the Adamello while the Orteler is retained a decided mistake. It would be better either to stop short at the Buffalora Pass, or to boldly overstep the frontier and accept the Finsternunz road and the valley of the Adige as the proper limits of a tour in the Central Alps.

Herr Trautwein, however, offends much more seriously in this respect. Indeed we cannot help suspecting that he wishes to furnish us with a *reductio ad absurdum* of the political boundary system. Otherwise it would be as foolish as it is barbarous to entice a traveller into the Dolomites, and then—because the frontier of Venetia, and therefore of Italy and Austria, makes a *voyage en zigzag* over their confused mountain masses—to desert him in their midst, and refuse to utter a word about Pieve di Cadore or Agordo.

It may be looked on, perhaps, as an open question, whether in a guide-book intended for the use of mountaineers, who almost always carry with them the local sheet of an ordnance survey, detailed district maps are to be desired. An inaccurate map is often worse than none at all. Some of those in the 'Alpine Guide' are far from satisfactory, and will,

we hope, in future editions give place to more adequate and carefully constructed engravings. The maps of the Gross-Glockner and Cetzthal districts in Herr Trautwein's volume are models of their kind, and might well be imitated. Herr Tschudi has rightly, we are disposed to think, dispensed with district maps altogether, but his general map of Switzerland is quite unworthy of the excellent volume of which it is an accompaniment.

CAUCASIAN LITERATURE.

The word 'Caucasus,' prominently placed on the titles of two works* lately advertised, must have attracted the notice of mountaineers. We regret to say that any expectations they may have formed of gathering fresh information as to the mountains of the future will be disappointed. Mr. Mounsey merely traversed the often-described road which leads through Tiflis and past Ararat into Persia, and need not delay us except to correct the statement that Elbruz is seen from the high road near Gori, a parallel blunder to Addison's remark that the mountains of the Grisons form the background to the view from Bern. The Caucasus is in fact about as much known as the Alps were in the days of the 'Spectator.' The author of the second volume in two instances diverged from the tracks of the Russian post-telegas; but in his description of the most important of these diversions—that from Temir-khan-shura, through Daghestan to Grosnaya—he has been anticipated by Mr. Ussher, in his 'From London to Persepolis.' Despite his title, Sir A. Cunyngame is no more qualified to speak of the Eastern Caucasus as a whole than is one who has only visited the Salzkammergut of the Eastern Alps; of Schebulos and Basardjusi, the Orteler and Gross Glockner of the Caucasus, he appears not even to have heard the names; of the district of which a description is most required, the valley of the Alasan and the passes leading over the great mountain wall which overlooks it into Daghestan, he has not a word to tell us. Taken in hand by Russian officials biassed by pride in their own military achievements, and as a rule either devoid of taste for scenery or too little accustomed to it at home to be very discriminating judges, he was forwarded along the regular round of Schamyl's battle-fields prescribed to all tourists who abandon themselves to such guidance.

We cannot, as a rule, afford space to comment on either the matter or manner of works which make no addition to our knowledge; and we should have passed over in silence both the volumes, the titles of which are quoted below, did not certain statements made by Sir A. Cunyngame seem to us likely, if left unnoticed, to retard the exploration of the most interesting portions of the Caucasian chain.

Our chief ground of complaint against the author of the 'Eastern Caucasus' is, that being an Englishman who ought to know better, he repeats the stale programme that falls from the lips of every Russian

* 1. *Travels in the Eastern Caucasus.* By Lieut.-General Sir A. Cunyngame. London: John Murray, 1872.

2. *A Journey through the Caucasus and the interior of Persia.* By A. H. Mounsey. London: Smith, Elder & Co., 1872.

officer, and that by the route he recommends he is likely to divert his countrymen from the most beautiful portions of the country which he professes to describe. Pätigorsk, the ordinary track through Daghestan, and the Dariel, are very well in their way, and quite worth visiting; but those who have not seen the heads of the Mingrelian valleys, where the perfection of sylvan loveliness is united to the majesty of a great snow-crowned and glacier-draped range, can form little or no idea of the highest glory of Caucasian scenery. The view of Kazbek from the post-house is one of the landscapes the recollection of which Sir A. Cunynghame most cherishes. He might have brought home a whole gallery of mental pictures of more splendid and entrancing beauty. The glaciers of Koschtantau are as accessible as Gounib. The Mammison Pass is practicable for a grand duke. Oni offers fair head-quarters; and even Suanetia, for those who know how to profit by others' experience, is not difficult of access. There is no reason why future travellers, as capable of enduring hardships cheerfully as Sir A. Cunynghame evidently is, should not follow in the tracks of a Swiss geologist who has lately visited on horseback almost every valley of the central chain, penetrating to the foot of their glaciers. It is hardly needful to say that these remarks would not have been called for had the author purposely limited himself to descriptions of what he had himself seen. But it is fair to add that the chapter of general information which he has offered, though open, as we consider, to criticism in some most important respects, contains a great deal of advice, which, if not new, is at least sound and of some value.

In another serious matter Sir A. Cunynghame has been misinformed. The reader of his book is led to believe, on the authority of 'experienced persons at the Foreign Office,' that there is great danger in approaching the Caucasus during the summer months by way of the Black Sea and Poti. 'Many evils'—we should like to know more of them—'of which the least was fever or ague in the marshy lands of Imeritia, were held out to warn' the author against this route.

The English railway engineers were, unfortunately for themselves, compelled to work for months in the swamps of the Rion, and the report of their sufferings has, amongst partially-informed persons, given a bad name to the whole Caucasus. The mountain region is, like most highlands, healthy—at any rate sufficiently so to allow Europeans to camp out in the roughest manner, and even to get wet daily without suffering any serious consequences. The journey through the marshes along the Black Sea coast—the really fever-stricken district—has, ever since the establishment of steamers on the Rion, been easily accomplished in a day, and is now, by means of the railway, made the work of only a few hours. The climate of Poti matters, in fact, little more to the Caucasian traveller than that of Boulogne to the Swiss. When England keeps a consul at Tiflis—a seat of viceregal government and the centre of trade and industry for a large portion of western Asia—the Foreign Office will probably be better informed on this and kindred matters: until that time arrives, intending visitors to the Caucasus will perhaps do better to apply for information to the Alpine Club.

Again, 'enormous heat' is, when applied to Trans-Caucasia generally, a misleading phrase. Tiflis and the Georgian plains are undoubtedly, like Lombardy, warm in summer, although in some seasons at any rate by no means unbearably so; but the hills are always at hand, and there is never any need to go far for shade and mountain air.

We trust that English travellers will not be influenced, in planning Caucasian tours, by reports founded rather on hearsay than on the experiences recorded by former writers, with whose works—and they are tolerably numerous—Sir A. Cunynghame seems to be but slightly acquainted.

PROCEEDINGS OF THE ALPINE CLUB.

Monday, December 16.—Mr. W. LONGMAN, *President, in the Chair.*

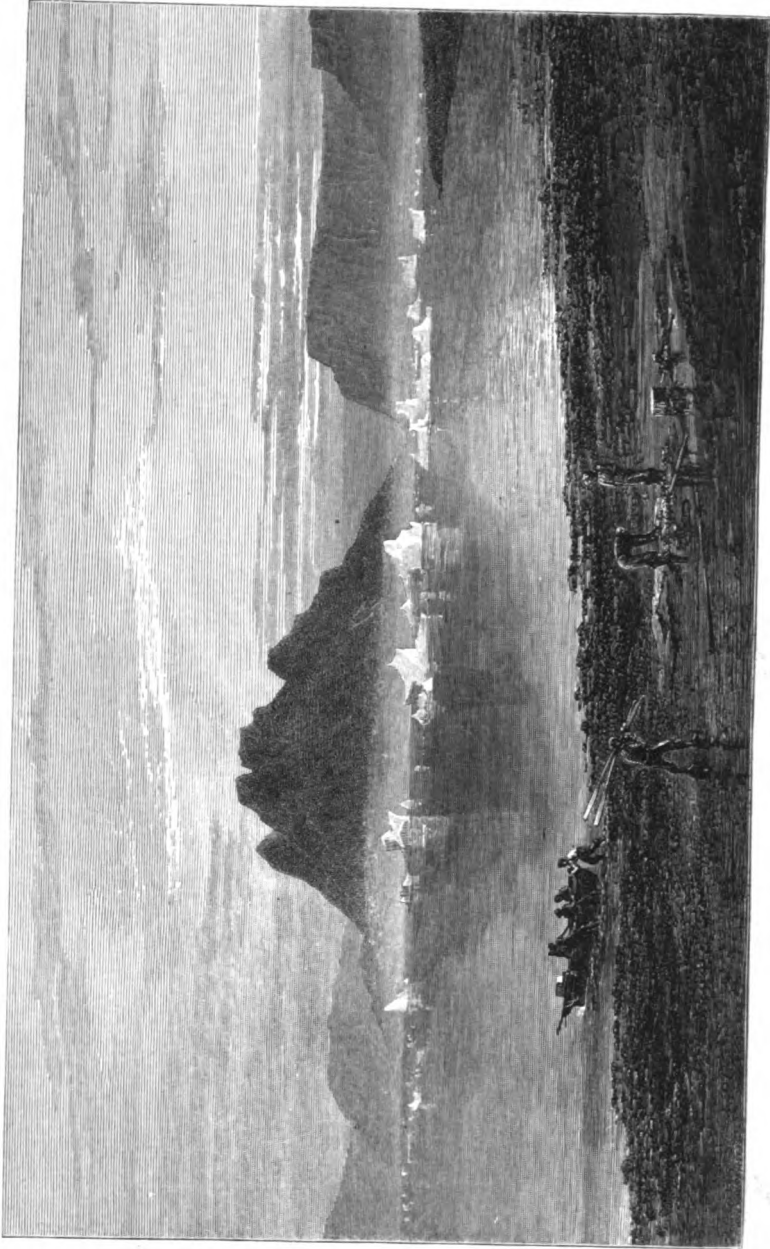
The following gentlemen were balloted for, and elected members of the Club, viz.: Messrs. S. F. Still, E. Hulton, C. Pilkington, H. Hoare, W. M. Pendlebury, Rev. J. F. Bramston, Rev. C. H. Hawkins, Messrs. W. White, and G. W. Stevens.

Mr. ADAMS-REILLY proposed, and Mr. C. G. HEATHCOTE seconded, 'That Sir J. H. Ramsay, Bart., and the Rev. W. H. Hawker, be elected members of the Committee in place of Messrs. C. E. Mathews and D. W. Freshfield, who retire by rotation; and that the President, Vice-presidents, other members of Committee, and Secretary, be re-appointed for the ensuing year.' An alteration of Rule III. was agreed to, so as to allow of the Editor of the Alpine Journal being added to the Committee as an extra member, the possible number of such extra members being thus raised to four.

Mr. T. S. KENNEDY read a paper on 'Excursions from Cormayeur, in the range of Mont Blanc,' giving an account of a new and more direct route up Mont Blanc from the Miage glacier, and of an ascent of the Aiguille de Léchaud.

Some discussion took place as to the expedience of, for the sake of country members, holding in future years the annual general meeting and the winter dinner on the same day. It appeared, however, to be the almost unanimous opinion of the country members present that the existing practice of holding the meeting and dinner on two successive days should be adhered to.

Tuesday, December 17.—The annual winter dinner took place at Willis's Rooms, when 110 members and their friends sat down; Mr. W. LONGMAN, President, in the chair. Amongst the guests of the Club on the occasion were Sir F. Pollock, Bart., and Lt.-Col. the Hon. W. Sackville West. Mr. Arthur Croft lent for exhibition a large collection of his own water-colour drawings, and pictures were also lent by Mr. G. Barnard, Mr. Alfred Wills, and others. Plates of the Alpine Club map of Switzerland (now being executed under the supervision of Mr. Nichols), in various stages of completion, and a magnificent volume of photographs of the Icebergs in the Polar Seas and the Glaciers of Greenland, lately published by Messrs. Sampson, Low & Co., were laid on the table.



THE ISLAND OF UMENAK, SEEN FROM THE MAINLAND.

FROM A PHOTOGRAPH BY EDWARD WYMPER.

THE
ALPINE JOURNAL.

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SOME NOTES ON GREENLAND AND THE GREENLANDERS.

By EDWARD WHYMPER. Read before the Alpine Club on March 4, 1873.

FIVE years ago I communicated a paper to the Alpine Club which contained a brief relation of a journey that I made in North Greenland in 1867. That journey was the result of an early ambition. Ever since I first began to take interest in anything, I have taken great interest in the Arctic Regions, and when I was able to travel in the Alps I eagerly seized the opportunity, in the hope that I might acquire such a knowledge of snow and ice as might perhaps procure me a post upon some future English Arctic Expedition. After six years' scrambling in the Alps, finding that my hopes were not likely to be realised, I looked about for some country where larger experience might be gained, and eventually my choice fell upon Greenland. Remote as the probability is that another Arctic Expedition will leave our shores, I nevertheless hope that Polar exploration will not be abandoned by our countrymen; and, as a member of this Club, I wish that they may attain the highest latitudes and climb the very Poles themselves. I hope the time may speedily come when the Chancellor of the Exchequer may feel that there *are* 'pressing reasons' for sending out another expedition, and that we may one day have a Government which shall be of opinion that there *are* occasions when the national honour should be considered before pounds, shillings and pence.

I went to Greenland in 1867 with two distinct and very different aims. Rumour said that the interior of the land was completely and absolutely covered up by glaciers. It seemed to me that if this were the case it should be possible to travel over

the interior of the land with sledges, and that, if this could be done, a novel and very valuable feature might be introduced into Arctic travel. It seemed to me, for example, that if Dr. Kane had endeavoured to pass the Great Humboldt Glacier by travelling *over* it, instead of toiling through the hummocks at its base, he would have succeeded in his object with comparative ease, instead of failing, as he did, after putting forth great exertions. There is the authority of Sir Roderick Murchison for saying that the idea of travelling in this way had not occurred to anyone else,* and certainly as far as I am concerned it was entirely original.

After a somewhat protracted voyage, I arrived at the colony of Jakobshavn, in Disko Bay, on June 16, 1867. This place was selected as the base of operations by the advice of the Director of the Greenland trade, as there were several fiords in its neighbourhood which approached the 'inland-ice' very closely. No one at the colony, however, was able to say at what spot the glacier-covered interior was most accessible, and to discover this point I first made a four days' boat journey in a north-easterly direction, and subsequently another four days' journey in a south-easterly direction. The place first visited proved to be the best, and I returned to Jakobshavn to prepare sledges, and to get together men and dogs, and dogs' food.

During the time in which these preliminary journeys were being made, a severe outbreak of pneumonia occurred in Disko Bay, which attacked almost the entire population, and eventually carried off four per cent. of the whole. Those who were not prostrated by the epidemic were naturally much occupied in tending the sick, and for some time it was impossible to procure even a single man, or indeed to obtain the slightest assistance. At length the Inspector of the northern districts induced a son of the trader at Jakobshavn to accompany me. In young Mr. Fleischer I gained an excellent dog-driver and a very useful and willing assistant. I had already a second driver in the person of my interpreter, Mr. Tegner, and we obtained a third one, a native Greenlander, from the neighbouring colony of Claushavn. To accompany the three sledges which it was proposed to take, it was necessary to have two other persons besides myself. One of these was supplied by a collector whom I brought from England, and a sixth man was at last procured from the colony of Christianshaab.

Dogs were almost as difficult to obtain as men, for they had their epidemic as well as the natives. At last, after a great

* *Journal Royal Geog. Soc.* p. cxc. 1866.

deal of negotiation, I obtained the loan of three teams (amounting to twenty dogs) from Claushavn, upon the condition that they were not to be landed in the infected districts; or, if circumstances forced us to land them, they were to be slain at my cost. Much time was also lost in obtaining the necessary quantity of dogs' food—for Greenlanders are extremely careful *not* to lay in a stock of meat beforehand. Five or six hundred pounds of dried seals' flesh were required for the contemplated journey, and these were bought by handfuls at a time from perhaps a hundred natives. The worst remains to be told. By the advice of my interpreter, wood was brought out to be made up into sledges in Greenland, instead of sledges ready fitted up. I now found that the only persons in the country who were capable of making sledges had their time fully occupied by the manufacture of coffins; so I was forced to content myself with the sledges ordinarily used in Greenland, which were made of very indifferent wood, were very weak, and were not fitted for the rough work to which they were afterwards put.

With the five persons already enumerated, twenty dogs, and three sledges, I started from Jakobshavn on July 20, 1867—in two boats, rowed by ten additional Greenlanders—to make an attempt to travel into the interior. In two days we arrived at the end of the fiord which approached nearest to the 'inland-ice,' and were occupied for two days more in transporting our baggage over the few miles of land which intervened between the fiord and the glacier. The ten additional natives then departed in one of the boats, and the other one was left moored in the fiord to await our return. For three days more we remained encamped at the edge of the glacier, waiting for a favourable change in the weather—the sledges, laden with provisions for thirty days, standing all ready upon the ice. The dogs, as is their nature, did all they knew to vex us, and gnawed incessantly through the lines with which they were fastened, and made rushes at portable property, or bit us, and fought each other on every possible occasion. If they could have been seized with a unanimous desire to escape in one direction, we should have been left without a single brute; but fortunately each one wanted to go a different route, and so they neutralised each other's efforts.

During this time I ascended a mountain, upon the outskirts of the ice, which commanded a view of the interior. To the north, east, and south, as far as the eye could see, *all* was ice. The land was completely, absolutely covered by glacier. There was not a peak rising above it, nor even a stray rock upon the surface. In the middle of June, when we first came

to this spot, the whole of this immense expanse of ice was covered by snow, and the surface of the snow had a frozen crust which was easy to traverse. The men who then accompanied me, all of them men of experience, said that with the snow in that state we should be able to travel 35 to 40 miles per day. Anyhow, we could easily walk upon it at the rate of three miles per hour, and actually did walk eastwards upon it for a distance of six English miles in an hour and a half, and rose in that time to the height of 1,400 feet above the sea. But at the end of July, when we returned, and were ready to start, almost the whole of the snow was removed and the underlying ice exposed. Instead of seeing, as at first, only a few large crevasses, which, on account of their size, were perceived at a long distance, and hence easily avoided, we now saw thousands and tens of thousands which we should be obliged to cross over. The entire mass of the ice was rent by chasms more or less profound. Now to men unencumbered with baggage the existence of the chasms would have been a matter of little importance, and to properly constructed sledges drawn by *men* they would not have opposed insuperable obstacles. But to sledges such as ours, heavily laden, and drawn by those perverse brutes Eskimo dogs, they presented the most formidable obstacles, and directly I saw the prospect I knew that we could not succeed.

Nevertheless, as soon as the wind moderated, we made a start. I went ahead for a short distance, fixed a stick in the ice to indicate the direction which the sledges were to take, and then ran on, looking right and left, to select the best route. It was also frequently necessary to run *back*, to break a dog's head, or to kick all the breath out of its refractory body, or to give aid to a sledge which had taken a header into a crevasse because half its dogs had made up their minds to return home; and to extricate the moaning driver from underneath a mass of bags of pemmican, biscuit, and travelling baggage of every description. In spite of these little drawbacks, we got along pretty rapidly for an hour or two, but every moment the crevasses became more labyrinthine and the sledge-runners weaker. The sledges looked picturesque as they came over the ice-pinnacles, rearing up like ships running before a gale of wind. The dogs, for a moment still as statues, in the next instant would rush away down the opposite slope with ungovernable speed and clear the crevasse at its foot with a bound, but the sledge would be jammed fast between the walls of the chasm. Then the dogs, feeling themselves checked, would tug away for a few moments to the right and to the left, and, finding their

efforts vain, ceased to pull, and invariably commenced to fight amongst themselves. By the time that the sledge was righted, the lines with which the dogs were fastened to it had become almost inextricably tangled and knotted. These proceedings were repeated over and over again during three or four hours. Then one of the runners of the largest sledge broke in half. Another runner belonging to one of the smaller sledges was also split along its entire length, and all of the remainder were more or less weakened by the battering they had received. As a matter of form, I sent three of the party ahead for a mile or two to report whether the ice became better, knowing, however, very well that it was all alike for many miles. When they came back, reporting truly that it was worse rather than better, I ordered a retreat, it being perfectly evident that to persevere would be only to render our return more and more difficult, and that under any circumstances we should at the most be able to proceed only a few miles further towards the interior. We could only take one of the dogs back in our boat. Eight more were recovered by a boat which I sent for them, three were found dead, one was not discovered, and the seven others came in overland one after another to Jakobshavn, and were killed by order of the Inspector.

Although we failed completely in the immediate object of the journey (the penetration of the interior), I demonstrated to my own satisfaction that it was possible to travel over the glacier-clad lands of the north with sledges. My poverty obliged me to employ dogs instead of men; but I will not do so again for similar work, as I am well convinced that in the long run it will pay better to use the biped instead of the quadruped. Our failure chiefly arose from starting too late in the season. It was my wish and expectation that we should commence the journey upon the 'inland-ice' at the beginning of June. A rather protracted voyage from Copenhagen, and the subsequent delays, prevented our departure until the end of July. During this period of eight weeks there was perpetual daylight and an almost cloudless sky. The temperature never descended to the freezing point, and frequently ranged as high as 65° to 70° F. Even upon the 'inland-ice' itself it was never lower than 37° to 38° F. The snow upon which I expected to travel, which bridged the chasms and levelled the inequalities on the surface of the ice, was completely swept away; and further, owing to the lamentable sickness which prevailed in 1867, we are unable to fit up sledges out of the superb wood which was brought from Europe. With the experience which has been gained the result will, I think, be

different upon another occasion; for the project, although novel, was perfectly feasible, and its execution, although adjourned, is not abandoned.

The remainder of my time in 1867 I chiefly devoted to the pursuit of a very different object. I had seen in Sir Leopold McClintock's well-known book, 'The Voyage of the *Fox*,' a casual reference to a so-called 'fossil forest,' at a place called Atanakerdluk. This place is on the mainland of Greenland, facing the strait called the Waigat. Sir Leopold McClintock did not visit it, and only brought home a few specimens which had been picked up as curiosities and were presented to him. It seemed to me, from the little I could learn about it, that a careful examination of this locality would probably yield results of high scientific interest. This indeed proved to be the case, for at Atanakerdluk, and at some other localities on the opposite shores of Disco Island, I obtained no less than 80 species of fossil trees and shrubs, out of which (according to the determinations of Professor Heer, to whom the collections were submitted on my return) 32 species were new, whilst all were unknown to the present *flora* of Greenland. I will say no more on this subject just now, beyond that those who take an interest in such matters cannot do better than consult the paper by Professor Heer, which appeared recently in the 'Transactions of the Royal Society,' to which is also joined a detailed account of my own proceedings.*

Had I been aware in 1867 how much of the mere coast-line of North Greenland remained to be discovered, I should probably, in the first instance, have contented myself with a less ambitious programme. Upon the strength of the English Admiralty Chart, sheet 1 (chart exhibited), I supposed that the coast-line of North Greenland was well known, but when landed in the country I found that the state of the case was very different. If I enquired at a settlement what was the nature of the coast between that place and the next, the traders and other Danes were frequently able to say that *our* map and *their* maps were very wrong, without being able to say what was right. And touching some portions of the coast they would not pretend to any knowledge whatever, saying that no Europeans or native Greenlanders had ever been known to traverse them. Such, for example, is the case in regard to the west and north-west shores of the great island of Disco.

* *Contributions to the Fossil Flora of North Greenland, being a Description of the Plants collected by Mr. EDWARD WHYMPER during the Summer of 1867. By Professor OSWALD HEER.*

No Europeans or natives have ever been known to land upon those shores, although they have been seen at a distance by perhaps thousands of persons; and although it is said, traditionally, that they were inhabited some centuries ago by Eskimo, it is certain that at the present time not an individual can be found from the mouth of Disco Fiord, right round the northern part of the island, and so down the Waigat, to the small settlement of Ujarasusuk, a distance of about 150 miles. If you look, however, at the English Admiralty Chart, you will see that this portion of the coast, like almost all the rest of North Greenland (lat. 68° to $72\frac{1}{2}^{\circ}$), is laid down with a firm line, such as would lead anyone to suppose that the coast had been surveyed. But the fact is that the greater part of the coast of North Greenland has never been surveyed in any sense whatever, and as laid down in the English chart is scarcely a closer approximation to the reality than the rude map which accompanies the book by the missionary Egede.* (Map exhibited.)

Passing over the early maps of Greenland (such as that just exhibited), which were based upon the original discoveries of Frobisher, Davis, Baffin and others, the first map which has a claim to be considered is that by Lieutenant Graah, an officer of the Danish army. Graah was sent out by his Government in the years 1823-4 to investigate the land, and in those years accumulated the material from which this map was afterwards made.† (Map exhibited.) It does not, as you will see, pretend to much; it is only a rough outline; but it is nevertheless the map used until this day by the Danish ships engaged in the Greenland trade.

In the years 1848-51, Dr. Rink (who has recently been made Director of the Greenland trade at Copenhagen) was sent out to the northern districts, and in 1852 produced the map which accompanied his book, '*Grönland geographisk og statistisk beskrevet.*' Dr. Rink executed a rough triangulation of a few miles in the neighbourhood of the settlements of Godhavn and Umenak, and his small special maps of these localities (which were made exclusively from his own work) I have found very fairly accurate. In his general map, however, besides embodying his own observations, he drew freely from Graah's, and also inserted a good deal from reports. A num-

* *Det gamle Grönlands nye Perustration, etc.*, af Hans Egede, Kjöbenhavn, 1741.

† Graah also published a work entitled *Den vestlige Kyst af Grönland*, Kjöbenhavn, 1825.

ber of altitudes are introduced; but these, I learn from Dr. Rink himself, are only eye-estimates, unless they are specified as having been obtained by barometric means, and I have found they are almost always greatly under-estimated.

We now come again to the English Admiralty Chart, sheet 1, which is the map used by our whalers. In this Dr. Rink's map has been copied outright. Even his altitudes, which on his own map are given in Danish feet, are transferred exactly to the English chart, our authorities apparently being unaware that the English foot is not equal to the Danish one. The details, too, are so much reduced, that the coast-line looks, as I have already said, as if it had been delineated with great minuteness, instead of looking, as it should do, like unexplored land.

There are therefore three maps in existence of North Greenland. The first (Graah's) is to be relied upon to a certain extent; the second (Rink's) is not always equally valuable, because it is not possible to separate in it that which is founded upon observation from that which is merely conjectural; whilst the third, notwithstanding its pretensions, is the least useful and reliable of all.—(*To be continued.*)

EXCURSIONS FROM COURMAYEUR, IN THE RANGE OF MONT BLANC. By T. S. KENNEDY. Read before the Alpine Club, December 16, 1872.

ON Saturday, June 29, Johann Fischer and I walked from Courmayeur to the Miage glacier, to see if we could find any route up Mont Blanc from the lower part of that glacier. The best point of view for this purpose would have been one of the Trélatête Aiguilles, but bad weather had prevented our going thither from the Trélatête pavilion, as well as from seeing anything during a walk to the top of the Glacier de la Frasse.

After spending the day in climbing past the Aiguille Grise, examining the Glacier du Dôme and frightening numerous chamois, we returned to Courmayeur and telegraphed to Val Tournanche for J. A. Carrel. Carrel arrived on Sunday evening; we engaged Julien Grange as a porter, and set out again on Monday up the Miage glacier.

When opposite to the ice-fall of its most southern tributary (called by Mr. Reilly the Glacier du Mont Blanc, but without a name in the French Ordnance Map) and almost exactly between the summits of Mont Blanc and of the Trélatête Aiguilles, we turned to the right hand and ascended the glacier

diagonally towards its northern bank. In about an hour we came to the rocks at the side and went straight up, spreading out our party to look for a convenient bivouac.

This was soon found, at a height of a few hundred feet above the ice, at the base of an upright rock, with water conveniently near, and at a distance of $4\frac{1}{2}$ easy hours from Courmayeur. We could not find any cave or overhanging rock for shelter. After a short rest Fischer went on to explore, and the rest of us built a small shelter wall and arranged sods of turf to lie on. Fischer came back after sunset with the news that he had gone as far as the upper basin of the glacier and had seen no reason why a greater height should not be attained.

Next morning we gave Grange a bottle of wine to comfort him on his way back with the luggage, fixed on our rope, and started at 3. Carrel led, and was so eager that he went very fast—too fast for my taste. We came to the snow on a small patch of glacier by 4 o'clock. The snow was soft and troublesome, and we waded knee-deep for an hour. Inclining slightly to the right, we got on harder névé lying at a high angle, and about 6 arrived on the small plateau attained by Fischer the previous evening.

Here the main mass of the mountain came into view. Before and below us lay the upper basin of the Glacier du Mont Blanc, perhaps a quarter of a mile across, sloping gently to the right to the summit of the ice-fall by which it plunges to the Miage glacier. On the left hand this basin is bounded by low broken rocks, which rise into a rugged aiguille close above where we were standing. On the opposite side of the basin rises the immense slope of Mont Broglia, almost bare of snow away to the right, but whitening as it sweeps round to the point opposite to us, and crowned with a line of séracs glittering against blue sky.

Now it had been our intention to ascend the rocky part of Mont Broglia, so as to gain its ridge above a notch or break, which is well seen from Mont Saxe and from many other points near Courmayeur, and to complete the ascent by that ridge. From our standpoint we saw at once that there would be little difficulty in doing this. But it was also clear that this course would be a roundabout one, and we decided to make for the slopes directly opposite, and to get past the séracs by keeping slightly to the left, where they seemed to run out. We could not see the upper part of the mountain, but, as it happened, a better line could hardly have been pointed for the Calotte.

We dropped down a hundred feet to the glacier basin, crossed it and its *schrund*, and at once commenced the ascent of steep

and rotten crags. We climbed up gullies and over little slopes and ridges, sometimes stopping to throw down masses of disintegrated and unsafe rock. About half the way had to be won with the axe, small frozen-in stones served as foothold for the remainder. Fischer led with much sagacity, and we sat down at intervals to measure progress by the appearance of the Trélatête Aiguilles. Gradually we found ourselves on a level with the séracs, though our course entirely avoided going through them, and we could see that they were merely small accumulations of névé on the brow of the descent. It would not be safe to mount directly beneath these, for the upper slopes are too steep to allow of much glacier clinging to them. We were nearing the head of a snowy spur on our left, and to surmount it was not easy, for its last 50 feet looked formidably steep. Fischer made us stand on the last jutting stones, while he cut a zigzag passage through the soft snow. We followed for a short distance to give him rope enough, and he pulled himself cleverly over the top. Then our passage was easy, and we walked up to some rocks and sat down to lunch. Now we could see something. Over the top of the Trélatête Aiguilles lay a fine distant peak—probably the Dauphiné Écrins. Between ourselves and Mont Broglia was a smooth, steep snow-slope, verging gradually into a large and exposed plateau supported by Mont Broglia and Mont Péteret. To the left and much below us lay the Dôme du Goûté, its ridge sweeping up grandly until we lost it behind some big rocks. Above us these rocks extended, concealing the head of Mont Blanc, and forming the western side of the Calotte. We saw that our ascent was secured, even if compelled to go round by the Bosses du Dromadaire. The wind had lulled, and we took a long and most enjoyable survey.

Carrel went on again, a large snow-wreath giving us easy access to the rocks. These were much frozen, and the axe was constantly necessary. I had a good opportunity of seeing Carrel's fine climbing, in which, however, he could not surpass Fischer. The rocks closed round us, became steeper and more icy, and we could see less and less of what was above us. At last, about 1 o'clock, we stepped on some soft snow and found ourselves on the ridge. Turning to the right hand, Fischer surmounted a small snow-mound with a crevasse at its base, and we were on the top.

A cold wind was blowing, mists were coming fast over the Dôme du Goûté and filling the hollows below, and we did not stay long. My men were unacquainted with the ground, and I had undertaken to find the way down. It was a rash pro-

mise. By the time we had run down the Calotte, mist and driving snow obscured everything. I made for the slope between the two Rochers Rouges, by which, seven years before, my ascent had been effected. A break in the mist showed us a steep slope with big crevasses, and Fischer declined to take that way.* We circled round the head of the lower Rochers Rouges in deep snow and much perplexity, and ascended again to the base of the Calotte, for I was quite unacquainted with the position of the Mur de la Côte. Then I felt how big Mont Blanc is and how unadvisable to trifle with him in bad weather. I proposed two alternatives to Fischer—to re-ascend half way up the Calotte and then to slide down quietly by the Ancien Passage; or to go back over it, and to descend by the Bosses du Dromadaire and the Dôme. But he promptly declined anything involving more ascent. We again went round the head of the Rochers Rouges, to try and find a passage down the rocks. In doing this we got to the Italian side, found out our error, and rushed tumultuously down the Mur de la Côte and the Corridor, until we were brought up by Fischer's broad back and the upper lip of a big schrund. Luckily he had caught a glimpse of it through the fog. It took us much time and trouble to pass this obstacle; then we got down on the Grand Plateau, passed an avalanche which had fallen from the Calotte, and became entangled in the broken glacier below. For half an hour we sat in the snow at the edge of a crevasse, and then a partial lightening of the mist gave a sufficient glimpse of things for us to move forward a few hundred yards. About 6 P.M. it got so thick that we sat down again in a very discontented state of mind, expecting to stay there all night. At last it occurred to me that we must be sufficiently near the Grands Mulets for the voice to be heard, and, to our delight, a shout answered ours with directions how to go. Then the mist lifted up, and at 7 we gained the Mulets, and found a party of gentlemen preparing to ascend Mont Blanc the next day. After a short halt we set off again, and arrived at Chamouni at 9:45.

Respecting this way of ascending Mont Blanc, I may say that there is no reason why, if the Courmayeur guides will build a hut at or near our bivouacking place, it should not be commonly used by travellers who have had some little previous experience. Of course the mountain is steep. A straight line drawn from the hut on the Aiguille du Goûté to the top would

* It seems that this short cut cannot now be used, as the ice has become more difficult than formerly.

show an angle of about $15\frac{1}{2}^{\circ}$, from the Grands Mulets about 23° , whilst from the side of the Miage glacier it would be about $36\frac{1}{2}^{\circ}$. Still there is no place that requires anything more in a traveller than steadiness. Nor is there any fear of avalanches if the proper route be taken, and that route is tolerably obvious. On the other hand, the mountain is very exposed to northern and easterly winds; there is not a particle of shelter on it; and it is too steep to allow a party of men to run back quickly, as they may do on the Chamouni side.

It is short compared with the long snow journey viâ the Aiguille du Midi, and easy compared with Messrs. Moore and Walker's route by the Brenva glacier, and it seems to me to be the natural way for the Courmayeur people to ascend their mountain. Had we not lingered on the way up, we might have been on the top two hours earlier.

Leaving Carrel to take charge of some friends at Chamouni, we returned by the Col du Géant to Courmayeur; ascending on the way to the base of the Dent du Géant. We found a small cairn there, erected the previous year by Mr. Whitwell and his guides the Laueners. From the base of the final tower, which is easy of access, the walls go up quite straight, and I think one might as well try to climb up the outside of a bottle as to ascend this tower. In fact, one cannot ascend even 50 feet. If it is to be climbed at all, the attempt must be made on the side facing towards the Aiguille du Plan.

A few days afterwards my friend Mr. J. A. G. Marshall joined me in the excursion up to the Aiguille de L'échaud—a walk which originated in a suggestion of Mr. Reilly's. This point does not seem to have been previously climbed, on account, no doubt, of its comparative lowness. Fischer was our guide, and we engaged a Courmayeur man of repute to help. Leaving Courmayeur on July 14th, about 4 o'clock (having waited an hour for our local guide), we walked up Val Ferret as far as the châteaux of Tréboutzie. Thence we turned to the left up a wilderness of stones, which come down from the flanks of the Grandes Jorasses. After an hour of these we came to the base of some small rocks which have been rubbed by the glacier when longer than it is at present. They were sufficiently steep to require care in climbing. Above came grass slopes, tenanted by a few sheep—which must, one would think, have been pulled up by a rope—and then we entered upon the ice.

A big rock divides this, the easterly, part of the glacier into two portions, of which the southern one comes from Mont

Gruetta, and the northern from the Aiguille de L'échaud and Petites Jorasses. All this cannot be seen from below, but the map had decided us to take the northern side, when our Courmayeur man told us that he had previously examined it, and that it would not be easily climbed. Consequently we bowed to his knowledge, and went the wrong way. Keeping at first to the left, to avoid a break in the glacier, down which séracs tumble, we came under the shadow of an unpleasant-looking ice-cliff, with some avalanche débris lying about its base. Fischer went on steadily, with remarks about trusting to his own judgment another time, and we presently waded up a curtain of deep snow, and stepped out of a small mist on to the ridge connecting Mont Gruetta with the aiguille of which we were in search. A couple of minor points rose out of the ridge, obstructing our road to the left, and we turned to pass over them.

This interesting moment was chosen by our Courmayeur friend to lie down on his stomach in the snow, and to announce that he meant to stay there. Mr. Marshall, who was making his first acquaintance with the Alpine guides, appeared somewhat astonished at this proceeding; but he took away the wine-bottle and followed us up the first point, leaving the unhappy man to his fate. After waiting a quarter of an hour the thought of being abandoned without the wine-bottle revived him sufficiently to get up and follow us, and to tie himself to the tail of our rope. It was the old story; the cause of all this was not so much the quantity of wine he had drunk the previous evening as the mixture of beer and *schnaps* which he had been so imprudent as to make.

One hour's climb sufficed to descend the little dip in the ridge, to ascend the rocks on the opposite side, and then to follow a most graceful snowy ridge to our desired aiguille. We got there at mid-day, having lost an hour by taking the wrong arm of the glacier.

The point of view, though low, is particularly fine. It lies in the heart of the mountains, and at the head of three distinct glaciers, all of which can be seen by merely turning the head. The views of the Grandes Jorasses, Aiguilles Verte and Triolet and Mont Dolent, were splendid, and we looked down upon the Petites Jorasses. After staying an hour to enjoy the place and to build a small cairn, we went down, turning almost immediately to the right hand from the ridge. This led us to some rocks at the head of the northerly arm of the glacier. There is no difficulty in descending these, and we found an easy way over the crevasse at their base. Then Fischer

scented out the way through the glacier with much skill, and we rounded the big rock to the place where we had gone wrong in the morning. After a little climbing in the rocks below, when Mr. Marshall was obliged to go last, so as let down our local guide by the rope, we returned to Courmayeur by 7 o'clock.

This is a pleasant little expedition for any one not inclined for the laborious ascent of the Grandes Jorasses, and it might be varied by ascending the nearer and lower part of the ridge called the Petites Jorasses.

A WOLF HUNT IN THE MARITIME ALPS. By the Rev. W. H. HAWKER. Read before the Alpine Club on May 7, 1872.

WHEN, at ten o'clock on the bright autumn morning of September 10, 1869, I stood on the top of Monte Viso, after the first fond gaze had naturally been cast at those old friends of the great Alps which at any distance, near or far, seem equally enchanting, and whose familiar forms required neither compass or chart to identify them, and after the less known peaks of Dauphiné, looking like a storm-tossed petrified sea, had claimed somewhat more care in order to make them out, I turned my face southwards with a thrill of joy and looked down with some feeling of pride, though none of disdain, upon the rugged but clearly-marked chain of the Maritime Alps. Of pride, though not disdain, for I had, during three seasons spent at Mentone, and varying in duration from the beginning of October to the end of June, been constantly exploring their recesses and scaling their crags, with the ever-increasing hope, whenever the mighty pinnacle on which I was now standing burst upon the view—as many and many a time it did—that some day I might complete my exploits in this district by achieving in summer what the winter snows forbade—the ascent of this noble mountain.

This, it is true, is rather beginning at the wrong end; but it is necessary, in order that I may give, in as few words as I can, some idea of the geography of the district to which I wish to introduce my readers.

On the ridge which extends to the S.W. from Monte Viso, there stands just beyond the Col de la Maddalena a mountain of pyramidal form named L'Enchastraye, or the Cima dei Quattro Vescovadi. This peak is remarkable, not for its height [9,747'], since it is surpassed by several peaks further

to the south, but on account of the geographical importance which has been attached to it from a remote period. For the range at this point bifurcates, and the mountain forms the watershed of three districts, its slopes directing the rainfall to the Rhone, the Po, and the Var. Of the two ridges formed by this bifurcation, the western soon loses itself in Provence; the other, on the contrary, trends to the E., and constitutes the main range of the Maritime Alps, a region possessing several peaks and masses of true Alpine character; some of them over 10,000 ft. in height, and throwing out a number of great spurs which radiate to the south, and retaining a considerable altitude until they plunge abruptly into the Mediterranean, afford that welcome shelter which causes the winters at such places as Mentone to be so renowned for their exceptional mildness.

But the work of this ridge is not yet done; for continuing still to the E., beyond the Col di Tenda, it gradually loses its Alpine character, and, under the name of the Apennines, becomes the backbone of Italy.

With this portion of it, however, we have nothing to do. Our business is with the Maritime Alps—a district full of interest, whether we regard its picturesqueness and the extremes of contrast often combined in its scenery; or whether we explore it as naturalists; or whether we consider it as a vast and strong barrier placed by nature between France and Italy for the political separation of the two nations, and the theatre of great historical events, the waves of war having fumed and fretted, and dashed against its natural ramparts, almost as fiercely as its cliffs have been attacked by the neighbouring sea.

I have dipped a little into all these matters in my excursions through this country; but it will be unnecessary to enlarge upon some of them, as they have been already treated of by others.

The 'Wolf Hunt' has been selected as the subject of the present paper, because that expedition took me for the first time into the interior of this district; but I propose to supply, at a future time, another paper or two on some of the other expeditions I have made in these Alps, accompanied by a few details on the important campaigns which have taken place in them.

The great quantity of snow which fell on the whole range of the Maritime Alps during the early part of the first winter I spent at Mentone, drove the wolves in considerable numbers from the higher and more remote parts down to the neighbourhood of the towns and villages in the valleys. Thus stories were soon spread of how wolves were seen almost every night

in the precincts of Sospello and Piandola; how they nightly passed through Fontan; all these places being on the high road from Nice to Turin by the Col di Tenda; and how they snapped up every dog or cat that chanced to be abroad.

In a few days the reports became more serious. It was said that a pack of wolves had run alongside of the courier over the Col di Tenda, showing an inclination to snap at the mules' heads, after the manner of the picture in the old editions of 'Robinson Crusoe.' Still the snow remained on the high mountains, and the chamois on the rocks, and all else—badgers marmots, and even foxes—underground. The wolves must be hard put to it at such times. I have seen when they have not only eaten any berries they could find, but even gnawed off pieces of turf and swallowed them to assuage the pangs of hunger. It is easy to believe the general report that a wolf, at such times, is an exceedingly unpleasant and dangerous animal to come across.

No wonder, then, that starved out of their natural hunting-grounds, they followed the flocks into the valleys, where they kept the shepherds and their dogs constantly on the alert, carrying off single sheep—now here, now there—and on one occasion joining together to fall on a large flock, and killing no less than seventy-six sheep before they could be driven off. But the wolves did not always wait till nightfall; for one entered the town of Sospello in broad daylight, and being detected by the commotion amongst the dogs of the place, who fled from him howling in all directions, a hue and cry was raised, and the people being braver than their dogs, the animal was mobbed into a tank and got drowned. Its skin was exhibited at Mentone a few days after, and created much excitement; and this was greatly augmented when a picnic party came suddenly upon the track of a wolf upon the snow near the top of the Berceau [3,772], a mountain close to the town. One gentleman of the party implored the ladies not to be alarmed, but advised great caution, as he felt sure the track was that of a bear and quite fresh, and probably the animal was close by. This introduced an element of sensation rarely experienced in a Mentone picnic, and one which I was loth to disturb by stating that the track was really that of a wolf, and not fresh, as I had seen it on the mountain some days before. A wolf, however, does make an enormous track in the snow, nearly as big as that of a lynx, and when enlarged by melting, it really looks out of all proportion to the size of the animal.

Then came a very serious and sad tale of how a poor soldier,

returning to his mountain home on furlough, and getting benighted, was attacked when quite close to his house by a number of wolves. He drew his sword-bayonet, and defended himself with such energy as to kill two of them, but the others mastered him; and when his wife came out of the house the next morning, the first thing she saw was his mangled remains and the two dead wolves lying by him, also partly eaten by the rest of the pack!

Soon after this I was told by a young French friend, M. de Lassence, that in consequence of the many complaints made on the subject, the government had ordered an official wolf hunt. Having obtained permission to invite a friend or two, he asked me if I would like to join it. It is scarcely necessary to say that I accepted with alacrity; and my brother-in-law, Mr. Edmund Probyn, being included in the invitation, we made, with another young Frenchman, a party of four.

We started on the afternoon of February 25, and the road from Mentone to Sospello not being at that time finished, drove as far as we could; and then shouldering our packs, and with a man to carry the guns, made our way to Sospello, which was to be the rendezvous. Through some mistake we went to the wrong inn—that of the Poste—where the accommodation was very indifferent, it being chiefly frequented by charretiers. The landlady of the other, the ‘Hôtel de Marengo,’ on the many subsequent occasions that I have been there, hardly ever omitted to groan over and describe the splendid dinner she had prepared for us all, having heard of the intended expedition, and taking it for granted we should go to her house.

The main party of officials were to arrive in the middle of the night by the courier from Nice, and in the meantime the Gardes Forestiers and Champêtres, who had assembled in readiness, told us that the battue next day was to be from Sospello to Giandola, and that it was believed there were at least fifteen wolves in the neighbourhood. This led to an inspection of the guns. De Lassence had his own double-barrel; his friend, a new breech-loader, ‘fusil à mécanique,’ as he called it; Probyn had a capital weapon, with one barrel rifled and the other smooth; while I, not really expecting much sport, though plenty of walking, had armed myself with the lightest gun I could find—an old makeshift of a double—the sort of thing a gardener would shoot bullfinches off gooseberry-bushes with. Fearing the very thin barrel might burst if the balls were at all tight, I selected some bullets which

were very loose, and had to be wrapped round and round a great many times with patch to make them stay down at all.

We did not, on the whole, spend a very lively evening, as the place was cold, damp, and draughty. A feeble effort was made to get up a rubber, and the 'choses de whist' were called for; but an imperfect pack of fifty cards was all the house possessed, so the idea was given up.

Being told that the 'assembly' was to take place by beat of drum at 3 A.M., we turned in pretty early, and, in the words of the old song,

'Determined all things should be right,
We primed and loaded over-night,
As full four hours before 'twas light
We were to start a-shooting.'

On turning out cold and sleepy into the pitch-dark road next morning, one became by degrees aware that one formed a part of a very mixed multitude, the whole population seeming to have come to join in the hunt.

Afterwards, as day began to dawn and we were able to discern our company, the 'sportsmen,' who were numerous, presented that wonderful variety of costume and gear which seems to foreigners almost to constitute the chief attraction of *la chasse*. Curious indeed was the workmanship of the gaiters, boots, game-bags, straps, gun-slings, and in short of everything about them.

The proceedings of that day do not supply much to record. Following the direction of the Turin road, over the Col de Brouis, the guns were thrown out as we went along, in a sort of skirmishing order, with instructions to command the principal troughs and gullies leading from the valley to the heights of Mangiato on our left. The beaters in the meanwhile worked the lower ground, accompanied by several shepherds with their wolf-dogs. When we got to the top of the Col de Brouis, Probyn and I were detached to the right to the top of the Cima del Bosco—a commanding point, from which we got a good general view of the whole proceedings, which were very prettily managed. Soon after getting there one of the dogs got for some time on the scent of a wolf, which led him in our direction, and his deep rich baying raised our hopes that we should have some sport on the ridge. The wolf, however, had either been before us, or had slipped through a weak point in our line, for we never viewed him. The only wild animal I saw during the day was a single specimen of a sand-grouse.

The mountain-sides were exceedingly sterile, and the largest

plants being lavender and *Artemisa camphorata*, there was, except in the lower parts of the valley, nothing in the way of covert sufficient to hold a wolf.

Returning to the col, we lunched at a cabaret, and then quitting the road, beat both sides of the valley down to Breglio, and ended the day by walking on to Giandola, where we slept. Just outside a little chapel on the way, we were shown a great hole where a wolf had buried a sheep a few nights before, and so cleverly was it done that it was never found out till the wolf dug it up again for his supper. I was shown a similar hole the next day, and in that case the wolf must have carried the sheep on his back up something like 2,000 feet of very steep ground from the place where he had killed it.

Over the fire at Giandola, after dinner, sporting stories were, as is usual on such occasions, freely related. Amongst others, the receiver of taxes of the district called our attention to his 'chien couchant,' or pointer, and told us how it had accompanied him in a stroll on the Nice road a few days before, while he smoked his after-dinner cigar, when suddenly a wolf pounced upon it. The dog, with a shriek, jumped over the parapet, and dog and wolf rolled together head over heels down the slope. The wolf did not renew the attack, and the dog escaped with several cuts and scratches caused by the rocks or the teeth of the wolf. 'Since then,' added M. le Percepteur, quietly, 'I have smoked my after-dinner cigar at home!'

Less fortunate was the brother of this dog, which belonged to another resident also present, and which, as his master was returning home one evening, was seized by two wolves. After a struggle, during which the poor animal endeavoured to shelter itself between its master's legs, one of them caught it by the head and the other by a hind leg, and they set to tugging away till they positively (so the man said) tore the poor shrieking dog in two.

The situation, one can well imagine, must have been a somewhat unpleasant one for the owner, armed, as he was, with only a light cane; but he described the event with such arched eyebrows, and so much excited gesticulation, as to send us into fits of laughter. 'Mais, messieurs,' he urged, 'je vous assure que c'était effrayant,' and certainly the expression of horror had hardly yet quitted his features.

These stories at last drew out our chief, M. de la Vevre, Inspector of the Forests of the Department—who had been in a crack cavalry regiment, and then in the Chasseurs d'Afrique, before obtaining his present appointment—and he told us some

very pleasant little incidents about lion-hunting and Arab warfare. As, however, we had had a longish day, with a prospect of a still longer one on the morrow—when we were to get as high up as the snow would permit us—the tales were soon cut short, and all hands turned in.

We were up again by 3 A.M., and over our hot coffee the chief told us that he had organised a different mode of proceeding from yesterday. There was to be no more of the beating of drums and general hubbub which had rendered yesterday's battue a mere fiasco.

Wolves are not exactly the kind of animals to wait and have salt put on their tails; they are of a suspicious nature, and apt to sheer off on being disturbed by any unusual commotion. Therefore to-day we were not to be accompanied by any noisy volunteers, but to go to work as quietly as possible, a few shepherds and their dogs acting as beaters.

There was a great examination of guns and a reckless looking into powder-horns in the tallow candle-light—for I am thankful to say we were far from the region of 'bougies'—and a general loading of weapons; while the wag of the party remarked, as a fresh supply of coffee was brought in, 'La première chose à charger c'est l'estomac.' However, at last we started off, some two or three hours before light; and, influenced by the warning we received as to silence, all went well for some time; but one might as well expect a bird-clapper to be still on a windy day as these chattering Italians or French to keep silent for more than a few minutes at a time. The chief stopped the line several times, and implored them not to make such a noise, but at last had to give it up in despair.

Our route lay up the skirts of a ridge that forms part of the mountain called Aution [about 6,000], and constitutes the south side of the valley of Cairos. After ascending for some time, we came to where a shepherd clothed in sheepskins, and armed with a long gun, was literally 'keeping watch over his flock by night.' It was the highest point at which any flock was camped; and the poor man told us he had been kept up the whole night by the wolves, who had been very daring; and that he had driven off one of them with the help of his dog and throwing stones at it—for he could not see to fire in the dark—only a few minutes before our arrival. The Inspector asked him to come with us, but he said he dared not leave his flock with only his young son, for fear the wolves might come back after he was gone; for there was still a long time to daylight, and he said the wolves must be very hungry, they had been howling so; but he would follow us later.

This news cheered us up considerably, and we plodded on steadily upward, with renewed hope at each step of gaining the ridge before the wolves retired into the forest beyond it for the day. Now, if ever, there was need for silence; but our gesticulating friend of last night—the one whose dog had been killed almost between his legs, and who had been bragging a good deal in the ‘let me get at them’ style of what he would do if he could only get a chance, and whose voice was a basso profundo of the loudest order—now awoke the echoes with his talking. The fact is, I believe, he had not yet got over his adventure, and was getting into a thorough fright at the prospect of another close acquaintance with the wolves. Anyhow, he suggested our going in twos instead of singly on the ridge, and himself took care to keep in the rear the greater part of the day.

A detachment was here sent off to work the valley to its head, and, on the beaters joining them from below, to beat up to the ridge where we were to be posted.

On arriving at length at the ridge, just as day was beginning to break, Probyn and I pushed on to the furthest point, where we thought—and rightly, as the event proved—that we should get the best chance.

We had got very hot in climbing quickly up the steep path, but now we were met by a bitterly cold north wind, which froze us to the marrow. We spread ourselves out singly along the ridge, which was very steep-sided, and commanded a view right down to the valley. I was lying on a rock, with my face just peeping over the ridge, keeping a sharp look-out through a binocular glass, when faint shouts reached me of ‘Le loup! le loup! il monte, le loup!’ then some straggling shots, and immediately I saw through the glass a wolf steadily coming up in our direction. I shouted to Probyn, who was next me, and he passed the word to the rest who were further down. Everybody down below who saw the beast fired at him, although none of them were in shot, except the curé of Giandola, who was half way up the mountain, and who told us that it had been the great desire of his life to kill a wolf; and although he had often been out he had never even had a shot, and now the wolf had come quite close to him, and he had got entangled in some way or other, and could not get his gun off until the animal was out of reach. All this time I was watching the animal with my glass with intense interest, for though he travelled four times as quick as a man, he took a long while to come up. He stopped several times for a moment, as I have frequently seen chamois do, to scan the sky-line and select his

route ; but on the whole was coming up as straight as possible between Probyn and me. So I put up my glass, kept more out of sight than ever, and prepared for action.

Being more warmly clad than Probyn, I had lent him my black waterproof, and the sun, which had just risen, shining upon it, made him a conspicuous object on the snow ; and the wolf, catching sight of him, while still some 200 yards below us, turned off towards a couloir or gully about 100 yards beyond me. Probyn gave him a shot as he turned, but without effect, while I instantly ran with my utmost speed to that point, and stooping behind a rock tried to hold my breath, when I heard the wolf panting and puffing within five yards of me. I jumped up at once, but the nature of the ground prevented my seeing him until he had crossed the couloir ; it was impossible for him to ascend it, as it was a sheet of ice. I now saw him about twelve yards off, with his left flank exposed to me, and obliged to go slowly over the ice. I had kept on reminding myself, ever since I saw him, that from the nature of my weapon I must aim high ; accordingly I pointed about six inches over his back and pulled trigger, watching intently to see the result. Alas ! I saw it only too plainly in a fragment of ice and rock knocked off by the bullet just underneath him.

I am bound to say that the animal now behaved in a manner perfectly worthy of a wild beast, for he turned and snarled at me ; and whereas before he had appeared to be all head, now he looked all teeth, and I have not the slightest doubt that but for the ice couloir between us he would have made an ugly rush at me, and then gone on again. But the wolf that hesitates, even for the purposes of revenge, is lost. That moment which he devoted to looking ugly at me, I occupied in aiming with my remaining barrel at some object far above him. Again I fired away, and this time my friend tumbled head over heels, and I raised a whoop which I am sure was never equalled by the basso profundo down below. But I was a little premature. Wolves die very hard, and this individual formed no exception ; for after biting the dust he got up again, and scrambled round the edge of the couloir out of my sight. Climbing up to get round the top of the couloir, I was soon joined by Probyn, De Lassence, and his friend, and we had a grand race over the snow to try and head him back from crossing the ridge ; but he had got over it, so we waited for the rest and the dogs to come up.

The owner of the 'fusil à mécanique,' who had strained every nerve to try and overtake the wolf, here found that his new gun had been unloaded all the time. He had been so

constantly exhibiting his weapon, and showing the way of loading and unloading it, that when the time of action arrived he quite forgot to see whether it was charged or not.

This, too, appeared an appropriate time for eating; so, wolf-like, we tore asunder a roast lamb we had been supplied with at Giandola, and which was so tiny that it was not too much for the four of us.

On the rest of the party coming up, an examination was made of the place where the wolf had gone over. The north side of the ridge consisted of steep slopes and crags, clothed with pine forest and covered several feet with fine powdery frozen snow. The wolf had floundered down this, leaving tracks of blood. The shepherd we had passed in the morning, judging from the conduct of his dog—which bristled up from neck to tail, and barked furiously—that the wolf was close by, tried to get down, but instantly disappeared under the snow, and left no signs of what had become of him till we saw the top of his long gun, which was slung at his back, sticking out of the snow ever so far below.

No time was to be lost, so we made a line and hauled him out by his gun, half suffocated. A number of gensdarmes had accompanied us on each day, some of them *en grande tenue*, with carbines, cocked-hats, and jack-boots; one of them, trying to get down a little further, slipped in the same way under the snow, and had to be pulled out by his spurs! We soon found that it was perfectly impracticable to descend into the Val Cairos, which was a great disappointment to us all, not only because we thereby failed to bag our game, but also because we found that a number of other wolves had crossed the ridge, probably just before we got to it, and, no doubt, alarmed by the noise of our talkative friend, and there would have been a very good chance of finding some of them in the forest. Probyn and I proposed to go round, but were told it would take six hours to get to the spot. So all that could now be done was to make a fresh beat along another ridge to the eastward, which at length took us into the main road opposite the town of Sarge, and we walked through the magnificent gorge of the same name back to Giandola, where we slept.

An old chasseur had been out with us, a retired captain of carabinière, named Lautrura, a summary of whose adventures I must reserve for a future paper. He told me that he had killed in this district fifty chamois, but only five wolves in all his life, and I was considered very fortunate to have happened to get in the right place for this one. The shepherds and Gardes Forestiers said that, provided the other wolves did not

eat him, there would be no doubt of finding my animal at the foot of the slope. As, however, we wished to get back to Mentone for Sunday, we could not go ourselves; but I told the people that if they could get him they might have the government reward, which I think is forty francs, and that I would give them something besides for the skin.

The next day Probyn and I walked down the Roza to Ventimiglia. On passing Breglio the man who carried our things showed us a spot where a shocking thing had happened. A wolf went, in broad daylight, into the town, and, taking a young child, tossed it over its back and carried it up the mountain. It had to pass the post of a douanier, and he ran alongside of the wolf and shot it through the heart with his carbine. In the act of dying the animal dropped the child, who was unhurt, and seizing the douanier by the knee-cap, died with his teeth so clenched that the jaws had to be forced asunder with an iron bar. The wolf must have been mad, for the poor man died of hydrophobia soon after.

At Ventimiglia we relieved the man of our knapsacks, and walked briskly home to Mentone. Not long after I got a letter from the Garde Forestier of Fontan, to say that the wolf had been found at the bottom of the slope. My bullet had gone right through him, but being just below his heart he had retained enough strength to crawl over the ridge and escape us for the moment. Fortunately the other wolves had not found him, and his skin forms a welcome addition to the various trophies and objects of natural history that grace the walls of my study.

A SWISS JAHRFEST.

THE annual fête of the Swiss Alpine Club was last year announced to take place at Lausanne, on August 24, 25, and 26. Although, at a previous meeting of our Club, a general invitation to its members had been received from the *Comité central*, the disastrous weather of last summer disorganised all pre-arranged plans, and the English Alpine Club was, in the end, only represented by three unworthy members.

Having, in company with our excellent friend, M. Loppé, left Chamouni on the evening of the 23rd, we arrived on the next day by train at Lausanne. Packed in a voiture, we crawled up the steep leading to the upper town, and presented ourselves at the Jardin de l'Arc, where we were most courteously received by M. Berneck and the committee of the fête, who, being aware of our intended arrival, had secured rooms for us at the 'Faucon;' otherwise we should have fared but badly. Having dined, we began the first event on our pro-

gramme, 'Réunion familière des Clubistes, et collation au Jardin de l'Arc.'

The Jardin de l'Arc forms a terrace on the crest of the hill, high above the lake. Nothing could exceed its gay and festive appearance. The roof of interlaced plane-trees above our heads was hung with festoons of Chinese lanterns, and long tables sparkled with the genial wines of the country. A stream of newly arrived 'Clubistes' constantly poured in, and warm greetings were exchanged on all sides. We were soon recognised as members of the English Alpine Club. Our insular reserve thawed before the warmth of the welcome we received, and so many of our entertainers insisted on pledging us in the little white wines of Lausanne, that we began to fear an increase in the brilliancy of the fête, as far as our vision was concerned, of 'ten thousand additional lamps!' Songs were sung, blue lights and red fire from time to time threw pantomimic gleams on the crowd of revellers, and occasional flights of rockets lit up for a moment the mass of undistinguishable shadow which lay between us and the 'shining levels of the lake.' It was late before we sought our hotel to prepare for the morrow.

According to the programme of the fête, the hours from 8 till 11 next morning should have been devoted to the antiquities and public institutions of Lausanne, all of which were thrown open on the occasion; but our first appearance in public took place at the theatre, where the annual general meeting was held. The entrance-hall was decorated in a style at once chaste and elegant. A perfect forest of young pine-trees was presented to the eye, through the foliage of which chamois gazed upon one from all sides, while the bouquetin, the marmot, and even the ferocious lammergeyer of the Alps, lent animation to the scene. The president of the fête, M. Rambert, opened the proceedings with an oration of considerable length, after which we withdrew and took no further part in the proceedings until we were summoned to the grand banquet, which was to take place at 1 o'clock. Seats had been reserved for us at the presidential table; and although our modest and retiring natures shrunk from the honour, M. Hoffman-Burkhardt, the president of the club, himself most kindly sought us out and insisted on its acceptance. One of our party, perhaps in consequence of his diminutive size, succeeded in eluding observation, and remained in well-merited obscurity at the end of a distant table, but the other distinguished strangers found themselves in the best position for hearing and seeing the proceedings. Close to the President's table was a sort of rustic pulpit, composed of moss and pine branches, furnished with a silver goblet of considerable size, for the official drinking of toasts. Into this tribune orator after orator mounted, and to the utmost stretch of his propulsive lung-power conveyed his eloquence to the ends of the immense suite of rooms in which the banquet was held.

On the excellence of the dinner and of the wines we will not enlarge. Shortly after the commencement of the banquet, a cheer announced the arrival of countless bottles, bearing on their richly ornamented labels the following inscription: 'Vin d'honneur présenté au Club

Alpin Suisse par la Ville de Lausanne.' We thought of our own ungrateful country, and blushed for very shame. At which of our banquets has the presence of civic port, or even civic turtle, testified to a graceful act of recognition on the part of our municipal authorities? Among our members we number the mayor of a cathedral town, 'given to hospitality' as episcopal towns should be: we cherish the hope, vague it may be, that when he calls the attention of his brother magnate of London to the facts we have mentioned, the chief magistrates of the richest city in the world will no longer suffer themselves to be outdone by the municipalities of a small but generous republic.

During the course of the banquet several sympathetic telegrams from distant Alpine Clubs were received with great applause, as was also a letter from our excellent secretary, the eloquent warmth of which was only equalled by the grace and purity of the French in which it was couched. But at last all was over. We had lighted our cigars, we had sipped our coffee, speeches had been succeeded by songs, and general hilarity prevailed. At 6 o'clock we all turned out and went up to the 'signal,' a justly celebrated point of view about half-an-hour's walk above the town. Here the stalwart mountaineers were welcomed by a crowd of holiday folk from Lausanne, and the festivities recommenced around the little cabaret which marks the spot. After a while, however, we withdrew from the hum of men, and smoked a quiet pipe, reclining on the soft turf and watching the sun as he packed up his last rays and finally disappeared behind the purple Jura, on his way to other climes.

But the evening was not yet over. We were bidden to the hospitalities of the principal club of Lausanne, which was thrown open to 'Clubistes' and their guests. At last the reflection that we were to start by special train at 5 next morning compelled us to tear ourselves away with a view to the 'conservation' of such 'forces' as were yet left in us.

In this we were prudent, for the morrow contained many more things than it could possibly have taken thought for itself. The official programme was sufficiently well filled:—

'Lundi, 26 Août.

'A 5 heures précises du matin.—Départ général avec un train spécial pour Vernex-Montreux. On s'acheminera par la gorge de Chaudron vers les Avants—Déjeuner—Plusieurs buts de course: Col du Soldatier et Cape du Moine; Col de Jaman; Dent de Jaman; Rochers de Naye, etc.

2 heures.—Dîner rustique à Glion offert par la section des Diablerets.

5 heures.—Descente au château de Chillon, et départ pour Ouchy avec le bateau à vapeur.'

But, besides all this, we had planned to sleep at Orsières, in order to cross to Chamouni next day by one of the lateral valleys of the Val Champey.

Our start on the morning of this eventful day was a scramble. No one was called, at least so they averred; coffee was late, and when it came, scalding hot. M. Loppé, who had throughout watched over us

with paternal care, was fain to leave his children to their fate and run for the train. One of our party, after a single gulp of coffee, which skinned his mouth, followed, and was just in time. Another arrived as the train was beginning to move; he would have been distanced had not a wagonette full of late 'Clubistes' passed him at full gallop, and when they recognised him nobly stopped and taken him on board. But the third—alas! he was 'lost to sight, though still to memory dear.'

All the way to Montreux the two remaining representatives of our Club became more and more painfully conscious of the fact that they had not breakfasted. For, certes, a mouthful of scalding coffee could count for nothing: a boiled tongue is an excellent thing for breakfast, but when the tongue in question is one's own organ of speech, 'l'appétit vient en mangeant.' We reflected, however, that we should soon be in the neighbourhood of the 'Hôtel Righi-Vaudois' at Glion, and we determined to slip away quietly and try its cuisine rather than that of Les Avants, which was, as we gathered, a long way off.

Arrived at Montreux, we passed in a long procession through the town, which was just then emerging from sleep, and plunged into the gorge of the Chaudron, one of the deep clefts scooped out by a torrent, which whirls and boils far below the narrow path and the rustic bridges which cross it at intervals.

We went on cheerfully for a couple of miles, until we realised the fact that we had crossed the last bridge, and were ascending steep meadows on the wrong side of the ravine which separated us from the haven of our hopes. This was too much. We struck. We refused to advance until we were credibly informed as to the exact distance from Les Avants. It was more than two hours. We looked in each others' faces for comfort, and found none. Not all the blandishments of M. Loppé, nor the 'petits pains' which he produced from capacious pockets, could console us. Breakfast, immediate breakfast, and that of the meatiest character, was our ultimatum; but we yielded to fate and toiled up the stony path, as men without hope. Now it happened that some time after, having stopped for the purpose of lighting our pipes, we found ourselves alone. The rest of the caravan had disappeared round a corner of the road, which wound in and out of the ravines which cut into the hill-side. We were at that moment capable of any meanness, and the same temptation occurred to us both at the same moment.

We trust we may be pardoned for this. No doubt the honour of the Alpine Club was in our hands, and it was our duty to carry it unblemished up the beetling crags of the Rocher de Naye. For a moment we quailed, as we thought, 'What will they say in England?' but then those little white wines of the country gave one the deuce's own appetite for breakfast, and in short we rushed violently down a steep forest to the torrent, which we contrived to cross, and then made the best of our way towards the 'Hôtel Righi-Vaudois.'

The path which we were now following lay at about the same level as the one we had quitted, and as we pursued our way we became aware of an individual who was evidently in pursuit of the main body,

now some three or four miles ahead of him. We levelled our glasses across the ravine, and even at that distance recognised the lost one. A great weight was lifted from our minds, for now the honour of the Alpine Club was safe. He was evidently very hot, for we saw him take off his coat and mop himself a good deal; but we knew his indomitable pluck, and besides, *he had breakfasted*, or should have done so.

We entered the fashionable salons of the 'Righi-Vaudois,' disheveled but happy, and the salmon cutlets 'à la Hollandaise' we can never, never forget. The English families who were breakfasting in sober sadness, after their manner, looked at us as if they had never seen two somewhat crumpled individuals finish a bottle of champagne straight off at eight o'clock in the morning. Perhaps they never had.

After this we turned into the lovely woods above Veyteaux, and wandered, and smoked, and dreamed lazily, until the first 'pétard' announced that the famished mountaineers were coming down 'like wolves on the fold.' We returned, and then was presented to our view the 'rustic banquet'—rustic, however, only in externals. Long tables were laid out under the shade of a terraced 'berceau' overhanging the lake. The weather was superb, but cruelly hot, and as 'Clubiste' after 'Clubiste' came down the steep pastures, their appearance bore testimony to the 'melting moments' they had experienced. We were soon seated, and the revels commenced. Although we had not earned our dinner, we contrived to do full justice to it, and when Montreux, emulating the generosity of Lausanne, sent no less than 800 bottles of 'vin d'honneur,' we again thought of our ungrateful country, and sadly murmured, 'They do these things better in Switzerland.' Many were the toasts, and eloquent the speeches. It has been said that one of our party made a speech. That is possible. It has been said that it was couched in the worst French ever inflicted on human ears. That is more than probable. But at least our sense of the welcome we had received was sincere, however badly expressed. Our party had much before them, and were compelled to leave some time before the proceedings were over. How the festive mountaineers descended processionally to Chillon, how that more speeches were made and more toasts drunk (for the municipality of Veyteaux, too, was equal to the occasion), we cannot describe, for at that time we were speeding away in a saloon carriage in the direction of St. Maurice.

We reached Orsières at midnight, and arrived at Chamouni exactly four-and-twenty hours afterwards, having in the interval crossed from the Val d'Arpetta to the Glacier de Trient, in weather which it were flattery to call malignant.

The last three days were like a dream—a dream of pleasant acquaintanceships which we hope soon to renew; of kindly hospitality which we would be glad of an opportunity to return; and lastly—must we confess it?—of 'petit vin blanc!'

D. J. A.
F. A. W.
A. A. R.

AN ASCENT OF THE PETER BOTTE MOUNTAIN, IN THE MAURITIUS.

WE have received, through the kindness of Sir Sidney Dacres, the following account by a midshipman of a bold feat of mountaineering, which may suggest to climbers several new uses of the rope.

The first authentic ascent of Peter Botte—putting aside that of the mythical hero whose name the peak bears—was made by a party of English officers in 1832, and is recorded in the 'United Service Journal' for 1833, part ii. p. 225.

'Peter Botte, from the sea, looks just like an inverted equilateral triangle, resting on the apex of an isosceles triangle. The real difficulties do not commence till you arrive at the shoulder. Then there is a frightful clamber up the neck; and, lastly, the crowning difficulty of getting on to the head. The first part of our ascent lay up a nearly dry watercourse, formed by a huge ravine between Peter Botte mountain and another; and when we were up level with the shoulder, we had to strike up the side of the ravine to our right, till we landed on its top. At this point we thought it better to put something into our stomachs to work upon. So down we sat, and began eating bread and cheese. Some of my companions smoked and drank rum; but I did neither, as I wished to reserve all my nerve for the ascent of the almost perpendicular rock that now stood bold and defiant against the clear blue sky right above our heads. The negroes whom we had hired to carry our coils of rope up so far had not arrived, so we had plenty of leisure to examine the neck on its only accessible side, and find an advantageous place for ascent. It really looked awful, and I am afraid some of us began to think of going down again; but as the negroes had now arrived with the rope, there was no excuse, so up we must go. Having taken off our boots, we began with hands and feet to creep up the very neck. It was about three feet wide in some places, and a sheer drop on one side of about 3,000 feet on the other into the ravine by which we had just come. When we had crept for about ten minutes we came to the famous Ladder Rock—so called because the last ascenders had brought a ladder up to scale it with. We, in our conceit, thought we could manage it without any mechanical help. But we were very soon undeceived. So after some consultation, back we went to the shoulder, and down the side of the ravine, until we came to some young trees. Two of these we cut down and lashed together, making a length of about twenty feet. With this weapon we returned to the rock. Luckily there was a convenient niche at the base, into which we inserted the heel of our spar; and still more luckily there was another niche on the perpendicular face of the rock, which formed a slight support for its head. Now the question was, "Who will take the rope up?" Wishing to appear very bold, I immediately volunteered; so did X.; but as I argued I was the better gymnast of the two, he gave it to me. Accordingly I tied the end of the inch rope round my waist; and trying to feel as much as possible as if I was only climbing the acacia tree, I

commenced the ascent. The fellows at the base held fast on to the heel, and took good care to pass the rope out as I wanted it. It wasn't very hard, and I very soon reached the ledge, just above where the spar left off. I drew myself up to this until my foot rested on the top of the tree; then, taking care that there was plenty of slack rope, I gave a vigorous spring, and landed on my stomach on the ledge. I soon made the rope fast, and the other fellows followed by it. After this we progressed with comparative ease for some hundred feet or so, when we came to a part where a large rock projected from the ridge as if it, too, were climbing up and had stopped. We could not climb over it, and therefore had to get round it, and regain the ridge above it. This was very horrid, as it necessitated getting down the side of the ridge, where the drop was sheer into the ravine some 1,500 feet below. This rock would have floored us, if it hadn't been for a very small root about half an inch in diameter. I am glad to say I was ahead, as I should not have liked trusting to it after four other fellows had passed it. As the last fellow passed the root became so loose as to be unsafe, but of course that didn't matter, as we should be able to descend by the rope, which all this time was dragging by my waist and uncoiling from below. At last we reached the neck. At one time I had quite a narrow escape of falling backwards and being dashed to pieces. It was the most disagreeable feeling I ever remember. Just after passing the dangerous rock, in rather a steep part, I happened to look up for a moment at the head above. There it stood, in sharp bold relief in the clear atmosphere, and just at that moment a small white cloud floated into my field of vision, towards the rock; this made it appear to me gradually toppling over towards me. My head began to swim horribly, and if I had not instantly looked down at my hands, I should have let go and fallen backwards. By the time we had all assembled under the neck, we suddenly became aware of a fact we hadn't noticed in the anxiety of climbing up—it had come on to blow rather hard from the S.E. Now the weather side of the peak was inaccessible, therefore we had to throw our small lead and line over right in the teeth of half a gale of wind. The small line, you will easily understand, was to haul over a bigger one; when, suspended by which, we hoped to swing over into the empty atmosphere, and then shin up to the top. The job of heaving the lead over was not nice, of course; the nearer you got to the edge and the more you leant backwards, the easier it was; so the one whose turn it was to heave passed a bow-line round his waist, and then leant backwards against it, while the other fellows hung on to it. For two weary hours the heaving went on, and every time the lead was hurled spitefully back in our faces by the increasing wind. To add to our discomfort, we were fast becoming enveloped in the huge dark clouds that came sweeping up from the S.E., and a heavy driving rain had set in. At one time, in our despair, we were discussing the possibility of sleeping up there under the lee of the head, and recommencing our attempt in the morning. The heroic party (consisting of two) vowed they would not move in any direction but upwards, if they had to stop there a week. The wavering party (the other three) having before

their eyes the fate of the mate of a merchant-ship, who had fallen from the neck a few months before and been dashed to pieces, were fast preparing for descent, when a loud yell from the fellows heaving the lead* announced that it had fallen the other side, taking with it the fishing-line, and sure enough there it hung far out on the weather side, being slightly driven towards us by the force of the wind. By throwing the bight of a rope round the line, we were soon able to seize the dangling object on which we founded all our hopes of final success. You may imagine how carefully we first hauled the same line over double, then four parts; and then having inserted the four ends under the strands of the rope several times, and put a seizing on over all, we began hauling it over, trembling every moment lest it should jam somewhere on the top, and even then prevent us from ever reaching the summit. Fortunately, only one very slight jam occurred, and in a few minutes more we were in possession of both ends of a rope whose bight passed completely over Peter Botte's head, some thirty feet above us. One of these ends we secured firmly round a big boulder, and taking the other firmly in our hands we, one after another, screwed up our courage; and, swinging out into the air, commenced the last performance of our ascent. The rain driving hard against us caused the rope to become very wet and slippery, and the intense cold rendered our fingers more or less numb; so altogether this last bit was about the most disagreeable part of the day's work; and when I tell you it was blowing so hard that we could not hear one another speak, but could only see mouths making frantic shapes, you will be able to form a pretty good idea of how we all felt. It seemed to me a frightfully long rope, although it was only about 30 feet, but after a few minutes' steady climbing, I was delighted to find a most convenient knot to catch hold of just at the edge of the top, and with a grab and a scramble I found myself landed on my stomach on the very highest point of Peter Botte. As we one by one gained the top, as if to reward us for our trouble, the clouds gradually cleared away, and a splendid view opened out before our exultant eyes. Away to the N.W. lay the town of Port Louis, with its fine harbour and docks looking like little pools of water glistening in the evening sun. Far out at sea we could make out the blue outlines of *Serpent* and *Gunner's Groin* Islands; whilst as far as the eye could reach inland was one vast expanse of the beautifully contrasted colours of the sugar, cotton and coffee plantations, interspersed here and there with tracts of uncultivated and wooded country. The dense masses of clouds gathering to windward warned us that all would soon again be shut out from our view; so having yelled horribly for about five minutes (it was meant for cheering), we commenced the descent. Nothing much occurred on the way down. Of course we took care to remove the rope over the head, so that no one hereafter may ascend more easily than we. It was nearly six o'clock when we arrived in the village of *Moka*, at the foot of the mountain. Here we found the inhabitants all ready to receive us

* Not the lead; that had already been lost, and we had been using a small piece of lock for some time. I have the piece in my chest.

with congratulations upon our success. One old Frenchman, with his national civility, persisted in making us drink claret, although in our wet state something more stimulating would have been more acceptable. He had been watching us all day with a telescope, and told us, with a great deal of acting, that he had trembled for us.'

ALPINE NOTES.

MOUNTAINEERING ON THE PACIFIC.

ASCENT OF MOUNT RAINIER, WASHINGTON TERRITORY.—Mr. Coleman, whose ascent of Mount Baker, in British Columbia, was noticed lately in this Journal, is still active in promoting mountain exploration on the Pacific Coast. We have received from him some account of the first ascent of Mount Rainier, 12,300 feet, the highest mountain of the Cascade Range, distant 120 miles from Olympia, a settlement on the southernmost bay of the Gulf of Georgia. Mr. Coleman himself was unluckily separated from his friends, General Hazard Stevens and Mr. Van Trump, near the foot of the mountain, and was thus prevented from sharing in their ascent of the peak.

Having slept amongst the highest firs, the party started at 6 A.M., August 17, 1870, provided with ice-poles, an ice-axe, 100 feet of rope, long spikes in their boots, a large canteen of water, a lunch, flags, and a brass plate inscribed with their names. The ascent offered all the difficulties of a Swiss mountain. After five miles over snow-fields, 'they climbed a steep ridge of rocks for 500 yards, along the sides of a 1,000-feet precipice for 200 yards in mid-air upon a narrow ledge filled up with loose débris, then for 200 feet they ascended almost perpendicularly, by the gutter formed by the junction of the rocky precipice and the ice-fields projecting from the crown of the mountain, cutting steps in the ice and clinging to each projecting point of rock. The next 150 feet was made wholly upon the steep ice-fields by cutting steps, and the remainder of the ascent was made without material difficulty, over perhaps a mile and a half of snow, on ice-fields, across several crevasses, one of which they surmounted by throwing the rope round an overhanging pinnacle of ice and climbing up to the higher side of the crack some 12 feet by that means.' In ten hours and a half they gained the southern peak, a long exceedingly steep narrow ridge striking out from the main dome. They next ascended the middle and highest peak, about a mile distant. 'Climbing over the rock ridge which crowns the summit, they found themselves within a circular crater, 200 yards in diameter, filled with a solid bed of snow, and with a rim of rocks projecting above the snow all round. As they crossed the crater on the snow, Mr. Van Trump detected the odour of sulphur, and the next instant numerous jets of steam, hot air, and thin smoke were observed issuing from the crevices of the rocks forming the rim on the northern side. Never was a discovery more welcome. Hastening forward, they both exclaimed, as they warmed their thoroughly chilled and benumbed extremities over one of old

Pluto's fires, that here they would pass the night, secure against freezing to death; for it was now six o'clock, and it would have been impossible to descend the mountain before nightfall.'

'A deep cavern, extending under and into the ice, formed by the action of the heat, was found; a short distance within its mouth they built a wall of stones enclosing a space 5 feet by 6 feet around a strong jet of heat and steam. Ensnconced within this shelter they discussed their future prospects, while they warmed themselves at their natural register. The heat at the orifice was too great to bear for more than an instant, but the steam wet them, the smell of sulphur nauseated them; and, in short, they passed a most miserable night, freezing on one side and in a hot sulphur steam bath on the other. The wind outside roared and whistled, but secure within their cavern and their wall it did not much affect them except when an occasional gust came down perpendicularly.'

It is to be hoped that this expedition, as well as Mr. Coleman's other adventures amongst the mountains of North America, will, at some future time, be more fully described to English readers.

The following letter has been received:—

ALPINE SLANG.

To the Editor of the Alpine Journal.

SIR,—In a recent French work of popular science the poverty in mountain phraseology of languages like the French and English, framed principally by dwellers in the cities and plains, is forcibly contrasted with the richness in this particular of the Spanish and Italian (the writer might have added of the Greek) tongues used by inhabitants of mountainous regions. Castilian Spanish alone is said to possess twenty-eight different words, serving to distinguish, with marvellous accuracy, every difference of form in mountain crests or ridges.

Colloquial or even classical English cannot probably be defended from the reproach thus brought against it. But it has always been to me a matter of surprise that the Alpine Club, counting as it does amongst its members some names known in literature, should not have endeavoured to do something to supply this deficiency. The dialects in use in the mountainous portions of Great Britain are a mine for those who care to look for characteristic phrases by which to express the bolder features of the earth's surface; and by a judicious process of translation from foreign tongues, of adaptation of old words to new uses, and lastly, by a touch of Transatlantic or Tennysonian boldness in invention, our language might have been enriched and, at the same time, your publications made more readable for those who, like myself, enjoy tales of English adventure written in their own tongue.

But lover of mountain-climbing as I am in the spirit—physical infirmities have, alas! cut me off from any nearer acquaintance with your pursuit—I cannot read with any pleasure such a jargon as this, which, you must admit, is a fair specimen of what often fills your pages.

'Having shouldered our *havresacs* and the porter his *hotte*, we left the

châlet, a *sennhütte* or *casera* in which we had lodged *en route* for a *grande course*. Having traversed some *geroll* and ascended a slope of *débris*, we came to the *moraine* of the *glacier*. A *mauvais pas* amongst the *séracs* and *crevasses* of the *eisfall* was successfully avoided by a slight *détour*, and we quickly gained an upper *névé-plateau*. Above the *bergschrand* a *couloir* raked by *avalanches* brought us to the *corniche*-defended *col* or *sattel* at the foot of the *arête* of the final *aiguille*. This *grat* having been passed *à califourchon*, we found ourselves, sooner than had been expected, on the *allerhöchste spitze*. We were now in the heart of a mighty *massif* crowned by a thousand *beccas* and *cimas*, *bergs* and *kogels*, *monts* and *dents*, &c., &c.

Why, I venture to ask, this wholesale importation of foreign phrases for some of which English substitutes already exist, while for all they might easily be found? Why this perpetual recurrence of *gerolls* and *grats*, of *crevasses*, *couloirs*, *séracs* and *bergschrand*s? terms without any distinctive meaning to the public in general, or even, as the Mont Iséran hoax lately showed, to the high intelligences of Printing House Square. Have we not scree and clatter, edge (with crest, comb, or ridge for variations); can we not speak correctly and intelligibly of rifts, chasms, and crevices, of gullies and snowcrag? Might not 'the moat' or 'the last chasm' be well accepted as an equivalent for the foreign and uncouth 'bergschrand'? Glacier, moraine, plateau, col and avalanche, must, I admit, thanks to their too hasty acceptance by poets and men of science, be looked upon as naturalised in our language; yet one may be pardoned a regret that icestream, earthbank, plain or level, gap, and snowrush* (snowalide, the American synonym, fails in force), have not been preferred in their stead.

Persuade your contributors that it is unnecessary and undesirable to address the public in this polyglot dialect, and Alpine literature will be freed from an affectation injurious to its popularity with the general English reader who wishes to be also like, Sir, your obedient servant,

A READER OF ENGLISH.

A VERY EARLY ATTEMPT ON THE AIGUILLE DU DRU.—The following extracts are made from a work published in 1779 under the title, 'A View of Society and Manners in France, Switzerland, and Germany; by a Gentleman who resided several years in those Countries. In two volumes. London: printed for W. Strahan and T. Cadell, in the Strand.'

'The wonderful accounts I had heard of the glaciers had excited my curiosity a good deal, while the air of superiority assumed by some who had made this boasted tour piqued my pride still more. One could hardly mention anything curious or singular without being told by some of those travellers, with an air of cool contempt: "Dear Sir, that is very well; but take my word for it, it is nothing to the Glaciers of Savoy."'

The author at last determined to see the new wonder of the world

* The rushing snow.
The sun-awakened avalanche.—SHRELEY.

for himself, and in company with several friends reached Chamouni, by way of Sallanches, on mule back.

‘Many travellers who have more curiosity, and who think less of fatigue than we, take their first view of the glaciers from the top of Mount Breven. We determined to begin with Montanvert. . . . While we remained in contemplation of this scene (the view from the Montanvert), some of the company observed that from the top of one of the Needles the prospect would be still more magnificent. This excited the ambition of the D— of H—. He sprung up and made towards the Aiguille du Dru, which is the highest of the four Needles. Though he bounded over the ice with the elasticity of a young chamois, it was a considerable time before he could arrive at the foot of the Needle—for people are greatly deceived as to distances in those snowy regions. “Should he get near the top,” said Mr. G., looking after him with eagerness, “he will swear we have seen nothing. But I will try to mount as high as he can; I am not fond of seeing people above me.” So saying, he sprang after him. In a short time we saw them both scrambling up the rock. The D— had gained a considerable height, when he was suddenly stopped by a part of the rock which was perfectly impracticable (for his impetuosity had prevented him from choosing the easiest way), so Mr. G. overtook him. Here they had time to breathe and cool a little. The one being determined not to be surpassed, the other thought the exploit not worth his while, since the honour must be divided. So, like two rival powers who have exhausted their strength by a fruitless contest, they returned fatigued and disappointed to the place from which they had set out.’

The travellers returned by the Tête Noire and Martigny to the Lake of Geneva. In a subsequent chapter, dedicated to a general account of ‘The Glaciers,’ and the theories then in vogue with reference to their motion, we find the following passage, which may be added for what it is worth to the traditions recorded by Mr. Tuckett: ‘The oldest inhabitants of Chamouni remember the glaciers when they were much smaller than at present, and also remember the time when they could walk from the Valley of Ice (the Mer de Glace) to places behind the mountains by passages which are now quite choked up with hills of snow not above fifty years old. I myself have heard several of the old people in Chamouni assert the fact.’

A WINTER ASCENT OF GLYDER FAWR.—The following notice shows how, by a due attention to weather, that is to say, by seizing on the most inclement portion of an English winter, climbers may, without crossing the Channel, enjoy many of the excitements and beauties generally thought peculiar to Alpine expeditions. It, at the same time, suggests that an ice-axe is not only a sensible, but almost a necessary, companion on a winter’s walk in Wales.

‘We started from Capel Curig on Wednesday morning, February 12, under the guidance of John Roberts, to cross over the summit of Glyder Fawr. A car took us as far as the end of Lake Ogwen, which spread out before us in its wintry garb of ice, more than one half of it being firmly frozen over. At its extremity we left the car, and

struck off across the mountain-side, which was covered with rocks, and large patches of snow, into which we often sank a foot or more. After much up-and-down work we came in sight of Llyn Idwal, a gloomy lake, now completely covered with ice, and shut in by steep frowning buttresses of rock. We now made straight for a cleft in the face of the rocks called Twll Dû, or the Devil's Kitchen. To reach this we had to skirt the lake, and then climb the rocky barrier behind it. It was pretty hard work; continuous climbing from one frozen rocky ledge to another, and here and there through deep snow: thus Roberts led us up the precipice by the only possible route. To our left, over the perpendicular face of rock, hung a large frozen waterfall, standing out some feet from the cliff, in most graceful form, a ponderous mass of hard greenish-tinted ice. We were a long time climbing up by the side of this beautiful cascade. Finally, we topped the ridge, and then, far above us to the left, was the peak of Glyder Fawr. We were now on a level plain, where the snow was at least four to five feet deep, but the surface frozen so hard that we did not sink in far. This level was soon exchanged for snow-slopes, which became steeper as we ascended, and, what was worse, harder; so that at last we were unable to kick steps, and, being unprovided with an axe, were obliged to use extreme caution to prevent a slip. A strong easterly wind at our backs—though bitterly cold—materially helped us up these slopes, and then, after plodding through deep snow, we stood among the frozen crags of Glyder Fawr.

'All around us was snow and ice; not a rock was visible, for all were thickly encased in their winter shroud. It was curious to notice how the wind had formed cornices and curtains of ice round these large stones, of arborescent or leafy form, presenting a most beautiful sight.

'For a few minutes, sheltered from the piercing blast, we sat on the top under one of the icy pinnacles, and took in what we could of the view. Snow-covered mountains rose all around, and below were the frozen lakes lying in the depths of the valleys we had quitted: on the south side, Snowdon was capped with clouds.

'On turning to descend, Roberts proposed a different route, and one which would take us by a direct line down into the Pass of Llanberis. We had not proceeded far when we were pulled up by a steep snow-slope, which was so hard that we could only kick small ledges about an inch wide for foothold, and that after considerable trouble; the slope was at least a thousand feet long, and it was not easy to determine how it ended, whether in a precipice or mass of rocks. On this slope, a mountain watercourse, filled with hard frozen snow, obstructed our path. In attempting to cross it one of my companions suddenly slipped, and began to glide downwards on his back. He struck me, knocking me off my feet, but the Alpenstock held firm, and the guide catching hold of his coat at the same time, we fortunately stopped him before he had attained a momentum which would have rendered it impossible to arrest his progress. Regarding this descent as impracticable, we sought for the slopes by which we had ascended. These, though not so steep as that we had attempted, were still sufficiently formidable, and many hundred feet in length;

but step by step, with great caution, we proceeded in the teeth of a biting east wind.

‘As we descended the snow became a little softer, so that our progress was quicker. On regaining the ridge, we had an opportunity of looking up at the slope by which we had first tried to descend: it looked a terrible place, and seemed to end in a steep face of rock, which would be very difficult to come down. We had yet a good deal of walking before us, over rocks and ice, down some more snow-slopes, till at last we came to grass once more. Still downwards, through furze-bushes and patches of snow, and then, in two hours from the summit, we reached the coach road: an hour more brought us to Llanberis.’

G. O. S.

ALPINE BYEWAYS.

THE KALTWASSER SATTEL.—AN EXCURSION FROM TARVIS IN CARNIOLA.—On September 14 I found myself at Tarvis, now become the terminus of a branch of the Vienna-Trieste line, which runs down the valley of the Save to Laibach. Limited time and the want of a guide or climbing companion forbid me from any attempt to scale one of the limestone peaks which raise their still unconquered heads to the south of the Luschari berg. But in this, to English travellers, remote corner of the Alps, where byeways still remain to be looked up, and questions of nomenclature settled, there is some excuse for chronicling even an unadventurous morning's walk.

The Jof di Montasio has been celebrated by most recent writers on the Julian Alps as one of the loftiest, boldest, and most imposing summits of the country upon which it looks down. It becomes clear, however, on close examination, that our travellers' pens have been making a shuttlecock of the euphonious title; now, like Mr. Ball, pitching it down firmly on the summit of the Wischberg of the government maps: now vaguely tossing it to and fro, or hitting it across the Wolfsbachthal to a stony crest, called on the same map the Balitza.

It seemed that the best way to inspect the rival claimants would be by a visit to the Wolfsbachthal. Mr. Gilbert, moreover, had roused our curiosity about this glen by an entry in the book at Caprile, in which he compares the view it affords of the Jof di Montasio with that of the Civita from Alleghe.

A car soon took us to the hamlet of Wolfsbach, a collection of public-houses hallowed by scriptural signs, and maintained by the custom of thirsty pilgrims on their way to the famous shrine of the Luschari Berg, which crowns the hill-top above it. Here our car-driver halted; there is no reason, however, why those who care should not drive on, as an excellent track used by timber-waggons extends quite to the head of the valley. The lower reach of the Wolfsbachthal is a straight, level, well-wooded trough, lying between two verdant but broken, and in places precipitous, hill-sides. In front, closing the view, a cluster of white limestone peaks, cupola-shaped,

rising in gradation from west to east, fill the place assigned on the map to the Wischberg. They are bold rocks, and must finish little, if at all, under 9,000 ft., but bear no possible likeness to the Civita. It was clearly necessary to hurry on to the corner, where the glen bends abruptly eastward, and look for some further discovery. At the angle the ground rose considerably, and we had some way to go before the expected view burst on us. The colour and composition of the landscape which greeted us at the top of the ascent were, in their way, perfect. We looked across a spacious sunny bowl of woodland and meadow, dotted with ruddy hay châteaux, and overlooked by a great mountain—as mountains go in these parts—bearing a general resemblance in outline to the Civita, but flatter and less relieved by buttresses than the glory of Caprile. The one is a massive imposing wall, to be taken in at a glance; the other a vast rock-curtain, draped by a master-hand, and requiring long and careful study fully to comprehend its manifold details.

Through a deep recess between this wall-mountain, the Balitza of the map, and the Himmelberg, a green buttress of the Wischberg, runs a path to the Raibl See, which must afford a good view of the back of the latter mountain, and possibly lead to the spot whence it may be attacked with success. Unless prepared to cross this pass, it seemed best to turn back at this point. We crossed therefore the broad but now waterless bed of the Seisara Giessbach, and plunged by a tempting path into the steep wood which clothes the lower slopes of the Himmelberg. If the Carinthian boor does not, as the poet declares, bar his door against the stranger, his neighbour the Carniolan certainly bars the path in the most effectual manner. The approach to a fortress in time of war could scarcely have been more carefully palisaded than was our humble track; at every few yards a tree had been felled across it, and left lying with all its branches, so as to make the most impassable obstacle for cows and men, and to force them to plunge right or left into the tangled wood. At last it seemed time to try elsewhere, and having scrambled across another dry but deeply-worn torrent bed, the channel of the spring meltings of the northern face of the Wischberg, we soon fell into a less troublesome track, by which we were led to an open portion of the hill-side, where stretches of meadowland gave space for a view of the surrounding scenery.

Framed between the nearer slopes, the Balitza, a broad bold line of cliffs lifting themselves starkly above the verdure, looked all its inches, and acquiescing almost in Mr. Gilbert's comparison, we agreed that, if size alone could render a claimant successful, this must be the rightful Jof. But the Jof had always been described to me as a conical peak, and there, immediately over our heads, shot up the tall cupolas of the Wischberg, noble crags, and not lightly to be passed over. These sloping meadows fringed with birch and pines, and watered here and there by a bubbling fountain, are spots to linger in; full of soft beauties themselves, and surrounded by mountains, which, even in the cloudless glow of autumn noon—a state of atmosphere the least favourable to illusions—have a peculiar grandeur of their own; different indeed, and to my mind inferior, to that of the snowy Alps, or even of

the greatest Dolomites, but still not to be denied by any eclectic mountaineer. Heightened and glorified by the slant rays of a setting sun, or, better still, gleaming white through the parting shroud of storm, the Julian Alps would hold their own with many of the loftier European ranges.

We were now making for the gap at the south foot of the Heiligenbergspitze, marked on the map simply as 'sattel.' The cow-trampled track, climbed steeply along the edge of a deep 'graben,' through thick woods, which cut off our view, and increased our impatience to reach the ridge. From the green saddle we had again a fine view of the wall mountain and the cupolas, apparently of equal height. On the further side lay the deep trench of the Kaltwasser Thal, a new tier of Wischberg pinnacles rising above its head, and a steep little pass between them and the Königsberg leading to Raibl.

Time permitting, we could have done nothing better than cross the crest of the Heiligenbergspitze to the Luschariberg; the two hills bear to one another the same relations as the Esel and Klimsenhorn of Pilatus—one a top, the other a spur. Our proper course was to follow the track indicated on the map along the southern side of the deep ravine, which broke away from our feet into the Kaltwasser Thal. 'Medio tutissimus ibis' is by no means an Alpine proverb, and we were repaid for choosing a terrace path which promised to carry us round the eastern spurs of the Heiligenbergspitze, by being deserted on precipitous ground, and forced to descend directly down a very steep and tiresome hill-side into the valley. The Kaltwasser Thal is a narrower glen than its neighbour, and, except for the fine view of the buttresses of the Wischberg at its head, has little to detain the traveller. It emerges on the dusty Predil road, some three miles above Tarvis.

Our whole walk occupied some six and a half hours, but as we had no local knowledge, and aimed rather at points of view than at the shortest path, the first 'fast walker' who gets over the distance in half the time will have no legitimate ground for self-congratulation.

And now, after all, which is the Jof di Montasio? Clearly, I think, after taking into account the written descriptions of this region, it ought to be a different mountain from the Wischberg. The Balitza is a lofty mass, well worthy of a sounding title, and likely to get one, as having one foot in Italy, which the Wischberg has not; and, seen end on, a wall may look sharp enough—witness the famous Cimon della Pala. The testimony of maps favours this view; those that print 'Jof' at all, printing it over some part of the mass elsewhere marked as Balitza. On the whole, therefore, I think we may fairly accept the theory sanctioned by both Messrs. Gilbert and Tuckett, that Jof di Montasio is the Italian name for the mass known to the Slaves on its north as the Balitza.

D. W. F.

ROUND CORTINA.—Cortina d'Ampezzo is undoubtedly one of the best head-quarters for exploring the Dolomites. Lying in the midst of numerous excursions, both far and near, its position is at once central and generally convenient. At an elevation greater than that of Cha-

mouni, it is easily reached by an excellent post road, traversed by public conveyances—slow, to be sure!—which connect, so to say, the Trieste and Venice railway with the new line through the Pusterthal, and the South Austrian lines. One finds here a few established guides of more or less merit, with a fixed and not unreasonable tariff; together with inns which are sufficiently good for any but a very unreasonable tourist. The pension of the 'Stella d'Oro' is the most comfortable. The 'Aquila Nera' has more of the noise and bustle of the village or post-inn about it. However, I have always found the Father Ghedina and his sons very just and friendly: two of these sons are painters—the eldest of Venetian reputation; the second, less well known, but of some talent, has his studio down at the mill by the river's side, where he generally keeps some sketches, and where he works at his art during the warmer months of the year. He has also exercised his skill and industry upon the walls of the *dépendance*, or supplementary building opposite the hotel.

First and foremost among the minor excursions to be made from Cortina is that to the 'Grotto of the Tofana.' The walk affords fine views, including a glimpse of the Marmolata, if not also of the Cimon della Pala; and a nice little bit of rock-climbing at the finish redeems it from absolute tameness. The grotto itself, requiring torches or flambeaux to show off its roof and its ice-stalks, is a large cavern on the great southern face of the westernmost peak of Tofana—a sheer precipice, embracing well-nigh the entire height of the peak. Access to it is obtained by a ledge running along this face, and not very far from the bottom of it; the only difficulty is in first getting upon the ledge, when the season is somewhat advanced, and winter snow lingers no longer in the rent of the cliffs which leads up to it; but I was told that even this difficulty would be remedied by the fixture of a ladder and some iron wire, thus rendering the *mauvais pas* accessible at all times, even to ladies. A visit to the Grotto may be combined with an ascent of the Tofana, a feat accomplished by a lady last summer, on which occasion the abundance of snow rendered the expedition arduous. A few days later I followed the lady's good example in ascending the middle or highest peak of Tofana, in company with Mr. C. J. Trueman and his English servant Batt—a hero of the Crimean War and Indian Mutiny. We had to circumvent the peak (first ascended by Grohmann some eight or nine years ago), by passing along the edge of steep snow-slopes under the cliffs on its north-western side—at this moment frozen, and requiring a good deal of step-cutting. The only incident worth notice in this ascent relates to Alessandro Lacedelli, who happened to let his axe slip through his fingers while cutting steps. The instrument shot swiftly and smoothly downwards, about to disappear, as we all imagined, over a series of cliffs which terminated the slope, when some isolated protuberance most obligingly arrested its course, say a couple of hundred feet below us! Alessandro, taking one of our axes, merely as an alpenstock, at once descended the hard steep snow, where a decided slip might have been fatal, and recovered his own, as cleverly as any good Chamouni guide could have done. I was astonished; though I afterwards found that his boots were armed with spikes fixed into the heel-plate, which, as he himself allowed, gave him great purchase where the

snow was frozen at the surface. As we approached Cortina on our return, Lacedelli called our attention to an old man in knee-breeches, grave and bony, basking before his cottage door. 'That is old Lacedelli,' said he, 'my relative. Although now in his 80th year, he is still capable of climbing, without assistance from any man, any of the mountains hitherto ascended in this neighbourhood!' This wonderful old man was over 70 when he acted as leading guide to Dr. Grohmann in his arduous ascent of the Sorapis—the only ascent, I understand, that has ever been made of the mountain; although the southern side has been explored from the Forcella Grande to within a very short distance of the summit, and is supposed to offer a much more direct and easier route than the one followed by Dr. Grohmann, from the Lago di Sorapis, on the north. I have had a great fancy to stand upon the top of this mountain; and a few days after the Tofana expedition I made the attempt, with Santo Siorpaes, which was frustrated, however, by bad weather. We started from San Vito, and reached the summit of the Forcella Grande; descended a little on the other side of the col; and after passing the night in a very rough gîte on the left bank of the torrent, with a fearful thunderstorm raging for many hours over our heads, and finding any further attempt would be useless, we made the best of our way, in continued bad weather, towards the valley of Auronzo, and ultimately returned to Cortina by Bastian's hut and the Tre Croci, having made the complete tour of the Sorapis and Croda Malcora, although we had failed in getting to the top of it. The Forcella Grande is very beautiful: near the summit on the Auronzo side stands a remarkable isolated rock, which, seen from where we made our bivouac, looks just like a ruined tower, with a broad terrace winding outside its walls towards the top. The gorge, downwards towards Auronzo, is magnificent for its rocks and its forests. At the bottom of it we passed under some of the noblest fir-trees, both for height and circumference of trunk, that I ever beheld in any part of the Alps. Bastian's hut was at this time occupied by the forester, a brother of Santo's, who sold wine and other refreshments. The site is highly romantic, but the weather too often draws a curtain of mist down over the far-famed rock scenery which it otherwise commands.

Among the many peaks and rocky forms around Cortina is one remarkable for its utter nakedness and uninviting aspect. This skeleton ridge, culminating in sharp teeth separated one from the other by deep perpendicular clefts, is named Piz Formin—sometimes Croda del Lago, from a pretty little lake which lies smilingly at the foot of its grim rocks. It is the highest point between the Pelmo and the triple Tofana, and has, I am told, attracted the attention of more than one mountaineer. Santo pronounced it quite impracticable last summer. Not so, however, the slightly lower peak, known as the Becca di Mezzo Di, to the south of it, which Mr. Ball likens to a 'carious tooth,' and which also was never known to have been ascended. This might be a little difficult, he said, but he saw nothing impracticable about it. Its height was not considerable, but it was an isolated peak, very conspicuous from Cortina, and from its position promising a fine view. Accordingly, on a bright morning (July 5), at 5 A.M., I left Ghedina's inn accompanied by Santo, with the determination of climbing, if possible, this little

virgin peak. We approached the rocks, or 'Croda' as they are locally termed, from the east, but it was from the first doubtful whether this side would do. 'Were it not for that *lastra*,' said Santo, alluding to a stretch of steep smooth rock which stared us in the face, 'we might get on to the "grat," and follow it easily enough to the top. Let us go round and examine the other sides.' So off we went to the north and west sides, where the slopes below the rocks were now steep snow-fields. Here, however, the cliffs above looked more perpendicular, and offered no encouragement. We made our way to the southern side, and struck a dry couloir near its head, which opened out almost opposite the Pelmo, and divided the main mass of the rocks from a ridge running off south-west. Santo now said he saw the way up. After a little breakfast we crossed the couloir and went straight up the rocks—less wall-like than on the other sides—by one or two steep and rather head-trying chimneys. The stone was dry and gritty, and it was not easy for the first climber to avoid sending down upon the other occasional showers of small gravelly débris, or pebbles. We soon got upon the arête; then wound round a short ledge on its eastern side; then, pulling ourselves easily over a few pieces of rock, we landed safely upon the summit, where we found that the 'Croda' below us was cleft in all directions and split into pinnacles, in place of being the solid, compact mass it appears from below and in the distance. Had we overcome the 'lastra' which Santo so much objected to on the eastern face, we should certainly never have been able to have followed, or indeed to have found, any continued arête to the summit from that direction. The general view rather disappointed our expectation. The elevation of our newly-ascended peak—barely 9,000 feet—was hardly sufficient, with so many loftier mountains around, to command a very wide horizon. The Pelmo, Antelao, Croda Malcora, and Croda Rossa all looked very fine, and the Cristallo very perpendicular. We had a good opportunity of surveying the Piz Formin, close beside us; which survey, together with another we made from its lake on our descent to the valley, would seem to justify the opinion expressed by Santo as to its inaccessibility. We had arrived on the summit about 9:40, and we remained there about an hour, taking care to erect a 'stone man' before we left it. The descent of the rocks was, in vulgar phraseology, 'short and sweet,' a little stiff in one or two places, but not in the least dangerous, except for very clumsy hands and feet. At Cortina we learned that our ascent had caused some interest, and that our movements had been watched through the telescope. Now that the way is known, this little expedition may be made in seven or eight hours from the village and back again; while the détour by the lake under the 'Formin' makes an agreeable variation in the route.

THE LANGKOFEL.—The Langkofel is one of the representative peaks of the Dolomites, and perhaps one of the oldest known to foreigners; few tourists beholding it for the first time from certain points in the Grödnerthal can fail to be somewhat awestruck with its extraordinary, I may even say unique, aspect; nothing can look much more impregnable to everything without wings than does this stately mountain, grandly towering over the pine-forests and pasture-slopes of

the Seisser Alp. It has been asserted that every mountain has its weak point somewhere, but sure enough the Langkofel has no weak point on this side! thought I to myself, as I walked down the char road between Santa Maria and Santa Christina, in the summer of 1871. I was not then aware that it had ever been ascended, and wondered whether it ever could be. I soon afterwards learned that Dr. Grohmann had attained its highest point, but I could obtain very little information as to the real nature of the ascent. This last summer I proposed to Santo to try what we could make of it, when he told me he had already reached one of its peaks with Mr. Tuckett. On July 9th, my friend Trueman accompanied me over the Grodner Joch to Santa Maria, where I found provisions and a porter. No one here seemed to know much about the Langkofel, for Herr Grohmann had brought both his guides from the Pusterthal; but the landlord of the inn, a very good fellow in his way, lost no time in sending to fetch a man—brother to a chamois-hunter of the valley—whose courage and legs he was sure he could rely upon for our purpose. The cut of this individual, Antonio Kaslatter, was at least uncommon; he stood somewhere about five feet nothing in his boots, a pair of roomy Wellingtons, under trousers which ceased a little below the calves. He wore a round short jacket, and a round hat, pulled well down over his ears; when his back was turned, he continually reminded me of a big old-fashioned schoolboy. Withal, he had a good broad shoulder of his own, a square jaw, and a shrewd good-humoured eye. He had no regular alpenstock, but carried a short ferruled walking-stick, secured to his wrist by a thong. Thus equipped, he offered to accompany us for a consideration of four guldens the two days, for which we should probably require his services, adding, at the same time, that he did not fear to follow where any man would go! There is a small chalet close under the Plattkofel which would have just suited us to pass the night in, and thither we repaired; but, finding it closed and unoccupied, we were forced to descend to the Solchner chalet, a sort of primitive auberge, frequented principally by herdsmen and woodcutters. Trueman had now taken leave of us, and gone on to Ratzes Bad, hoping to hail us the following day on the Langkofel, from the top of the Schlern; but the following day was to be a failure for us: suffice it to say that the weather obliged us to return, after we had made a very fair start. Owing to the continued unpromising condition of the weather, we did not leave the chalet on the 11th before 5:30 A.M., and even then not without misgivings. On the side of the Seisser Alp the Langkofel is separated from the Plattkofel by a wild glen or hollow, into which we mounted pretty steeply over snow and *éboulements* from a small green Alp; on the southern side, however, the rocks of the two mountains seem to amalgamate above the Fassathal, although they are intersected or penetrated from the north by at least two steep snow valleys, which might, likely enough, prove practicable as passes over to Campidello, or to the foot of the Fedaya! Insufficiency of time prevented our making the experiment on the present occasion. Turning our backs then upon the rocks of the Plattkofel, we made straight for those of the Langkofel on the eastern side of

the glen. These were not inviting; and indeed, until we arrived at their base, about 7:20, I could hardly conceive where it might be possible to get up. We first attacked the precipice where the rocks, though very steep, were still scantily clothed with short and slippery grass. Here, in skirting the edge of some cliffs, we passed one or two *mauvais pas*, but we soon turned directly upwards, and came upon 'Croda,' or bare rock, which we found better 'going.' Peter Salcher led Grohmann up a snow couloir in a very ugly cleft, lying a little south of our passage, and, from all accounts, more troublesome to deal with; but our different routes converged at no great height above the bottom of the precipice. There is a small glacier, or snowfield, high among the cliffs, and distinctly visible from the Seisser Alp. We reached the border of this glacier at 9:30, and, after a short halt, we went north, up an unmistakable snow couloir, which comes down to it. We took the rocks to the left of the head of the couloir, and, after a little stiff climbing, we attained a ridge looking into the upper part of the Grödnertal. Upon a point of the same we found a bottle, containing Mr. Whitwell's card, left in 1870. At this moment the clouds broke, and disclosed a higher point, north of us, crowned with a cairn and flagstaff; but we at once perceived that it was utterly impossible to get there from the ridge on which we stood: itself impassable a little farther on. We went down again to the top of the couloir, and, as it was then only a quarter after mid-day, with a much more promising sky, we descended slightly on the north side of it. We had all along been bearing too much to the south among the rocks; now, crossing a short snow-slope, we saw a large couloir below us, which appeared to run up into the very heart of the cliffs. Santo thought it unnecessary to descend to it, and recommended the course of striking across some precipices to our right, on the chance of being able to get into it higher up. This succeeded admirably; we found the couloir long and steep, slightly serpentine in its course, but with objectionable angles of rock projecting here and there. I say objectionable, because, without affording any secure resting-place, they threatened most obtrusively to break one's head in the event of an accidental glissade; the snow was, moreover, in a bad state of consistency from the weather. Santo led the way upwards, kicking steps, for nearly an hour; we passed a very steep couloir coming down from a peak to the right of our couloir: it had bare ice in it towards the top, and looked a nasty, if not a dangerous, passage. I thought the peak above it might be the one we were in search of; but Santo immediately exclaimed, 'I see the summit on our right!' Continuing nearly ten minutes longer on the snow, we were enabled to board the rocks on the left of the couloir, just under the main arête, and in less than another ten minutes we stepped upon the culminating point of it, where Grohmann had left his Stoneman in 1869. The flagstaff was still erect, but the little flag had been torn down in the strife of the elements, and was now lying among the stones. We raised it, and set it afloat again in the breeze. The names, 'P. Grohmann, P. Salcher, and F. Innerkoffler,' along with the figures '1869,' were painted in large black letters on the stones at our feet. This peak was apparently rather the highest of a group of three of almost equal elevation, which evidently formed the highest

mass of the mountain, and which was penetrated by the couloir we had just come up. The nearer to us of the other two might probably have been reached by us without much difficulty, in passing a narrow little arête, not unlike a col, if we had entertained any doubt of its being lower than our own; but the outermost one to the right of the couloir, and closest to the Seisser Alp, would, I am sure, prove much less accessible, and could, I think, only be attacked by the small couloir we saw on our left in coming up the great one. I should not be much surprised if this peak turned out to be the highest of all, although I am still inclined to accept Grohmann's measurement in giving the greatest elevation to the one we were upon. We now saw the ridge that we were first on considerably below us, separated from us by vertical precipices. What we were able to see of the general view was fine and varied. We caught occasional glimpses of the Oetzthal and Zillertal ranges; the higher of the Dolomites in our neighbourhood—or comparatively speaking in our neighbourhood—were the Monte Pordoi, the Marmolata, Cimon della Pala, and Rosengarten; among more distant minute objects we saw very distinctly the great fort at the foot of the Brenner. But it was already 2:30, so we left the summit, supposed to be about 10,400 ft., and descended the couloir carefully backwards. This was not to the taste of our little porter, who could not at first be made to understand the danger of snow under certain conditions; notwithstanding, as the descent became steeper, instinct perhaps induced him to adopt our mode of progression as the best, and so satisfied was he with his experience of it, that he told Santo he had given him a lesson in climbing, and would, by way of return, treat him to a bottle of wine at Santa Maria, where we arrived soon after 8 o'clock. Kaslatler ought now to know the way up Langkofel; he is a cheery, courageous little man, although by no means a first-rate cragsman.

W. E. UTTERSON KELSO.

REVIEW.

THE MOUNTAINS OF SYRIA.*

CAPTAIN BURTON is a type of the professional traveller, and he displays in many points the advantages that professionals usually have over amateurs. Long and varied experience has taught him both what and how to observe and collect, so that even from countries whence others return empty-handed he is sure to come back bringing his sheaves with him. 'Unexplored Syria,' the second sheaf we have had lately, is a tying-up of the facts collected by the author during his two years' consulship at Damascus, together with the results of some further explorations, partly planned by himself, but carried out, after his premature translation, by his friend Mr. Tyrwhitt Drake. As usual with Captain Burton, the bundle is pitched at our feet very much as it was gathered, and without any trouble having been taken to dress it up in the form most likely to be acceptable to that easily repelled if omni-

* *Unexplored Syria.* By R. V. Burton and C. V. Tyrwhitt Drake. London: Tinsley Brothers, 1872.

vorous animal, the general reader. But those who take any interest in the antiquities or geography of Syria will gladly welcome volumes so full of fresh matter, as well as of corrections of the numerous mistakes into which early prejudices, inadvertence, or ignorance of Arabic, have led previous travellers. The book may be roughly divided into two sections, one—perhaps the most interesting, but with which we have here no concern—dealing with architectural remains; the other treating of the physical features of the country, and especially of mountain exploration.

An odd literalism of interpretation has too often blinded Syrian travellers to the facts before their eyes. If a scene is described in the Bible as beautiful, no matter how desolate it may since have become, it is extolled in phrases which, even applied to its past state, would have been exaggerated when flowing from the pen of a European acquainted with Italy and the Alps. Where, on the contrary, a prophet has foretold desolation, the 'Scripture spectacles' are powerful enough to reverse the miracle and turn bread into stones, acres of growing wheat into utter barrenness.

On the whole, however, Biblical enthusiasm has adorned and magnified rather than destroyed. There is a large balance of undeserved praise on the account of Syrian scenery. Captain Burton here points out, with perfect truth, that there is no real mountain peak in Syria; that Hermon is at best an enormous hogsback; and the much-vaunted Lebanon Range distinguished as a whole by 'insignificant lines, dull tintage, and a sterile surface.'

While it is thus easy to find reasons for the loose descriptions, and consequently inaccurate impressions, of Syrian landscape which are common amongst us, it is more difficult to account for the uncertainty as to the relative importance of the best-known summits of the country, which has prevailed since the day when the Psalmist first confused our ideas by coupling the button-shaped mound of Tabor with the bulk of Hermon, and Mount Moriah with the Hill of Bashan.

Even in the last edition of Murray's 'Handbook' (published in 1869), we still find ourselves in an atmosphere full of inaccuracy or vague speculation. 'The highest summit of Anti-Lebanon,' we are told, 'rises behind Bludan to the height of 7,000 ft.' 'El Kleib is the highest peak of Jebel Hauran.' 'Hermon is the second mountain in Syria, ranking next to the highest peak of Lebanon behind the Cedars, and probably not more than 300 or 400 ft. lower than it.' 'The elevation of Hermon may be estimated at about 10,000 ft.'

By the personal observations of Lieut. Warren and the authors of these volumes, the respective heights of the principal Syrian summits have now been ascertained with tolerable accuracy at the following figures:—Jebel Timarun (the highest point of Lebanon) rises to 10,500 ft.; Hermon, to 8,800 ft.; Anti-Libanus, to 8,740 ft.; and Jebel Dscheineh, the highest point of the Jebel Duruz Hauran, to 6,000 ft.

In his journeys through Anti-Libanus, Captain Burton has broken entirely new ground. We recommend this chain, which has been represented until recently in the most superficial manner, and is still far from completely explored, to any members of the Club who may find themselves in Syria. Five of its summits—of which the lowest num-

bers 7,736 ft., the highest (Tal'at Musa) 8,740 ft.—have already, through Captain Burton, obtained a local habitation and a name on the map. The northern portion of the range, owing to the porousness of the rocks, and the consequent underground escape of the springs, is parched and barren; farther south it is said to surpass its better-known rival, the Lebanon proper, both in the form and colour of its rocks, and in the richness of its vegetation, 'which in places assumes the semblance of a thinned forest.' 'High praise for Syria,' Captain Burton adds, with truth. But he nowhere alludes to the romantic forest scenery contained in the winding glens of Jebel Kafkafka, behind Jerash, a range which still shares with Anti-Libanus the hard fate of being introduced to the world by cartographers disguised out of all knowledge as a conventional caterpillar, and which also deserves notice at the hands of those of our countrymen who are not content with the Palestine Exploration Fund to give up to American research all the Transjordanic territories.

Few traces of ancient glaciers have yet been found in Syria. The friable rocks of which the northern ranges for the most part consist are little likely to retain the gravings of the ice-plough, and no striæ have yet been observed in the country. Captain Burton believes, however, that in the mound on which Bludan (well known as the summer resort of European residents at Damascus) stands he has recognised an old moraine. Similar mounds are found in the Cedar Valley, near the Zahleh Gap, and in 'the heaps at the gorge-mouths to the east and north-east of Iskandarun.' In a review of a book of travels, the map ought to claim a share of notice. The contributions to geographical knowledge embodied in that attached to these volumes are very considerable, though, as the authors point out, there is plenty left to do before Syria can become a known country in the full sense of the term.

PROCEEDINGS OF THE ALPINE CLUB.

Tuesday, February 4.—Mr. W. LONGMAN, *President, in the Chair.*

Messrs. A. G. Barber, A. Fairbanks, J. Jardine, J. H. Peebles, J. H. Pratt, H. W. Primrose, and the Rev. C. Taylor, were elected members of the Club.

The SECRETARY submitted the accounts for the year 1872, which were passed, after some discussion as to the expediency of increasing the expenditure on the library, and the best means of making it more accessible to members.

Mr. BALL gave some details of the expedition made by him in 1871, in company with Dr. Hooker, to the Atlas Mountains in Morocco, and of his ascent to the crest of the principal chain; adding, in response to Mr. Hawker, some interesting particulars with regard to the botany of the country, the most marked feature being the general absence of plants pre-eminently Alpine in character. His expectations of finding connecting links between the flora of the Peak of Teneriffe in the Canary Islands and that of the Mediterranean coast had been disappointed. With regard to wild beasts, they were not so common as

had been supposed. Lions existed, but were seldom met with, the animals generally described as lions being probably panthers.

Tuesday, March 4.—Mr. W. LONGMAN, *President, in the Chair.*

Messrs. R. Collier, A. Croft, and the Hon. A. D. Ryder, were elected members of the Club.

Mr. WHYMPER read a paper on his expeditions to Greenland in 1867 and 1872, and exhibited a collection of flint implements and other articles brought by him from that country, together with a model of a screw-propeller canoe, by means of which he had explored a considerable portion of the western coast.

In response to questions from Messrs. Ball, W. Mathews, Schweitzer, and Longman, Mr. Whympfer gave some additional details with regard to the snow-line, the character of the glacier-clad interior, the currents in the strait of the Waigat, between Disco Island and the mainland, and other points which had been raised; stating, in conclusion, that he hoped to revisit the country.

Tuesday, April 1.—Mr. W. LONGMAN, *President, in the Chair.*

Messrs. J. Oakley Maund and Henri Pasteur were balloted for, and elected members of the Club.

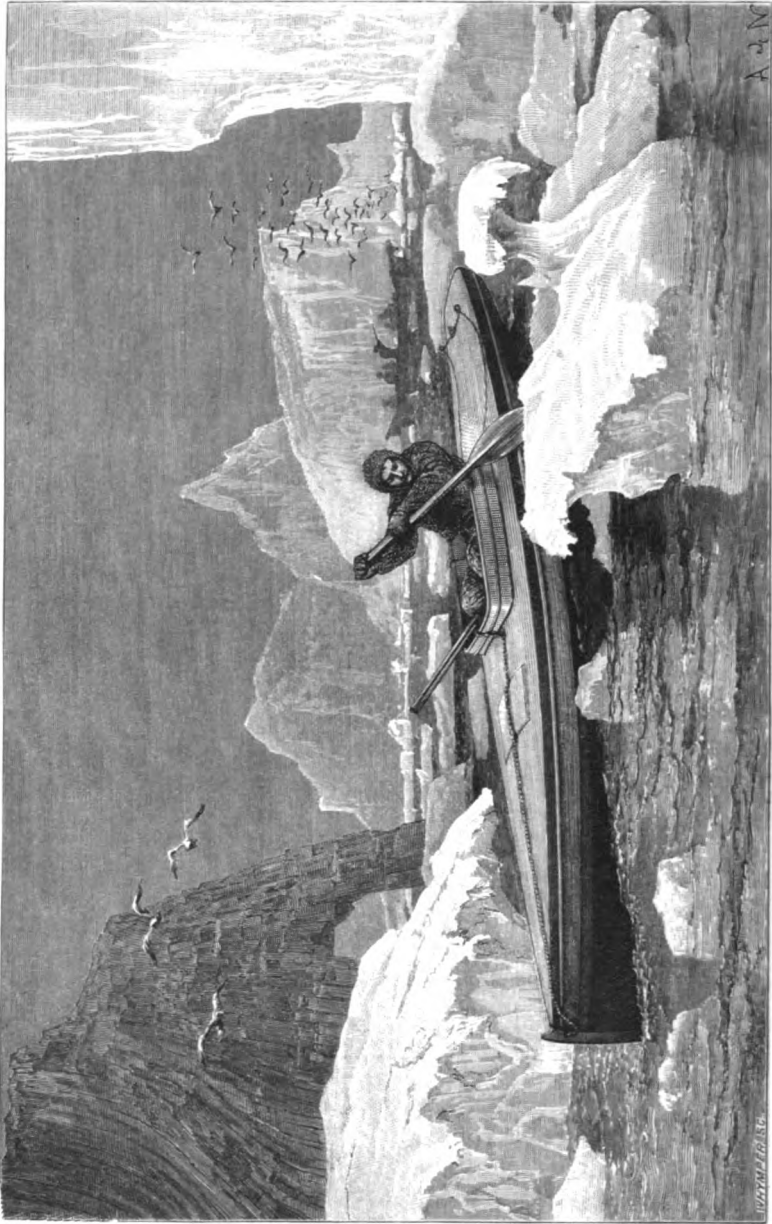
The Rev. C. TAYLOR read a paper on the 'Ascent of Monte Rosa from Macugnaga,' made in July, 1872, by Messrs. R. Pendlebury, W. M. Pendlebury, and himself.

The third part of the new map of Switzerland, containing the sheets Binnenthal, Helsenhorn, Andermatt, Six Madun, S. Gotthard, Faido, Olivone, Hinterrhein, Mesocco, Jungfrau, Adelboden, and Lenk has recently been published at Berne. All these sheets are on the scale of $\frac{1}{50,000}$, and they are all finished in the same admirable manner as those which have previously appeared. Sheet 489 (Jungfrau) is a perfect 'Vade-mecum' to the upper basin of the Aletsch glacier and the majority of the great peaks of the Oberland. Sheets 391 (Interlaken), 392 (Brienz), 395 (Lauterbrunnen), and 396 (Grindelwald) will also be found extremely useful by those who visit the districts they embrace. Any sheet can be obtained separately of the bookseller Dalp, at Berne.

Exhibition of Paintings by Monsieur Gabriel Loppé.—We have the pleasure of informing our readers that a collection of paintings by Monsieur Loppé, the well-known artist of Geneva, and an honorary member of the Club, is at present on view at the Club Rooms, 8, St. Martin's Place. Although in the habit of establishing his summer quarters at Chamouni, Monsieur Loppé has not devoted his pencil exclusively to the range of Mont Blanc. Lovers of the Bernese Oberland and the Monte Rosa group will find reminiscences of their favourite haunts; and we cannot too strongly recommend a visit to the exhibition, which is open daily between the hours of eleven and six.

Corrigenda.

The notice of the ascent of the Wildspitze in 1870, on p. 148, should be corrected by omitting W. M. Pendlebury and adding James Noon as a member of the party. The name of Monsieur de Falkner, who planned as well as shared the first ascent of the Marmarole, was accidentally omitted from the account (p. 96) furnished by Mr. Utterson Kelso of that expedition.



THE SCREW-PROPELLER CANOE AMONGST ICEBERGS, ON THE COAST OF NORTH GREENLAND NEAR NOURSOK.

THE

ALPINE JOURNAL.

AUGUST 1873.

SOME NOTES ON GREENLAND AND THE GREENLANDERS.
BY EDWARD WHYMPER (*continued*).

AFTER becoming aware of these matters in 1867, it seemed to me that it was desirable I should make myself acquainted, at the least superficially, with the exterior land before making another attempt to penetrate into the interior, and last year's journeyings were directed with this view, and with the ultimate aim of producing an original map of the coast-line. I resolved to trust to my own devices, to be my own interpreter, and, if possible, to go out so provided that I could act, if necessary, independently of the natives. For these gentry have some excellent qualities, but they have also not a few which are eminently distressing to the traveller. I say nothing about their smell—that can be overcome; nor of the hordes of creeping things which roam over them—you must risk the encounter; but it is distressing, after you have engaged and paid in advance a crew to go a few days' journey, to have a man come just before you start and say that he has no boots, or no socks, or no shirt. You remind him that he has had five dollars in advance, but you find that he has nothing; for he has taken the precaution which is adopted by the British merchant before he becomes insolvent, and has settled it all on his wife, who has immediately eaten it up. You are obliged to pay a little more in advance, and beg that he will go at once to the store and supply his wants. 'The store is closed for to-night.' 'Go to-morrow, then.' 'To-morrow is Sunday; the store is not open on Sunday.' 'Well, on Monday then.' Monday comes, there is a gentle breeze which just ruffles the sea; all your natives shake their heads, for in Greenland it is not the fashion to go to sea unless there is a dead calm. Tuesday

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comes, the wind has fallen, and so has one of your crew fallen sick. Again you suggest that you have paid five dollars in advance. The man acknowledges it, and says that he would be most happy to repay you, but points to the fact that he has nothing. You can only grin and bear, for it would be no use to appeal to the trader, who would tell you that he has no power to compel the natives to fulfil their engagements. At last, after a multitude of delays, the sick man is replaced by another, and all your natives declare themselves ready to start. You point to the baggage and tell them to put it in the boat. 'First we will drink a little coffee,' say they, and all your natives vanish again. This custom of drinking coffee immediately before leaving on a journey is universal and invariable, and occupies one to three hours, as the case may be. Attempts to combat it are both useless and impolitic. Upon one occasion, after having had almost a whole day frittered away upon one excuse or another (during which time my natives had probably drunk coffee half-a-dozen times at least), when they said, 'first we will drink a little coffee,' I so far forgot myself as to shrug my shoulders. The Danish trader, who was standing by, put his hand upon me and said very gravely, 'You must not do that.' 'Why not?' 'If you do,' he said, pointing to the retreating natives, 'none of them will go with you.' Such would have been the case. In Greenland you must look pleased when you are annoyed, good-humoured when you are angry, and happy when you are cheated, for if you do not none of the natives will accompany you.

After this solemn coffee-drinking is over, you do really start, and your natives, who are greatly excited, row away at the rate of perhaps five or six miles per hour. You say to yourself, 'Dear me, I had no idea these Eskimo fellows could pull so well,' and begin to calculate that six times five is thirty. After you have gone a few hundred yards, however, your natives suddenly leave off pulling, you hear a shout behind, and, turning round, you perceive a kayaker, who is paddling desperately after you. Something dreadful seems to have happened—perhaps the colony you have just left is on fire. Not a bit of it. When the kayaker comes up he hands in an old sock, and, after a few minutes' conversation, he turns round and paddles home again. This sock will appear again by-and-by. It had been accidentally forgotten, and its recovery affords your crew ten minutes' subject for conversation. Long before this time has expired, No. 3 rests on his oar and lights his pipe, and as the seats are close together, he stops Nos. 2 and 4 as well. After you have gone about a dozen yards more,

No. 4 gets out *his* pipe, and, as he borrows matches of stroke, the whole crew ceases to pull. About this time the nose of No. 5 begins to bleed, and he lays his head over the side of the boat for a quarter of an hour. Then the steersman points out an eider-duck which is approaching, and all who have guns immediately blaze away, most likely without doing any execution; but if by chance they wing the bird, it drops into the water several hundred yards astern or on one side, which causes you to go so much out of your course. After these superhuman exertions all stop and look intently at you, and at last one of them plucks up courage and says 'snaps.' Now, I explained in a previous paper* what 'snaps' means in Greenland, and I am not going to repeat that description; but let me say that, after the coffee-torture, there is no torture so severe to which the traveller in Greenland is put as the 'snaps' torture. It is inflicted upon him morning, noon, and night. He has to pour out liqueur-glasses full of the nasty corn-brandy in cold weather, in wet weather, and in stormy weather. He has to stop in the middle of important work to do it, he has to stop when time is of the utmost consequence to do it, and he is awoke out of his sleep to do it; and he must always do it smiling away, as if it were one of the greatest pleasures of his life. In the short season of last year, although the 'snaps' was cut down as far as possible, I dispensed more than ten gallons of this abominable corn-brandy, which quantity amounted to about three thousand glasses.

The incessant stoppages which occur upon one excuse or another when one is being rowed by Greenland crews, render it almost impossible to cover more than twenty miles in a day. Half as much again could be accomplished by the same amount of exertion if the natives would condescend to keep to their course, instead of dodging about to one side or the other in search of amusement or sport. First impulses cause one to attempt to check their erratic tendencies, but a little experience shows that it is most unwise to do so. For the native, when he comes with you, is little tempted by your money, and comes because he supposes that he will have a jolly time, that he will be amused, that you will keep his stomach well-filled, or that he will visit his friends in neighbouring settlements; and it is quite foreign to his intentions to work hard, or to submit to privations, or to visit uninhabited places, far away, where he will not meet with the amusements which he intends to enjoy. From these reasons you will perhaps understand why

* *Alpine Journal*, vol. v. p. 22.

it is desirable that a traveller should be able to act independently of the natives.

The first desideratum is a boat or canoe that can be managed by a single person. When I returned home in 1867 I brought along with me a native kayak or skin-canoe to see whether it could be adapted to my purposes (model exhibited). I soon acquired a considerable degree of expertness in turning it bottom up, but all my efforts to keep my head above water were failures until the canoe was provided on each side with an outrigger float of cork. There was, however, a second and a fatal objection to its use. It would not carry one half of the things which were indispensable, so I looked out for another craft of greater capacity. The ordinary English canoes were even less suitable than the kayak, for they were less strong, scarcely more capacious, and almost equally unstable. There may be expert canoists among my readers who may think it a small matter to be upset; but allow me to say that whatever you may do in Europe, or in warmer climates, you must not be capsized in Greenland. The water is seldom more than two or three degrees warmer than 32° Fahrenheit, and its temperature is generally 29° to 30°. A few minutes' immersion in water of that temperature is sufficient to numb the hardiest person. I was relieved at last from all perplexity on the score of a boat by a clever engineer of my acquaintance informing me that he was constructing, in conjunction with a fellow-workman, a screw-propeller canoe which was to be driven by the feet. This boat was almost exactly adapted to my purposes. It would take on board all that was necessary, had little tendency to capsize, and weighed about 120lbs. Packed in a huge case, which resembled an overgrown coffin, it made two stormy voyages across the Atlantic, and came home safe again. There was some little difficulty at first in getting it shipped at all, for the Thames river-side sharks humorously pretended to decline 'the job,' on the ground that I was smuggling Tichborne out of the country.

This screw-propeller canoe served me extremely well, and I felt that with it I was prepared for whatever might happen. Although I say that it would carry all that was necessary, you must understand that it seldom or never did carry all my baggage, which, as a rule, was taken in another boat; as it was not my intention or wish to do without the natives, but only to be able to act independently, provided they would not accompany me. Fortunately, I had no serious trouble with them, except on one occasion quite early in the season, when, owing to bad interpreting, they supposed that they were to go to a spot twelve

miles to the north of the right place. When they came to land I pointed out that it was not right; but they held to their bargain, and persisted that it was the place to which they had contracted to come. The squabble was protracted, and ended by their saying that if I liked to stop there they would stop, but that if I didn't like to stop there they would go home at once. On this I fired up, and ordered them to put all the things out of the boat, and to go home, admonishing them further that the Danish trader at their settlement would be sure to send them back to fetch me. This display of vigour rather took them aback; they gave in, came on to the right place, stayed there a week (notwithstanding that it was uninhabited) and travelled several weeks afterwards with me as well.

These journeys up and down the coast, tame as they may seem to be, were sufficiently adventurous and exciting. In consequence of the rapidity with which squalls arose, it was necessary to coast the shores closely, so as to be able to come quickly to land. A great part of those shores was fringed with immense icebergs, which had drifted from the Umenak fiord and the Tossukatek ice-stream, and were undergoing rapid dissolution. Sometimes the sea was covered for mile after mile with *débris* of these bergs, packed too closely for my canoe to get through. At these times the larger boat went ahead to force a passage, whilst I followed closely in its wake, and even then it required constant watchfulness to avoid contact with the ever-thawing and revolving masses which, had we come into collision, would have smashed in my thin planks as easily as an egg-shell. To the bergs themselves we usually gave a wide berth (and so will any man who values his life), for besides the slices that fell from time to time from their cliffs above, huge masses shot up unexpectedly from their depths beneath. It seemed to me that there was always more danger to be apprehended from the grounded bergs than from those which were not fixed, though these latter can also perform very wonderful antics.

We were coasting the northern shores of Disco Island and passed an iceberg which was about a mile from the land. It was a large berg, a quarter of a mile or more in diameter, with a pinnacled summit rising a hundred and fifty feet above the sea, and cornices around its base, showing where the water-line had been at different periods, and, lower still, flutings which marked the fretting of the waves. The sea was like a mirror and dotted, round about the ice, with countless eider-ducks. In a moment, the huge mass split into three nearly

equal portions which fell outwards into the sea with a terrific roar. The frightened birds took wing and hurried off, whilst the riven ice continued to revolve until what had been the base of the iceberg became the summit. One gigantic prong, a most audacious-looking thing, which had been a projecting tongue beneath, uprose in the air like the sail of a windmill to double the altitude of all the rest, and carried in its recesses an immense volume of water which fell back in an imposing cataract as the ice became erect. Even the stolid Eskimaux gasped with wonder as they saw this happen, for the body of water was vast enough to appear green against the sky whilst falling from a height which must have greatly exceeded that of Niagara. The prong wheeled round, and whilst still high in the air dashed against another of the great masses and was smashed into a thousand pieces. The concussion seemed to shake the very sea, and the noise which followed was deafening. Gigantic waves rolled out from the centre of commotion, and were shivered into spray against the frozen walls. Underneath the water the combat was equally ferocious, and shattered blocks momentarily rose to join the *débris* on the surface. At last the three original masses were divided and subdivided into hundreds of pieces, which gradually came to rest, though the sea for miles around was covered with undulations which had been produced by their disruption. In a quarter of an hour the uproar almost ceased, for the destruction of the majestic iceberg which had been such a splendid spectacle was completed, and not a fragment could be seen that rose thirty feet above the water, though its ruins covered a space which was not less than a mile in diameter; but long afterwards our boats were tossed in the heaving sea, and the echoes rolled back from the cliffs of Disco as the swell broke against the rocky shores.

The risks of being caught in squalls at sea, or of being detained upon inhospitable shores through stormy weather setting in, are the most serious ones which have to be taken into consideration in Greenland. The food question there, as almost everywhere else, is the most important of all. You cannot rely upon providing for your daily wants with your gun, but, as a rule, must take your food about with you. All the stuff for my own especial use I took out from Europe, as I found that the Danish stores, although nominally able to supply almost all the heart can desire or the stomach wish, do not answer to the calls which are made upon them. For example, I came last year to one settlement where the only stores for sale were china buttons, fish-hooks, and lucifer-matches; all very good things in their way, but rather indigestible. As a

general rule, however, a considerable portion of the food that is required for one's natives can be obtained at the Danish stores. When the Danes travel with Greenlanders it is customary for them to give them about a pound each of bread per day, coffee and sugar twice a day, snaps three times a day, and a shilling to one and three pence in money. Whatever the natives require beyond the above-named things they have to provide for themselves; but there is seldom any difficulty on this account, for the Danes very rarely do more than travel from one settlement to another, starting from one place in the morning and arriving at the next within twenty-four hours. In my case it was not possible to leave the larder to supply itself in this easy fashion, as I went sometimes for ten or twelve days away from the settlements and lived under canvas. My plan was to offer premiums to the natives for everything eatable that could be obtained. Thus I paid two and threepence for a seal, sixpence for an eider-duck, fourpence for a ptarmigan, and so on. The arrangement was popular with the natives, as it was a novelty to them to be paid four or five times the usual prices, and at the same time to have the articles returned for consumption. Our diet was occasionally varied by burgo-master, great black-backed or kittiwake gulls, though it generally consisted of ptarmigan and eider-ducks.

The reference to the last-named birds recalls an old perplexity, which I mention because some reader may perhaps be able to throw light upon the matter. Eider-down is a valuable article of commerce, and is greatly in demand for quilts. At Copenhagen it is worth twenty shillings a pound, yet in London eider-down quilts weighing four pounds and a half are sold for six and thirty shillings. Now what I want to know is this—If eider-down is worth first-hand twenty shillings a pound, and quilts weighing four pounds and a half are sold for thirty-six shillings, how much chopped straw and old feathers has the British tradesman to insert to realise his honest profit? I suggest this question as a proper one for middle-class school examiners.

I acquired popularity cheaply with the Greenlanders by allowing them an unlimited amount of coffee, but I shall never, no never, get accustomed to their peculiar method of making that beverage. When we came to land, whether in morning, noon, or night, they immediately dispersed to collect wood and water; and as soon as the fire was raised the green berries were placed over it in an old frying-pan which we always carried about with us, to be roasted, or, properly speaking, to be burnt. As soon as this part of the operation was completed

(and it usually consumed at least an hour), the kettle was put on the fire to boil, and the berries were pounded between two stones, first of all being put inside an old and very dirty sock. I fondly imagined that they would use a coffee-mill if I gave them one, but they declined it on the ground that it was a complicated machine which destroyed the true aroma of the berry! They admitted that an old seal-skin glove would answer nearly as well, but maintained that nothing could equal the unapproachable bouquet which was imparted by a dirty old sock or stocking.

The customs of the natives are eminently distressing to the fastidious traveller. On the other hand, it must be admitted that they have several good qualities which go far to make amends for their filthy habits. Their good-humour is seldom put out; you can trust yourself amongst them, solitary and unarmed, without fear of treachery or violence; and, notwithstanding their communistic tendencies, they have acquired a worthy respect for the property of strangers. I lost nothing during the whole time I was away, although hundreds of objects were frequently and unavoidably exposed or left in their charge, many of which could have been easily purloined, and must have been extremely tempting to them.

So much for the natives. There is no country upon the face of the earth which can more properly be termed mountainous than the land which they inhabit. I have seen almost the whole of its coast now (at a greater or less distance) from Cape Farewell up to $71\frac{1}{2}^{\circ}$ N. lat., and I know that there are scarcely a dozen miles out of these 700 miles of latitude where the country possesses a lowland character. There are, I should suppose, immediately bordering the coast, thousands of peaks 3,000 to 7,000 feet elevation. Some few, though not many, are higher, and none are very much higher. There are no great peaks towering above their fellows as Mont Blanc towers above the rest of its chain, and in this respect the western coast of Greenland resembles the western coast of Norway; but as far as I know the Norwegian coast, it will not for a moment compare with the Greenland coast, where the mountains in all respects save altitude are scarcely inferior to the noblest of the Alps. Still it must be confessed that the want of dominating summits, which are so valuable for the purposes of exploration, is a very great drawback which is much to be regretted. Upon myself it has had a disastrous influence, for I have sometimes gone on day after day and week after week, constantly expecting to discover, though never finding, a peak rising well above all the rest, and

so have been led to pass by mountains whose ascents might have yielded good results. In general, the mountains look their best at the end of the spring or at the commencement of summer, when the snow, although rapidly disappearing, still remains in great beds and in all the gullies, displaying the architecture of the peaks, and giving relief to the precipices; but by the middle of the summer, under the influence of perpetual sunlight, the snow vanishes with extraordinary rapidity, and at the end of August the mountains are stripped bare, and often exhibit from summit to base scarcely anything except naked rock. These general observations apply to the whole of the western coast of Greenland—the remarks which follow concern only those districts in which I have actually set foot. First, I will say a few words regarding the elevation of the land, next a word respecting the snow-line, then a little touching the constitution of the mountains, and lastly something about the interior.

In the neighbourhood of Egedesminde the hills are perhaps lower than in any other part of Greenland; they have been much degraded by glacier-action, and are monotonous in the extreme. The highest points are probably not more than 500 feet above the sea. In the vicinity of Christianshaab their elevation is more considerable, and some points exceed 1,500 feet. Round about Jakobshavn the highest mountains are more than 2,000 feet above the sea, and the general elevation of the land steadily increases as the Waigat strait is approached. On the mainland side of the Waigat, in the southern part, the highest summits are more than 3,000 feet; at the northern end 4,250 feet; and in the centre 6,000. The most important mountain on this side of the strait, a grand snow-capped peak with several large glaciers, is situated nearly midway between its two extremes, and it is, I believe, considerably over 6,000 feet in elevation. On the side of the Noursoak peninsula which faces the Umenak fiord, there are numerous peaks rising immediately from the sea to a height of more than 7,000 feet, and this elevation is nearly maintained in the islands of the fiord. These islands contain some of the most imposing mountains that I have ever seen, extraordinarily steep, with glaciers streaming from the summits right down into the sea. The island on which the colony of Umenak is situated, although much less elevated than the other islands which I have just mentioned, is remarkable for having a mountain that appears to be inaccessible.* To the north of the Umenak fiord there are

* See illustration accompanying the last number of the *Alpine Journal*.

the large mountains with pointed summits, which I discovered in last August were more elevated than any others known in Danish Greenland. Their very situation is unknown at present, for neither I, nor any others, have travelled in their direction; and, looking to the fact of the constant increase in the elevation of the mountains the farther we proceed to the north, I shall not be surprised if still more elevated summits are discovered beyond them.

Last year I coasted the larger part of the great island of Disco, and circumnavigated the whole of it. It is a mass of mountains from one end to the other, but none of its peaks attain so great a height as the highest of the mountains in the Umenak fiord, although there are some peaks towards its northern extreme that do not fall much short of them.

The snow-line in Greenland is generally stated by authors, who know nothing whatever about the matter, to range from 1,500 to 2,000 feet. This is certainly not nearly high enough (if by the term 'snow-line' is meant the lower boundary of a region in which great snow-beds and fields are permanently found), yet I am scarcely prepared to state what height should be assigned to it. The fact is, that not a few of the highest mountains which I have seen have *not* a snow-line. Indeed, I can go farther, and say that many of the higher mountains have no snow whatever left upon them by the middle of the summer. Even taking into consideration the fact that both of the years in which I was in Greenland were exceptionally warm ones, I am disposed to think that 4,000 to 4,500 feet is a much closer approximation to the truth than the 1,500 to 2,000 feet which have heretofore been stated as the height of the snow-line.

The mountaineer in Greenland, besides experiencing all the usual difficulties, meets with some which are the result of the peculiar constitution and structure of the mountains. In the districts between Egedesminde and the southern part of the Waigat strait, the rock is almost exclusively gneiss. The whole of this land has been at some early period completely covered by a sheet of ice, and the rocks have been ground down to an extent that cannot be seen in the Alps. The expression '*roches moutonnées*' seems to me to be inapplicable to these ice-eroded rocks, as they for the most part want the peculiar characteristics which gave rise to the term. I propose to call them *roches nivelées*. They are so smooth that it is all but impossible to walk upon them in boots such as we employ in the Alps, and the Greenland skin-boot is necessarily resorted to. The gneiss comes to an abrupt termination at the southern end of the Waigat, and, although it still forms the

bases of the mountains, and peeps out occasionally underneath the other formations, no great mountains of it are again met with until the termination of the Umenak fiord is approached. The immediate mountains are formed exclusively of basalts and sandstones, the highest summits being invariably basalt.

The sandstones of these districts are for the most part coarse and crumbling. They attain in some places a height of 1,300 or 1,400 feet, but seldom or never more. As they are eroded with great facility, the streams which course down the mountain sides cut deeply into them, and form profound and highly picturesque gorges, which, however, are extremely inconvenient to the traveller, who has frequently to make great detours to avoid them. These gorges are good hunting grounds for fossils, though somewhat dangerous ones, for their sides have an ugly way of falling in without notice, and so too do the old snow-beds which generally are found in their most profound parts all the year round. I was clambering up one of the gorges last year, and touching the sides of the snow-beds to steady myself as I walked over the rocks in the stream, when a mass of hard snow, which I estimate must have weighed not less than 25 to 30 tons, fell into the stream about ten yards behind me, completely blocking up the ravine.

The basalt mountains have also their own particular disagreeable peculiarities. Loose basalt *débris* lying over fast basalt is a most vexatious thing to the temper, and is scarcely less dangerous, when lying at a considerable angle, than new snow over old snow. We had to pass over a considerable amount of this, at an angle of about 30°, when making the ascent of the mountain Kelertingouit (in the Umenak fiord) last year, and for a time it completely stopped our progress. We pawed and pawed in it without advancing a single step, and it seemed as if it would not be difficult to start an avalanche of it. The dykes of basalt, which pierce the older basalts and the sandstones, are also frequently a considerable hindrance, and so too are the walls of columnar basalt which frequently intervene. We had to clamber two such walls on the ascent of Kelertingouit, and in descending all of us had to be lowered down them like bales of goods. The basalt cliffs not unfrequently rise sheer for 3,000 to 4,000 feet, though there is generally one side to all the mountains with moderate slopes. Such is the case with Karkarsoak (a mountain at the northern end of the Waigat), where on the side of the strait there is more than 4,000 feet of precipice, though on the side facing the land there is nothing to hinder one literally walking to the top, which I did with a single Eskimo lad.

From all the principal summits you perceive the vast glacier-clad interior of the country, stretching from north to south in an unbroken line, with a crest as straight as a sea-horizon. As I have already said, there are no marks upon it which enable one to calculate the altitude to which it rises, or the distance to which it extends. But having now seen it from several elevated and widely separated positions, as I find that its summit line always appears lofty, even from the highest mountains which I have ascended, my impression is that its height is generally not less than 8,000 feet, and in some places perhaps surpasses 10,000 feet. Whatever its altitude, it is the only great region on the surface of the earth that is known to be enjoying a glacial period, such as has been supposed, with a high degree of probability, to have existed at former ages over a large portion of the world. Whether it actually extends unbroken over twenty degrees of latitude, and in some parts over more than as many degrees of longitude, or whether it is divided by great fiords into numerous islands, and contains vast lakes in its interior, are questions which no one can answer at the present moment, and are some of the questions which I hope to be able to answer at a future period.

MOUNTAINEERING IN THE GREAT ATLAS. By JOHN BALL, F.R.S. Read before the Alpine Club, March 4th, 1873.

IN the spring of 1871 Sir John Drummond Hay, the British Minister in Morocco, obtained from the Emperor for Dr. Hooker, the eminent director of the Royal Gardens at Kew, permission to collect plants in the range of the Great Atlas. It is well known that, owing to the fanaticism of the inhabitants and the jealous policy of the rulers of Morocco, that great mountain range has been hitherto inaccessible to travellers. About the beginning of this century Mr. Jackson had been allowed to accompany a body of troops despatched by the then reigning Sultan from Morocco to Tarudant, and on the way crossed one of the lower passes in the main chain; but in his excellent work on Morocco that traveller has given no particulars as to a route which has probably never been traversed by Europeans, excepting in the capacity of slaves taken from ships wrecked on the West Coast. Gerhard Rohlfs had in our own time succeeded in travelling in disguise through the eastern part of the Great Atlas, but under conditions which allowed him to give little information as to the country; and

still more recently M. Balansa, a botanist, had reached the skirts of the mountain range near to the city of Morocco. His excursion was a short one, and he was speedily forced to return to the port of Mogador, and to quit that part of the Empire.

Along with Mr. Maw, a gentleman who has been eminently successful in the cultivation of new and rare plants, I was fortunate enough to be able to accompany my friend Dr. Hooker, and to take advantage of an opportunity unique in the history of Morocco for exploring a region which has long excited in the highest degree the curiosity of naturalists.

Although the time at our disposal was unavoidably limited we were led to hope that the express orders of the Sultan, and the favourable disposition evinced by the Governor of the district nearest to the city of Morocco, would secure to us the necessary facilities for visiting several of the main valleys, and attaining the highest summits of that part of the chain. There is indeed reason to suppose that these may be surpassed in elevation by the more eastern portion of the Great Atlas, inhabited by independent tribes, and virtually independent of the Sultan's authority; but there remained ample occupation of the most interesting kind for the three short weeks which we were able to give to that portion of our journey.

We speedily became aware that even the authority of an absolute ruler does not avail to undo the effects of immemorial tradition, sustained by the influence of religious fanaticism. Although a ride of five or six hours suffices to carry one from Morocco to the foot of the mountains, we found after as many days that we were unable to penetrate into any one of the interior valleys, and that we were constantly baffled by more or less ingenious devices, renewed not once but many times in the course of each day.

After sufficient experience of this vexatious sort of life, our tempers were getting worked up to that point at which further evasion was no longer possible. In the evening *palaver* of the 11th of May, which as usual was held in the tent with closed doors, our Jew interpreter was ordered to explain clearly to the two captains who commanded our escort that we had the Sultan's order to permit us to go as high as we pleased on the mountains, and that if we were to meet further opposition we should send a courier to the viceroy at Morocco, and wait where we were until we received his answer.

As usual, our captains retired to lay their heads together, and finally returned with the Sheik of the next valley, de-

claring that he was ready and willing to conduct us 'as far as the snow.'

The next day was spent in traversing the low line of hills that divided us from the valley of Aït Mesan, and ascending it to a point at least ten miles nearer to the main range than any we had yet reached. The bolder scenery, Pyrenean rather than Alpine in character, the sight of a real mountain torrent with a tinge that spoke of melting snow, and the seemingly friendly disposition of the sheik, all put us into better spirits; and our good humour was increased by an abundant harvest of plants, some rare, others quite new to science.

Without any overt opposition, the arrangements were made for a start on the following morning.

We were distinctly assured by our Sheik that he was to lead us to the snow; and as the only snow visible lay on the upper zone of the highest mountains, the promise seemed to mean a good deal. But on the other hand it appeared to me that our position with reference to the head of the valley was something like that of Châtillon in the Val Tournanche, and that, doing our best, we could not expect to attain to any great height on the lofty rugged barrier that shut us in on the south, if we were, as arranged, to go and return on the same day.

As we left our camp standing and our escort in charge of our possessions there, little delay should have occurred next morning; nevertheless the start was not made till about six o'clock. The scenery was very interesting; the plants so attractive that the utmost strength of resolution was needed to content ourselves with merely grabbing hastily at such specimens as were beside the path; but the feeling that we were on the threshold of *terra incognita* carried us forward, and little time was wasted by the way. The track was not very bad until, after more than three hours' steady progress along steep rough mountain slopes, first above the left, then above the right bank of the valley, we found ourselves riding along nearly level ground only a few feet above the level of the torrent. But this did not extend far. In front a steep convex declivity seemed to separate us from the proper head of the valley, and on the left hand a minor glen opened nearly at the same level. Midway on the declivity in front of us was perched a small village. Above this the rocky ground rose, rugged and patched here and there with shrubs and small trees, but below the land was cultivated and enclosed by stiff thorny fences and walls of loose stones. We had passed from summer into spring, and had left the last olive-trees below us, so the corn was not yet in ear.

I had occasion to become well acquainted with the path leading up to that village, and I shall never forget it; for though there is no obvious reason why it should be more detestable than any I ever encountered elsewhere, it undoubtedly seemed so the first time I passed it; and it appeared considerably worse on each successive occasion when I repeated the passage. It winds up between the aforesaid stone walls topped by spiny shrubs, and at the same time serves as the bed of the stream that flows out of the lateral glen. Eager to snatch such plants as came within my reach, I had dismounted, and made my way on foot ahead of my companions who sat sedately on their mules. As we advanced the way grew rougher, the stones were horribly slippery, with holes between big enough to hold a man's leg up to the knee. The wonderful Morocco mules scrambled up behind me, but not without desperate struggles; and when I would fain stop to gather a lovely pale blue daisy from the crevices on either hand, I was forced to scramble on through the plashing stream on pain of being jammed against the wall. It was a slight consolation to me to discover afterwards that my companions had not so much the best of it as then appeared. All sorts of thorny bushes with straight thorns and curved spines and hooked prickles, and amongst them the gooseberry-bush—dear to our childhood's years—hang their branches above the track; and the horseman who passes that way must keep a very sharp look-out if he does not wish to try the effect of each and every one of them on the cuticle of his face.

We reached the village; and although we were on this day without our interpreter, it was made clear to us that we were expected to halt and accept an entertainment that had been provided in anticipation of our arrival. I suspect that some of us were not sorry to get a little nourishment, though all were anxious to push on; but it was clearly impossible, without offending the feelings of the natives, to refuse their hospitality, and we put the best face we could on the matter, although the delay cost us more than an hour of precious time.

About eleven o'clock we made a fresh start along a fairly well-constructed path that winds up the rocky slope, and in little more than half-an-hour we reached the summit, and presently found ourselves at Arround, the last and highest village in the valley. A wilder spot cannot easily be imagined. We had reached a height of about 6,500 feet above the sea, and on every side rugged masses of dark red rock rose to about an equal height above the floor of the valley. This extended nearly at a level for about three miles ahead of us, and then

the mountains seemed to close together. The highest peaks of all were concealed by heavy clouds, and between them fell steep ravines, whose slender streamlets joined to form the torrent that meandered through the level ground near at hand.

We now perceived that, although little snow had been visible from a distance, there was no lack of it, and that, too, at no great distance. Numerous considerable patches remained unmelted in sheltered spots, descending to within some 1,500 feet of the level of the village, and it soon became clear that our Sheik intended to fulfil his promise by leading us to the one which seemed easiest of access.

I need not now detail the remainder of our day's work, which became exciting enough before we got safely back to the shelter of our tents, some time near midnight. The obvious result of the expedition was to whet, but certainly not to satisfy, our mountaineering appetite. It was plainly impossible that, having seen our way to reach the crest of the Great Atlas, if not one of its higher peaks, we should allow ourselves to be drawn aside, and to forego the main object of our journey when it was actually within our grasp.

Many difficulties remained, however, to be overcome, and the worst of these were on the side of our escort. It was not merely that they were full of vague suspicion as to the real object of our journey; they had a still more direct motive for longing to quit the valley of Ait Mesan. The place was poor; and, although in pursuance of the Sultan's orders, they were amply supplied with the necessaries of life, they could not here feast on the fat of the land, as they had done in the richer districts at the foot of the mountains, for the simple reason that the land here offered no fat on which to feast. The only way to checkmate the escort was to secure the active co-operation in our plans of the friendly Sheik. He undoubtedly bore us no love; but, unlike most persons of his class that we encountered in Morocco, he appeared to have no fixed aversion to the Giaour, and well enough disposed to get whatever he could for himself out of the strange visitors.

To convert this natural feeling into decided partizanship, we resorted to the chief engine of seduction that had been provided for such a contingency. Shortly before leaving London I saw one day in an old curiosity-shop a quaint weapon of the form of an old horse-pistol, but provided with four barrels of goodly size, each capable of discharging a half-ounce bullet, the whole framed to go off at the same time. We had ascertained that the other articles we had provided as presents—watches, musical-boxes, opera-glasses, and the like—excited

but moderate desire in the Moorish breast; weapons alone seemed to be really prized; and of all weapons this four-barrelled machine, which we called the Young Mitrailleuse, promised to be the most formidable. The gift was presented in due form, and the Sheik was secured. I feel quite sure that whenever the Young Mitrailleuse is called into action the result will be deadly, but not at all persuaded that the victim will be the man against whom it is directed.

Our plan was to return next day to Arround, and on the morrow obtain a long day for ascending as high on the main range of the Atlas as circumstances should permit. Many small questions arose that excited vehement controversy. Certain large tin cases, intended to be packed with living plants, were the main cause of dispute. Finally, the Sheik absolutely refused to allow them to proceed. Nothing, he said, could persuade his people that they were not filled with treasure; they would surely attack us in the night, and murder us all, in order to gain possession of them. The boxes were left behind, and we once more started next day for the head of the valley, bidding a short farewell to our escort, who remained to guard the camp with the vegetable treasure we had already secured—quite as valuable in our eyes as though our boxes had really been laden with the precious metals that the natives imagined.

All went smoothly enough that day. When we reached Arround we found ready for us a native house, whose occupants had been turned out to make room for the strangers. Two very small dark rooms on the ground floor; two more, nearly equally dark, above them; and an open verandah, adjoining the last, made up the Schleuh dwelling-house. Preferring fresh air, Dr. Hooker and I chose the verandah; Mr. Maw selected one of the adjoining rooms; the other served as our kitchen. A stroll up a lateral glen to the east, and the treatment of a number of natives who came to implore medical advice, occupied the afternoon. At dark we applied ourselves to the evening meal, which was enlivened by one of the precious bottles of wine, carried safely from England, with which Mr. Maw had enriched our stores. After this the natural proceeding would have been to lie down to sleep; but, according to our usual practice, Dr. Hooker and I struggled on through a good part of the night in the effort to sort and lay out our plants by the flickering light of a candle, which we vainly strove to shelter from the wind. Having liberally sprinkled the floor with insect powder, we at last lay down to welcome sleep.

The night was very cold, and when we rose at day-break on the 15th of May, the sky was dark, and heavy clouds roofed the valley across. After a little delay for breakfast, we started full of anticipations of the coming day. The floor of the valley stretches nearly level for some distance, at a height of nearly 7,000 feet above the sea. Near the village small fields divided by low stone walls, and some tolerably well-grown walnut-trees, were the only sign of man's appearance on the scene. Above and beyond all looked rugged and bare. On the lower slopes a covering of stunted, sombre-looking shrubby plants; above, dark red and brown rocks. Dotted about on the mountain sides were solitary trees of dark hue and conical form, which at once excited our curiosity. We afterwards found that they belong to a species of juniper common enough on the northern shores of the Mediterranean, where it is a mere bush with a stem as thick as a stout walking-stick. In the Atlas it attains to the dimensions of a forest tree, five or six feet in girth, and flourishes at a level of nearly 10,000 feet above the sea.

Anxious as we were to get on, it was simply impossible for a party of naturalists to travel fast over ground where every dozen paces brought us face to face with plants altogether new to us, and many of them hitherto unknown to botanists. Nor were we much less interested to meet in such an unexpected quarter with many of the common plants of central and northern Europe, at a distance of many hundred miles from their nearest known stations.

Luckily for us, as it turned out, the Sheik had no taste for mountaineering on his own account. He had appointed two active fellows professedly to show the way, and we had besides two of our own faithful attendants, who had accompanied us throughout the journey from Mogador.

One of these was of especial service. He had already picked up eight or ten words of English from the seamen in the port of Mogador, and had gradually added to his vocabulary during the journey. Being a Schleuh by birth, he spoke the language of the mountains as well as the Moorish Arabic of the plain, and was able, to a limited extent, to serve as interpreter. Added to this, his general intelligence, activity, and good humour, made him an invaluable attendant. In about three hours we had reached what might fairly be called the head of the valley, at a point where several streams descending from as many ravines join to form the main torrent. Here stood a small stone shed, and here commences the actual ascent to the Tagherot pass, leading to Sous and the Sahara.

It was now made clear to us that this was intended to be the limit of our excursion. Between a few uncouth scraps of English and abundant gesticulation, it was explained that the people of the opposite slope were given to the practice of shooting at strangers, and that we should risk our lives if we attempted to go any farther towards the pass. It did not suit us to attempt controversy; we appeared to be satisfied, and to be busily engaged in searching for plants in the neighbourhood of the shed. At this time the rain most opportunely began to fall, and as the air was extremely cold and raw, we suggested the propriety of lighting a fire in the shed. This quite suited the fancy of our scantily-draped attendants, and ten minutes after they were crouching over a fire which they had contrived, I know not how, to light. With one accord, we immediately started along the beaten track which, as we already knew, led up to the pass. As we pushed along up the tolerably steep slope, keeping always within sight of the path, but drawn to one side or the other by the new plants that came into view, the weather grew steadily worse, and we rightly calculated that our friends below would not suspect us of stealing a march on them, and that even if they were to look out for us we should very soon be lost to view.

An unexpected incident interfered with our project, and might well have marred it altogether. When we had ascended some 700 or 800 feet, and were already out of sight of the shed, we caught a glimpse of moving forms on the track above us, dimly visible through the rain now mixed with sleet. It presently became evident that a party of natives, with two or three mules, were descending along the zig-zag track. It was a strange position for three Englishmen, not knowing a single word of the language, in a part of the world where the natives are utterly unused to see a stranger even from the neighbouring low country. We had no idea of attempting to conceal our presence; but we thought it judicious not to give them time to meditate hostile designs, and therefore kept some rocks between us and them until they were quite near at hand, and then allowed them suddenly to see us when only some twenty yards distant. What they may have thought we had no means of telling; they passed on, and we continued our ascent amid weather constantly growing worse. As it became pretty clear that the ground would soon be covered with snow, our feverish anxiety to procure specimens of every flowering plant that we met grew stronger every moment, and was only combated by the desire to reach at least the summit of the pass.

In less than an hour after our encounter with the native

party we began to hear shouts and screams from below. We rightly guessed that the strangers had reported the circumstances, and that our guides were hastening after us to induce us to turn back. This was, of course, an excellent reason to urge us to push on; but our pursuers were light of foot, and by the time we had attained a height of about 11,000 feet the first of them overtook us. Mr. Maw, the youngest of our party, was a little ahead, and to him the most vehement remonstrances and gesticulations were addressed. Mr. Maw used the argument which is understood in almost every known language, and presented the man with a piece of silver. For the moment the effect was quite satisfactory, and with a rueful but resigned air the poor fellow followed the upward track. Presently the second man appeared, panting with the rapid climb, and addressed himself to me with equal energy. I replied in the same strain that had quieted the resistance of his companion, and with a similar result. Botanizing was now pretty nearly out of the question; it was snowing fast, and a violent wind had arisen, so that for the remainder of the way we collected nothing but a few plants growing on ledges of rock where the snow had not lodged. The last part of the ascent was up a broad couloir, on débris lying at a high angle between steep rocks on either hand; but the mule track was well engineered, and carried up a regular zig-zag nowhere inconveniently steep.

By this time the cold had become intense. My guide, if I am to give him that name, over and over again appealed to me in language quite as intelligible as if he had spoken English, or I had understood his native Schleuh. I own that I found something pathetic in his earnestness as he repeatedly kissed the hem of my 'jellabiah,' and explained that it was not only the present suffering but the future consequences to himself of our adventure that he dreaded. The poor fellow's bare legs were cut and bleeding, and, in his scanty dress, he was evidently suffering severely. Presently I heard shouts through the howling of the wind, and a few moments after Mr. Maw re-appeared descending towards me. He had been on the top of the pass, about 100 feet above the spot where we stood. The ridge was level for 10 or 12 yards, and then appeared to descend on the opposite side. He was able to see absolutely nothing, and found the cold and the violent wind quite unbearable. This I was quite ready to believe, for in spite of the active exertion I found myself near the limit of what I could bear. I was quite ready to forego the honour of the last hundred feet; and when we joined Dr. Hooker, who was about fifty feet below me, he displayed the same forbearing spirit.

I don't know what my appearance may have been, but I can testify that that of my companions was decidedly peculiar. Their hair and beards were completely matted with ice, and the blackish-red aspect of their faces would have disguised them from their nearest friends.

As we descended, we found that the snow had fallen nearly to the level of the shed where our attendants had patiently sat, not sorry to enjoy its shelter. We were told that the Sheik was waiting for us a little way down the valley, and we pushed on to the spot. Food of some kind was provided, but for my part I was too wet and cold to feel disposed for more than a mouthful; and, as soon as I decently could do so, I pushed on to our temporary home at Arround.

On the preceding day we had agreed that, if all went well on our first excursion, we should make a serious attempt to induce our Sheik to let us have a second day's mountaineering in the Atlas, with the hope of gaining some peak and getting a bird's-eye view over the unknown region to the south. But that project, like many of a mountaineer's best projects, was settled in the negative by the elements. It snowed heavily all night, and in the morning the mountains were completely covered to within a few hundred feet of the village, save where the rocks rose too steep for snow to rest, and we made up our minds to return to our camp. Disappointed as mountaineers, but consoled as botanists by the rich booty that we had managed to store up, we set our faces once more down the valley. It was fortunate for us that snow and not rain had fallen on the mountains, and that the heavy clouds still kept the valley in shade. As it was, the passage of the torrent was not quite easy. There are no bridges in Morocco, and it is quite a common occurrence, even on frequented roads, to wait several days before it is possible to ford a stream. Our camp presented a dismal appearance. Our tents had been pitched in a fallow field almost bare of vegetation, but the rain of the last thirty-six hours had turned the surface into one mass of slimy mud, and the wet had soaked in under the tents, so that there was scarcely a single dry spot to be found. Such a state of things is not pleasant to ordinary travellers, but to botanists it is little less than a calamity.

I might here end this short account of our mountaineering experiences in the Great Atlas, but a regard for the good repute of a region not yet familiar to travellers makes me say that the outbreak of bad weather which we encountered on the 15th and 16th of May was followed by a delightfully clear and brilliant sky. Six days after our ascent to the Tag-

herot Pass, Dr. Hooker and I—Mr. Maw having meantime returned to England—reached the summit of Djebel Tezah, a conspicuous peak about 11,400 feet in height, in a lower part of the main range, and some forty miles nearer to the coast. As before, our guide on that occasion was commissioned to prevent us from reaching the summit; but, either because he had not such good legs, or because climbing was rather severe work under a blazing sun only a few degrees from the zenith, he took the sensible course of resting under a rock, and left the infidels to their own devices. In due time we stood on the peak, with no one to interfere with our enjoyment of a view never before gained by Europeans. The existence of a great mountain valley, enclosed between the main range of the Great Atlas, and a parallel southern chain, which may be called the Anti-Atlas, and watered by the upper stream of the Sous, had indeed been established by Gerhard Rohlfs, who had traversed the lower part of it; but we actually looked across it, and saw, in the southern horizon, at a distance of some forty miles, the heaving outline of the Anti-Atlas, contrasting remarkably with the peaked and jagged aspect of the main chain. We roughly estimated the height of the portion lying opposite to us at about 10,000 feet.

On the 19th we had obtained a fine view of the main range, deeply clad in snow from about the level of 7,500 feet; but four days later—so quickly does the nearly vertical African sun accomplish its work—we found only a few large patches where the snow had drifted on the flanks of Djebel Tezah, and the topmost ridge was completely bare. The ascent was perfectly easy, the form of the mountain being somewhat like that of the Mole near Bonneville, familiar to Chamouni tourists.

Enough has been said to show the members of the Alpine Club that at no great distance from home there is a range of mountains rivalling in height the loftiest of our European mountain chains, and all but utterly unexplored. The fact that the most accessible pass in the district due south of the city of Morocco is as nearly as possible 12,000 ft. above the sea, makes it probable that I am not far wrong in estimating the height of the more conspicuous summits which we saw at about 14,000 English feet; but the concurrence of native testimony to the existence of mountains white in summer in the more eastern portion of the chain makes it highly probable that there are peaks yet unseen by travellers that rival, if they do not exceed, the giants of the European Alps.

In point of accessibility, however, the Great Atlas presents

a curious contrast to other portions of the African continent. The difficulties and dangers that beset a traveller in Eastern Africa arise from the climate and the natural obstacles; but the rude races of the country do not appear to have any fixed antipathy to strangers, or where they have such feelings they are subject to the ascendancy which a white man of ordinary determination and coolness can exert over utterly uncivilised people. In Morocco the climate is admirable; the natural obstacles of no account, but the traditional policy of the ruling race has passed into the very fibre of the inhabitants, and affords an obstacle all but impassable to ordinary travellers. The Government is so far centralised that in the parts of the country subject to the Sultan's authority no local chief would dare, even if he were so disposed, to harbour a foreigner without the permission of the higher powers; and even when this had been obtained, we learned by experience that a complete network of obstacles arising from the active or passive resistance of subordinate officials remains to be broken through.

The partial success which we obtained has naturally led some travellers to follow on our footsteps. An English gentleman, relying on the influence of some of the foreign consuls, has visited the city of Morocco, with the intention of endeavouring to travel farther into the country, but finding that his food was poisoned by the order, or with the connivance of the governor of the city, he judiciously abandoned the attempt. Two German travellers were more fortunate. Through the good offices of Sir John Drummond Hay they obtained from the Sultan an order of the same kind as that which was granted to Dr. Hooker; and after encountering difficulties similar in character to those met by us, they appear to have penetrated the same valley of Aït Mesan, and, as I understand, attained under more favourable conditions than we did the summit of the Tagherot Pass.

It is possible that the relaxation of the policy of exclusion, which appears to have commenced in Morocco, may gradually be extended, but I do not expect that so great a change will be carried out rapidly in a country which has been not inappropriately styled 'the China of the West.'

Barriers of all kinds are yielding to influences that penetrate, however slowly, beyond the pale of European civilisation; and it is, perhaps, not too much to hope that some of the younger members of the Alpine Club may explore that lofty and altogether unknown region that lies eastward of the ancient capital of Morocco, and set foot on snowy peaks whose very existence is still an unsolved problem.

MONTE ROSA FROM MACUGNAGA. By the Rev. C. TAYLOR.
Read before the Alpine Club, April 2, 1873.

ON July 22, 1872, a party, consisting of William Martin Pendlebury, Richard Pendlebury, and myself, with Gabriel Spechtenhauser of Fend, in the Oetzthal, commonly known as Gaber,* and the local guides, Ferdinand Imseng and Giovanni Oberto, started to attempt the Italian side of Monte Rosa from a point on the left bank of the Macugnaga glacier, called by Imseng, *Rücke Jägi*.†

We had been travelling for some weeks in the Eastern Alps, and had reached Chiavenna by way of the Disgrazia. Then, the party having disbanded, W. M. Pendlebury and I, with Gaber, set off for Macugnaga, while R. Pendlebury agreed to rejoin us at Zermatt after a flying visit to Milan; but it so happened that he came up the Val d'Anzasca, and that on his way he fell in with one Ferdinand Imseng, a guide unknown to fame, whose ambition it was to ascend Monte Rosa from Macugnaga, and thus to accomplish a feat which mountaineers of greater experience had been unwilling to attempt. It was soon agreed, though with no votes to spare, that Imseng should have a trial, and, the weather being at length good, we arranged to start for the 'Rücke Jägi' on the following day.

From the Monte Moro hotel, now kept by the brothers Oberto, Imseng pointed out the route by which he proposed to ascend. The precipitous face of the mountain, running at first approximately from north to south, and then curling round to the east, was from this point full in view; the Nord End being to the extreme right, the Höchste Spitze next to the left, and the Zumstein Spitze farther to the left and in the bend. The Höchste Spitze is described by Mr. Ball as a double tooth of rock, of which the eastern pinnacle is 24 feet lower than the western. The former pinnacle may be called the *Est Spitze*; the latter is known as the *Allerhöchste Spitze*. The ridge which leads up to the Est Spitze runs about east and west, and is seen endways from Macugnaga; but a good broadside view should be obtainable from the neighbourhood of the Cima di Jazi. Between the ridge in question and the Zumstein Spitze is a snow Sattel, which overlooks the Grenzgetscher, and may be called the *Grenz Sattel*. Imseng's plan

* He was introduced to us, with Alois Ennemoser, by the Herr Curat Senn, and has travelled with one or more of us in the years 1870-2.

† This name was written down at Imseng's dictation.

was to mount the Grenz Sattel* and to attack the ridge of the Hochste Spitze from its southern side.

The necessary preparations having been made, we set off with Caspar Burgener as porter, and reached the place of bivouac in an afternoon stroll of four and a half hours; the route being at first through Belvedere, then to the left up the broad and almost level moraine, and lastly to the right, along a ridge of the moraine and up some rocks at the base of the eastern slope, which we proposed to climb. It was not, however, without some controversy that we agreed to take up our station with no other shelter than a wall at our backs. Gaber in particular hankered after the chalets of Pedriolo, and disliked the prospect of passing the night 'under an icefall,' with an empty kettle and no fire; but Imseng, knowing the place, dismissed the last fear as groundless, and, urging the necessity of an early start in the morning, promptly led the way up the rocks on the right, which, though from below apparently bare, were found to be plentifully interspersed with shrivelled twigs of the Alpenrosen. Of these, axes and fingers soon chopped or tore up an abundant supply. Then, after a reconnaissance, we set off again, Imseng with a small waggon-load of fuel scudding lightly along, and at length halting, some few minutes before 7 P.M., at a bleak but well-chosen spot on the mountain side.

No long time elapsed before we had set light to our roses and boiled some snow from a couloir which ran beneath. Then, *inter alia*, we had time to reflect on our prospects for the night and the following day. The ascent which we proposed to attempt had been declined a few days previously by Ulrich and Christian Lauener, and in 1867 by Christian Almer. The veteran Lochmatter had also pronounced against it, and it was not surprising that Gaber, more or less backed by one of his Herren, should have felt qualms about following an unknown local guide into a region which some of the highest authorities on mountaineering had condemned as dangerous. But Imseng, nothing daunted, steadily maintained that his route was comparatively little swept by avalanches, and would be reasonably safe at an early hour of the morning. It has been thought, notwithstanding, that we showed a want of caution in undertaking the expedition; but it was natural that

* We did not, however, complete the ascent of the Sattel, but inclined a little to the right of it, and took to the rocks at their lowest point.

the positive statement of a man who knew the mountain, and had examined the proposed route* repeatedly from different points, should have been allowed to outweigh a very considerable amount of less definite testimony on the other side. At all events we might go to the end of the lower rocks, and then turn back if circumstances proved unfavourable.

Soon, however, the fading of the light changed the current of our thoughts, and warned us that whatever might be in store for us on the morrow, we were likely to find our present quarters of the coolest. We had had experience of *châlets* in descending order of comfort, from the luxurious hay barn of Waxegg to the open cheese shed of Porcellizza, but a lower depth seemed now to be reserved for us under the *séracs* of Monte Rosa. The night, however, was passed more comfortably than we had any right to anticipate, the temperature being remarkably moderate for the situation. Lying with our backs to a low wall of rock, and our feet sloping towards the moraine of the Macugnaga Glacier, we settled down as best we could; a scientific member of the party speculating what would become of us if the laws of friction should be repealed during the night. Each Herr coiled himself up in a blanket, while the three guides and the porter, having only one between them, lay closely packed in the neighbourhood of the fire. Imseng, with no extra covering but a woollen nightcap, was quickly at his ease, and proved to our dissatisfaction that he was fast asleep: the rest appeared to sleep less soundly; but those who watched late had the consolation of seeing a bright moon shining upon a panorama of ice and snow which no visitor of Macugnaga will need to have described. About midnight Imseng woke with a slight shiver in time to save the last spark from extinction. This led to a general stir. Then, the fire having been made up, we once more composed ourselves till the guides aroused us by their preparations for breakfast, which was, after all, but a very scanty meal, owing to the difficulty of descending the rocks in the dark to procure snow.

At length, some time after 2 A.M., the breakfast was over, and everything seemed ready. We were on the point of putting on the rope and making our start while it was yet dark, when a deep roll from the Zumstein announced that the avalanches were waking early. Gaber thereupon put in a

* In company, I think, with Alexander Burgener. I was told, in 1870, by Franz Burgener, that some guides proposed to make the ascent, and to ensure the popularity of the excursion by building a hut.

final protest against proceeding, for when an expedition is once fairly launched he is not the man to turn back. 'Guide,' said he, 'what think you? I think it is very dangerous;' but Imseng, though with a shade less of confidence than overnight, still maintained that his route was safe. In the discussion which followed it was urged reasonably enough that the warmth of the night must have loosened the foundations of the séracs and increased the danger to be apprehended from avalanches. Even Imseng, as I learned long afterwards, shook his head and said that he did not *quite* know, when asked in an undertone by R. Pendlebury what he really thought of it. But in spite of all whispered doubts the party of progress remained steadily in the ascendant, and we determined, without too closely defining the meaning of our sage resolve, that we would go just so far as we could with safety go. Accordingly the rope was put on, and the start made some minutes before half-past two, in the following order: Imseng, R. Pendlebury, Oberto, W. M. Pendlebury, Gaber, and myself.

The first few steps were not encouraging. We groped slowly over the rocks to the couloir, where the leaders floundered into a mass of soft snow, which augured ill for the condition of the slopes above when they should have been exposed for a few hours to the action of the sun. Things, however, were not so bad as they seemed; the main part of the couloir was hard enough, and it was merely an accidental accumulation at a point near the edge which gave ground for apprehension. Passing the couloir we came upon rocks again, and then before long to a second couloir considerably broader than the first. Imseng now turned abruptly to the right, and showed a disposition to go straight up, while Gaber emphatically dissented, and urged the necessity of crossing. Being some distance behind the leader, and not at once appreciating the situation, I assumed at first that the dispute was about an unimportant detail, and was thus led to conjecture that Imseng was bent upon trying a more direct ascent, of which he had held out hopes the evening before. But he was in reality actuated by overmuch caution rather than by rashness, for as the party advanced in accordance with Gaber's more far-seeing, though bolder, recommendation,* it became evident

* The other course must have led us into difficulties. We have always found Gaber a bold and judicious guide, who can be trusted in trying circumstances. When we had been lost in a storm and partly frozen near the summit of the Ortler, it was mainly through his sagacity that we were enabled to complete the descent.

that we were flanked on the right by a strong battery of séracs. One by one we partially disappeared in a deep furrow, the trail of some huge ice-block which had plunged down the slope to the glacier beneath. Then advancing, unmolested as yet by the enemies we had most to fear, we found ourselves at the beginning of a long stretch of good and fairly interesting rocks.

Our course having hitherto lain almost horizontally along the side of the mountain and in the direction of the Zumstein Spitze, we now turned more to the right and commenced ascending the rocks, rather rapidly than otherwise, considering the size of the party. Our way was for a time safe and plain before us; and, as we struggled up the massive boulders, we shook off the stagnation of the night, growing more and more convinced at every step that Imseng was a true prophet. At length the rocks came to an end for a time, and we emerged upon a precipitous broken snow-slope, which was blocked along its further side, except at the upper corner, where there was a narrow gap looking towards the Zumstein, and surmounted by a small but rather threatening sérac. As we made for this point, going horizontally along the upper part of the slope, an avalanche was observed to break away at some little distance below us. But our route was well chosen; and as we passed through the gap, cautiously though without difficulty, we could not help remarking the skill and judgment with which we had been led.

Nothing worthy of notice occurred between this and the first halt near the end of the lower rocks, a little before 5 A.M. At the start, and for some time afterwards, the slopes on our left, as they fell away in the darkness, had of necessity seemed more formidable than they really were; and almost the first thing that the dawn revealed was a thick cloud which threatened storm as it rolled over us from the valley. But soon the clear light showed us the true nature of the work before us; and long before the halt it had become evident that we had nothing to fear from the weather, except, perhaps, some excess of heat that we would gladly have dispensed with. At the halting-place, which we thought safe and well chosen, we passed a very pleasant five-and-twenty minutes. But the eyes of lookers-on are sometimes sharper, and their imaginations generally more lively, than those of persons actively employed; to one or other of which causes may perhaps be attributed a report afterwards current at Macugnaga, that we halted for breakfast under a dangerous cornice, which to the spectators who watched us from below seemed likely to make short work with us, and which actually fell on the third day after. It could, perhaps,

be decided by a comparison of watches whether the reference in this rumour is to the first halt, or to a shorter one made from two to three hours after, or to a still later occasion when we halted to drink some wine under the shelter of one of the last séracs ; but if, as I incline to suppose, the allusion is to the first and longest of these halts, I must confess that I doubt the accuracy of the report, although, on the other hand, it should not be too hastily denied that a spectator below may have had the advantage of us in more than one particular.

The halt over, we proceeded in the general direction of the Grenz Sattel, with such deviations as the nature of the ground necessitated ; but this part of the route for some hours has left so little impression upon me that I cannot describe it at all in detail. I remember only that we found enough of séracs and crevasses to keep us continually on the alert, and make us unconscious of the lapse of time. The snow, which at the commencement of the day had been hard enough to bring the axe into requisition, was now rapidly softening, and kept the leader fully employed at treading steps, which he did very effectually, perhaps even causing delay by making them better than they need have been. That we made slow progress is evident from the time which passed before the final rocks were reached, but that we were not idle may be gathered from the rate at which the hours flew by ; and indeed there was more work in the expedition than had been apparent from below to practised eyes, or could have been inferred from an estimate of the vertical height to be climbed.

At length, when Imseng had done what might have passed muster for a good day's work, it was suggested that Gaber should change places with him. The change having been effected, we soon came to one of the most interesting portions of the route. Swerving a little to the right, we found ourselves at the edge of a monster crevasse which could be made out from Macugnaga ; then, turning to the left, we walked for some distance along it in the direction of a promising bridge by which we hoped to cross. Before the bridge was an irregular mound, along the front of which we passed without much difficulty. Then, burrowing through the froth of snow on its further side, we crept slowly downward, leaving between us and the crevasse a frail barrier, on the outside of which our right arms were at one point placed so as to overhang the brink. The next moment Gaber was at the bridge, promptly hacking at the cornice which covered its lower end. Imseng, for some reason, seemed to think this bridge impracticable, and proposed to go in quest of another ; but the sound of the axe in

front was the sole reply, for Gaber, though by nature a man of the rocks, is fast developing an acquired taste for crevasses, and it was no ordinary pleasure for him to lead us over the most voracious-looking 'schrund' that it had ever been his happiness to cross.

In the few minutes which elapsed before the preparations for crossing were complete, I took the opportunity of observing the situation from my position in the rear, which enabled me to see underneath the bridge. The crevasse may have been nine or ten yards across. Its solid walls ran straight down till they were lost in the depths, except that at one point they inclined inwards, clamping between them a large block of ice, over which the bridge itself was formed, and which had doubtless fallen in the same avalanche that had piled up the mound behind us. The bridge proved trustworthy, and the abrupt slope immediately above was ascended without apparent risk; then we turned back some few degrees to the right, being driven by the nature of the ground to deviate a little from the direction of the Sattel which it was proposed to ascend. Before long, Gaber, still unreconciled to the expedition, was glad to resign the lead into the hands of Imseng, who once more went to the front, and continued there till the rope was taken off in the evening. The slope of the mountain was now considerable, and the snow, as Gaber afterwards described it, 'bad and hollow,' but there was nothing to suggest extraordinary risk so long as we went with caution, and looked well to every step. After a time, still bearing a little to the right of the Sattel, we came to a colossal sérac heavily fringed with icicles, under which we proceeded to pass, turning considerably more to the right so as to face almost north. As Imseng laboured at the steps, we had leisure to examine the massive structure on our left; but I regret that I am unable to communicate any results of scientific importance, for a crack and a rattle put an untimely end to our observations. Imseng with a shout sprang forward, while the hindmost darted back, and R. Pendlebury, *in medio* but not *tutissimus*, with the rope taut on either side, received a smart rap on the head from a fragment of an icicle; W. M. Pendlebury was struck on the chest by a larger block, and although in the excitement of the moment the circumstance was almost unheeded, yet some days later an expanse of black and blue testified to the severity of the blow: Gaber escaped with a slight contusion above the ankle; I cannot answer for Oberto, but only the first man and the last were wholly out of the line of fire. Nevertheless, the alarm was a false one, for after this slight ebullition the sérac

cooled down and suffered us to pursue our way in peace, though not altogether without a lurking suspicion that the mountain had perhaps not done its worst.

After this we plodded on for I cannot say how long, without seeming to encounter any difficulty. We looked upwards to the Sattel, and saw nothing to hinder us from reaching it. Whether the mountain was growing commonplace, or whether we were becoming hardened to anything short of the sensational, must remain an open question; but suffice it to say that everything was going well, and the idea of failure had vanished from our minds, at a moment when we were on the verge of the most alarming situation of the day. A sudden sliding of the surface through which we trod brought the whole party to an instantaneous halt. Each man planted himself in his steps, and looked on in silence, no sound being heard but the hiss of the snow as it skimmed down the steep slopes on every side. Perhaps an avalanche was coming, perhaps not; we had no means of judging for the moment which of these contingencies was the more probable. And yet our feeling was one almost of indifference, for the reason doubtless that, although we may have been in some danger, we were absolutely free from perplexity, since nothing could now be more self-evident than that we must abandon the Sattel, and make with all care for the very lowest point of the rocks on its right. Accordingly, it was not long before we were again in motion. We had waited for a time to see what was coming, but the sliding went on without diminution, and at the same time, as I thought, without material increase. Gaber, however, remarking that it grew worse every instant, was anxious to be at once on the move, and recommended very judiciously that we should go some distance to the right, and then mount straight up in a line of still snow under cover of a sérac. He had singled out perhaps the only spot in the neighbourhood where the slope was undisturbed. The snow was in motion right and left, and some distance in front, but the current immediately above was turned by the sérac itself, and poured off in a strong stream to the north. At the sérac we made a halt and drank some wine, feeling ourselves for the moment in a position of comparative security, and having a, perhaps, irrational confidence that somehow we must succeed now that we were almost within a stone's throw of the solid rocks. But, confidence or no confidence, the right course was to go on; for had not retreat likewise its risks, which we were in no mood to under-estimate? Earlier in the ascent we might well have been turned back by similar appearances; but with the rocks now close in front, and

hours of softening snow behind, it was clear as the day that we must go forward, since it was no longer consistent with prudence to go back. Whether the situation was really dangerous, we were unable to judge. But it was idle to speculate: the practical issue had to be tried: one stage more, and then the rocks—perhaps. Accordingly we passed under the sérac to the south, and scrambled up its side; a piece of work which under more favourable circumstances might have been thought difficult. We then made for the last sérac, which lay midway between us and the lowest point of the final ridge, and from which a small crevasse ran down obliquely to the right, so as to separate us from the slope by which we were to reach the rocks. The snow here seemed better than below, but, the incline being greater, it was deemed right to use every precaution before we fully committed ourselves. Imseng was sent to the front for the first trial, and went to the full extent of his own rope, now uncoiled for the first time, while the main body of the party remained well placed below; Gaber next followed, changing places with R. Pendlebury; * then, one by one, we stepped over the crevasse, till the last man had left his firm footing under the sérac, and the whole party was launched irrevocably upon the slope.

It was felt that the decisive moment was now at hand, and that in a brief space the fate of the expedition must be determined; but we gave our minds to the work before us, and wasted very little thought on possible consequences. The snow was not to be trifled with, but it bore the pressure put upon it, and showed no symptoms calculated to cause uneasiness; and, indeed, but for the recollection of what we had experienced below, it would scarcely have occurred to us at this point that there was any danger at all to be feared; but, as it was, we went with the utmost caution, fully resolved that up to the last step no chance should be thrown away. I have a sufficiently lively recollection of the scene, but there is little that I could say by way of description which would not be better left to the imagination of the reader. The simple fact was that six men, joined by some fifty yards of cord, were nearing the end of a short steep snow-slope. A few steps, and the head of the column was hopefully near the goal. A few more, with growing confidence but undiminished care, and the last film

* The order from this point to the summit was: Imseng, Gaber, Oberto, W. M. Pendlebury, R. Pendlebury, myself. After reaching the ridge, we used only our own rope, which was 100 feet in length.

of doubt was scattered by a subdued *Jodel* from Imseng, which announced that the rocks of the 'Vorspitze'* were reached, and the day was won.

Up to this point, as we learned on the following day, our porter had been anxiously watching us in company with Lochmatter. Once they had lost sight of us, but we soon reappeared, and thenceforward remained in view until the rocks were reached.† The time must have passed slowly down below; but our own feeling was one of sheer amazement, when we found that five good hours had elapsed from the first halt, and eight hours, including one spent in halts, from the start, for our watches positively assured us that it was not far short of half-past ten.‡

After a few words of consultation among the guides we set off again, going at first to the north of the ridge, the opposite side to that which Imseng had intended to try. While we were still on the snow some one had foreboded that the rocks themselves might present insuperable difficulties, but Imseng pledged his word that success was certain if they could once be reached. I had myself put the question both overnight and in the morning, and had extracted from him the further assurance that, if the worst came to the worst, we might cross the Sattel and find an escape by the route of the Sesia Joch; but as for the rocks, he had seen them from above, and had no doubt whatever that they might be climbed. It so happened, however, that he did not approach them in the way that he had planned, nor do I think it likely that he had surveyed our actual route in detail; but we were more than nine hours of daylight to the good, which gave time enough, though none to spare.

For the first few steps the rocks were not steep, but they were interspersed with some patches of snow and ice. Afterwards they became steeper, and we ascended by a sort of gully, inclining a little to the north; the climbing being perhaps intermediate in difficulty to that in the Zermatt and Breuil ascents of the Matterhorn. Once only, as we were passing

* Imseng's expression for the Est Spitze.

† Burgener then returned to Macugnaga, and, starting at midnight, brought our knapsacks over the Weissthor to the Riffel.

‡ We had expected to clear the snow much earlier, otherwise the expedition might have been abandoned. We lost time, doubtless, by letting one guide lead almost without intermission. The eastern slope of Monte Rosa, being fully exposed to the morning sun, becomes less safe towards midday; and for this reason the *descent* from Monte Rosa to Macugnaga is not, as a rule, to be recommended.

up, and along the face of a wall on the left, we came upon a weak point in the ledge, which, however, was easily detected. After a while we crossed over to a wall on the right, and there spent much time in quenching our thirst from a rock of more than average dampness. In this halt and another of like nature, some hour and a quarter or more may have been consumed; for we concluded a little prematurely that we could now afford to loiter. At one point, which I cannot precisely fix, we encountered an obstacle in the shape of a smooth inclined slab, which no one man alone would have found it an easy matter to surmount; accordingly Imseng was first pushed up, and the rope was then for once brought actually into use instead of being worn merely by way of precaution. The next thing that I remember is our arrival at a point on the backbone of the ridge, from which we looked down to the Grenz Sattel on the left; the Silber Sattel and the Nord End being to our right front.

Here Oberto placed a handkerchief under a stone on the left.

Although we had now been for a long time on the rocks, some good work remained to be done before the ascent even of the eastern peak was accomplished—a peak which is of sufficient importance in the history of mountaineering to be called by a distinctive name, whether Est Spitze or any other, since it was ascended from the Silber Sattel before the Allerhöchste Spitze had been reached, and is cut off from the true summit by a gap which was described as quite impassable. But we felt that the gap must now be passed, and passed it was, though with what degree of difficulty I can scarcely say, for the inclination to discriminate was fast evaporating. The complete ascent of the ridge was to occupy us for what remains of five hours when the duration of the long halts already mentioned is subtracted; and, whether because the time was long, or because we had expected it to be shorter, our freshness showed signs of wearing off before the summit-cross was seen over the left shoulder of the Est Spitze; so that, without meaning any disrespect to the rocks, we began to whisper that we had had enough, considering that the sun had all day poured an unwelcome blaze upon us, after perversely refusing to show us a view from some half-score of peaks that we had climbed before. No vestige of doubt survived to make our toil interesting; there was nothing for it but to work on and long for the end. Upwards again over walls and towers and pinnacles, to which may some future chronicler do fuller justice, and down and outside projecting rocks, and round them to the right, and once more up, till at length the

last impossibility was fairly vanquished, and the labour of thirteen hours was brought to a successful close.*

The usual banquet followed, and does not need to be particularly described; but the champagne of victory had been left behind, for it was voted tempting fate to speak even with an 'If' of reaching the summit. The general view was good, except in the extreme distance, and we could see down under a cloud to Macugnaga. By one half of the party the Matterhorn was now for the first time seen close at hand. As Imseng inspected it, he augured that there was still too much snow upon it; for it was the desire to ascend this peak that had brought us into the neighbourhood, although Monte Rosa had been taken by the way.

A little before 4 o'clock, after a halt of half an hour, we started for the descent in the fresh tracks of a party from the Riffel. Below the Sattel the snow was extremely deep, and we were frequently reminded that there were crevasses under foot; but at length, after all delays, we came to the rocks of Auf der Platte, and our troubles were at an end. We reached the Riffel at about 8.30 P.M., or upwards of eighteen hours from the start. Imseng was giving me his autobiography—how that he was a Saasman, and related to the well-known mountaineering *curé* of that place, who was drowned three years before in the Mattmark See; had been settled for some time in Macugnaga; was twenty-seven years of age—though, by the way, he looked younger; was a *Jäger* by profession, but also worked in the mines—when our attention was arrested by an electric flash from the left, a signal from the Zermatt *cabane* to the lower world. Almost at the same instant we reached the hotel, already full to overflowing, and ordered dinner with a quiet mind, reflecting that a blanket and a doorstep would reproduce all the accommodation of 'Rucke Jägi;' but in due time it was announced that there was prepared for us 'das schönste Zimmer im ganzen Hause,' to wit the drawing-room, where we slept in dreamless state, till roused at six by the general stir to see the first party of the season on their way to the summit of the Matterhorn.†

* The following new route up Monte Rosa may be suggested as worth trying:—Mount the Grenz Sattel from the Riffel, and complete the ascent from this point, according to Imseng's original plan.

† Young Peter Taugwalder, having crossed the Matterhorn with us from Zermatt to Breuil (July 24 and 25) is now in a position to say whether the scene of the accident of 1865 is still traversed. Under his lead things went as well as could be desired. He showed a little anxiety before beginning the descent, but was soon reassured when he found that the last man, Gaber, was to be trusted.

NOTE BY THE EDITOR.

THE Est Spitze of Monte Rosa mentioned by Mr. Taylor is undoubtedly the summit above the Silber Sattel (the hollow between Monte Rosa proper and the Nord End) ascended in 1848 by Professor Ulrich's guides, and subsequently by other parties, who, without any sufficient reason, considered it impracticable to pass from it to the Dufour, or as it is more generally called, the Allerhöchste Spitze. After the reading of Mr. Taylor's paper, a discussion took place as to the relative height of the two peaks, and Mr. Moore suggested that the Allerhöchste Spitze may prove to be in reality the lower of the two. The difference in height between them is, as we can testify by experience, exceedingly small, and not easily determined by the eye. For, having climbed Monte Rosa by the ordinary route, but with guides strange to the mountain, at a time when the stone man on the Dufour Spitze was masked by a heavy fall of fresh snow, we walked over that summit, and began without a question the passage of the ridge leading on to the eastern peak. Some progress had been made, when one of the party, looking back, detected the stone man, to which we then returned.

Standing on the Dufour Spitze, it seemed to us impossible to assert with confidence its superior height. But, on the other hand, all those who have reached the eastern summit have, despite the natural bias they must have felt towards a contrary opinion, acquiesced in its inferiority. The question, now attention has been called to it, admits of easy decision, but we shall be surprised if the established verdict is reversed.

REVIEW.

THE LIFE OF PRINCIPAL FORBES.*

THE Life of Principal Forbes could not be passed over without a word of welcome in the pages of this Journal. It may be said, without exaggeration, that from his writings, more than from any other source, sprang the influences that created the taste for mountaineering exploit and enterprise of which the Alpine Club is a remarkable illustration. Later *opuscula* have popularised the subject, but they probably would never have been written save for his *opus magnum*; and it is impossible not to see in the extracts from his diaries and correspondence, which form the great attraction of the interesting volume before us, how intense, amidst all the deeper and soberer claims of scientific investigation, was his sense of beauty and grandeur, and how keen his enjoyment of mountain life and adventure. It would have been no matter of surprise if the father of all true and accurate knowledge of the phenomena

* *Life and Letters of James David Forbes, F.R.S.* By John Campbell Shairp, LL.D., Principal of the United College of the University of St. Andrews; Peter Guthrie Tait, M.A., Professor of Natural Philosophy in the University of Edinburgh; and A. Adams-Reilly, F.R.G.S. London: Macmillan & Co., 1873.

of glaciers had been so engrossed with his own great discoveries, and with the scientific discussions to which they gave rise, as to have had no care or attention left for the doings of the mere climber, and little sympathy with the youthful exuberance of animal spirits and physical vigour which have undoubtedly been the predominant characteristics of many of the narratives recorded in these pages, or in contemporaneous publications, in form, at any rate, less ephemeral, and have induced one of our most undaunted explorers (who might well have associated his own records of adventure with a less modest title) to designate the Alps as the Playground of Europe. No such bounds, however, confined the comprehensive sympathies of the late Principal. In that kindly and generous nature was a mixture of unaffected liking for the thoughts and ways of the young, and of admiration for the courage and enterprise displayed by the modern race of Alpine explorers, which made him to the very end of his life the keenest reader of stories of Alpine travel, and the most sympathetic listener to whom a tale of mountain difficulty or danger could be told. No sense of added years, or of increasing bodily infirmity, ever damped his interest in all that touched those mountains and glaciers that he loved so well; and the numerous friends he made amongst members of the Alpine Club—men much younger than himself, and often with no claims upon the attention or notice of so eminent and so busy a man—know well how true this statement is, how accessible and graceful he was in his intercourse with them, and how completely he could descend from the pinnacle of scientific distinction and throw himself into their less dignified and more popular interests. The forces of the Alpine Club have been largely recruited since the occasion of which we speak, but there are very many members who will still remember his presence at a meeting of the Club, many years ago, on a sultry evening in June, under circumstances of temperature and atmosphere which might well have daunted a man of much less delicate frame, and the pleasure with which he listened to the papers read, took part in the discussions which followed, and made the acquaintance of men with whose mountain exploits he was almost as familiar as they were themselves.

No man welcomed the formation of the Alpine Club more heartily than Principal, or, as he then was, Professor Forbes. He undoubtedly hoped at first, as did some of the founders of the Club, that more use for the ends of science might have been made of its organisation, and of the energies of its members, than has proved actually to be the case. He was well aware that the Club was not likely ever to be a scientific society, and that it must take its tone largely from the element of muscular vigour and physical activity, without which the greatest triumphs of Alpine adventure can hardly be won, and also in a considerable degree from that æsthetic love of the grandest order of scenery which tempts to the Alps, year after year, a considerable class of professional men whose laborious occupations during ten months of the year put out of the question any serious prosecution of scientific labour during the remaining two. He was well aware, too that the real work of science must be done by men trained to science, and devoted to little else. But he always entertained a strong view that educated and intelligent

men might usefully observe and record facts where their speculations upon causes and theories might be of little use, and that such observations could hardly fail to be of some value, if sufficiently numerous, and if made with some degree of common purpose, and that they might, at all events, suggest from time to time to more trained observers subjects that might otherwise have passed unheeded, to which their more accurate investigations might be advantageously directed; and he strove hard to impress upon the founders of the Club the practicability of its becoming, within certain limits, a useful organisation for systematic observation. He found himself pretty well checkmated, so far as any organised work of this kind was concerned, by what he describes as the 'unbounded muscular exertion and unfettered freedom of range' which soon distinguished the proceedings of the Club. But he neither scolded those whom he could not reduce to his own ideas of work and usefulness, nor withdrew his sympathy from proceedings which he might well have treated as too irregular and undisciplined to interest a man of science, nor threw cold water upon the efforts of individual members to aid the progress of physical knowledge or geographical discovery. The truth was that he had the spirit of a thorough mountaineer, and even the wilder undertakings, which he sincerely and *ex animo* condemned as involving unjustifiable and purposeless risks to life and limb, went, after all, straight to his mountaineering heart, and found a response there more cordial than perhaps his sense of duty would have allowed him to avow, even to himself; and he was always of opinion that the taste for Alpine enterprise and glacial exploration which the Club at once symbolised and stimulated would be sure, from time to time, to be the parent of some good scientific or topographical work which otherwise might never have been undertaken. He was not destined to be disappointed. Amongst the acquaintances he formed through the Alpine Club, of which he had early been elected an honorary member, was Mr. Reilly, to whose careful and conscientious work we owe some of the most interesting chapters of the biography now before us. That acquaintanceship, like some others which originated in a similar manner, ripened before the close of the Principal's life into a warm and intimate friendship, and it is impossible that a labour of love should have been performed with greater fidelity and good taste than mark Mr. Reilly's contributions to the biography. But Mr. Reilly's modesty has kept back many details connected with the publication of his most beautiful and accurate map of Mont Blanc, which would have been as interesting to members of the Alpine Club, as they were eminently characteristic of Forbes.

The Principal had become aware of Mr. Reilly's great accomplishments as a draughtsman, as well as of his passion for mountain adventure; and true to his notion of getting good work done where he could, he urged upon Mr. Reilly to undertake the survey of Mont Blanc. We are not wrong, we think, in saying that the idea was first mooted at St. Andrews, where the Principal laid before Mr. Reilly a system of triangulation of his own, and illustrated it by experiments in his own garden. The seed was not sown in thankless soil. Mr. Reilly, qualifying the suggestions of his friend by the results of his own experience

and the promptings of his own ingenuity, worked round Mont Blanc, first to the west and then to the east, starting in each case from Chamouni, and connecting his two systems of triangulation at the back of Mont Blanc, near the top of the Col Ferret, if we are not mistaken, and, at once aiding and testing the work of the theodolite by a most extensive series of sketches and drawings, executed, often under the most adverse and discouraging circumstances, with wonderful accuracy and untiring industry, succeeded at length, after very many months of unremitting labour, in producing a map which Forbes justly said 'would do credit to a bred engineer and draughtsman,' and pronounced, with equal truth, 'the first true delineation of the most interesting ground in Europe.' The interest he took in the publication of this map is evidenced by a letter to the then President of the Alpine Club, printed, in a chapter contributed by Principal Shairp, at p. 423 of the biography. But even this letter gives a very faint notion of his high appreciation of Mr. Reilly's work, or of the eagerness with which he pressed forward its publication. Mr. Reilly appeared satisfied with having satisfactorily accomplished his self-imposed task, and there was much delay in publishing the map, its publication being ultimately undertaken by the Alpine Club. Forbes thought the Club a little supine in the matter—unjustly, let us hope—but his numerous and urgent letters to the President, full of every argument and persuasion by which the views of the writer could be enforced, materially abridged the delay which would otherwise have taken place. They would have formed a goodly addition to the chapter in which one of the series is printed, and would have presented a very characteristic picture of the perseverance and tenacity of purpose which distinguished their author. The map of Mont Blanc did not long remain a solitary achievement, being followed in due course by a survey, probably much more difficult of accomplishment, and, if possible, much more urgently needed, of the districts of Monte Rosa and the Valpelline. How much our knowledge of the topography both of these regions and of the district of Mont Blanc has gained—what gross and time-honoured errors have been dispelled, and what assistance has been rendered to the mountaineer—by Mr. Reilly's labours, is too familiar to the readers of these pages to need more than a passing allusion. Not less hearty was Forbes's recognition of the topographical researches of Mr. Tuckett, who was amongst his Alpine friends and correspondents, nor of the various contributions of a lighter kind to Alpine discovery or literature for which the Alpine Club or its members have been responsible.

With strangers Forbes sometimes passed for a cold man. There was a certain dignity and reserve about him, which at first sight might be mistaken for a coolness of temperament. It was partly, perhaps, the result of education, which, owing to the circumstances of his early life, was with him a process of self-development such as is rarely seen, partly belonging to what he styles in a letter to a friend 'my Northern caution,' partly due to his long life of academical elevation, but to be attributed probably most of all to the necessity of self-restraint so early and so sternly imposed upon him by his broken health. A very

slight degree of familiarity served to show what a depth and tenderness of heart lay beneath the calm exterior. We have alluded to several members of the Alpine Club who figure in the biography as amongst his correspondents. Without exception, they were men much younger than himself, and men who would never have ventured to intrude themselves upon his notice. It was he who, in every such instance, sought, or willingly afforded, the opportunity of becoming known to them, and nothing could have been more graceful or more gracious than the manner in which these introductions were brought about. He had no interests of his own to serve: from *their* positions in the world, there was little, indeed, that they could ever hope to do for him. But his heart and sympathies warmed towards those who had shown tastes with which he had so much in common, and it could have been no cold or calculating temperament that thus offered to them the opportunity of an intercourse which, in every such instance, as we have good reason to know, was soon prized by those to whom it was thus unexpectedly opened, as one of the most precious gifts that life had brought them. In more than one such case, the foundations were laid of a friendship which lasted, with increasing warmth of regard on both sides, until suspended, so far at least as intercourse is concerned, by the inexorable hand of death; and there are those who have survived him, whose acquaintance with him began in the manner to which we have alluded, who have experienced from him the tenderest and most affectionate sympathy, in their joys and their sorrows alike, and have felt all the inexpressible charm of unrestricted interchange of thought and feeling with a man at once great and good. There was no trait about him more characteristic or more interesting than his accessibility to young people, and few of a generation younger than himself came into contact with him without acknowledging the fascination of his manners, voice, and speech. To little children he was unspeakably tender, and when speaking to them his eye would light up with an expression of gentleness and love, difficult ever to forget. His conversation was of a very high order. He was a great reader of general literature, and was a keen observer of men and manners, and in talking with him you would forget entirely that science had all his life engrossed by far the greater part of his time and study. Habitually grave, and with the sobered tone of thought and utterance belonging to a constant invalid, he yet relished a joke or a good story, especially of the dry and quiet order, better than most men, and was never without a certain light and delicate play of humour, which gave an indescribable charm to his conversation. In his estimates of other people he was always generous. Perhaps the preponderating quality of his mind was justice. In this part of his nature there seemed a certain inflexibility. He revolted at untruth or injustice. He was very slow to suspect them, and always anxious to find some other explanation of a doubtful matter; but if he once came to the deliberate conclusion that an act of wilful dishonesty or injustice had been committed, he found it difficult to forget or overlook the offence.

One aspect of his character must be but lightly touched upon here. Principal Forbes was an eminently religious man; unostentatiously, sincerely, and devoutly so. It was impossible to know him well and

not be aware of it, and yet you knew it not from anything that he said ; for he never spoke upon such topics. Even in his own family he scrupulously avoided all direct reference to them ; the very existence of the devotional exercises and self-examinations, from which extracts appear from time to time in the biography, and the fact that they largely absorbed his time and thoughts, were absolutely unknown to any member of his family during his life. Sunday at his house was a cheerful day, which calls up no impressions of a ' Scotch Sabbath.' He was a man of strongly marked and strongly held doctrinal opinions, but he was absolutely free from bigotry, and showed the greatest respect for the views of others. Differences upon such points did not, as so often is the case with men of very distinct dogmatic opinions and very earnestly attached to them, interfere with his friendships, or check the warm flow of his sympathies ; but there was a quiet, unobtrusive devoutness of life and mind about him that could not escape those who knew him well, and displayed goodness and religious earnestness in their most beautiful and attractive form. In his love of the mountains there was a certain undercurrent of silent devotion. It was a *reverent* adoration of nature ; and a very interesting passage in the biography is a letter in which he speaks to a friend of his ' deep sympathy with your quiet tone of reverential admiration of Alpine scenery.'

The form and features of Principal Forbes were such as are not easily forgotten. He was very tall, and slightly though strongly made ; a frame capable of combining great activity with great endurance. In later years, and after he had suffered greatly from illness, he became extremely thin, and probably by most of his survivors his memory will be associated with the tall gaunt form, just a little bowed by sickness and suffering, and the thin, somewhat melancholy, countenance of his later years. But in youth he must have been a handsome man, despite a certain irregularity of feature, which gave a strongly marked character to his face. His forehead, at once broad and high, his resolute and well-set lips, his straight, finely cut, rather prominent nose indicated no commonplace intellect or character. But the great charm of his countenance was his eye—one of the most expressive with which mortal man was ever gifted. It had as many aspects as the sea, or the changing sky ; now grey, cold, motionless, and quite impenetrable, now lighting up into life and fire, beaming with animation, sparkling with humour, or mellowing to softest blue and assuming the sweetest and tenderest expression. Almost the same might be said of his mouth. Habitually in late years it wore a somewhat fixed and rather saddened look, but as he warmed up in pleasant chat or serious discussion, it became full of flexibility and meaning, and his smile was like a message from a brighter world. None who have ever fallen beneath the influence of his graceful welcome can forget its fascination, and none who knew him intimately but would bear witness how truly it glowed with the sunshine of his gentle, true, and affectionate nature. There never was a man more simple and more natural, and with whom the words he uttered, and the way in which he uttered them, more genuinely and unaffectedly reflected what was passing in his inner self. In his younger days, his physical powers were great. He was at once active

and enduring. His old guide, Auguste Balmat, used to speak of the summer they passed together on the Mer de Glace, in 1842, as the hardest time of his life; and himself a most moderate eater, and scarcely anything of a drinker, remembered with astonishment to the last hour of his existence the combination of long hours and scanty meals which marked the Professor's mountain life, and devoutly believed that his subsequent breakdown, a year later, was in no small measure due to a misplaced preference for cold tea over good red wine—a theory which will probably not be entirely without adherents amongst ourselves.

What place may be ultimately assigned to Forbes in the Pantheon of science, this is not the place, nor is the time yet come, nor is the writer of these pages competent, to discuss. Such questions are best decided by the judgment of posterity, which rarely fails to decide them justly. Names as great as that of Forbes can well afford to wait that verdict. The elements upon which the decision must be founded are apt to be distorted by a nearer view, and the judgment of contemporaries is too often warped by personal sympathies or antipathies. The name of Forbes is so prominent in connection with glacial discovery that we are liable to forget that his work in that department of scientific investigation, great as it undoubtedly was, constitutes neither his only, nor even his greatest, achievement. He was a zealous and original investigator in astronomy, in geology, and in physics, and his researches upon radiant heat, and his discovery of the polarization of heat, though much more abstruse, and therefore less easily appreciated by the general reader, will probably rank higher with posterity than even his labours in glacier science. The great peculiarity of the latter is that he began, as it were, at the very starting-point, the zero of the scale of knowledge. When he began to investigate the nature and phenomena of the glaciers, there was hardly a truth known about them which was not so mixed up with falsehood as to be almost worse than ignorance itself; and his first necessary and initial step was to discard and demolish most of the facts that were supposed to be known about the ice-world. Almost every notion with which he started he had to abandon, or to modify in some essential particular, and those only who have had thus to climb from a base which is continually yielding beneath their feet, can tell how painful and laborious is the process by which the shifting sand of error is at length distinguished from the solid rock of truth. His conclusions may or may not have been entirely right, but his methods and processes of investigation were eminently philosophical, and the history of his observations as to the phenomena and motion of glaciers will ever remain a remarkable monument of patient, faithful, and conscientious investigation. His theory has been assailed, and with no common assiduity and perseverance, but the facts he accumulated remain without material correction or development. They must long, perhaps always, form the foundation of any and every theory of glacier motion and activity, and it is not by a process which has been sometimes adopted in the glacier controversy, of exhibiting in exaggerated magnitude everything that anyone else has done or conjectured, and then, as it were, turning round the glass, and looking at his work through the wrong end, till it almost disappears from view,

that his scientific reputation will be compromised with the calm tribunal of posterity, or the more sacred interests of truth and justice advanced.

Forbes was early warned that he must not expect to find the path of a discoverer strewn with roses. The moment he should have distinguished himself, wrote Sir David Brewster, in 1830, he would become the object of depreciation and attack. Indeed, Sir David's words give so melancholy a picture of the springs and motives of many a scientific controversy, that we, who have been used to sit with folded hands and gaze reverently on the sanctuaries of science, and suppose that there at least, in the sacred presence of Nature and of Truth, the unworthy passions of humanity must be hushed and stilled, turn sadly from the prospect, and, with sorrowing heart and averted eyes, exclaim, 'Tantene animis celestibus iræ!' and forbear to retrace the characters lest we should be thought to make an application of the passage which we emphatically repudiate. But it is a melancholy proof that science throws no ægis over her votaries, nor preserves them from bitter words and angry assaults, that a man like Forbes should have become involved, as we venture to think with no fault of his own, in two most painful controversies growing out of his theory of glaciers. The history of neither could be excluded from his life, for in both was his personal honour sharply attacked, and in both triumphantly vindicated. The first, now above thirty years old, arose out of an assertion by M. Agassiz, that *he*, and not Forbes, had discovered the veined structure of glacier-ice—a discovery which must give the key to any theory that may be adopted of the nature and *modus operandi* of glacier motion. It was promptly met and repelled with an accumulation of independent testimony and of cogent argument, such as can leave no doubt on any impartial mind that Forbes was entirely in the right, that the discovery was not only made by him, but at once communicated to M. Agassiz, who was so far from claiming it as his own, that he repudiated the *fact* and treated it as unworthy of serious notice. Forbes's paper on the subject, though M. Agassiz lived many years afterwards, received neither answer nor correction of any kind, and the authors of the biography would, as they tell us, have been well pleased to let the matter rest undisturbed, but for a recent work of Dr. Tyndall's, in which so great a prominence is given, at the expense of Forbes, to the labours and discoveries of Agassiz, that it was impossible, in justice to the subject of the memoir, to avoid reproducing the paper upon which his claims to priority and originality, so far as M. Agassiz is concerned, may be so safely rested.

The other controversy to which we allude originated in an attempt made by Dr. Tyndall, in his 'Glaciers of the Alps,' to show that Forbes's 'Viscous Theory' had been anticipated by Bishop Rendu, of Annecy, and to suggest that Forbes had suppressed the extent of his obligations to Rendu's pamphlet. This attack brought forth a reply equally prompt, equally cogent, and equally unanswered with that in the case of Agassiz. As a general rule, persons who can lay claim to scientific or other discoveries are not backward in doing so, nor slow to resent anything like poaching upon their manor, and it is curious to find that Bishop Rendu wrote in 1844, long after the publication of

Forbes's great work, inviting Forbes to visit him at Annecy, and take up his abode under the episcopal roof, and congratulating him in the heartiest fashion upon his work and his theory; and that it was reserved for Dr. Tyndall to find out, some sixteen years later, that justice had not been rendered to that prelate by Forbes or by the scientific world. But the question of mere priority was a small one. It was one of those which might have been safely left to the judgment of posterity, and certainly would never have disturbed the repose of Forbes; but it was otherwise when the attempt was made to fasten upon him what he justly styles the 'odious' imputation of having suppressed his knowledge of antecedent labours, and whilst citing some facts or opinions from his predecessor, omitted others of more importance in order to enhance his own claims to originality. The paper in which this charge is met is, perhaps, one of the ablest productions that ever proceeded from Forbes's pen; calm, dignified, wholly devoid of rhetorical ornament, full of the closest reasoning, backed by a perpetual reference to facts and citations, without a word of passion or invective, betraying neither feeling nor annoyance, save once, where he deals with a quotation made from his own work, and used to fasten upon him the charge of scientific plagiarism, but itself extracted in a mutilated form and with the omission of its most significant passage; it is a perfect model of controversial writing, and conveys the highest idea of the power, judgment, and self-discipline of the writer. It was penned at a time of great pressure, shortly after his installation at St. Andrews, and when his new duties called for all his slender stock of health and strength; but there is no trace of feebleness or hesitation about it, nor could the most robust and vigorous health have added anything to its firm and masterly tone; and it showed with what resolution he was prepared to meet any attack upon his character or integrity. What it did not show—what was known but to a few intimate friends—was how deep were the wounds inflicted upon his upright and sensitive nature by such attacks; 'the moral imputation,' he writes to a friend, 'remains behind with something of a leaden weight.' It is difficult to suppose that imputations affecting personal honour would be so lightly made as they often are, if their authors realised the exquisite pain they are calculated to give to men of high and generous natures. It is a great mistake to suppose that the mere consciousness of innocence is, or ought to be, enough to render them innocuous. The more finely organised the moral nature, the more keenly sensitive it often is to undeserved reproach. A security, by no means the least, for the maintenance of high character is a jealous care for an unspotted reputation. It will be an ill day for the world, when names of discredit can be flung about and glide, like water from a duck's back, unheeded and unfelt by those at whom they are hurled, and when a sensitiveness to assaults upon personal integrity shall come to be regarded as a weakness, or held to imply a consciousness that they are in some degree deserved. To those who knew Forbes well, it seems a contradiction in terms to couple his name with the thought of scientific plagiarism, or anything else that is mean or dishonourable; but we lay no stress upon any such consideration in the present case; the position of Forbes is impregnable upon

the merits and the evidence, and needs no aid from witnesses to character.

We have forbore to attempt any analysis of the Life itself. It has been for some months before the public, and has been reviewed in a host of publications. Few readers who begin it will lay it down till they reach the end, nor then will part from it without regret. Like every biography that is worth reading, it owes its best interest to the numerous and copious extracts from the diary and correspondence of the subject of the memoir. It has suffered in homogeneity (to borrow a term from the vocabulary of science) from an almost inevitable division of labour; but we certainly cannot regret a partition to which we are indebted for Mr. Reilly's admirably written chapters, which represent an amount of work and careful condensation rarely to be met with in these days, when men write at railroad speed, sacrifice style to haste, and either cannot, or will not, take time to write a short book. Principal Shairp has contributed by far the largest portion of the volume, and if we supplement his extracts from his predecessor's journals and correspondence by the fact we have already alluded to, that Forbes's religious exercises and meditations were with him matters of absolute privacy, imparted to, and known by, neither wife, nor child, nor friend, the picture he presents us is a just and faithful one; and the selection made from the immense mass of letters and papers with which he had to deal is, with few exceptions, judicious and in good taste. We could have wished that some of the slipshod English which from time to time appears in extracts from the journals had been kept in the background, as it tends to give an unfavourable and untrue impression of Forbes's powers of composition and command over the English tongue. He was fastidiously accurate in the use of language intended for publication, sometimes a little harsh and rugged in style, sometimes rising into a high vein of eloquence, but always grammatical and careful. It is impossible to say as much of many passages from journals never meant for any eye but his own, and we see no adequate advantage gained by the admission of such extracts. But the late Principal has found in Dr. Shairp a sympathetic and friendly biographer, intent upon making the subject of his memoir speak for himself, and retiring from the scene wherever the narrative can be adequately continued in the words of Forbes himself. Mr. Tait has written the two final chapters relating to Forbes's scientific work, the only fault we find with which is that we come too soon to the end of them. But our aim has been, not to criticise this interesting volume, but to add to its contents some imperfect traits drawn from the grateful recollections of a friendship of many years.

ALPINE SLANG.

The following letters have been received on this subject:—

To the Editor of the Alpine Journal.—Sir,—The letter of 'A Reader of English' in your last number contains a grain of wheat hid in a bushel of chaff. No one of your contributors will, I suppose, be

inclined to differ from him in preferring English words to foreign where English words can be found equally expressive of their meaning, though some may plead guilty to an occasional forgetfulness of this canon.

But where there is no English equivalent, they will hardly agree with him in preferring an English word which means something else. 'Rift' and 'chasm' are words already conveying a definite meaning, and do not convey without circumlocutory addition the meaning expressed in one word by 'crevasse.' Moreover, the word *crevasse* is an augmentation of *crève*, used indifferently in French for large and small cracks; but 'crevice' has already in English its proper sense of a diminutive crack. But why should *crevasse*—write it 'crevass' if you please—be a worse English word than 'canvas,' 'matrass,' or 'morass'? 'Scree' and 'clatter' may be English, but they are local and provincial English, probably less known to most of your readers than *geroll* or *clappei*. I defy 'A Reader of English' to Anglicise 'bergschrund' without circumlocution. 'The moat' means something else and 'the last chasm' anything or nothing. The suggestion of 'ice-stream' for 'glacier,' and 'earthbank' for 'moraine,' seem to imply a very limited acquaintance with the nature of either; 'a plateau' is not a plain or level; 'col' does not mean gap, and 'snow-rush' describes only one class of avalanche.

Your contributors will not sympathise with his lament for the adoption into the language of the words 'glacier,' 'moraine,' 'plateau,' 'col,' and 'avalanche.' Why not raise the same outcry over 'river,' 'mutton,' 'plate,' 'collar,' and 'intelligence'—I take the words almost at random—or any other half-dozen words of French origin by which our language has been enriched in the course of the last five centuries? Your correspondent would almost seem to have introduced this lament for the purpose of reducing the whole of his complaints to an absurdity.

By all means let us use English words as far as possible, but 'where no English substitutes exist,' it is either nonsense or indifferent English to insist that 'they can easily be found.' When this is the case we fail to see how 'a judicious process of translation from foreign tongues' is to help us, and are weak enough to prefer the adoption of a foreign word which really expresses the meaning of the writer to either 'the adaptation of old words to new uses,' or any 'touches of Transatlantic or Tennysonian invention.'—I am, Sir, &c.,
R. C. N.

Sir,—'R. C. N.' must excuse me if, taking him as your spokesman on behalf of your contributors, I endeavour to point out how, as it seems to me, his letter exactly reflects the frame of mind which has caused the corruption of Alpine literature. It shows, in the first place, the carelessness in the application of a rule rightly laid down—that a foreign word should never take the place of an equally suitable English one—which has brought into use *couloir*, *arête*, and *crevasse*; it shows also the distrust in the powers for natural development of our language which has given us *sérac* and *bergschrund*.

For instance, the use of 'crevasse' is justified on the ground that no English substitute exists. We need not now stop to inquire whether common usage has made English a word originally French, for that is

beside 'R. C. N.'s' argument. He ought to have known that the best writers on Alpine subjects frequently employ 'chasm' in the place of 'crevasse' 'without circumlocutory addition,' and that there is no authority for his attempt to exclude ice from the substances with reference to which the former word can rightly be used.

In the next place, your correspondent fails to notice that there is a choice of sources from which we may seek enrichment for our language. In his eagerness to make his own the charms of some foreign phrase, he slights altogether the honest service of home-born compounds. It seems to him absurd to hope to find, without recourse to a foreign dictionary, an adequate expression for any phenomenon of nature unknown to our ancestors, and for which, therefore, they have not left us a word ready made. He has forgotten such happy inventions as 'icefall' and 'dirtband,' and can think of no means of enriching our vocabulary unless by importing into it uncongenial expressions, such as *geroll* and *clappei*, words not to be found in many dictionaries, but for which, I believe, the equivalent is 'rubbish.'

Easy answers might be found to many of 'R. C. N.'s' minor criticisms. But they are directed for the most part against that part of my former letter which was expressly stated not to be intended as a practical suggestion, and to which 'R. C. N.' gave the true value when he unconsciously suggested a comparison for it with Wamba's well-known lament over the conversion of Saxon sheep into Norman mutton. Both were expressions of a sentiment for which their authors could not expect universal sympathy.

My motive, a wish so to put before Alpine Clubmen the claims of plain English as to prevent them from abandoning it through simple thoughtlessness, must serve as an excuse for an intrusion on your space, which it is full time to cut short. I will only add that there is abundant authority for 'ice-stream' in the writings of Professor Tyndall, and that 'bergschrund,' which is, of course, a compound word, may be very literally translated 'mountain-moat;' or more scientifically, 'the snow-flaw.'—I am, Sir, &c.,

A READER OF ENGLISH.

Sir,—I cannot see that your correspondent has shown any foundation for the charges he makes against my letter. It is not beside my argument, but the substance of it, that 'crevasse,' and other words to which he objects have become English by adoption, and are practically beyond his protest. Many other foreign words are equally suited to enlarge our vocabulary. It is as unreasonable to allege that 'crevasse' is French as that 'chasm' is Greek. There has been no question about foreign phrases. I referred to *geroll* and *clappei* only as not more open to objection than *scree* and *clatter*. *Geroll* might be Anglicized into *Roll*. *Clappey* (as it should be written) makes as good and expressive an English word as 'clatter,' with the advantage of not having already another meaning. 'Geroll' and 'clappey' are not the same thing, and neither means 'rubbish.' Ice-stream may be used by Tyndall to describe one class of glacier, but not as a synonym for glacier. A moat is a ditch round a fortified place, not a crevasse. It, too, is French, though *motte* is properly the mound, not the ditch.

The sentiment which objects to all words of foreign origin might be excusable in Wamba, but since the days of Chaucer is something more than an anachronism.
R. C. N.

PROCEEDINGS OF THE CLUB.

Tuesday, May 6.—Mr. W. LONGMAN, *President, in the Chair.*

The following gentlemen were balloted for and elected members of the Club :—Mr. W. R. Browne and Mr. A. D. Puckle.

Mr. F. T. P. BARLOW read a paper on 'The Ascent of the Grand Paradis from Cogne.'

Mr. W. MATTHEWS pointed out the importance of this route, lately discovered by the Italian Alpine Club, by which the long and tedious approach to the mountain through Val Savaranche is avoided, and Cogne made more than ever the centre for mountaineers in the Graians.

Tuesday, June 3.—Mr. W. LONGMAN, *President, in the Chair.*

Mr. C. C. TUCKER read a paper on 'The Rosengarten and Cima della Vezzana,' describing ascents made last summer of the Kessel Kogel, the northern summit of the Rosengarten range, and of the second in height of the peaks of Primiero.

Mr. T. CARSON agreed with Mr. Tucker in recommending Campidello as head-quarters for several interesting expeditions at the head of Val Fassa. He thought many of the Tyrolese mountains might be safely climbed without professional guides. Mr. W. Longman's experience of the inn at Campidello was less favourable than Mr. Carson's. Mr. Lealie Stephen thought the dolomites rather grotesque than sublime, and not likely to afford so much enjoyment as the Bernese Oberland. The absence of guides at Primiero was a reason against mountaineers frequenting this district.

Mr. D. FRESHFIELD pointed out that good rock-climbers, accustomed to act as guides, might be brought from Cortina or Caprile at very small expense. He and Mr. Tucker had been obliged to ascend the Cima della Vezzana alone, owing to an accidental failure in their arrangements. While holding that practised climbers were occasionally justified in doing without professional aid, he did not wish to take any share in the responsibility of inducing travellers to learn to mountaineer by themselves.

Mr. MACDONALD observed that 'Mountaineering without Guides' had been recently fully considered by the Club, and the subject could not be reopened with profit, unless there was some prospect of reversing the adverse verdict then arrived at. The Club was not, he thought, likely to do this.

Wednesday, June 11.—The summer dinner took place at the Crystal Palace, when more than sixty members and their friends sat down; Mr. W. Longman, *President, in the Chair.* Among the guests of the Club was General Imboden, late of the Confederate Cavalry.



ON THE PELMO.
FROM A SKETCH BY D W FRESHFIELD.

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THE PELMO. By THE EDITOR.

Lacs de moire, coteaux bleus,
Ciel où le nuage passe,
Large espace,
Monts aux rochers anguleux.

THÉOPHILE GAUTIER.

EVEN in the Venetian Tyrol the tendency of tourists to choose the colder pine-clad north in place of the more tender and varied grace of the south has become observable. Cortina, Caprile and the Val Fassa are even now, in everything but prices, on the downward path of corruption. But away to the south and outside the 'regular round' there are still many quiet nooks known as yet only to those who

'love to enter pleasure by a postern,
Not the broad populous gate which gulps the mob.'

It is across the Italian frontier, and not amongst the stern peaks and solemn pines of Cortina, or in the savage gorge of Landro, that we find the nature which Titian so often sketched and painted. In the foregrounds of the northern dolomite country there is a commonplace stiffness and want of variety, which even the weird crags of the Drei Zinnen or Coll' Agnello cannot render romantic; it lacks the noble spaciousness, the soft and changeful beauties of the southern region. Its character is German in the place of Italian, it reminds us rather of Dürer than of Titian. It excites and interests the appetite for the wonderful rather than soothes and satisfies our longing for complete and harmonious beauty.

Landscapes composed of blue surging waves of mountains, broken by sharp fins and tusks of rock, of deep skies peopled with luminous masses of white cloud are familiar to the eyes of thousands who have never seen Italy nor heard of a dolo-

mite. Side by side with the wide sunny spaces, the soft hills and unclouded heaven of the early schools of Perugia and Tuscany, they remain to us as types of what Italian art found most beautiful and sympathetic in nature. The hill-villages of Val di Zoldo claim our interest as the frequent haunts of Titian; while wandering between them we are amongst the influences which impressed his boyhood, and were afterwards the sources of his inspiration. The Pelmo may on good ground assert itself as Titian's own mountain. Mr. Gilbert, in his 'Cadore,' has shown it us as it stands over against the painter's native town; and it is impossible to turn over the fac-similes of the master's drawings contained in that charming volume without being persuaded that he drew the mountain from life more than once, and from his recollection of it very frequently.

Val di Zoldo resembles many of the Venetian valleys in being shaped like a long-necked bottle. In its lower portion a narrow gorge, hemmed in by beetling crags, it expands at its head into what, seen from any vantage-ground, shows as a broad sunny basin, divided by green ridges into a labyrinth of fertile glens. The outlines of these ridges are symmetrical in themselves, and they are grouped together in a constantly shifting but harmonious complexity. Away to the south the horizon is fringed by splintered edges of dolomite, black as the receding night when cut clear against the first orange of dawn, or pale gold in the palpable haze of an Italian noon, or crimson with the reflected rays of sunset. As the paths cross the crests from glen to glen the snowy boss of the Antelao, or the painted cliffs of the Sorapis tower loftily over the low intervening ridge which divides Zoppè from the Val d'Ampezzo. But (to accept the hypothesis of Von Richthofen) the great glory of Val di Zoldo lies in the chance which led the coral insects to select the plateaux lying behind the hamlets of Pecol and Brusadaz for pedestals on which to plant their two noblest efforts, the huge wall of the Civita and the tower of the Pelmo. Elsewhere in the dolomite country edifices may be seen covering a wider space of ground, or decorated with more fantastic pinnacles, the Westminster Palaces and Milan Cathedrals of their order. But these two works belong to the best style or period of insect art; their builders have shown that simplicity of intention and subordination of detail to a central controlling purpose which mark the highest of the comparatively puny efforts of their human competitors.

To travellers the Civita is best known by its north-western face, to which the little Lake of Alleghe lends a picturesque

charm sure to catch the fancy of every passer-by. The structure of the mountain as seen from Val di Zoldo appears less intricate; and if the cliffs are not so perpendicular, the prevailing angle from base to cope is steeper. Its crags, glittering with rain or sprinkled with recent snow, shine out at an incredible height athwart the slant rays of a setting sun; in the cloudless morning hours they become ordinary rocks up which the experienced cragsman detects a path, safe enough when the spring is over and the upper ledges have 'voided their rheum.'

To the mind of the climber who wanders beneath its cliffs I know not what incongruous fancies the Pelmo may not suggest. From Val Fiorentina and Santa Lucia its broad shoulders and massive head resemble an Egyptian sphynx; as we move southwards one of the shoulders becomes detached, and the mountain is transformed into a colossal antediluvian cub crouching beside its parent. When clouds part to show the vast glittering crest which overlooks Val di Zoldo we seem to realise 'the great and high wall' of the city coming down from heaven of Apocalyptic vision. If we ever have a 'Practical Tyrol,' the likeness of the solid mass seen from the Ampezzo road to the Round Tower of Windsor will probably be remarked on,—and there will be a certain amount of vulgar truth in the observation.

One of the easiest paths to Val di Zoldo starts from Alleghe, and has been described by Messrs. Gilbert and Churchill. From Caprile, the more usual point of departure, there is a direct track which first attacks the mountain with the headstrong energy of a novice, and then takes a long breathing space along the level. After passing several bunches of farmhouses, clinging to the steep sides of Monte Fernazza like flies to a window-pane, it again climbs up through woods to the hamlet of Coi.* The needful height is then won, and a green terrace, overhanging Alleghe and looking into the heart of the Civita, leads to the great rolling down which spreads out towards the Pelmo.

Heavy clouds, charged with electricity and rain, had swept about from peak to peak during our walk from Caprile, and the greyness of evening was deepened by falling rain as we splashed down the wet path from Pecol. Near the river, and nestling under a steep bank crowned by a far-seen church and spire, we came upon the inn of San Nicolò. It stands a little back from the path behind a courtyard, a tall three-storied house, hanging out no vulgar sign of entertainment for man

* Not the hamlet of the same name subsequently mentioned.

and beast. At the top of the three stories are two bedrooms, clean and spotless, hung with engravings, and furnished with the air of conscious wealth of a farmhouse best parlour. Their windows give an exquisite glimpse down the deep glen which falls towards Forno di Zoldo, and across to a high ridge capped by a most fantastic fence of dolomite splinters. But if the upstairs rooms are bright and comfortable, they have not the homely charm of the great groundfloor kitchen. It is a wide room, ranged round with rows of lustrous brass pans, alternating with generous full-bodied wide-mouthed jugs, which could never give a drop less than the measure painted across them. At one end is the fireplace, of the sort common in southern Tyrol, a deep semi-circular bow forming a projection in the outer wall of the house; the floor is slightly raised, and a bench runs round it, leaving the centre to be used for the hearth: an arrangement which seems to solve the problem of the greatest happiness of the greatest number better even than an old English chimney-corner.

The structure which supports—not the fire, for that lies on the hearthstone, but the pots and pans which may be cooking upon it—is a piece of smith's work, enriched with wrought-out conventional foliage, chains, and two noble brass griffins: all the character of the workman has been stamped into the metal, and comes out even in the irregularities of detail which Birmingham might call defects. A modern and native product, however, as our host with pardonable pride assures us, and the best that the neighbouring forges of Forno di Zoldo can send out.

The master of the house proved to be a man of wealth and position in his native valley. He knew Venice well, and something of the more distant world. 'What can one do?' he said, in answer to our compliments on his house; 'in the mountains there are no cafés, no theatres; one must build a fine house, and get what novelty one can from strangers; but,' he added with a sigh, 'there are not so many.'

In the gloom of a wet evening the conquest of the Pelmo on the morrow seemed little more than a slender hope. Still, in the Alps successes are chiefly won by being always prepared for the best, and we were resolved not to lose a chance. In the matter of guides, however, we found a difficulty. We were ourselves but poorly provided. In the Alps only for a fortnight, it had not seemed to me worth while to summon my friend François Devouassoud from his far-off home; while Tucker's hope of securing the services of Santo Siorpaes of Cortina had been disappointed. The native of Capriè who

had carried our wraps was a pleasant fellow, but he had never been on the Pelmo, where, if anywhere, local knowledge is indispensable. It was with some dismay, therefore, that we first learnt that no hunter who knew the mountain could be found nearer than Brusadaz, a hamlet an hour off. However, Brusadaz turned out to be on the way to the Pelmo, and in the early morning we could reckon on finding the inhabitants at home.

As at 5 A.M. we took the path which wound round the hill rising above the church of San Nicolò, the sawblade of Monte Piacedel cut a clear sky to the southwards. Brusadaz was soon discovered lying in the centre of a natural theatre, which opens into the main valley very near its fork at Forno di Zoldo, and is directly overlooked on the north by the Pelmo, a square block of smooth, solid and inaccessible precipice. The hunter Augusto di Marco, to whom we bore an introduction, was quickly forthcoming, and with unusual but welcome readiness, in five minutes prepared to lead us to the mountain. Our luck seemed altogether good, for the stonemen on the Pelmo were clear of mist, and we promised ourselves a day of more than usual enjoyment.

A steep grassy bank severs the quiet hollow of Brusadaz from the Zoppè branch of the valley. We reached the crest at some distance from the base of the Pelmo, and had to follow an up-and-down track in order to gain the lower end of the Campo di Rutorto, a broad level pasturage, lying at the eastern foot of the mountain. The cliffs, up which a way was to be made, were now before us; but we found, to our surprise, that their appearance—partially veiled, it is true, by floating mists—was almost as discouraging as that of the southern face.

There is scarcely any summit in the Alps which from every point of view presents so formidable an appearance as the Pelmo. Time, and the various forces of nature, almost invariably create a breach in the defences of great mountains. Here, however, their work has been left unfinished. The upper cliffs are, it is true, broken on the east by a long slope, where, after a fresh fall, snow lies in such quantities as to show that it is easy of ascent. But this snow, when, as in spring, it has accumulated to a sufficient mass, falls from the bottom of the slope over a perpendicular cliff of at least 1,000 feet in height. It is only at what may be called the northern cape of the bay formed by the whole S.E. or Zoppè face of the mountain, that the ridge dividing the Campo di Rutorto from Val Ruton runs up, buttress-like, against the cliffs to a point not perhaps more than 400 or 500 feet lower than the

bottom of the upper breach, but fully half a mile distant from it; and the cliffs along this half-mile are quite hopeless in appearance.

It was consequently with some surprise that we found ourselves climbing the buttress in question, and, as far as we could see, about to run our heads against the wall-like rocks on which it rested. Before setting foot on the crags the rope was uncoiled and brought into use. We at once found sufficient employment for our muscles in making long steps, or rather lifts of the body, from ledge to ledge of a rockface, the angle of which (disregarding our footholds) appeared to approximate very closely on 90. The transverse shelves, however, afforded excellent support, and made our progress a matter of perfect security.

Above the first 150 feet a narrow gully disclosed itself, which led us to higher and more broken rocks. Then, again, the wall looked perfectly smooth, upright and unassailable. On the last place where it could have found room to rest was a low pile of stones. Standing beside it, we began for the first time to comprehend the key to our dilemma; we were now to turn our faces to the left, and to attempt the formidable task of traversing the face of the Pelmo. Our pathway was before us, a horizontal ledge or groove, at present a few feet broad, shortly narrowing so as to afford only sufficient standing-ground, threatening before long not to do even this. The cliffs around us bent into deep recesses, and each time a projecting angle was reached, the side of the bay seen opposite appeared wholly smooth and impassable.

This portion of the ascent of the Pelmo is, in my limited experience, one of the most impressive, and at the same time enjoyable, positions in which a climber can find himself. Even a sluggish imagination has here enough to stimulate it. The mysterious pathway, unseen from a short distance, seems to open for the mountaineer's passage, and to close up again behind him as he advances. The stones he dislodges, after two or three long bounds, disappear with a whirr into a sheer depth of seething mist, of which the final far-off crash reveals the immensity. The overhanging rocks above, the absence of any resting-place even for the eye below, do not allow him for a moment to forget that the crags to which he clings form part of one of the wildest precipices in Europe.

To walk for a mile or so along a ledge no broader than the sill which runs underneath the top story windows of a London square, with, for twice the height of St. Paul's cross above the pavement, no shelf below wide enough to arrest your fall,

must sound an alarming feat to anyone, except perhaps a professional burglar. And yet to a head naturally free from giddiness, and to nerves moderately hardened by mountain experiences, the full sense of the majesty of the situation need not be disturbed by physical fear. The animal 'homo scandens' is not in the slightest danger. His pedestal may be scanty, but it is sufficient. He can follow his chamois-hunter amongst the abysses with as much confidence as Dante followed the elder poet amidst the boiling gulfs of Tartarus.

As we went on, the height of the groove, and consequently the head-room, became, for a time, inadequate to our requirements, a fact which a moment's inattention seldom failed to impress forcibly on the brains. Let the reader picture himself walking along the mantlepiece and the cornice coming down on him so as to force him to stoop or lie flat. 'Va bene!' cheerily remarked the Brusadaz hunter, in reply to some grumbles on this score, 'it is all as easy as this, except one place, and that is of no consequence.' This place, the 'eccentric obstacle' of the guidebook, arrived in due course, a projecting corner where the ledge was not broken away but partially closed in by a roof of rock. There was just room enough to allow a thin person to lie down in and worm himself round with due care and deliberation; a brilliant climber could find some support for portions of his body on slight knobs below; those who were neither thin nor brilliant had to trust to the rope and their companions. For us who followed an adroit and confident leader, there was little difficulty in the feat, but the happy boldness of our predecessor who, when his companion's courage failed him, himself led the way, did not the less impress us. Mr. Ball, we agreed, had here proved himself in the body as well as in the spirit the true 'Alpine Guide.*'

Having all wound or scrambled past the corner as instinct led us, we followed round yet another bay the faithful ledge. At last the precipice above us broke back, and our guide announced that all difficulty was at an end. And so it proved, at least, as far as nerves and gymnastics were concerned. But to keep up the pace he now set us was no slight task. We raced upwards through the mists at true chamois-hunter speed, over steep slopes now of large broken crags, now of smaller and

* The Pelmo has also been climbed by Messrs. Bryce and Ilbert, and by Mr. and Mrs. Packe. I have satisfied myself by personal inquiry that in each case the same course was followed; and the statement of Augusto di Marco, that it is the best and only tolerably easy one, is probably correct. I have not seen any notice of foreign ascents.

less cohesive fragments, up low cliffs, then over more slopes, until we began to think the mountain interminable. At last, where a stream the hidden roar of which was often heard flashed for a moment into light, I was glad to call a halt. Two buttresses of rock, the ends of the topmost ridges of the Pelmo loomed largely, and, despite our exertions, still loftily overhead; a glimmer of ice shone between them.

We soon came to the glacier, a sheet of uncrevassed ice, sloping slightly from south to north, and filling the large but from below unseen and unsuspected hollow which lies between the horseshoe-shaped battlements of the mountain. 'If the water of the ocean,' writes Professor Huxley, 'could be suddenly drained away we should see the atolls rising from the sea-bed like vast truncated cones, and resembling so many volcanic craters, except that their sides would be steeper than those of an ordinary volcano.' The description exactly fits our peak; and if, reversing the picture, we imagine the level of the Adriatic raised a trifle of 10,000 feet, the glacier would yield its place to a lagoon, and these ridges would exactly represent an atoll of the southern ocean. Our leader at first swerved to the left towards the lower crags which immediately overlooked his native village; turned by our remonstrances, he led us to the highest rocks, a broken crest perfectly easy of access.* The verge of the huge outer cliffs, in some places level up to the extreme edge, and unencumbered with loose stones so as to allow of the closest approach, was gained within a few yards of the stoneman who holds the summit.

Through a framework of mists we could see down from time to time into Val Fiorentina and along the gorge of Sottoguda, but the upper mass of the Marmolata and all the neighbouring peaks were wrapped in dense folds of leaden-coloured cloud; and, feeling that a distant view was hopeless, we hastened to retrace our steps before any wandering storm should burst on the mountain. During the descent the fog became at times thick enough to suggest unpleasant fears of missing the direction. No such calamity, however, occurred; and, gaining a slide on every slope composed of minute enough fragments to allow it, we found ourselves far sooner than we had expected on the brink of the lower precipices. The spot was marked by a patch of dwarf edelweiss, which, in company with other

* The assurance given by the San Vito landlord to Messrs. Gilbert and Churchill, that 'only the final ice-portion was difficult' (*The Dolomite Mountains*, p. 399), was, I need scarcely say, wholly misleading and contrary to fact.

bright but tiny flowering plants, grew here and there upon the mountain. We made our way rapidly back along the ledge; the confidence of experience more than compensating for the inconvenience of the cliff, to which we had often to hold, being now on the left instead of the right hand. Where the direct descent on to the green buttress had to be made we, by keeping a few yards too much to the left, nearly got into a scrape, which was only avoided by a timely acknowledgment of the error. Straight and narrow as is the right path on the Pelmo, all other ways lead to destruction far too palpably not to induce one immediately to return to it.

On the top of the buttress we rejoined our provision sack, and enjoyed a long halt in full view of the Antelao, now towering above the clouds, a gigantic vapour-wreathed pyramid. From this point it is, as we found the next day, but a two hours' walk or ride amongst bilberry-bushes and forests to San Vito on the Ampezzo road. To return to San Nicolò was, however, our present object, and our hunter promised a new and easy path. We rushed rapidly down a very steep funnel to the great patch of avalanche-snow which lies against the base of the cliffs in the centre of the Campo di Rutorto. In the sort of cave left between the crag and snow a jet of water, spouting like a fountain of Moses from the arid rocks, served to fill our cups. A little footpath mounts gently the rhododendron-covered slope beyond, and winds as near as it can creep to the huge mountain. The cliffs above are broken, and in this part there was formerly a possibility of scrambling through them. Our guide declared that owing to a fall of rock, the passage had now become extremely difficult; and his statement gains some confirmation from the fact, that two of my friends who attempted (with a San Vito man) an escalade from this direction, were forced to retreat, one of them with a broken head. While climbing in advance he dislodged with one hand a boulder from a shelf above him, which made its first bound on his skull, fortunately without loosening the firm grasp of his other arm or inflicting any permanent injury. Unstable boulders are the great source of danger in this part of the Alps, and even old climbers require to be constantly reminded that on dolomite rocks they must test before they trust every handhold.*

* It is curious that Santo Siorpaes, when with Mr. Tuckett in 1872, should have proposed to adopt this line of attack, and have passed by the angle of the mountain facing San Vito, the nearest and most natural route from the Val d'Ampezzo.

At the south-eastern angle of the Pelmo the cliff rises sheer for some distance and then a wedge of stone suddenly juts out, overhanging its base to an extent which I fear to estimate in figures, and can only describe as incredible; the under part has fallen and lies on the path, but the huge summit still hangs threateningly overhead, an appropriate gargoyle for so Titanic an edifice.

The brow beneath it commanded a wide and splendid prospect. To the north the red crags of the Sorapis and the more symmetrical outlines of the Antelao. Turning eastwards, green pasturages and gable-formed ridges filled the foreground; in the distance we looked on the least known portion of the Dolomites, the blue mountains, crested with dark teeth and horns, which encompass remote Cimolais.

A sturdy little goatherd, the first human being we had seen since leaving Brusadaz, here came up to greet us. The boy did not depend on his voice alone to summon his flock; round his shoulders was slung a trumpet, one blast from which sent flying a peal of wild echoes such as the deafest and most obstinate of goats could scarcely have disregarded.

The terrace path continued to skirt the base of the Pelmo, until it reached a platform of pasturage, the Campo sô Pelmo, lying due south of the mountain. After crossing a gentle elevation, we found ourselves on the verge of the hollow of Brusadaz, and turned along a sledge-track leading down the crest between it and the western branch of Val di Zoldo, beyond which the crest of the Civita stood forth high above the belts of vapour. The hamlet of Coi, seated as it were astride the narrow ridge, looks down at once on Brusadaz and San Nicolò; a steep corkscrew path led us in twenty minutes to the latter village, where we found our return had not yet been begun to be expected.*

I cannot bring myself to lay down the pen without paying a tribute to the Italians of the southern Dolomites, rendered, as it seems to me, the more due and necessary by the frequent praises which the Bœotian simplicity of their German-speaking neighbours has received from English writers. A mountaineer may well have a good word for the population of Val di Zoldo. Where else in the Alps will he find a valley the natives of which alone, and unincited by foreign gold, have found their way to the tops of the highest peaks? And let it not be

* We had been absent 10½ hours. The ascent occupied five hours of quick walking, the return, made on the whole much more leisurely, about four; halts accounted for the remaining hour and a half.

thought that this success was an easy one. The Civita, from whatever side it is seen, is of formidable steepness; and, as I have said before, the Pelmo is to the eye of a mountaineer one of the most perplexing peaks in the Alps. Yet the men of Val di Zoldo, by following day after day their game, and learning that the ledge which offered the chamois a means of escape was also for the hunter a means of pursuit, found out at last the secret of the circuitous access to the upper rocks, which had been for centuries a true 'Gemsens-Freiheit.'

I do not doubt that Mr. Ball was the first man to stand on the highest rocks of the Pelmo. Their attainment was probably not an object of sufficient value to the hunters to induce them to cross the upper glacier and brave the peril of being swallowed up alive by some hidden chasm, which weighs a risk heavily on the mind of the peasant who has yet to learn the saving grace of a rope. But the real difficulty lies below, and amateur climbers with foreign guides might have sought long and vainly for the passage which the spirit of the neighbouring villagers had found ready for them.

But it is not alone on the narrow ground of venturesomeness that the people of Val di Zoldo recommend themselves to an English traveller. They possess in a high degree the intelligence and quick courtesy we are accustomed to meet with in Northern Italy. No peasant will pass the stranger as he sits to rest or sketch beside the path without a few bright words of greeting and inquiry, showing often a feeling for natural beauty and a quickness of apprehension rare amongst a secluded population. The slowness alike of mind and of action, the refusal to grasp anything outside their own daily experiences, so common among the peasantry of the Pusterthal, is here unknown. To quote a shrewd observer of manners, 'the men are such gentlemen and the women such ladies, that every chance meeting becomes an interchange of courtesies;' and the traveller, turning northwards, will often have occasion to join in Dickens's regret for what he has left behind, 'the beautiful Italian manners, the sweet language, the quick recognition of a pleasant look or cheerful word, the captivating expression of a desire to oblige in everything.'

THE ROTHORN FROM ZERMATT. By C. T. DENT.

BEGINNING an article with an apology is like beginning dinner with a bad oyster—it gives an unpleasant flavour to all that follows; but though one is certainly needed for an account of a mountain ascent, which was not entirely original, but only taken from a new side,* I must refuse it for the reason mentioned above. Our party had reached Zermatt on August 30, 1872, having come from Chamonix by the high-level route.† Wishing to take advantage of the fine weather, I was casting about for something really good to do, and had determined that that something should be a rock-climb. For it is on the rock mountains of Switzerland that the acmé of enjoyment is to be found. I by no means wish to disparage snow-walking; but if a comparison be instituted between them, I take it that it is infinitely in favour of the rock. Of course, it may be argued that there are few mountains where you do not get both combined; but looking only at the chief difficulties a mountain presents, I would roughly classify them, according as these consist in rock or snow obstacles. For, as a matter of fact, it is in this way that mountaineers do classify the peaks. A man may encounter serious difficulties in the way of bergschrunds, steep couloirs, soft snow, &c.; but if he meet with rocks which compel him to put forth greater energies and perseverance than the snow required, he will set his climb down as a difficult rock one; simply, of course, because the idea of difficulty which is most vividly impressed on his mind is in connection with that portion of his climb; and *vice versa*. This by the way, however. An undeniable drawback to snow climbing is its monotony; the long series of steps that have to be cut at times, or the dreary wading for hours through soft powdery snow, do not always sink themselves in the pleasure of overcoming the difficulties of a crevasse, reaching the summit of a peak, or the excitement of a good glissade. It is the diversity of obstacles that meet one in rock-climbing,

* The Rothhorn was ascended for the first time from Zinal by Mr. L. Stephen, who has described the expedition in the *Alpine Journal*, vol. ii. p. 67.

† To those who take the Col du Mont Rouge as one of their passes, I would recommend the ascent of the Ruinette from the Col, or rather by the northern face of the mountain. It is a stiff rock-climb. I descended by the same face on to the Glacier de Gétroz, the ascent taking in all just five hours to accomplish.

the uncertainty as to what may turn up next, the doubt as to the possibility of finding the friendly crack and the apposite ledge on some huge tower of rock one has to storm, that constitute some of its main charms. Every step is different; every muscle is called into play as one is now flattened against the rough slabs, now abnormally stretched from one hold to another, or gathered into a heap like the conventional pictures of the ibex—and every step can be recalled afterwards with pleasure and amusement as the mountain is climbed over again in imagination.

But there is more than this. It is on the rocks alone that an amateur can and must exercise his own powers, and not be wholly dependent on his guides. On snow the amateur is but an impediment, an extra burden, as has often been said, to the guides: they have to hack out huge steps for his benefit; he is entirely dependent on them for steering clear of avalanches, rotten snow-bridges and the like, while the share he usually takes in a snow ascent is either counselling retreat, insisting on progress, indicating the route he selects, which is never by any chance the right one, or the highly intellectual and arithmetical exercise of counting the number of steps hewn out to ensure his locomotion in the proper direction.

Place your amateur on rocks, on the other hand; here the probability is that a slip will entail no unpleasant consequences to anyone but the slipper. The power of sustaining a sudden strain is so enormously increased when the hands have a firm grip of the rock, that the amateur can, if he please, sprawl and scramble unaided over difficult places, with satisfaction to himself, and in the majority of places no risk to anyone else; that is, as soon as he has fully persuaded the guides (no easy task, I admit,) that the process of pulling vehemently at the rope, which probably encircles his waist in a slip knot, when he is 'ganz fest,' is alike detrimental to his digestion and his equilibrium. Then will he find himself an unit in the party; a burden still, and hindrance to some guides, but nothing to what he was on the snow.

It is, too, to my mind at least, a huge satisfaction to look back on a difficult rockridge or cliff, and feel that it has been climbed with no other assistance than that which Nature provided herself; to feel, as it were, that one has successfully translated oneself over a stiff rock passage set by the female examiner (such things may yet be) Nature, without surreptitious aid from one's neighbour, in the shape of steps. Then, again, snow mountains are so cruelly inconsistent. One year every step costs much labour and toil, and the next, perhaps,

the peak will allow itself to be conquered in one tenth of the time.

Far be it from me to argue that there is no pleasure to be derived from snow-climbing; it is of climbing *per se* that I have spoken. After all, every one has his own opinions; but this I would say, that he who has not tasted the pleasures of a really difficult and successful rock-climb—especially if it be a new one—knows not what the Alps can do towards enabling him to catch that ‘mental Will-o’-the-Wisp,’ Content.

An expedition of the magnitude and difficulty we desired was suggested at once by my guide, and that was, to climb the Rothhorn from the Zermatt side. Mr. G. A. Passingham, of Cambridge, was at the time staying at the Monte Rosa hotel, with his two guides, and it was soon arranged that we should combine our forces. However, when I got down to Zermatt, on September 2, after a pleasant ascent of Monte Rosa, I found that he had but just returned from a one day ascent of the Matterhorn, and we accordingly put it off till September 5. The next day we chiefly spent in surveying the mountain with a telescope, by whose aid I succeeded in discovering a perfectly impracticable route to the summit, to my own entire satisfaction; the guides, meanwhile, were sent up to reconnoitre. This they did thoroughly, and reported that with fine weather it would be difficult, but possible. Much pleased, we made the necessary arrangements, and turned in early at the Monte Rosa, as we had determined to do the whole excursion in one day, considering that a short rest in the comparatively luxurious beds provided by M. Seiler, was infinitely preferable to a more prolonged one, with probably undesirable company, in a châlet. As we assembled in the little dingy guides’ room, at 2 A.M. on the morning of September 5, to superintend the packing of our provisions, it struck both Passingham and myself that if the success of our expedition was to be dependent on the excellence of our guides, it was a foregone conclusion. Franz Andermatten, tough, compact, and weatherbeaten; Alexander Burgener, the embodiment of strength, endurance, and pluck; Ferdinand Imseng, of activity and perseverance—formed a trio that for an expedition like the one we were about to undertake, it would be hard to match. Our porter, too,—who was truly an exception to that much maligned class, whose appetites, dirt, and incapacity, have been so frequently dragged forth and sported with—worked well, and proved of great service; and, moreover, carried a very considerable load over difficult places with great unconcern. At 3 A.M. we started with a lantern, and toiled up the narrow valley running

north from Zermatt, which eventually leads up to the foot of the mountain we were making for. Having journeyed for about half an hour, it was discovered that the telescope had been left behind. Franz instantly started off to get it, and we stumbled along the dark, winding little path. Arrived at the opening out of the valley, we called our first halt. Here we waited an hour for our guide; but as no answer was returned to our frequent shouts, we agreed to give him up, and proceeded. Presently, however, a distant yell attracted our attention, and looking up, we made out the scarlet countenance appertaining to our guide smiling benignly on us from the top of the moraine on our left. Stimulated by this apparition, we pushed on with great vigour, clambered up the moraine, whose extreme want of cohesion necessitated a treadmill style of progression, and having reached the top, passed along it to the snow. Here we bore first to the right, and then working round, made straight for the sharp-topped but-tress which juts out at a right angle from the mountain itself. At a patch of rocks at the commencement of the arête, we disencumbered ourselves of superfluous baggage, and buttoned ourselves up as tight as was convenient, after the manner of mountaineers generally when a stiff climb faces them. My companion arrayed himself in a strange woollen garment and head-dress to match; but I, knowing full well that the exceedingly powerful telescope, with possibly a critical eye applied to it, was doubtless directed on us from the Riffel, merely exchanged my ancient hat for a species of woollen extinguisher.

It is a grand moment that just when the real difficulty of the expedition opens out; as you grasp the axe firmly, settle into the rope, and brace up the muscles for the effort of the hour. On a fine day, when your peak towers clear and bright above you, when you feel that at last you are on the point of deciding whether you shall achieve, or fail in achieving a long-wished for success, or what I may perhaps be allowed to call a cutting-out expedition: it is that moment which is probably the most pleasurable of the whole expedition; the excitement on getting near the top rather fades away than increases, and you clamber as calmly often on to the actual summit of a peak as on to the knifeboard of an omnibus.

Dividing into two parties of three each, we passed rapidly along the snow arête which abuts against the east face of the mountain. The cliffs of the Rothhorn, which seem almost to be overhanging, are from this point magnificent, and on our right, too, the precipice was a sheer one. Without much difficulty we clambered up the face of the mountain, taking a zig-

zag course to the large couloir, which is distinctly visible from the other side of the valley, and which terminates above in a deep jagged notch in the arête not far from the summit. The climbing here became more difficult, and it was found necessary to cross the gully several times, in doing which we were exposed to some risk from the falling stones which are here tolerably frequent. For the greater part of the time we kept to the left or south side. We reached the notch, and now looked right down upon the commencement of the Glacier de Durand, whose snow-fields are singularly wild-looking and much crevassed. Turning to the right, we ascended a short distance along the arête, and then a halt was called. My companion and I took refuge from a biting wind beneath some rocks, while the guides proceeded to arrange a length of 100 feet of rope on the rocks above us, to assist us on our return. This process sorely tried our patience, and we were right glad when the signal was given to move on again. It was now necessary to leave the arête, descend for a little, and then pass on to the west face of the mountain, and by this face to ascend and gradually work round to the arête again. This was the most difficult part of the whole ascent, but we worked ourselves slowly along, the rope being quite unnecessary. Reaching the ridge again, our progress was somewhat faster, and we felt now that the peak was as good as won. A huge inverted pyramid of rock that tried rather successfully to look like the top gave us a little difficulty in surmounting it; but this was the last obstacle, and at 1.30 P.M. we stood on the summit, enjoying a most magnificent view in every direction.

Our stay there was, however, a short one; and having added a proper number of stones to the cairn, we descended rapidly to the point where it was necessary to quit the ridge. Down the first portion of the steep rock-slope we passed with the utmost caution, some of the blocks of stone being treacherously loose.

We had arrived at the most difficult part of the whole climb—the descent of the nastiest piece of rock I ever attempted to pass over; the smooth, almost unbroken face of the slope scarcely affording us any foothold, and our security almost entirely depending on the rope we had laid down in the ascent. Imseng was far below working his way round to the arête; suddenly I heard a shout from above; Franz and I both glanced up at once: a large flat slab of rock that had afforded us good hold in the ascent, but proved to have been only frozen in to a shallow basin of ice, had been dislodged by the slightest touch from above, and was coming straight at us.

It seemed an age, though it could not have had to fall more than about ten feet, before it reached me: just above me it turned its course slightly. Franz, who was close beneath me more in its direct line of descent, attempted to stop it, but it ground his hands cruelly against the rock, and passed on swiftly straight to Imseng. A yell from us hardly awoke him to the danger; the slab slid on faster and faster; but, just as we expected to see our guide swept away, it gave a bound for the first time, and, as with a startled expression he flung himself against the rock face, it leapt up, and flying by within a few inches of his head thundered disappointed down below. A moment or two of silence followed, and then a modified cheer from Imseng announced his safety, as he looked up at us with a serious expression on his face. 'Comment ça va, Franz?' 'Terriblement cassé,' was the answer; and in truth, though his escape had been a remarkably lucky one, his hands were badly cut about and bruised. I may have unduly exaggerated the escape we had, but I simply give honestly the impression which I strongly suspect was left at the moment on all our minds. I do not think that by the lapse of time I have brought myself to consider the danger greater than it really was, when I say that had the rock not turned its course just before it reached me, and bounded from the face of the mountain over Imseng's head, one or more of the party must infallibly have been swept away: Franz and I might possibly have been held up by those above, but Imseng was unroped at the time. I am ready enough to admit that the place was an exceptional one; in fact, I never saw a stone glide for such a distance on rock without a bound, but with the circumstances still fresh in my memory, I cannot bring myself to consider falling stones such an imaginary danger as they are often made out to be.

Without the aid of the rope, at which in a short-sighted spirit I had scoffed in the morning, and which I used more than anybody else in the descent, it would certainly have been most difficult to have descended at all, and quite out of the question to have done so, remaining respectably appavelled at the end. A zig-zagging crack, which was too narrow to admit of anything but a most uncomfortable position, gave us the only hold for our feet we could rely on: my gloveless hands while clutching at the rope slowly cooled down to that unpleasant temperature at which one ceases to know for certain whether they are attached to one's arms or not, and I began to wish we had gone down the Lo Besso side of the mountain. However, Imseng, leaving a considerable and important portion of his raiment here and there on the rocks, wormed himself along,

and finally reached the end of our rope and a position of comparative safety. We followed his example slowly, and having joined him, seated ourselves on some inappropriate rocks, and finished our food. Climbing carefully down the E. face of the mountain we reached the snow arête, and passed rapidly along it, our spirits rising exuberantly as we looked back on the conquered peak. Having achieved a series of gymnastic exercises, after the manner of cabmen, the effect of which was to convert the mottled purple of our countenances into a more pleasing shade of colour, we descended rapidly to the rocks where we had left our baggage. Here the use of tobacco was considered expedient, and my companion accordingly produced a curious looking substance, purchased in the valley, which strongly resembled odds and ends of brown paper. This however he declared to be excellent, and it certainly, having been lit after a frightful struggle, did induce a state of calm enjoyment. In fact,

We soared above
Dull earth in those ambrosial clouds, like Jove,
And from our own empyrean height
Looked down upon the world with calm delight.

Descending rapidly, we reached Zermatt at 7 P.M. precisely, in an exultant frame of mind, discontinuous suits of clothes, and a preposterous state of hunger.

The way our guides worked was first rate. No doubt a little party spirit, the notion of taking the shine out of some of the Zermatt men, who, with a dismal incredulity, worthy of the Chamonix clan, had denied the possibility of the ascent, stimulated them to greater exertions. A desire to prove that there were men of the Saas Thal as mighty as any to be found in Switzerland (of which fact I am fully persuaded) may also have assisted. But it was evident to us that they thoroughly enjoyed—as all truly good guides do—overcoming the difficulties of what both Passingham and I agreed was the most formidable ascent we had either of us ever succeeded in making.

The whole time occupied was sixteen hours; of this an hour was wasted while we were waiting for the telescope, and three-quarters of an hour were spent in arranging the rope by the aid of which we descended. I should say, then, that in actual climbing and walking we employed rather under thirteen hours. Our descent was, however, on the whole a very rapid one.

MOUNTAINS, RAIN, AND SNOW. By R. C. NICHOLS, F.S.A.

THE effect of mountains in inducing rainfall has long been a familiar circumstance. The air of the plains, more or less charged with vapour, is driven upwards as it encounters the mountains, it undergoes expansion, and is thereby chilled so that it can no longer support the same quantity of vapour, which is accordingly precipitated in showers of rain, or, if the refrigeration is sufficient, in snow. It is generally believed that the cold of the mountains aids in the work of condensation.*

But the question is here suggested, why are the mountains cold? The amount of sunshine received by them is as great as that on the plains—greater indeed, as it comes to them unsifted by the aqueous vapour of the lower regions of the atmosphere, which absorbs a large portion of the heat rays before they reach the earth. On the other hand, their heat is more freely radiated into space for want of this very covering. A sufficient explanation of the mountain cold may be afforded by the refrigeration of the air which is forced up their flanks by the winds. But if we call in the coldness of the air to account for that of the mountains, we must not attribute to them generally a similar action upon the air, though it is, of course, not only probable, but also consonant with experience, that the normal relation, whichever it may be, may occasionally be reversed.

Some light may be thrown upon this and some other questions by attempting to estimate approximately, by the aid of figures, the actual results which will follow from given circumstances. Let us suppose a current of air, at a temperature of 70° Fahrenheit, flowing over the plains or low hills at the base of a mountain chain, at an elevation of about 400 feet above the sea, the pressure being 14·25 lbs. on the square inch, corresponding to a height of the barometer of 29·5 in. at the sea level. We will further suppose this air to be carried up the face of the mountains to an elevation of somewhat more than 11,000 ft., where the pressure is only 9·5 lbs. per inch. It will be expanded in the inverse ratio of these pressures, or rather this would be the ratio but for the effect of refrigeration, and the refrigeration produced may be measured by the amount of energy expended in the expansion.† This would be, if the

* See Tyndall, 'The Forms of Water,' &c., § 8, p. 27.

† This follows necessarily from the principle demonstrated by Dr. Joule that the refrigeration results entirely from the performance of mechanical work in the act of expansion. If the expansion takes place

temperature remained the same, for every cubic foot of the original volume of the air, an amount of force which would be

into a vacuum, there is no reduction of temperature. The following indications will suffice to show the manner in which the figures given in these pages have been obtained. If p_1 be the original pressure per square foot, p_2 the pressure after expansion, U_1 the work of expansion per cubic foot of original volume in foot-pounds, assuming the temperature to remain uniform, then :

$$U_1 = p_1 (\text{h. l. } p_1 - \text{h. l. } p_2).$$

And the work of contraction consequent on the reduction of temperature from t_1 to t_2 , may be taken at :

$$\begin{aligned} U_2 &= p_1 \frac{t_1 - t_2}{459 + t_1} \left(1 + \frac{\text{h. l. } p_1 - \text{h. l. } p_2}{2} \right) \\ &= \frac{t_1 - t_2}{459 + t_1} \left(p_1 + \frac{U_1}{2} \right), \end{aligned}$$

which is slightly in excess of the true value.

So long as no condensation of vapour occurs, the true value of $U_2 - U_2$, that is to say, of the work of expansion, taking into account the effect of temperature, is :

$$U = \frac{\frac{n p_1}{1 - \left(\frac{p_2}{p_1}\right)^{1 + n p_1}}}{n}$$

where $\frac{1}{n} = (459 + t_1)u$; u being the equivalent in work estimated in foot-pounds of the heat consumed in raising the temperature of one cubic foot of the air one degree. Or, if p_2 be the pressure at which the temperature will be reduced to t_2° ,

$$\log. p_2 = \log. p_1 - \frac{1 + n p_1}{n p_1} \log. \frac{459 + t_1}{459 + t_2}$$

$$\text{and } \log. \frac{459 + t_2}{459 + t_1} = \log. \frac{459 + t_1}{459 + t_2} - \frac{n p_1}{1 + n p_1} (\log. p_1 - \log. p_2).$$

But these two equations are not available when the problem is further complicated by the condensation of a portion of the vapour, and the error which arises from first taking the value of U_1 , and afterwards that of U_2 , as before given, is not important.

The amount of aqueous vapour which can be held in suspension at a given temperature is calculated from Mayer's formula. The latent heat of aqueous vapour at the temperature t° , is taken at $1091.7 - 695(t - 32)$, that of water at 32° (above ice of the same temperature) at 142.56 , the specific heat of air by weight, the pressure being constant, at 0.2377 , and that of aqueous vapour at 0.837 , these last *data* being all on the authority of Regnault.

The specific heat of air and vapour, at constant volume (that is, irrespective of expansion or contraction), has been calculated on the principle that the mechanical work indicated by the specific heat at constant pressure, must be equal to the work indicated by that at con-

sufficient to raise 832 lbs. weight to the height of one foot, or in other words 832 foot-pounds. This amount of force converted into heat would raise the temperature of 1.08 lbs. of water one degree, and to obtain this amount of force the temperature of 1 lb. of water would have to be lowered 1°.08. Or to obtain it by the refrigeration of one cubic foot of air which, at the assumed temperature of 70° and pressure of 14.25 lbs., would weigh 509 grs., this air must be lowered 88°. But the reduction of temperature also occasions contraction, or diminishes the expansion of the air, and, allowing for this, the actual reduction of temperature would be about 59°, or to 21° below the freezing point. If the same air were carried further to a height of about 13,250 ft., where the pressure was only 9.15 lbs, the temperature would fall to zero.

But we have not yet taken into account the effect of the aqueous vapour contained in the air. It is the force developed, or heat set free, in the condensation of a portion of this vapour, which prevents the ordinary summer temperature in the higher regions of the Alps from falling to or below the zero of Fahrenheit, as the results just obtained might lead us to expect.

Suppose the air to have been originally saturated with moisture, or to have contained 7.75 grs. of vapour to the cubic foot. At 32° only 2.12 grs. will remain in the state of vapour per cubic foot. But at 9.5 lbs. pressure, and at 32°, one cubic foot of air will have been expanded to 1.39 cubic ft., and 2.95 grs. out of the original 7.75 will remain uncondensed. The amount of energy obtained by the condensation of 4.8 grs. will be 571 foot-pounds, and by the diminished expansion of the air consequent on the reduction of the temperature 174 foot-pounds. The weight of the cubic foot of air, exclusive of vapour, would be 497 grs., and its reduction and that of the remaining vapour to 32°, would give 358 foot-pounds. The sum of these numbers is 1,103 foot-pounds, whereas the work of expansion amounts only to 832, showing that the temperature will not fall so low. The actual reduction will be only to 41°, and 4.17 grs. of vapour will remain uncondensed.* This pressure and temperature indicate a height of about

stant volume, plus the work of expansion, $p(V_2 - V_1)$. The values thus obtained are for air .1685, and for aqueous vapour .726.

* At 41°.8 the work of condensation will amount to 424 foot-pounds.

| | | | | | |
|---|---|--------------------------|---|-----|---|
| “ | “ | diminished expansion | “ | 132 | “ |
| “ | “ | reduction of temperature | “ | 276 | “ |

Total . . . 832 foot-pounds.

11,550 ft. To obtain a reduction to 32° , the air must be elevated to a height of about 14,500 ft.

But suppose the original amount of moisture in the air not to have exceeded 2.59 grs. to the cubic foot. The reduction of the air and vapour to 32° will give 363 foot-pounds, and the expansion of the air until the pressure is reduced to 11.05 lbs., corresponding to an elevation of nearly 7,400 ft., will require 526 foot-pounds less 163 due to diminished expansion, or 363 foot-pounds; a cubic foot of air will be expanded to 1.22 cubic feet, and 2.59 gr. of vapour will remain uncondensed, so that the air at this height will be reduced to the freezing point without the condensation of any part of the vapour.* A further reduction of pressure to 9.5 lbs., corresponding to a height of about 11,300 ft., would cause a reduction of temperature to $18^{\circ}.5$, and the condensation of .87 gr. of vapour to the state of snow, leaving 1.72 gr. uncondensed. If no more than .8 gr. of vapour per cubic foot had been contained in the air, the temperature would fall to 32° below 7,600 ft., and to zero at about 13,250 ft., without any condensation taking place.

We may conclude, then, that the temperature of the air about the mountain summits would be not much above zero on a clear day, when the temperature on the plains is 70° , if it were not for the direct action of the sun's rays, and for radiation from the ground, both during and after its elevation. Now, there are reasons for believing that the temperature of the mountains themselves a little below the surface of the ground will not vary much from 32° . The surface is frequently heated by the sun, which melts a portion of the snow, causing the water derived from it to percolate the rocks. If this freezes again it must in so doing give up its latent heat, which will suffice to raise a large amount of snow or rock to the same temperature. When, therefore, the air which rises from the plains is comparatively dry, the mountains will generally be warmer than the air, and will supply vapour to it if it is capable of taking up an additional quantity.

These are the circumstances under which the so-called 'cloud-streamers' are formed at the tops of lofty peaks, under a clear sky. The snow or ice upon the peak is melted and evaporated by the rays of the sun, and the vapour rising into the colder air is condensed into cloud, which is drifted away by

* A direct calculation of the pressure at which the temperature will be reduced to 32° gives 10.998 lbs., showing that the error by the separate calculation of U_1 and U , scarcely exceeds .05 lbs., or about 120 feet of height.

the wind, and ultimately again evaporated as it mingles with sufficient air to hold it in the state of vapour.*

When the air of the lower regions is more nearly saturated with vapour the temperature will not sink so low, the mountains will be colder than the air, and will act as condensers. In the case first supposed, of the air being originally at a temperature of 70° , and fully saturated with vapour, all that is condensed below about 11,550 ft. will be precipitated as rain above the temperature of 41° , and no snow will be produced until the air has ascended nearly to 14,500 ft. But if, instead of 7.75 grs., only half this quantity, or 3.88 grs., of vapour had existed in the air, condensation would commence at about 5,000 ft., and at a temperature of 45° ; and at 9,500 ft. the temperature would be reduced to 32° , and snow would be produced, both from the further condensation of vapour and also from the water remaining suspended in the form of cloud. We have, therefore, these results—no snow with a given initial temperature and maximum evaporation, but snow produced with the same initial temperature and diminished evaporation.

If the initial temperature were higher, say 80° , and the air saturated with 10.57 grs. of vapour, the temperature at 9.5 lbs. pressure, corresponding to an elevation of about 11,800 feet, would fall only to 54° , and would not reach 32° until a height of more than 18,000 ft. had been reached, so that nothing but rain, some degrees above the freezing temperature, would fall at the very highest Alpine elevations.

Or, if at this temperature the air were only half saturated with vapour the freezing point would only be reached when the pressure was reduced to 9 lbs., corresponding to an elevation of about 13,000 ft.

It is worthy of remark that a reduction of pressure from 14.25 to 9.5 lbs. causes a reduction of temperature from 80° to the extent of only 16° , when the air is fully saturated with vapour, whereas with the initial temperature of 70° the same reduction of pressure reduces the temperature by 19° .

If, on the other hand, the original temperature were considerably lower, say 50° , and the air saturated with 4.02 grs. of vapour, its reduction to 32° , and the condensation of 1.5 gr. of vapour, would be effected at a height of about 6,000 ft., where the pressure would be 11.55 lbs., and 2.52 grs. of vapour would remain uncondensed. So that at the height

* The same explanation of the 'cloud-streamers' was given in a note by the present writer in the 'Alpine Journal' for December, 1863. Vol. i. p. 208.

of about 6,000 ft. the freezing point would be reached, and snow would begin to fall.

It appears, therefore, that with a given temperature to commence with, the greater the amount of vapour beyond that which can be held in suspension (either as vapour or cloud) at 32° , the less will be the snowfall up to a given elevation, and the greater must be the elevation attained before any snow begins to fall. An increased temperature has the same result. When heat and moisture both increase, the rainfall increases, but the temperature at higher elevations is less reduced, until all the precipitation is in the condition of warm rain and none of snow. This is well known to be the case in the Alps when the hot wind, called the Föhn, blows from the south heavily laden with vapour, and a few hours of the warm rainfall occasioned by it causes a greater waste of the glaciers than days of the hottest sun.

These results do not support the views favoured by Professor Tyndall that the greater glacial development of former times can be accounted for by increased evaporation occasioned by increased heat on some part of the earth's surface.* There might, however, be some plausibility in a contrary supposition. Supposing the temperature of the lower regions to be the same as now, if the supply of vapour were less, a larger proportion of it would fall as snow, and less as rain, so that a larger development of glacier would be the consequence of a diminished supply of moisture, without reduction of temperature from any other cause.

But it is said that what is required is not diminished heat, but more powerful condensers. We have already seen reason to conclude that the temperature of the mountains themselves exercises, at least in the production of snow, an inappreciable effect, if not a negative one. Condensation would also be caused by the intermingling of two quantities of air of different temperatures, both saturated with vapour. We will suppose two equal bodies of air to be thus mixed at a height of 10,000 ft., the pressure being 10 lbs. to the inch, one being of the temperature of 48° , with 3.76 grs. of vapour to the cubic foot, the other of 8° , with .79 gr., together 4.55 grs. Two cubic feet of the mixed air at 28° would carry only 3.66 grs. But the condensation of .45 gr. to the state of snow would suffice to raise the temperature of the air and remaining vapour to 31° , at which 4.10 grs. could remain uncondensed in two cubic feet, and no more snow would be produced. The ex-

* 'The Forms of Water,' § 56, p. 154.

pansion consequent on the elevation of the same bulk of air at 32° to a further height of about 1,050 ft. would account for the production of the same quantity of snow from aqueous vapour. In both cases the production of snow would be greatly increased if a considerable amount of water were suspended in the air in the form of cloud, and this will not much affect the comparison; but it is obvious that the mixture of bodies of air on a large scale will not occur readily or rapidly in nature, while the action of ascending currents is continually operating.

Another mode in which condensation is produced is by the diffusion of vapour passing from warm air heavily charged to colder air already saturated, and currents of cold air will act as condensers much more effectively in this manner than by mixture with the warmer air. If the warmer current is much above the freezing point, the vapour will be immediately condensed on passing from it to the colder air, and will fall as rain. But suppose the warmer air to be at 32° , and the colder air at zero, and both already saturated with 2.12 and 0.61 grs. of vapour respectively, and, for simplicity of calculation, suppose the two bodies of air of equal bulk and, as before, at an elevation of about 10,000 ft., the condensation of .85 gr. of vapour per cubic foot of the colder air will raise its temperature to $10^{\circ}8$, at which .94 gr. of vapour can remain uncondensed, while an equal quantity remains in the warmer air. The actual snowfall would not be more than one-sixth of an inch (taking snow to be one-sixth the density of water) upon a square foot of surface for 2,000 cubic ft. of the total bulk of air. An equal quantity of air would have to be raised to an additional height of nearly 2,500 ft. to effect the condensation into snow of an equal quantity of vapour. But if in addition to the vapour about half a grain of water per cubic foot were held in suspension in the form of cloud, a very much less elevation, little more than 120 ft., would suffice to produce the same quantity of snow.

It seems, then, that the most powerful condenser now existing is the absorption of energy which results whenever a current of air is directed upwards; and it is difficult to conjecture what others more powerful can be conceived to have existed in former times, while this must have remained uniform.

One not unfrequent phenomenon of precipitation among the mountains remains to be noticed. In stormy weather the fall is often neither rain nor snow, but hail. It is evident from what has already been said that currents of air carrying with them large quantities of vapour may ascend to great heights without being reduced to the freezing point, while others of the same

original temperature, but less vapour-laden, will be reduced below this point at comparatively low elevations. Suppose the former to be carried over the latter and then further chilled, the rain falling through the colder air will be frozen in its passage, and will reach the earth as hail.

Suggestions respecting the Process of determining Depth from an Observation of the Time taken by a Weight in its Descent By

JOHN R. CAMPBELL.

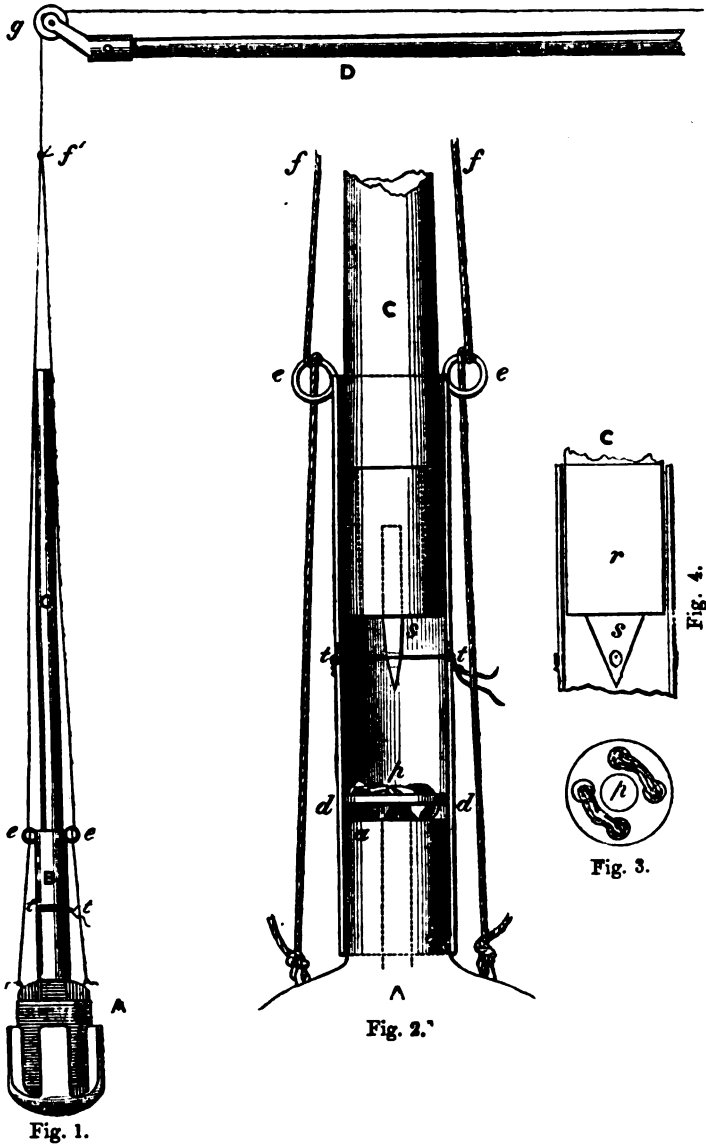
THE common method of getting a rough notion of the height, or, perhaps more correctly speaking, *depth* of a wall of rock by timing the descent of a stone is so old and well known that it would be waste of time to enter into a long description of it. The process may be applied to certain waterfalls where the pool into which the stream plunges is inaccessible to a climber, and which therefore cannot be measured by the aneroid; of such there are several examples in Norway. Probably, too, the depth of crevasses might occasionally be arrived at in this way. Indeed, with all its liability to error, supposing that error not to exceed what may be called a *reasonable* amount depending on the circumstances of the case, since it is the only plan that can be adopted in some instances without going to great trouble and expense—especially by a traveller in a mountain country—it may be fairly said to merit some consideration. The operation is not limited to the few cases in which a weight can be dropped vertically; the time occupied by the descent is the same if we can throw it horizontally forward so as to fall clear of the rock. I ought also to observe that the unavoidable error in the result is, as a rule, so great as to warrant our neglecting the resistance of the air in the calculation.

Now, when a stone of moderate size, such as one can easily throw, has to descend several hundred feet it becomes almost lost to view, and where it drops into the pool of a waterfall the spray may conceal it during the last second or more of its course; in both cases, therefore, we have a difficulty in determining the exact instant of its reaching the bottom. The question then arises,—Is it practicable to overcome this difficulty by using some other kind of weight in place of a stone?

The plan I am about to describe I would at once acknowledge possesses little claim to originality; I doubt not it bears much resemblance to more than one that have been tried at different times, although I have never seen an account of them.

My idea, briefly expressed, is to substitute for a stone a weighted *maroon* furnished with a detonating fuze that shall explode it on its striking the ground; and to compute the depth from the number of seconds elapsing between the instant of its being let go and that of the report being heard.

Fig. 1 represents the arrangement complete, and fig. 2 (drawn to a larger scale) is a section of the fuze with its striker. A is the maroon,



which in pyrotechnical language means a paper box welded round with kitted twine worked crossways. This contains 3 oz. of powder and is weighted with a small plate of lead in the form of a cross, the ends of

which are bent up so as to grip it tightly. The fuze *B* consists of a tin tube some 4 inches long, into the lower end of which the neck *a* of the marroon is inserted when the instrument is made ready for use. The tube is divided by a plate *dd* (of which fig. 3 is a plan) having a patch of fulminating powder *p* over its centre and pierced with several holes. These holes serve as communications between the flash of the detonation on the upper side of the plate and the powder in the marroon, and ought to be primed with pieces of quick-match threaded through them as shown in fig. 3. *c* is a deal rod 14 inches long and of slightly smaller diameter than the tube; it has a ring of lead *rr* round its lower end in order to increase its weight and steady it in the tube, and is fitted with a 'striker' *s* consisting of a pointed piece of iron with an eye-hole through it (best seen in the side view, fig. 4). A piece of silk thread stretched between two holes *tt* in the sides of the tube (to the exterior of which the ends are made fast) passes through the eye of the striker, and it will be easily seen that so long as this thread is unbroken the striker is prevented from coming into contact with the fulminating powder on the plate *dd*. In putting the parts together the strings *ff* attached to the marroon are brought up and knotted round the rings *ee* projecting from the sides of the tube—supposing that the instrument is to be thrown horizontally. Should circumstances, however, admit of its being let fall vertically these strings (after passing round the rings) are knotted together at *f'*, thus forming a sling by which it can be suspended from the end of a long rod *D* a few feet beyond the edge of the precipice or crevasse. The rod is fitted with a brass pulley *g* over which a cord from the sling passes to the hand of the operator. The action of the fuze is very simple. On the motion of the marroon being destroyed by impact with the ground, the momentum of the rod *c* causes the breakage of the silk and the striker to impinge with considerable force on the fulminating patch, thereby producing an instant explosion of the marroon.

Of course, in order to ensure even moderate accuracy, the time ought to be measured on a stop-watch; and, as a general rule, I think, half a second may safely be subtracted from this time before applying to it the equation which gives us the depth, in order to make allowance for the minute intervals occupied by the muscles of the hand in the actions of throwing (or liberating) the marroon and stopping the watch. In other words, it may require about that time for the hand to follow the eye and ear.

Let *T*, then, represent the observed number of seconds diminished by $\frac{1}{2}$ a second.

Put *D* = the depth (in feet)

g = acc. force of gravity = 32.2

a = velocity of sound = 1130 (about).

Now the time occupied by the report in its ascent is clearly $\frac{D}{a}$,

Hence $D = \frac{g}{2} \left(T - \frac{D}{a} \right)^2 = \frac{g}{2} T^2 - \frac{g}{a} T D + \frac{g}{2a^2} D^2 \dots (a)$;

from which we obtain

$$D = a \left(T + \frac{a}{g} \pm \sqrt{2 \frac{a}{g} T + \frac{a^2}{g^2}} \right).$$

The term under the square root has a double sign; but since $D=0$ when $T=0$, it is evident we must consider it negative. Putting for a and g their numerical values, the expression becomes

$$D = 1130(T + 35 - \sqrt{70T + 1225})$$

If in the equation (a) we neglect the term $\frac{gD^2}{2a^3}$ (and we may safely do so in all cases, since for a depth of 1130 feet it only amounts to 16.1), the value of D is expressed in a simpler and more easily applied form; viz. :—

$$D = \frac{a}{2} \left(\frac{T^2}{T+a} \right) = 565 \frac{T^2}{(T+35)} *$$

In constructing the instrument it is obviously unnecessary to follow the dimensions just given so long as the principle is carried out. The tube for the fuze can be obtained from almost any tinman. *Possibly some better kind of fuze might be devised than the one I have described.* As to the marroons, they must be purchased of a firework-maker; they vary in price according to size from 6d. to 1s. a-piece. Mr. James Pain (Pyrotechnist), 15 Heygate Street, Walworth Road, would be a good person to apply to regarding this portion of the arrangement.

M. LOPPÉ'S PICTURES.

IN the world of nature, as in the world of thought, we are not satisfied until the emotions of which we are conscious have been put into a concrete form by the hand of genius.

It must be the wish of all members of the Alpine Club whose love of the mountains is something more than the mere physical enjoyment of exercise in the open air and the moral enjoyment of overcoming obstacles of ice and rock to see the glories of mountain nature translated by art, both for their own sakes, and also for the benefit of the dwellers in the plain, amongst whom are those whom strength does not allow to climb, but whom culture has made most capable of appreciating every form of beauty.

* Any formula for the computation of depth by the descent of a weighted marroon in which the resistance of the air is taken into account, must be one of considerable complexity; and it would involve at least two constants, one having reference to the weight of the whole arrangement, the other to the diameter of the base. I may observe, however, without attempting a discussion of this subject, that in the case of an arrangement 2 inches in diameter and weighing 2 lbs., the air's resistance for depths requiring less than 6 seconds will not (considering the unavoidable roughness of the experiment) seriously affect the result. When the observed interval is longer, say 6 to 8 seconds, I should, in order to insure greater accuracy, subtract $\frac{1}{2}$ of a second from the value of T before inserting it in the above equation.

But for any artistic expression of the crowning glory of the Alps, we must look to our poets rather than our painters. To the transfigured world of the high mountain-top, where the eye turns from the near snows glowing with unendurable light to range over miles of green and countless shades of blue distance to the saffron hues of the extreme chain, where the mind, as in a starlit southern night, is stirred by the presence of a vast order, which it feels, yet has no sense adequate to comprehend, art can only look up with idle and folded hands. A Turner may, perhaps, some day arise to paint the unpaintable, but the task is for a giant's strength. Until then mountaineers must be content to enjoy alone and in memory only the recollection of those 'golden hours,'* which the world has not known and does not believe in, spent on the top of some 'tower of observance searching space,' some Schreckhorn or Monte Rosa. But the mountains have other beauties. The grey, still dawn in the forests, the glow of sunrise seen from some lofty pasturage, the waves of the ice-sea sparkling in the first morning sunshine, the pure upper snows, the fantastic rock-processions of the topmost ridges, are all subjects within the grasp of earnest and persevering art.

Until lately, however, painters could not be induced to climb. As the forest boundaries were approached they dropped one by one in the rear, or if one hardier than his fellows persevered to the short interval of dreary waste which lies between the rhododendrons and the snow, it was only to turn back more than ever convinced that he had gone beyond the term of beauty, and that the high Alps were unfit subjects for artistic representation. Our artists, as a body, were content to remain as ignorant of the phenomena of the region of eternal ice and snow as a Yarkandee may be of marine effects. In a nature so remote from that of our daily lives, careful study, as well as artistic perception, was required to detect and reproduce the truly picturesque elements. Yet we need not feel surprised that this combination was so long wanting. For art is the child of its century. True mountain painting could only have birth as the outcome of the modern love of the mountains and of the new light thrown by Forbes and Tyndall, and reflected by Emerson, on the 'horrid wastes' of old-world theologians and poets.

Ruakin was among the first to point out that 'it is possible by care and skill to suggest the preciousness of form and intimate the nature of the light and shade' of the upper snows; and he added, 'this has never been attempted.' The latter statement no longer remains true. What had 'never been attempted' the Alpine Club naturally recognised as its proper province. Our members have shown their love for the mountains in other ways besides climbing them; and we are proud to reckon amongst them Mr. E. Whymper, Mr. G. Barnard, Mr. E. Coleman, Mr. Croft, Sir Robert Collier, Mr. Walton, and M. Loppé, those who were the first to feel that a new country was to be gained for art, and to put forth their best powers for its conquest. It would not perhaps be difficult for an unsympathetic critic to search out a weak point in each of these painters. But it is far pleasanter to dwell on

* Three hours is no unusual time to be able to spend on a first-class peak.

the contrast between the works of men, who have all studied and more or less grasped the true nature of rocks and snow, and the productions which still from time to time disgrace the walls of our exhibitions, the emasculated Matterhorns, topheavy Jungfraus, and tottering Eighers of what we may call the Prealpine School.

The pictures of M. Loppé, lately on view in the Alpine Clubrooms, are the most forcible assertion we have yet seen of the painter's power in the snow-world. M. Loppé, whose studio at Chamonix must be well known to many of our readers, has made a determined effort to express truthfully on canvas the facts of ice and snow, to do for them what Mr. Walton has done for rocks and lofty peaks. He has studied the glacier from its birthplace in the névé region down to its tomb amidst the mud and rockheaps of the terminal moraine. Now he shows it us in full life opposite the Montanvert or under the Gornegrat, with its semi-transparent mottled surfaces, its green caves and keen knifelike edges; now he transports us to the upper snows, and bids us admire the delicate gradations and reflections of their imprisoned light, the deep blue depths of their abysses, the confused ruin of tottering towers and fantastic spires, or the ranges of moated ramparts, each white as the purest marble, yet like marble delicately streaked with pale veins of colour.

The masterpiece of the collection represents a huge gaping rift in the half-formed ice. In the slight stains on the glacier surface, in the frosted white of the sides of the crevasse, in the glorious colour which shines out of its recesses those who have learnt for themselves the secrets of the mountains recognise proofs of the painter's fidelity; while, at the same time, they admire the skill which has succeeded in transferring to canvass so much of the pure transparent brightness of the upper world. As we gaze into these blue depths, we are raised 10,000 feet in an instant, and fancy ourselves within a stone's throw of the Col du Géant or the Petit Plateau of Mont Blanc. Empedocles could never have jumped down a volcano if he had seen M. Loppé's crevasse.

We should like to have lingered longer with M. Loppé amongst the 'séracs,' but we must turn to some of the other subjects contained in his collection. 'Nil pictoribus ardui est' might be the painter's motto, and in the pursuit of his art he has carried his brushes up the rocks of the Sonadon, and close to the tops of the Breithorn and Mont Blanc. In a sketch actually painted on the 'calotte,' within a few hundred feet of the summit, the wandering clouds caught and torn at the edges by wind, and the deep hues of the upper air, are most truthfully represented.

An important finished picture of the same scene—the view looking towards Monte Rosa—has been presented by the painter to the Club. Here high mountains seen from a level are admirably drawn; the 'Grandes Jorasses' still produce the effect of great peaks, and are not diminished, as by a less skilful hand they would have inevitably been, into mere rocks. Perhaps in choosing the moment of sunrise, M. Loppé was overbold; to represent the 'awful rose of dawn' at 15,000 feet, a sight few even of the Alpine Club have seen, but once seen

never to be forgotten, requires the greatest powers of colour and imagination. This sunrise fails to impress us with sufficient awe, it is such an affair as might be seen on the lower hills; in a small 'Sunset from the Aiguille du Goûté,' M. Loppé has been more entirely successful.

'Mont Blanc from the Breithorn,' and 'Mont Blanc from the Col du Sonadon,' are both reproductions of the same effect. The cold upper glacier sweeps down from our feet, and carries on the eye to an horizon glowing in warm sunrise colour. In both pictures the difficulty of giving sufficient distinctness of detail, and at the same time conveying a sense of the distance of the far-off chain, has been successfully conquered. A third class of landscapes—views of the lower Alps in their winter robes—charms us less. Partly, perhaps, because in the lowlands snow always comes as an intruder, reversing all the relations of light and shade we are accustomed to look upon. Amongst these we must, however, stop to point out 'The Mont Salève, near Geneva,' a charming little sketch of frosty air and sunshine.

We now hasten, in conclusion, to offer our hearty thanks to M. Loppé for the pleasure he has given us. We hope that the appreciation his pictures have met with may induce him often again to brighten the dull gloom of our London springs with the pure radiance of his midsummer snows.

NEW EXPEDITIONS.

WESTERN ALPS.

DAUPHINÉ. VARIATION ON THE COL DES CAVALES, *June 10.*—The Rev. C. Taylor, Thomas Cox, W. M. and R. Pendlebury, and F. Gardiner, with Hans and Peter Baumann, Peter Knübel, and J. M. Lochmatter, crossed the dividing ridge from the upper part of the Glacier des Étançons to a field of névé occupying the north-western angle of the Vallon des Cavales, but cut off from the main part of the glacier by a wall of rocks. After descending these the way from the Col des Cavales was joined. Height of the ridge where crossed estimated at about 12,000 ft. 14½ hrs., including all halts, from La Bérarde to La Grave.

PEYROU D'AMANT, *June 13.*—Height 2,862 mètres (9,390 ft.). The same party ascended the Peyrou d'Amant by the ridge running out towards La Grave, and descended over the glaciers from the Râteau and Meije. The summit gives an excellent view of those two mountains and their snow-fields. The entire excursion occupied 5½ hrs.

RÂTEAU, *June 14.*—Height 3,754 mètres (12,316 ft.). The same party left La Grave at 4 A.M., and proceeded at first as if bound for the Brèche de la Meije, but bending to the right as soon as they had passed the ice-fall, gained the crest connecting the Meije and Râteau at a considerable elevation above the Brèche. They had climbed some distance along this ridge when the guides, dreading the weather and the state of the snow, urged a retreat. It would have been quite possible to

reach the summit; but not, under the circumstances, without the loss of so much time as to render highly improbable any prospect of getting off the snow, which was in a most wretched condition, before nightfall.

COL DE LA CASSE DÉSERTE, OR BRÈCHE CHARRIÈRE, *June 16.*—The same party propose the name of Brèche Charrière for a gap lying immediately to the South of the Tête Charrière (see p. 292). It is a deep cleft bounded by almost perpendicular walls, and so narrow that two men would have difficulty in passing through it abreast. Estimated elevation: 10,700 to 10,800 ft. (?) The approach on the eastern side is by a very steep and narrow snow couloir. The above party having passed the preceding night at some châteaux belonging to an abandoned mine in the upper valley of the Romanche, started at 2.15, and reached the top of the pass at 7.15 A.M. In descending they made in almost a straight line for La Béarde until brought to a stand by the steep rocks overlooking the Vallon de Bonnepierre. Some difficulty, which might have been avoided by keeping more to the right, was encountered in getting down on to the moraine of the glacier. La Béarde was reached at 10.30 A.M. The scenery on the eastern side of the pass is extremely fine.

SOMMET DE ROCHE-FAURIO, *June 21.*—Height 3,716 mètres (12,192 ft.). The same party left their bivouac on the moraine of the Glacier de Bonnepierre at 2.45 A.M., and commenced the ascent by a couloir to the left of that rising to the Col des Écrins; but, deserting the snow very soon for the rocks on the left, crossed these, and other snow couloirs by which they were seamed, diagonally in the direction of the summit. Having gained the ridge half way to the Col des Écrins, they followed it to the top. Time of arrival, 9 A.M. The rocks were partially covered with ice, steep and rotten. On leaving the summit they kept for a short distance along the ridge, then bore to the left, and descending by easy slopes of soft snow on to the Glacier de l'Enclava, arrived at the Châteaux d'Aillefroide at 2.45 P.M. This mountain is well worth ascending if for nothing else than the glorious view of the Écrins.

SOMMET DES ROUIES, *June 19.*—Height 3,634 mètres (11,923 ft.).—The Rev. C. Taylor, Thomas Cox, W. M. Pendlebury and F. Gardiner, with Hans Baumann, Peter Knübel and J. M. Lochmatter, ascended the Sommet des Rouies from the Glacier du Chardon. They left La Béarde at 3.15 A.M., reached the top at 12.15, commenced the descent at 1, and arrived in La Béarde at 4 P.M. The disproportionate time employed in the ascent was due to a mistake. One of the prominences on the ridge joining the Montagnes de Clôchatel to the Sommet des Rouies was taken by mistake for the summit of the latter mountain itself. After gaining this point, the real top was attained by way of the connecting ridge, but not without a considerable descent. The snow was very bad throughout the day.

LA GRANDE AIGUILLE, *June 20.*—Height 3,422 mètres (11,227 ft.).—Thos. Cox, W. M. and R. Pendlebury, with Peter Baumann and J. M. Lochmatter, ascended this peak in 6 hrs., and returned to La Béarde in 5. Standing in the centre it commands a most noble view of the entire circuit of the high Alps of Dauphiné. From an erroneous im-

pression as to the height of the mountain the start was not made until 6 o'clock, and the steep rocks were found laden with enormous masses of the most miserable snow conceivable, a touch being sufficient to send down an avalanche. Under more favourable circumstances the ascent might possibly not require so much time.

In addition to the above excursion, all the travellers and guides named climbed the central peak of the Meije, their ascent being, as they understand, the second.

AIGUILLE D'ARVE (MORE THAN 11,000 ft.), *July 3.*—Miss Brevoort and Mr. W. A. B. Coolidge, with Christian Almer and three Grindelwald porters, left the Châlets of La Motte d'en haut, above St. Jean d'Arve, at 4.30 A.M., and reached the Col des Aiguilles d'Arve by the ordinary route. The central Aiguille (apparently the highest of the three) seemed impracticable on that side; the party, therefore, in about 1½ hr. from the Col gained the southern pinnacle of the northernmost and lowest Aiguille, the northern pinnacle appearing impossible. There were no traces of any previous ascent. The view was extremely fine, including most of the giants of the Dauphiné and Mont Blanc ranges. The return to the Col by the same route occupied 1 hr., and the châteaux were easily regained in 2½ hrs. more.

SOMMET DES ROUIES (11,923 ft.), *July 9.*—Mr. Coolidge, with Christian Almer and Peter (son of Christian) Michel, effected the second ascent of this peak from the Glacier du Chardon. The view was very fine, some snowy ranges to the south in the extreme distance perhaps belonging to the Maritime Alps. It was seen that the Aiguille d'Olan, which the French map credits with a height of 3,883 mètres, is really much lower than the Pic d'Olan, which appears to be about the same height as the Rouies. The party, after descending the final cone, kept up to the left, skirted the base of some rocks, and without difficulty reached the col at the head of the Glacier du Vallon, overlooking a valley, which opens out at Les Étages. The descent over very steep rocks, raked by avalanches, looked very formidable, and may be impossible; at any rate, the attempt was judged to be useless, and the party returned to La Bélarde by the same route.

RÂTEAU (12,369 ft.), *July 11.*—The whole party started at 3.40 A.M. from a bivouac on the eastern side of the Vallon des Étançons to make the first ascent of this peak. Crossing the route of the Brèche de la Meije, just below the Glacier des Étançons, they climbed a range of rocks, seamed by waterfalls, and, mounting to the left, gained the edge of the basin, under the great snow corniche, so conspicuous from that side. Hurrying across this for fear of avalanches, they ascended a short snow slope, which led them at 8.20 to the great southern snow arête. Mounting along this through very deep snow, they reached the final rocks, and after a short but very difficult passage along the knife-like ridge, gained the highest point at 10.40. The view was very fine, La Grave was quite distinguishable, and the western pinnacle of the Meije came out as a veritable needle of rock, quite unrivalled in the Alps. After building a stone-man and leaving a flag (both afterwards seen from La Grave), the party descended to the great basin, and thence direct to the level of the valley by a steep couloir of moraine-stained

snow to the right of the morning's route. La Bérarde was regained the same evening.

CRÊTE DU GLACIER BLANC (PIC SIGNALÉ OF E. M. F., 12,008 ft.), July 17.—Mr. Coolidge, with Almer and Christian Roth, left the Châlets de l'Alpe above Villard d'Arêne at 3.25 A.M. to make the first ascent of this peak. Following the route of the Col du Glacier Blanc to the Glacier d'Arsine, they kept to the left, and reached the base of the peak by a succession of moraines at 5.10. Then keeping to the left of a patch of rocks dividing the glacier which flows down between the two arêtes, they gained a vast plateau, and turning to the right gained the westernmost arête at 7.10, and halted $\frac{1}{2}$ an hr. for breakfast. Then creeping round a pinnacle of rock, they again struck the arête, and easily gained the beautiful snow peak so well seen from below at 8.55. Here it was seen that two rocky points beyond were higher (these are all well marked in the French map and figured by Mr. Bonney in Plate V. (II.) of his valuable 'Sketches in the High Alps of Dauphiné'). The nearest was gained in 10 min., but to reach the other, by far the most formidable in appearance, the party had to gain the ridge overlooking the Glacier du Casset, and attained the summit by steep broken rocks in 35 min. from No. 2. The view was marvellous; including all the Dauphiné giants, with Mont Blanc, the Dom, Matterhorn (?), Monte Rosa, Weisshorn, Dent Blanche, &c.; on one side was Monestier and Villard d'Arêne, on the other a village in the Vallouise, perhaps Puy St. Vincent. After building stone-men on the three points, the party in 3 hrs. from the snow peak rejoined the others at l'Alp.

The whole party bivouacked that night at the junction of the valleys descending from the Glaciers des Cavales and de la Platte des Agneaux. The next day they went up the Glacier de la Casse Déserte, turned up to the right, and gained a plateau under the Grande Ruine; crossing a ridge to the right they gained another branch of the glacier, and higher up reached a notch overlooking the Glacier des Cavales. Here the party was unavoidably compelled to spend the night in the tent pitched on the snow, at a height of about 11,500 ft. The final ridge of the Grande Ruine, the object aimed at, was full in view.

LA GRANDE RUINE (12,316 ft.) AND COL DE LA CASSE DÉSÉRTE (11,516 ft.), July 19.—The whole party left the tent at 8.20 A.M., the weather being still very doubtful, and mounted by easy snow slopes to the foot of the final arête of the Grande Ruine, ascending by which, without the slightest difficulty to their great surprise, they reached the highest point at 9.10. The view was rather cloudy, but cleared off enough to allow a sight of the neighbouring peaks, and to satisfy all doubts as to having attained the true summit. The return to the tent was effected by the same route. The party then retraced their steps to the plateau under the Grande Ruine, and the same day reached La Bérarde by a col between the Grande Ruine and Tête de Charrière, of which the summit was reached from the La Grave side by Mr. Bonney's party, which named it Col de la Casse Déserte. Not knowing that Mr. Gardiner's party in June had made the first complete passage, and named the pass 'Brèche de la Charrière,' they gave it the name of 'Col de la Grande Ruine.'

The pass has thus three names, all of which are equally appropriate; but the precedence should, perhaps, be yielded to Mr. Bonney's nomenclature.*

MONT GIOUBERNY (ABOUT 11,000 ft.), *July 21.*—The whole party left La Bérarde at 4.30 A.M., and proceeded up the Vallon de la Pilatte, some way beyond the stream flowing down from the Col de la Tempe, Mr. Coolidge, with Almer and Peter Blauer, left the others, and following the route of the Col du Selé, at 8 reached the base of the Mont Giouberny, the peak crowning the buttress which divides the two branches of the glacier descending from the Crête des Bœufs Rouges and the Col de Sais. After half-an-hour's halt for breakfast, the party climbed straight up over rocks and snow, gaining the north-eastern arête, and the summit of the Mont Giouberny (supposed to have been previously untouched) in $2\frac{1}{4}$ hrs. from the breakfast. The view included the chief Dauphiné peaks, the Val Godémar, and the southern side of the range from the Cime du Vallon to the Col de Sais. Keeping to the right, the descent was effected by glissades, and in $\frac{3}{4}$ hr. from the top the party rejoined the others at the spot chosen for a bivouac, a little above the breakfast place.

COL DE LA PILATTE (ABOUT 11,000 ft.), *July 22.*—The whole party made the second recorded passage of this col (the first from the La Bérarde side). The couloir on the southern side was filled with snow, but the bergschrund was utterly impracticable, and a very difficult descent down about 100 ft. of precipitous rock to the right had to be effected, consuming no less than $1\frac{1}{4}$ hr. Ville Vallouise was gained the same evening.

'Tschingel, our dog, accompanied us throughout all the above-mentioned expeditions, with the exception of the Rouies, the Crête du Glacier Blanc, and the Mont Giouberny.'

MONT D'AMBIN (11,092 ft.), AND COL DE GALAMBRE (10,200 ft.), *July 25.*—Mr. Coolidge, with Almer and Michel, accomplished these little-known expeditions. Starting at 4.30 A.M. from a bivouac $1\frac{1}{2}$ hr. above the Châlets en Aval (which are about $2\frac{1}{4}$ hrs. walking from a little chapel on the road between Salabertrand and Exilles), an easy ascent over grass, rocks, and snow led them to the Col de Galambre at 5.40. Rather over an hour's ascent along the ridge to the right led them to the 'signal' on the Mont d'Ambin. Here a splendid view was gained of the Dauphiné, Pennine, Graian, and Cottian Alps, including Monte Viso, Mont Blanc, Grand Combin and Matterhorn. Forty minutes were occupied in regaining the Col, whence the party in 35 min. got clear of the ill-famed glacier, and in about 4 hrs.' more actual walking reached Bramans on the Mont Cenis road.

COL DES GRANDES JORASSES, *July 14.*—Messrs. T. S. Kennedy, J. G. Marshall, Loppé, and Stephen crossed the pass between the Grandes and Petites Jorasses. Leaving the Montanvert at 3 A.M., they reached the foot of the rocks at 6.15, and the Col itself at a few minutes before 9.

* The earlier explorers of Dauphiné are opposed to the alterations suggested; and in the absence of very strong reasons for change it is always desirable to retain a name which has already become familiar to travellers.—*Editor, A. J.*

They descended by the Glacier de Freboutzie and reached Courmayeur at 3 P.M. The pass presented no unusual difficulties. Guides Johann Fischer, Ulrich Almer, and Henri Devouassoud.

AIGUILLE DE BLAITIÈRE.—A point not actually the highest, but within a few feet of the highest, was reached this year by English mountaineers. They ascended by the Glacier des Nantillons. No further particulars have been received.

AIGUILLE DU MIDI, August?—Mons. and Madame Millot, with Johann Jann of Meiringen and Henri Devouassoud, ascended the Aiguille du Midi by a new route. They slept at the hut on the Plan des Aiguilles and crossed the col between the Aiguille du Midi and the Aiguille du Plan to the hut behind the Aiguille du Midi. They took a very long time to reach the col. They ascended the Aiguille du Midi the next day, returning to Chamonix by the Mer de Glace.

MONT BLANC, July 21.—Messrs. G. E. Foster and Moore, with Jakob Anderegg and Hans Baumann, left Courmayeur at 12.20 A.M., and reached the foot of the Gl. du Mt. Blanc, the most southerly feeder of the Miage, at 4.55. Starting again at 5.20, and following, more or less, Mr. Kennedy's route described in No. 40, they reached the summit of Mont Blanc at 4 P.M., their halts on the way having aggregated less than 1 hr. They descended by the usual route, and reached Chamonix at 10.40 P.M. To accomplish the whole distance from Courmayeur to Chamonix in one day will probably not always be found practicable, but there is no question that Mr. Kennedy's route is the best yet discovered for the ascent from Courmayeur, and may be made generally available. Though less direct and exciting than the route by the Brenva glacier, it is interesting and is comparatively free from difficulty, only the last thousand feet of rocks offering any obstacle worth mention. The erection of a hut on the rocks on the right bank of the Glacier du Mont Blanc would probably make the expedition one of the most popular in the Alps, and the subject might advantageously be considered by the Italian Alpine Club. Signor Gamba, a member of that Club, subsequently ascended from, and returned to, Courmayeur by this route, sleeping out two nights.

COL DE LUSENEY. FROM THE VALPELLINE TO THE VAL ST. BARTHÉLEMI, Friday, July 11.—Mr. A. Giles Puller, accompanied by J. J. Maquignaz and Louis Carrel (both of Val Tournanche) as guide and porter, left the house of the Curé at Bionnaz at 4 A.M., and, after ascending the valley for an hour, crossed the main stream of the Valpelline, and ascended by a path which led to a chalet on the brink of the stream which drains the gorge lying west of the Bec de Luseney; on a plateau higher up they passed a second chalet, and a third still higher on the edge of the stream which drains the glacier and gorge lying north of the Bec: this third chalet was left well to the left, and they commenced ascending the slopes which lead to the arête coming down from the Bec itself. After a time they reached the first snow-slope, and, that being surmounted, they continued the ascent, partly by rocks and partly by a couloir filled with snow, until they reached the arête itself. Continuing along the arête, about 11.30 A.M. they reached a level portion of it covered with snow, from whence they looked across

a gulf to the séracs at the extremity of the glacier, which appeared quite hopeless either to ascend or descend, ending in a pitiless fall of 300 or 400 ft. : and could also see not far above a remarkable rocky tooth, inside or south of which it was possible to pass, and from thence a broad ledge landed them on the upper level of the glacier at 12.15 P.M., from whence (after resting an hour for dinner) they easily reached the Col de Luseney at 2 P.M.

One hour's descent brought them to the châteaux of Luseney, and a second hour to the châteaux of Preterier, where they halted for the night, as rain commenced to fall. From the châteaux of Praclou an hour below commences an easy pass, called locally the Col de Fenêtre, which in one hour brought them to the upper châteaux of Torgnon, in the Val Tournanche, whence Chatillon may be reached in 3 hours, and the village of Val Tournanche in little more than 4 hours.

Anyone attempting the pass the other way (from the Val St. Barthélemi to Valpelline) should, after reaching the Col, descend the glacier for $\frac{1}{4}$ of an hour, and then bear to the left so as to strike the remarkable rocky tooth, which will appear to him the end of the arête : he will thus avoid the séracs at the end of the glacier, to descend which is hopeless.

ASCENT OF THE DENT D'HERENS FROM BREUIL, *Thursday, July 17.*—Mr. A. Giles Puller, accompanied by J. J. and Pierre Maquignaz as guides, and Emmanuel Maquignaz and Louis Carrel as porters, left Breuil at $\frac{1}{2}$ past 3 A.M., and in 2 hours reached the glacier which is called in Mr. Reilly's map, Glacier d'Erin, but which is known locally as the Glacier de Mont Albert. Ascending by the left side of the glacier, they passed between two patches of rock, and, after crossing the bergschrund, circled round to the right on the plateau above the great séracs, and pitched their tent about 3 P.M., on the ridge of rocks bordering the east side of the glacier. Starting the next morning (Friday, the 18th) at 4 A.M., they ascended first by a steep snow slope, and afterwards by the rocks to the right of the great couloir (visible from Val Tournanche) till, at 8.30 A.M., they reached the summit of the ridge which divides Val Tournanche from the Zardezan Glacier ; the final peak of the Dent d'Herens standing out clear immediately in front of them. Without descending, they crossed the head of the glacier on to the southern arête, and then cut straight across the great ice-slope, and reached the western arête overhanging the Tiefenmatten Glacier at a great elevation. The passage from the ice-slope on to the arête occupied considerable time, the rocks being both steep and difficult. At 2 P.M. they reached the final arête, which was found to be extremely narrow, and touched the highest point at $\frac{1}{4}$ before 3 P.M. : they descended by the western arête, the lower portion of which presented great difficulties, so that they did not get on to the upper level of the Zardezan glacier till nearly 9 P.M., and reached Prerayen at 4 A.M. on the 19th, from whence they returned to Val Tournanche by the Val Cornère pass the same day.

SCHALLHORN, *July 20.*—Mr. T. Middlemore, with Johann Jann and Christian Lauener, left Zinal at 2.10 A.M., reached the top of the Moming Pass at 10.30 A.M. by the usual route, and thence ascended the Schallhorn

by 11.45 A.M. They descended to Zermatt by the ordinary way. The Schallhorn is worth climbing, since from the Moming Pass the eastern view is spoilt by the Schallhorn, and the western by the Rothhorn range.

ROTHHORN, *July 1 and 2*.—Messrs. Thomas Cox and F. Gardiner, with J. M. Lochmatter and Peter Knübel, ascended this peak from Zermatt by the western arête, and descended to Zinal. They left their gîte on the moraine of the Trift Glacier, 2 hrs. above Zermatt, at 4 A.M., and reached the summit at 10 A.M. The last 2 hrs. of the ascent were over loose snow and ice-covered rocks, which rendered a considerable amount of step-cutting necessary. Near the summit they found the rope left by Messrs. Dent and Passingham (who made the first ascent by this route last year), almost entirely covered with ice. The descent was made by Mr. Leslie Stephens' route. The above party, the first that has crossed this mountain, consider it decidedly easier on the Zermatt side. Zinal was reached at 7 P.M.

August 16.—Mr. F. A. Wallroth left at 2 A.M. a bivouac just below the moraine of the Trift Glacier, with Nicolas and P. J. Knübel, for the ascent of the Rothhorn. They reached the top by 8 A.M., without any difficulty, owing to the absence of snow on the rocks. In descending, they diverged from the ordinary Zinal route, and came down the face for about 500 ft., and then crossed it till they struck the arête just below the lower of the two towers, where the snowfield from the Moming Pass touches it. This they descended, and finally arrived at the foot of the last slope on the Zinal side of the Moming Pass, the summit of which was reached at 12, and Zermatt at 6 P.M. The Zinal face of the Rothhorn is very steep, and if there were any snow on it, would be impracticable.

SCHWARZHORN.—The following account of the first ascent of the Schwarzhorn, one of the southern peaks of Monte Rosa, has been received from Baron Albert Rothschild:—'On August 17, with the Marquis Marco Maglioni, the guides Peter and Nicholas Knübel, Edward Cupelain, and three porters carrying a tent, I started from the Riffel hotel for the top of the Lysjoch, which we reached at 4 P.M. Two guides were sent on to see whether a rock, situated at a $\frac{1}{2}$ hour's distance from the col (and which we found out later to be the Balmerhorn), would prove fit for an encampment. The guides returned, after an hour, telling us the Balmenhorn would not be a suitable place for pitching the tent; and so we passed the night at the foot of the Lys Kamm. The weather was calm, but rather cloudy, and unusually warm for a height of 13,000 ft., the thermometer marking 5° Réaumur at 7 in the evening. However, when it became dusk the cold was intense. A strong north-west wind cleared the sky, and when we rose at 3 A.M. our claret was completely frozen. We had the intention of making the ascent of the Schwarzhorn, but none of us knowing exactly the position of this peak, marked in Dufour's map a little below the Parrotpitze, whilst others place it near the Vincent Pyramid, we determined to scale first a rocky tooth between the latter and the Ludwigs-höhe, in order to gain a good view of the surrounding summits. It took us less than 1 hour to reach the top, although the rocks were very steep; and Peter Knübel, whom we had appointed leader, scrambled up

on the north side, which is by far more difficult than the southern (facing the Vincent Pyramide), by which we made our descent. On the summit, reached at 5.15 A.M., we found no stone-man, and this made us suspect our rocky tooth to be the Schwarzhorn. A flag was planted on the summit, and the usual stone-man erected by the guides. Immediately after the descent on the *south-west* side, we went up the Ludwigshöhe, and then the Parrotspitze, near which we could not discover the peak called the Schwarzhorn in Dufour's map. This fact, but still more so a detailed article on Monte Rosa and its nine summits in the last volume (1872-73) of the Italian Alpine Club, which we read on the following day at Alagna, fully convinced us that the first peak we had scaled was the Schwarzhorn. Its height, as given by Tschudi and others, is 4,295 mètres; but it overtops the Lysjoch, 4,300 mètres; consequently one of these statements must be wrong. We had the intention of ascending, also, the Signalkuppe and the Zumsteinspitze, but thick mist was rising rapidly in the Italian valleys, and therefore we hurried back to the Vincent Pyramide, which we ran up, and then descended to Alagna, where we arrived at 2 P.M. Our three porters had left us on the col, and carried back the tent to the Riffel.

'An Italian gentleman tried last year to get up the Schwarzhorn, but his attempt was frustrated by bad weather.'

THE STRALHORN FROM THE WEISSTHOR SIDE, *September 2, 1872.*—Messrs. A. P. Boyson and C. J. Penfold, with Franz Burgener and an Andermatten as guides, made the above ascent. They followed the Mattmark Weissthor track to within a short distance of the col. From this point the Stralhorn presents the appearance of two walls of rock, the one surmounting the other, and divided by a belt of snow. The only care needful is to avoid stones, which occasionally fall, and whose accustomed tracks are clearly marked on the snow plateau beneath. The two rock cliffs having been climbed, the summit is reached by a moderately steep snow slope, or, as they found it, an ice slope, necessitating step-cutting for a considerable time. This, however, they venture to think was exceptional. The descent is on to the col of the Adler pass (thus combining a good ascent with the best part of this first-rate pass), and thence by the Adler and Findelen glaciers to a point on the Riffelberg, termed Gugel. The shades of evening having come upon them before they had well left the glacier, and the attempts to hit off the said Gugel being made in the dark, resulted in a late arrival at the Riffelhaus. This is, however, to be attributed to a late start and much step-cutting. The excursion occupied 17 hours, including halts, one of the party being unwell, but under ordinary circumstances 14 would be ample.

LAQUIN JOCH.—In crossing this pass a few days afterwards (September 6) the rocks on the left hand, formerly used in the descent, were found to have been swept away, thus compelling the party to make a straight line to the glacier beneath. This sheer descent cost about 4 hours, whereas by the old rocks much less time would have been required. Leaving Saas at 3.30 A.M., they reached the col at 8.30 A.M., and Simplon at 5 P.M.

WEISSMIES, August 20.—Messrs. J. A. Peebles, J. Oakley Maund, and H. Noel Malan, with Johann Jann and Ulrich Huggler, of Meyringen, and Joseph Dorsaz, of Simplon, made the ascent of the Weissmies from the village of Simplon, and descended to Saas.

They left Simplon at 1 a.m., and ascending the Laquin Thal, reached, at 6, the foot of the Laquin Glacier. The left-hand branch of the glacier was followed into a semicircular basin, enclosed by the Weissmies on the right, Thälhorn on the left, and in front the ridge which joins the two. At 8.30 the top of this ridge was struck at a point about south of the summit of the Weissmies, which was reached at 11.45, the way being mostly up rocks to the last arête, which was trifling, the snow being soft. On account of the clouds, Dorsaz had refused to cross the peak and descend the other side of it, and so left the provisions on the ridge. The party was therefore obliged to return that way, after staying $\frac{1}{2}$ an hour at the top. The ridge was left at 2, and Saas reached at 5.15. There was little glacier on this side, less than an hour sufficed to reach the top of the Zwischbergen Pass, whence they reached the Almageler Alp, and got into the Saas valley at Almagel.

Time: 16 $\frac{1}{4}$ hrs., including 1 hr. 40 min. of halts.

CENTRAL ALPS.

FINSTERAARHORN, June 28.—Messrs. Moore and H. Walker, with Melchior and Jakob Anderegg, left the Kastenstein at 2.15 a.m., reached the summit of the Finsteraarhorn, by the Agassiz-joch, at 12.15 p.m., and returned to Grindelwald by the same route at 8.45 p.m. Since Mr. Foster's ascent in 1868, one or two parties have followed the above route to the summit, but the descent has always been made to the Äggischhorn. There is, however, no reason why the descent to Grindelwald should not become popular, and the expedition be recognized as one of the 'stock' ones to be made from that place. Starting from the Faulberg, the distance would not be excessive, and a party could usually reckon with confidence on reaching Grindelwald before night, unless the great couloir below the Agassiz-joch happened to be in exceptionally bad order, in which case retreat to the Faulberg would be easy, or the night could be passed at the Kastenstein, where the quarters are pretty fair.

JUNGFRAU, July 10.—Mr. Moore, with Jakob Anderegg and Peter Schlegel, passed from the Hôtel Bellevue on the Klein Scheidegg to the Äggischhorn over the summit of the Jungfrau in a single day. Starting at 2.55 a.m., they reached the Silber-lücke at 10.15, the summit at 12.50 p.m., and the Äggischhorn at 8.55 p.m. The north side of the mountain was in good, but not first-rate, condition. On the south side the snow lay deep on the Aletsch glacier down to the Margëlen See, and on the slopes of the Äggischhorn to within a quarter of an hour of the hotel. As there is no convenient spot for a bivouac on the north side, persons attempting this expedition—perhaps the finest in the Bernese Oberland—would probably do well to follow Mr.

Moore's example, and start from the Klein Scheidegg, trusting at least to reach the Faulberg on the other side. The descent to the Wengern Alp cannot be recommended, as the risk from avalanches while getting through the central icefall of the Guggi glacier in the afternoon is very great; on July 6, at 1 P.M. an immense mass of ice fell from near the Jungfrau-joch, and swept right down and across the central fall, completely smashing it up. There is no possibility of keeping out of the line of fire, so contracted is the available space.

ALETSCHHORN, *July 4.*—Mr. T. Middlemore, with Johann Jann and Christian Lauener, left the Faulberg at 3.50 A.M. Rounding the Dreieckhorn, they mounted the slopes and séracs of the eastern spur of the Aletschhorn. On reaching the col between that peak and the Dreieckhorn, they ascended by the usual route the eastern 'kamm,' and got to the top at 12. They returned by the Middle Aletsch Glacier to the Eggischhorn.

SCHRECKHORN FROM THE LAUTERAAR SATTEL, *July 11.*—Messrs. W. M. and R. Pendlebury, with Peter Baumann and Peter Kaufman, left the hut near the Gleckstein at 12.35 A.M., passed the Lauteraar Sattel at 5 A.M., and reached the summit of the Schreckhorn at 11.30 A.M. Actual walking, 10 hrs., and halts, 55 min. The old way by the Zassenberg was taken in descending. The course lay at starting along the slopes of the Wetterhorn range under the upper snowfields (not over them as in the account of the Lauteraar Sattel in the Alpine Guide), and taking to the Upper Grindelwald Glacier almost immediately above the great icefall, struck the ridge connecting the Berglistock and Schreckhorn a little to the right of the lowest point. This ridge was followed to the base of the final peak, and the ascent thence completed by the northern face of the mountain on a line keeping nearly straight upwards to the summit, and joining the arête by which the ascent has hitherto been made about 10 or 15 minutes from the top. This expedition would be shorter if the start was made from the 'Pavillon,' on the Unteraar Glacier.

WENDENSTOCK, *July 26.*—The following notes have been received from Mr. J. C. V. Bastow:—

'I had for a long time reconnoitred the highest point of the Gadmenfluh from Engstlen. It is called either Wendenstock or Schwarzstock, and bore the reputation of inaccessibility. It is against my principles to go with guides, and I was unable to find any companion willing to go with me. I started alone at 9.45, and ascended diagonally from the middle of the Engstlen See towards the right bank of the glacier, to which I kept up to the buttress which divides a small and very steep arm of the glacier (which runs down to the east) from the main stream. I cut steps across this to the rocks at the base of a large and very conspicuous couloir to the extreme east of the cirque of rocks forming the final peak. The rocks here were very smooth, and the ascent had to be made by the palms of my hands and my knees, holding my axe in my teeth now and then. I reached the base of the couloir at 10.45, where it was impossible to get into it, but by a short climb to the right over very rotten stone I overcame the difficulty. The rocks are very steep, and the ledges very small, but I reached the gap at the top at

11.25. The danger of falling stones in the couloir is very great, as it is a perfectly smooth chimney, about 1,000 ft. high, and at (I should think) an angle somewhat above 75° (?) There are many huge masses at the top ready to fall, and one side overhangs. From the gap I crossed to the Gadmen side of the peak, and so ascended over huge blocks of stone, which give very uncertain footing, in 5 min. to the top (the extreme east of the peak), which I reached at 1.30, having spent $3\frac{1}{4}$ hrs. without halting from Engstlen. On the top I built a small cairn, which is just visible from Engstlen with a good glass. The descent occupied 3 hrs., the couloir being very difficult, as also the rocks at the base just above the arm of the glacier which has to be crossed. The view is finer than that from the Titlis, which hides scarcely anything, and is itself a conspicuous object. The right bank of the Gadmenthal is so much nearer from the Schwarzstock that I would recommend everyone who has a steady head to ascend it, in preference to the Titlis. I may also mention that there is a good pass from Engstlen to Meiringen between the Rothhorn and Glockhaus (Ball's Lauberstock?). The ascent from the Melchsee is somewhat difficult, and the danger of falling stones considerable. The Glockhaus may be ascended on the way by its south arête. The view is preferable to that from the much-overrated Hohenstollen. Both ascent and descent require care. Time to Meiringen from the top $2\frac{1}{2}$ hrs. In all, from Engstlen, including a halt at the top, 6 hrs. There are three or four ways of descending between the Graustock and the Wildgeisberg to Engelberg. All are taken diagonally from south-east to north, along the face of the precipices overhanging the lower Trubsee Alp, until you get on to the ordinary Jochli route to Engelberg. It would be well to allow the whole day for anyone of them, and they all require a steady head.

'The short cut from Engstlen to Meiringen, which is one of the most beautiful walks in Switzerland, is little known, and seems worth describing. As far as the direction-board ($1\frac{1}{2}$ hr.), 'Imhof and Meiringen,' the path is the same as the ordinary one. The horsepath then crosses the Gentelbach, but the footpath keeps on the right bank of the torrent, mounting for 5 min., past a spring and trough on the left (1.40 from Engstlen). In 10 min. a path descends to Wyler, on the left. In 10 min. more, another path goes down to Wyler, and you must here turn off for Meiringen (2 hrs. from Engstlen) sharply to the right, along an ill-marked track, over a patch of grass which descends through a belt of firs to a spring on the left, in 2 min. from the broad path to Wyler. Henceforward keep at the same level, turning neither right or left, about 2,000 ft. above Hof, which you can see below. In 2.40 from Engstlen, after 10 min. descent, you pass a trough on the right, and, in a few yards more, a waterfall; henceforth the path is unmistakable, and brings you to Meiringen in 3 hrs. 10 min. The views of the Urbachthal by this route are very grand. The distances are throughout those of a fast walker in good training. The landlord at Engstlen does not like visitors to know of the short path to Meiringen, because (I am told) there is some arrangement with the innkeeper at Hof, who would suffer if Hof was not passed *en route* for Meiringen.'

PIZZO (10,096 ft.) AND PASSO DI CAMPO TENCA (9,800 ft.). FAIDO

TO PRATO IN VAL MAGGIA, *September 5.*—It is an instance of the perverse capriciousness of travellers that the Val Maggia, within a few hours of Lago Maggiore and easy reach of the St. Gothard road, should be so seldom visited. Mr. Ball has in vain done his best to call attention to its beauty, and it is perhaps idle to repeat his praise. But it may be possible, by pointing out another glacier pass leading into it, to attract some stray members of the Club to what is probably the finest granitic valley in the Alps. The route over the Basodine from Val Formazza to Bignasco has already been described in the Alpine Guide; a mountaineer may easily come by this way, and leave by Pizzo Campo Tenca. Bignasco itself is a charming halting-place. The village, a cluster of bright-coloured houses, capped by a grey campanile, stands amongst gardens and orchards at the junction of the blue water of Val Bavona with the still more exquisitely blue Maggia. High-arched bridges leap over either stream. The balcony of the inn, a tall house between the two rivers, commands a view unsurpassed for romantic beauty and picturesque completeness. Over a foreground of peach-trees and sunflowers the white hamlet of Caveragno gleams from among its vineyards on the neighbouring hillside. A little further the mountains of Val Bavona fall into the deep valley in successive buttresses, each a mass of the noblest outline, composed of cliffs sweeping down into curving slopes of granite boulders half buried in chestnut forests. The snows of the Basodine close and complete the picture. Charming walks may be found in every direction through the woods. One of the nearest is to a chapel behind Bignasco, standing on a brow commanding Val Bavona and the lower valley towards Cevio. A smaller chapel close at hand bears a date early in the sixteenth century, and its frescoes, sadly restored, at least contrast favourably with the modern horrors of Italian valleys. Fishermen should find good sport in the river, on the banks of which two or three native anglers are always to be seen brandishing their long, jointless bamboo rods. There is a telegraph, and a diligence twice a day from Locarno to Bignasco, and once to Fusio in the upper valley (where a new inn has lately been opened), 5 hrs. by mulepath from Faido or Airolo. Signor Patocchi, who entertains visitors at Bignasco, is a man of position in the Canton, and would be willing to meet the wants of English people if they came more frequently to his house. Clean beds, plenty of fish, and a fowl may always be relied on.

The possibility of crossing from Val Leventina to Val Maggia over the highest point of the range dividing the two valleys was first proved by Herr Studer (*Jahrbuch des S. Alpenclub*, vol. v. p. 121). The Swiss mountaineer was, however, led astray by his guides, and occupied many hours over an expedition which ought to be of very moderate length. The proper course from the Alp Crozlina is suggested in the *Jahrbuch*, and may very likely have been taken by foreign climbers, but the mountain is entirely new to Englishmen.

D. W. Freshfield, with François Devouassoud, reached the chalet of the Crozlina Alp, after a pleasant walk of 3 hrs. from Faido. The easiest line of ascent up the steep rocks which form the base of the Pizzo Campo Tenca is found by keeping near a little stream falling

from the glacier to the south of a ridge ending in a point marked 2,470 mètres on Dufour's map. When the glacier is approached, it seems best to strike this ridge. Mounting alternately by steep banks of rock and névé, the peak was gained after a very direct but easy climb. Bad weather came on, and destroyed what must be a very interesting view, and the descent into Val di Prato had to be sought for in thick fog. From the gap between the two highest summits of Pizzo Campo Tenca, it proved easy to get down over snow and rough ground to the highest hut, whence a track led, in $1\frac{1}{2}$ hr., from the peak to the first inhabited chalet, the solitary tenant of which was consoling himself with some excellent coffee. A $\frac{1}{4}$ of an hour further the head of Val di Prato is entered. A romantic path, built along the face of vertical cliffs, threads a long and narrow gorge where the rocks are fringed with beech, birch, and ash, and the stream, unequalled in the Alps for its brilliancy and depth of colour, forms a succession of sparkling leaps and still blue pools. At the junction of a glen, through which a path leads to Val Verzasca, a steep descent, which the stream shoots in a shower of water-rockets, leads to the hamlet of San Carlo. The path here crosses a bridge below the fall, and runs along a finely-broken hillside, richly clothed in thick beech and chestnut forests, until at Prato it joins the carriage-road of Val Maggia.

Times: Faido to Crozolina Alp, 3 hrs.; to Pizzo Campo Tenca, $2\frac{1}{2}$ hrs.; to chalet, $1\frac{1}{2}$ hr.; to Prato, $1\frac{3}{4}$ hr.; to Bignasco, $1\frac{1}{4}$ hr.: total, 10 hrs.

PONTRESINA TO SILS MARIA BY THE SELLA AND SCERSCEN PASSES.—The following note has been received from the Rev. T. G. Bonney:—‘Among the various possible combinations of passes over the Bernina chain, I believe the above is a new one. Though less direct than the Capütschin Pass, it offers a much greater variety of scenery, and, according to my guide, Hans Grass, the Sella is a far more beautiful pass than the Capütschin. The only part of the route which is new is the descent of a wall of rock, a spur from the Piz Sella, which divides the snowfields of the Sella Pass from the Scerscen Glacier. This cannot be very much less than 1,000 ft. high, and is one of the steepest that I have ever descended, but not difficult, as the rocks are very good for climbing. Grass led me down in first-rate style, with only one slight check. There is now a small Alpine hotel in the Roseg valley, rather more than $1\frac{1}{2}$ hr.’ walk from Pontresina. On an emergency they can make up ten beds. I found the place clean, comfortable, and well supplied, and the charges not too high, and strongly advise mountaineers, who intend to make long excursions in that district to avail themselves of it, and so secure having the snow in good order. Our times were, from this inn to top of Sella Pass, 3 hrs. 45 min.; thence to top of Scerscen Pass, 3 hrs. 20 min. (the descent of the wall occupying 1 hr. 10 min., the greater part being spent on rock); thence to Sils Maria, 3 hrs. 15 min.: total 10 hrs. 20 min. actual walking, rather fast.’

THE ORTELER.—We are informed, on the authority of Herr Sigward, of the Deutschen Alpen-Verein, that the ‘Tuckettweg’ up the Orteler has become impracticable, owing to the formation of a great crevasse

extending right across the face of the mountain. In consequence, the 'Gebhardweg,' by which the first ascents were made in the last century, and which has long been considered impracticable, has again been brought into use. This lies along the east ridge, descending from the peak towards the Suldenthal and forming on one side the boundary of the Sulden Glacier.

HIGH-LEVEL ROUTE FROM SANTA CATARINA TO RABBI BY THE MONTE CEVEDALE AND VEDRETTA DELLA VENEZIA, August 22.—Messrs. J. G. and R. T. Ritchie, and D. W. Freshfield, with François Devouassoud, and a porter, left Santa Catarina at 3 A.M., and ascended Monte Cevedale by the glacier falling from it into Val Cedeh without going round to the Cevedale Pass. Having returned to the gap between the two summits (Mr. Tuckett's Furkele Joch) they traversed the crevassed southern face of the east peak to the ridge descending to the Hohenferner Joch. Following this ridge to the pass, they traversed the gap, and kept along the rocky crest dividing the Val della Mare from the Martell Thal. After an easy ascent, a small glacier was crossed and the crest again struck to the east of the stone-men, marking the second pass mentioned by Mr. Ball (Alpine Guide, 37 Route F).^{*} They then climbed the shoulder of the Pizzo Venezia to a point scarcely 150 ft. below that rather insignificant summit. Few passes in the Alps command views equal to those of the central mass of the Orteler obtained between the Hohenferner Joch and this point, including on one hand the bold peaks of the Königspitze, Zeburu and Orteler itself, on the other hand, the vast snowy masses which surround the Forno Glacier, sending down on this side also large glaciers into Val della Mare. The Cetzthaler Ferner are well seen, and in the opposite direction, the whole height of the Presanella, a splendid object, rising behind the meadows of the Val di Pejo. A descent of 5 min. led to the level snowfields of the Vedretta della Venezia, which were crossed to a broad gap, forming the highest pass between the Val della Mare and the Rabbi valley. Its height (about 10,300 ft.) is sufficient to overlook the opposite eastern ranges and to command a wide prospect over the fertile hills of the Nonsberg and the rich Trentino, fenced in like a garden by the distant spikes of the Botzen and Primiero Dolomites.

The following directions may be found useful in the descent. Keep at first on the left side of the small glacier; from the platform below its foot bear to the right to the highest pasturage, then to the left over a grass-slope leading to a stream, which must be crossed. The precipices which now stop the way must be turned by keeping well to the left and scrambling down a steep but easy gully, which leads to a track near the foot of one of the barriers of the valley. The path follows the right bank down three steep and stony descents separated by small

^{*} In the 'Karte der Centralen Ortlergruppe,' published under the authority of the German Alpine Club, the route can be followed with sufficient accuracy. Ball's Hohenferner Joch is there Fürkel Scharte, and his second more easterly pass the Hohenferner Joch. The Vedretta della Venezia becomes the Vedretta Careser. The small glacier falling towards Val di Rabbi is well shown, but the ground below it is left vague. In this map the whole south-west limb of the Orteler group is most inaccurately represented, and might better have been left a blank.

plains; below the last, and near some cottages, it crosses the stream, and after a time begins to mount along the hillside towards the village of Piazzola. For the Baths it is best to follow a watercourse, and then run down into the level meadows which extend for a mile above the mineral source.

The inns at Rabbi are rougher than the Stabilimento at Santa Catarina, without being, like Pejo, intolerably dirty and disorderly. The beds are clean and comfortable, sufficient food can be obtained, and the people are very civil to passing strangers.

Previous to the expedition here described no way was known between Santa Catarina and Rabbi unless by descending deep into either the Martell Thal or the Val della Mare. The new route is very direct, free from difficulty, and not too laborious, involving a second ascent of only 1,000 ft. The latter part of it is, of course, equally available for mountaineers crossing from the Suldenthal to Rabbi, who can ascend Monte Cevedale from St. Gertrud in about the same time as from Santa Catarina. *Times*:—Ascent of Monte Cevedale 6 hrs.; to Hohenferner Joch, 1 hr.; to shoulder of Pizzo Venezia, 2 hrs.; to pass overlooking Val di Rabbi, 50 min.; descent to Baths, 3 hrs. Total 12 hrs. 50 mins.

VAL TERESENGA AND BOCCA DI VALLEZZA, August 23 and 24.—The same party (except the porter) crossed by this hitherto undescribed valley and pass from Cles to Molveno.

There are probably few valleys in the Alps 6 hrs. in length the name of which is not mentioned in the 'Alpine Guide.' Val Teresenga has met with this fate. The entrance to the valley is near Tuenno, a few miles below Cles in Val di Non. A good cart-road mounts beside the stream through a porphyry gorge, which recalls the scenery near Botzen. High up on the vertical cliffs on either hand are seen watercourses constructed with wonderful boldness, in order to fertilise the lower valley. Above the spot whence these draw their supplies, the stream itself is buried under huge rock-avalanches, the remains of which give a desolate air to the valley. Although there are no permanent dwellings in Val Teresenga, its forests afford employment in summer to a large population. Being Saturday afternoon, at least 200 men, women, and children were met returning to their homes, most of them laden with baskets of raspberries and bilberries.

The road presently mounts more steeply under the smooth cliffs of Monte Corno, and the forest becomes thicker. About 2½ hrs.' steady walking from Tuenno the Lago di Tovello, a sheet of clear blue water about a mile long by half a mile wide, is suddenly discovered embosomed amongst dense forests and lofty cliffs. A native of Cles has built a small fishing lodge on the shore.

The porter, instead of taking the direct path beside the lake and along the valley, insisted, for fear of being benighted, on our climbing a steep ascent of at least 2,000 ft. to a châlet said to be nearer than the Flavona Alp. The labour was repaid by an unexpectedly extensive view not only of the mountains round the head of the valley, but of the Venetian Dolomites as far as the Pelmo. The châlet (known as the Malga di Sotto) stands on the edge of a shelf of pasturage under

the rugged limestone cliffs of the Sasso Rosso and Sasso Alto. The still, blue lake lies deep beneath, buried in forest and girt in by broken crags. Above and below the lake there is no floor to the glen; where a torrent might be expected to flow through a tolerably level trough, nothing is seen but a confusion of high-piled mounds. Some extraordinary convulsion of nature has overthrown mountains and blocked up the valley with their remains; but the ruin is so veiled in a thick cloak of verdure as scarcely to attract attention at first sight.

From this châlet it is a walk of 2 hrs., gradually descending along forest paths skirting the great precipices above the lake, to the lower Flavona Alp, standing at the foot of a steep low barrier. Half an hour higher, in the middle of a broad sloping meadow, is the upper Flavona châlet. Two passes were known to the herdsmen, one on the W. leading to Campiglio, another on the E. to Spor Maggiore; neither they nor the porter, who had been for many years a forester in the valley, knew of any direct way to Val delle Seghe and Molveno. The track to Spor enters an upland valley running under the cliffs of Monte Tublan, the highest of which is crowned by a shepherd's cross. Turning to the right, and passing close to the southern foot of a rock resembling the Riffelhorn, the party entered a snowy hollow closed by a saddle, separated by a stretch of rocky ground from the watershed. Close to the W. base of the bold but probably accessible out-lying pinnacle of Monte Gallina, a gap was found leading into the extreme head of the northern branch of Val delle Seghe. It is proposed to call the pass the Bocca di Vallezza, from the name of the highest pasturage on the Molveno side. Clouds hid the view, which must be fine; the lake of Molveno was seen through the first break in the mist. The descent, through scenery at least equal to that of the other branch of the valley, is at first over steep beds of snow and rock, and then by a sheep-path. The only place where it is possible to miss the way is near the first shepherd's shelter, where a path will be found on the right in the ravine of the torrent. The track of the Bocca di Brenta is joined at the fork of the valley. *Times*:—Tuenco to Flavona Alp (estimated by the direct path) 5 hrs.; to Pass, $1\frac{1}{2}$ hr.; descent to Molveno, $2\frac{1}{4}$ hrs.

CARÈ ALTO AND HIGH-LEVEL ROUTE FROM VAL RENDENA TO VAL CAMONICA, August 25 and 26.—The same party, with B. Nicolosi of Molveno, drove down from Pinzolo to Borzago, and walked up the Val di Borzago to the châlets at which Messrs. S. Taylor and Montgomery slept before their ascent of the Carè Alto. The mountain is constantly in view, and the valley is throughout well-wooded and picturesque. Birch trees of Caucasian growth flourish near its head. The cows were higher on the mountains, and they climbed on up a steep path into the recess lying above the barrier at the head of the valley, and west of the spur which, springing from the base of the Carè Alto, forms the limit of the Borzago Glacier.

The promised 'malga' proved to be nothing more than a rude shelter formed by piling up a wall of stones against the underside of an overhanging rock. The narrow space inside was already occupied by three men and a girl, and crowded with cheeses and milk-pails, so

that it was with difficulty that room was found to make up a bed with the brushwood collected outside for fuel.

Starting at daylight next morning Mr. Freshfield's party climbed the spur already mentioned. The best course is to follow it to the base of the peak, where it sinks into a snow ridge, and the Borzago Glacier can be reached without any descent. This line of ascent is shorter than that previously taken by the (true) left of the glacier. Future climbers are recommended to strike straight up the rocky N.E. face of the peak, which does not seem to offer any serious difficulty. Mr. Freshfield and his companions turned to the right, and after a little trouble with crevasses, reached the gently-sloping snowfield at the N. base of the Carè Alto, on this side an ice-wall of great steepness. By striking the N.W. ridge low down, and then completing the ascent as much as possible by the rocks, they avoided the necessity of cutting more than a dozen steps. It is only for a few yards that the rocks become too smooth to give satisfactory foothold.

The first glimpse of the green pasturages of Val di Fum, seen as an oasis amidst rocks and snow, is very striking, and may recall the legend of the lost valley of Monte Rosa. The panorama is naturally extensive, and, from the position of the peak overlooking on one side vast glaciers, on the other fertile valleys, rich in contrast.

After returning to the glacier, the party skirted the sides of Monte Folletto and the Corno di Cavento, and having crossed the almost imperceptible division between the névé of the Borzago and Laris Glaciers, gained the well-marked gap between the Cavento and the Crozzon di Laris. The granite ridge on the left is broken into horns and pinnacles of unusual boldness and splendid colouring. From this pass they descended on to the snowfields of the Fum Glacier, and crossing to those which feed the Matterot Glacier (Lobbia Gl. of Payer) reached the Passo della Lobbia alta. The Vedretta di Bedole (Mandron Gl. of Payer) was next crossed in its greatest breadth to the Passo del Mandron, the lowest gap in the chain connecting the Corno Bianco and Monte Mandron. As the party drew near the Corni del Confine, a family group of three chamois were seen on the snow, and shortly afterwards a gun was fired from among the rocks skirting the glacier, and a solitary hunter sprang forward. The shot missed, but it was curious to see how in their flight the two old chamois not only would move no faster than the pace of their young, but placed themselves close on either side, as if instinctively sheltering it from danger. A snowfilled trough leads to one of the glaciers of Val di Avio. The ice should soon be quitted on its right bank where a gully, amidst rugged crags, gives access to the highest pasturages. A rough cow-track, difficult to trace, leads down to the first chalet, where the stream must be crossed.

The scenery at the head of Val di Avio is of a very high order. The Adamello unexpectedly rears itself up in a noble pyramid, large glaciers fall from its flanks, and on the other side the Corno di Baitone and its neighbours form a sheaf of snow-girt horns and pinnacles. One of the level platforms common in this group is filled by a large lake and a smooth expanse of meadow, into which two torrents pour over

side by side in splendid cascades. Below the lake the glen falls with extraordinary rapidity, and a very stony path, mainly on the left bank, leads down past a succession of waterfalls, any one of which might be famous in a less favoured region.

The lower level of the valley is devastated by the torrent. Travellers ascending Val Camonica to Ponte di Legno, the nearest sleeping-quarters, will cross the stony bed and follow a cart-track joining the Tonale road a little below Pontagna, and about $2\frac{1}{2}$ miles from Ponte di Legno, where the inn is much improved.

This route across the snowy table-lands of the Adamello may be shortened by from 3 to 4 hrs. by omitting the ascent of the Carè Alto. It would then cease to be a day of unusual length, and there is probably no place in the Alps where five watersheds of equal elevation can be crossed with so little fatigue. The views of the surrounding ranges, especially of the whole chain of the Brenta Alta, are most splendid, and mountaineers already acquainted with Val di Genova can scarcely do better than follow the track here pointed out. The passes traversed are believed to have been all accomplished by Lieut. Payer, or other foreign mountaineers, but their combination is certainly new. The relative heights assigned to the Passo di Cavento and Fum Pass (9,400 and 9,800 Austrian feet) by Payer require revision, the former being decidedly the higher of the two.

Bonifazio Nicolosi of Molveno can be recommended as a splendid rock-climber and as one of the most cheerful and ready companions and sturdy weight-carriers to be found in the Alps. He seems also perfectly capable to take the lead on ice. It is a pity that his duties as a forester prevent his accepting any long engagement.

Times—Borzago to shepherd's hut, $4\frac{1}{2}$ hrs.; ascent of Carè Alto, 4 hrs.; to Passo di Cavento, $2\frac{1}{2}$ hrs.; to Passo della Lobbia alta, 1 hr.; to Passo del Mandron, $1\frac{1}{2}$ hr.; descent to Alp near Lago di Avio, $1\frac{1}{2}$ hr.; to Ponte di Legno, $2\frac{1}{2}$ hrs. (fast); total (second day) 13 hrs.

ALPINE NOTES.

CHAMONIX * GUIDES AND THE DEATH ON THE MER DE GLÂCE.

A letter from the Editor of the 'Alpine Journal' appeared in the 'Times' of October 7, giving some of the leading facts connected with the recent death of Professor Fedchenko, a Russian *savant*, already distinguished for his researches amongst the mountains of Central Asia. A report spread at Chamonix that the immediate cause of the catastrophe

* The 'Times' reviser, following the ordinary custom of English printers, twice substituted 'Chamounix' for 'Chamonix.' Good literary authority can be found for both 'Chamounix' and 'Chamouni.' But 'Chamonix' is the spelling of the people of the valley, and of the French Ordnance Survey and Post-office, and there seems no reason why it should not in England, as in accurate Germany, be universally accepted.

had been the traveller's refusal to take the necessary provisions was contradicted, and the conduct of the guide and porter, two brothers, named Joseph and Prosper Payot, in leaving Professor Fedchenko while still alive, was severely commented on. The letter concluded as follows:—

'Every effort has been made at Chamonix to hush up the matter; the one brother remains on the roll of guides, and no punishment or even public censure has fallen on either.

'For the present, therefore, the whole body of guides must be regarded as discredited and disgraced. There is only one course by which they can partially retrieve their credit.

'They must at once remove from their ranks the member who has so grossly violated his trust, and they must further press for such punishment on his conduct as French law can inflict. But if they wish to regain their former reputation much larger measures are necessary. Mountaineers have for some time known that many of those on the Chamonix roll were unfit for their work. The men who can take the lead on a glacier and the men who are only capable of following a mule must be placed on separate lists in such a way that strangers may run no risk of mistake. Until this has been done travellers should accustom themselves to look on the title of "Guide de Chamonix" rather as a snare than a safeguard, unless it is prefaced by one of the well-known names distinguished in the "Alpine Guide" of Mr. Ball.'

Three days afterwards, Mr. Warren Pugh supplied the following information as to the antecedents of the guide employed by M. Fedchenko:—

In the autumn of last year Mr. Pugh ascended Mont Blanc with Joseph Payot as his guide, and his brother Prosper and a Champéry man as porters. The guide showed himself so little acquainted with ice-work, and was so often at a loss in finding his way among the crevasses, that had it not been for his brother, the porter, and the Champéry man, to both of whom he was constantly appealing, the party would scarcely have reached the summit in time to descend by daylight. Mr. Pugh called at the office of the "chef guide," and stated his experience of J. Payot, but was informed that the man having passed all the requisite examinations must continue to rank as a duly qualified guide.

Mr. F. T. Pratt-Barlow also wrote to the 'Times' condemning strongly the rules of the Chamonix bureau, and giving his experience of a Joseph Payot who walked with him over the Tête Noire. Mr. Barlow described him as a young man looking not more than 20, very inexperienced, but with a genuine enthusiasm for the mountains. It does not seem certain that Mr. Barlow's companion was the same Joseph Payot employed by Mr. Pugh and Mons. Fedchenko.

On the 17th ult. a most interesting letter from Mr. Alfred Wills furnished for the first time full details of the sad catastrophe. We cannot do better than reprint Mr. Wills's account, founded on first-rate authority, and on a personal examination of one of the men concerned:

'M. Fedchenko was recommended to visit the Col du Géant by a near relative of the guide and porter he afterwards engaged, who keeps

one of the shops for the sale of crystals and the like, of which there are so many at Chamonix—a person who has the reputation of some geological and botanical knowledge, and to whom on that account M. Fedchenko had addressed himself. The same person naturally recommended the guide and porter in question. I do not blame him for this, and I think he was justified by their character in so doing. The guide—Joseph Payot—was a young man between 23 and 24 years of age; the porter, his brother Prosper, between 22 and 23. M. Fedchenko started from Chamonix at 5 A.M., intending to visit the col and return the same evening. He breakfasted at the Montanvert, whence he set forth at 8 A.M. He there procured his provisions, for which, with his breakfast, he paid 26f. The party took the ordinary route, and reached the snow slopes about the séracs without any unusual incident. The passage of the séracs always involves a good deal of close attention to details, and it was only on reaching the névé above that they noticed that the day, which, when they started from the Montanvert, was exceptionally fine, was clouding over. They did not, however, anticipate any very severe weather, and pursued their way; but when they had nearly reached the rocks known by the name of “La Vierge,” from which it would have taken them, under ordinary circumstances, about an hour to reach the col, a storm of wind, rain, sleet, and snow burst upon them with extreme suddenness and violence. Their first idea was to push on, cross the col, and reach Mount Fréty on the southern side; but a very few minutes sufficed to show them that it was hopeless to attempt in such weather to toil up the heavy snow slopes which lead to the col, added to which the storm prevented them from telling in what direction they were going, and the chances were greatly against their hitting the place of passage even if they could breast the ascent. They turned, a little after 2 P.M., to retrace their steps. The tracks they had made in the snow were already obliterated, and were never found again, except here and there in the middle of the descent of the séracs. They were soon wet to the skin and half frozen by the cold wind. M. Fedchenko was already tired, and the cold and wet told heavily upon him. Partly in consequence of his exhausted state, partly in consequence of the mist and drift in which they were enveloped, and which prevented them from seeing any distant object by which to direct themselves, they were a long time in reaching and again in descending the séracs; and it was necessary to give an increasing amount of help to the traveller, who was not a light man. By the time they arrived at the foot of the séracs it was nightfall—the day was the 14th of September—and by this time M. Fedchenko was so exhausted that the two Payots had to carry him on their backs, turn and turn about. The storm still continued, and they descended in this fashion over a stretch of ice very far from being as difficult as the séracs, but still laborious and embarrassing in the last degree to men so encumbered. About 9 P.M. they reached the few scattered rocks which compose the moraine known as La Noire—a moraine totally insufficient in size to afford any protection against the weather, but which still gave them rock instead of ice to rest upon. By this time Joseph Payot, who is the less strong of the two brothers, was almost as exhausted as M. Fedchenko,

and was himself unable to proceed further. They remained in this dreadful position, exposed, without any shelter, to wind, rain, and snow from 9 P.M. to 2 A.M. There was no moon, and the night was dark, with clouds and bad weather. Prosper Payot, who was the strongest of the party, remained upon his feet all the time, moving about, and, as long as he could, he kept his brother and the traveller upon their feet; but at length exhaustion became supreme. The traveller sank upon the rock, and despite every effort Prosper could make, fell into that fatal sleep of frozen exhaustion from which there is no awaking. He had been long in this condition, though still breathing, and Prosper had already had to strike, kick, and shake his brother to prevent him also from falling asleep, when the younger brother came to the conclusion that the only chance of saving any life besides his own—perhaps his own also—was to attempt to walk on. He got his brother into motion with infinite difficulty, and with great difficulty kept him from falling, till, little by little, circulation and warmth to some degree revived, and between 4 and 5 A.M. on the 15th they both reached the Montanvert in a very exhausted and pitiable condition, especially Joseph. What time the traveller died cannot be known, but if the information given to me be correct, he was dead to all intents and purposes long before the Payots left him.*

† If this narrative be substantially true, it is difficult to see what more the two men could have done after they once became involved in the difficulty, or of what avail it would have been to stay longer on the glacier than they did. It is true that the narrative comes from the men themselves; but I see no reason to doubt it. The story was told me by Prosper Payot simply, quietly, and modestly; and there are many circumstances to bear it out. In the first place, it is undoubted that the men did not reach the Montanvert till between 4 and 5 on the Monday morning. In the second place, it is to the last degree improbable that they should have been able to descend the séracs in the night. They therefore must have stayed several hours by the traveller, and I cannot conceive for what purpose except to do the best they could for him. Their own chance of escape would have been infinitely greater had they left him earlier, and there is no room to doubt that one of them had a very narrow escape with his own life, which, indeed, he owed entirely to his brother. Their retreat would have been much easier at 9 or 10 P.M. than at 2 A.M., because the strain of several hours passed under such circumstances of weather, temperature, and associations was a very fearful one even for a very strong man. On the other hand, when it had once become impossible to rouse the traveller from the fatal lethargy which creeps over men so situated, no power on earth could save him, and I cannot see any sufficient reason to doubt that they did stay by him as long as there was any chance of saving him,

* Joseph Payot, immediately on his return to Chamonix, stated distinctly that he had left M. Fedchenko alive. The Commissary of Police, however, informed Madame Fedchenko that her husband died while the guides were with him. It may be hoped he made this statement from a kindly motive; but the same excuse cannot be made for the rest of Chamonix, which did its best to circulate the untruth.

and, indeed, till the life of one of themselves hung by a thread. I have only to add upon this part of the case that my friend and I both entered upon the investigation with a strong feeling against the Payots. That my friend's views were changed by examination and reflection is best proved by the fact that a week ago he selected the same Prosper Payot to accompany us on an expedition of very considerable length, rendered serious by the fact that we were both taking with us some of those nearest and dearest to us, and upon which we were both, therefore, unusually anxious to be sure of our men. I do not see any reason, further, to doubt Prosper Payot's statement that, had he started off alone to the Montanvert to get assistance, in the four or five hours which must have elapsed before he could return his brother and the traveller would have infallibly both perished. As it was, he long prevented the traveller from falling into his fatal sleep, and just succeeded in preventing his brother from following in the same course.

'The mistake they made, so far as I can judge, was in going so far before turning back. It is quite possible that in this respect they were wrong. The Chamonix tariff offers to guides and porters enormous temptations to press on in spite of warning. Had these men reached the summit of the col, the guide would have been entitled to 40f. or 50f.—I forget which—and the porter to 20f. or 25f. Had they turned back where they were when the first symptom of bad weather attracted their attention, the guide would have been entitled to 10f. and the porter to 6f. A similar provision in the exaggerated tariff for the ascent of Mont Blanc was the undoubted cause of the death of 11 persons in the terrible accident of 1870; and it would take a higher nature than that of probably 335 out of the 340 guides of Chamonix to resist such a temptation, when they did not foresee that their own lives would be at stake.' *

For this mistake, if it was one, Mr. Wills proceeds at some length to excuse the Payots, on the ground of the sudden and unlooked-for character of the storm. It did not burst, however, on the Mer de Glâce wholly without warning. Another traveller, with an Oberland guide, was on the glacier that day. He breakfasted at the Montanvert with M. Fedchenko, and only parted with the Russian and his guides at the junction of the glaciers, where the Jardin route turns off to the left. About midday the Oberlander called attention to ominous signs in the sky, and insisted on the return being hurried. We mention this circumstance as a contribution to the accurate understanding of the events of the day.

The concluding paragraph of M. Wills' letter is now quoted:—

'I quite agree with the Editor of the "Alpine Journal" that it would

* Mr. Wills has here hit on the motive actually avowed by J. Payot as having induced him to disregard the first signs of storm. The following fact has lately come to our knowledge:—On the night of M. Fedchenko's funeral the Payots were at the village *café*. Joseph was asked by a bystander, 'Did you notice signs of bad weather?' 'Oh, yes,' was the reply. 'Then why did you go on?' The exactness of the answer is vouched for:—'On "grandes courses" one takes the chance. One goes on because one gains much. Generally all goes right; and if not, well—"tant pis!"'

be well if the guides could be divided into two classes, one comprehending the men competent to carry ladies' shawls to the Montanvert and to help nervous tourists over the Mauvais Pas or up to the Planpraz or the Flégère, or even to conduct a mule to Contamines or Martigny; the other, those fit to take the lead on a great glacier expedition, and to whom a life may be safely trusted in a moment of real difficulty or danger. But how many would be properly placed in the second category? I solemnly believe not half a dozen in all. And who is to classify them? If it were possible to give an idea of the illusory character of the securities provided by the existing laws regulating admission into the corporation of guides, or the depth of incompetence, sordidness, and prejudice which now prevails among that once honourable body, those to whom the traditions of Mont Blanc and the associations of Chamonix are dear would fairly stand aghast. The Chamonix regulations are a system of the rankest Communism, framed for the purpose of destroying all wholesome and honourable rivalry. The enormous influx of visitors has had its usual demoralising effect. The annexation of Savoy to France has told wofully upon the character of a people just learning to be independent. I have been a resident in Savoy during a part of every year since the annexation, as well as having known it very well before, and I have seen with pain and sorrow the rapid deterioration brought about by a system so fearfully and wonderfully perfect in all the arts and means by which public spirit, independence, and self-respect can be crushed out of the national life. At Chamonix every one of these causes is at work in the fullest vigour, and it is only surprising that any manliness is left in the place. There is not much of it. I have been a sorrowful witness during the last week to a picture of cowardice, imbecility, and incompetency on the part of guides, in whom I had been accustomed to believe, such as would have been incredible if I had not seen it and suffered by it. The glaciers of Mont Blanc are fast melting away, but the courage and virtue of the once hardy population of Chamonix are melting faster still, and already what is to my mind incomparably the most attractive district of the Alps has become scarcely a fit place for any mountaineer who is not prepared to do guide's and porter's work as well as his own, and to rely upon himself alone in any situation of difficulty or danger.'

The distressing story is now before us, told in such full detail and on such good authority that, although it is possible the chef-guide may be able and disposed to throw light on one or two points still more or less obscure, it is not premature to express at once our comments on the catastrophe, and to point out where we should wish to modify the conclusions drawn from it by Mr. Wills.

On the ground principally that the Payots remained by the traveller for five hours, and did not leave him until their own lives were in danger and his was, as they considered, past hope, Mr. Wills inclines to a more lenient judgment of the guides than that we felt at first bound to express. It must be borne in mind throughout, although not pressed unfairly, that our only evidence comes from the Payots themselves. Nor can we forget what Mr. Pugh has told us, that last year Joseph Payot proved himself on Mont Blanc a worthless guide. But it

need hardly be said we have no wish to judge the men harshly, and are heartily glad to find that, after Mr. Wills' explanation, their conduct appears less selfish and cowardly than at first sight. Mr. Wills has, we think, successfully cleared the Payots from the charge of manslaughter which, when the story first reached England, they seemed to labour under. But if we admit they did all they could, it must be with the reservation—being the men they were. Joseph Payot remains in our eyes a poor creature, unworthy both physically and morally to retain the name and position of guide. Prosper is very young, and was engaged only as a porter. He may be a good porter, and it is possible he may some day develop into a good guide. But in the accounts of the fatal expedition we find no sign that he rose above the duties of a porter, or at any moment by an act of judgment or decision proved himself capable of the post in which his brother was found wanting.

The men, having knowingly run into difficulty with a mercenary motive, lost their heads the moment they found themselves in what, no doubt, they did not foresee—real danger. Pluck and spirit were wanting in the decisive moments of the day, and when at last the moraine was reached Joseph Payot who, five hours afterwards, could walk down to the Montanvert, lost the last chance by being too weak or too timid to go on at once by himself and seek assistance. Had he done so, help would have been brought before the hour at which M. Fedchenko was left to die.

If the Payots showed little heart they showed less heart. Though able to walk down to Chamonix, they neither of them thought to return with the men who went in search of their employer. And yet they did not scruple to ask and receive payment from his widow—payment for the services which were of such little avail.

We cannot finally leave this side of the subject without protesting most earnestly against the suggestion—not made by Mr. Wills, but which might be drawn from his letter—that it is allowable for a guide to attempt to judge whether his employer is or is not 'to all intents and purposes dead,' and, if he takes the former view, to leave him. Mutual confidence between the members of an Alpine expedition is founded on the knowledge that all will act on the principle that 'while there is life there is hope.' If the extremity of a companion's state is to be allowed as the reason for his abandonment, we must give up all our former ideas of honour, duty and devotion as between guides and travellers.

The skill or conduct of the two Payots is, however, despite the tragic interest for the moment thrown over it, a question of comparatively minor importance. Is it true, as Mr. Wills tells us, that the whole valley of Chamonix is a dark gulf of 'incompetence, sordidness, and prejudice,' and that a notice ought to be placed round the glaciers, 'Closed for want of guides'?

We feel that in the face of the evidence it must appear presumptuous to uphold any other view. When Chamonix has been tried and found wanting by Mr. L. Stephen, Mr. Wills, and Mr. Reilly, what can remain to be said for it? Yet we must be loyal to old friends. The

two or three men of the village we have ourselves had to do with have been good guides and honourable companions. In their families we have found independence joined to a delicacy of feeling rare anywhere. It is hard to us to believe that we have fallen upon the solitary specimens of virtue in a large population. No doubt the wretched rules of the 'bureau' have been successful to an extraordinary degree in discouraging and checking the progress of the young men who might, under other circumstances, have by this time taken an honourable position as the successors of the old Balmats and Couttets. But until we have yet further proof to the contrary we would fain hope that there is still good raw material in Chamonix, and that, despite the miserably low tone of morality prevalent, reformers may count on the presence and support of a perhaps small but influential class in the place itself. The select list we propose to form would not embrace many names, but in how many villages in Switzerland are there more than from a dozen to twenty first-rate guides?

But, however few the good men left in the valley, it will be admitted that the present inefficiency of Chamonix guides, as a body, has been the product of a bad system, rather than the result of any natural unfitness or viciousness in the men themselves. It follows that if we wish to enable Chamonix to regain its old reputation this system must first be destroyed. It is, we think, the duty of the Alpine Club to take the means at hand to effect this object, and in the first place to represent in the most forcible way to the guides themselves, through their official chief, the evils caused by the levelling nature of their present rules, the laxity of their discipline, and the disloyalty often shown towards travellers. If the 'bureau' refuses to listen to our advice we shall then be justified in taking the strongest measures to save travellers from the trap prepared for them, and in devising some means by which what good men there are in the valley may be effectually severed and distinguished from their unworthy brethren. The 'Corporation of Guides' has to choose between submitting itself to a severe but wholesome reform, or remaining as it is, and being denounced to the world as an association of muledrivers, bent on obtaining money under the false pretence of glacier guides.

It only remains for us to add, that the first step in the course here sketched out has already been taken, as will be seen from the following letter extracted from the 'Times' of October 21:—

'Sir,—I send you herewith a copy of a letter I have sent to the Guide Chef at Chamonix, relative to the death of M. Fedchenko, and the organisation of guides at Chamonix. I trust you will publish it in your columns, as it will, I hope, give your readers an assurance that serious accidents on the Alps cannot take place without an effort being made by our Club to investigate their causes and to prevent their recurrence.

'I am, sir, faithfully yours,

'WILLIAM LONGMAN, President of the Alpine Club.

'Alpine Club, St. Martin's Place, W., Oct. 20.

“Alpine Club, St. Martin's Place, London,
October 20, 1873.

“Sir,—As President of the English Alpine Club, I write to you relative to the death of M. Fedchenko on the Mer de Glâçe on September 14; of which two accounts—one by Mr. Douglas Freshfield, the Editor of the ‘Alpine Journal,’ and the other by Mr. Alfred Wills, formerly President of our Club—have appeared in the ‘Times’ newspaper. These two accounts of the catastrophe differ considerably. It is therefore important that we should have a report from yourself, who—responsible by virtue of your office—must be able to speak with authority of all the circumstances connected with the expedition.

“Although the unfortunate gentleman was not an Englishman, you will, I am sure, feel that I, as the representative of English mountaineers, and the President of the first-formed Alpine Club, am only performing a duty to the general body of Alpine travellers in now addressing you. It is to the interest of travellers of all nations, and I may add to that of the guides themselves, that the dangers of Alpine travel should be, as far as possible, reduced to a minimum. When, therefore, an accident does occur, its causes must be jealously scrutinised, for the purpose of ascertaining how far the fatal event was inevitable, and how the occurrence of a similar catastrophe may be prevented. I therefore invite you to send me a circumstantial and properly-authenticated account of the whole expedition. Unless this is done the confidence of all travellers in the bureau which guarantees the efficiency of the Chamonix guides will be destroyed, and no small injury be inflicted on Chamonix itself.

“But I have a further object in addressing you, and that is, to induce you to take steps for the improvement of the organisation of the body over which you preside, the necessity for which is insisted on in the two letters to which I have referred, and also in that by Mr. F. P. Barlow, one of the most active members of our Club, in another letter to the Editor of the ‘Times.’ It is not right, as I am sure you cannot hesitate to admit, that there should be but one list of guides, comprising indiscriminately those qualified for glacier expeditions of the greatest difficulty and for arduous ascents of the highest mountains, and also those competent for merely ordinary passes, and that all travellers, whether genuine mountaineers or ordinary tourists, should be compelled to take them in strict rotation. This practice is as unjust to the guides themselves as it is to those requiring their services. The members of our Club are absolved from this condition, and so should be the general public. I should be stepping out of my proper province were I, at present, to attempt to dictate to you the exact details of arrangements having for their object a more satisfactory organisation of guides; but I may suggest to you that a list of guides should be printed, and presented to all applicants, in which they should be arranged in three classes. The first should contain the names of those qualified for expeditions of real difficulty; the second of those suited to ordinary glacier expeditions; and the third of those capable of only easy work. To the names of the guides in the first two divisions should be appended a list of the expeditions they have made, and

travellers requiring a guide for any purpose should be allowed to select their companions, entirely untrammelled by the principle of rotation; but no guide except those in the first and second divisions should be allowed to conduct any traveller on a glacier.

"I trust you will give this communication—a copy of which I have sent to the 'Times' newspaper—your early and careful consideration, and that you will write to me on the subject with as little delay as is consistent with due deliberation.

"I am, sir, with expressions of the highest esteem and consideration, faithfully yours,

"WILLIAM LONGMAN, President of the Alpine Club.

"I enclose copies of the various communications to the 'Times' to which I have alluded.

"To the Guide Chef, Bureau des Guides, Chamonix."

MELCHIOR ANDEREGG AS A SCULPTOR.—Very many members of the Alpine Club know Melchior Anderegg, and those who do not know him know of him. He is, I venture to affirm, the first Swiss guide of the day; and he is, furthermore, as good a fellow off the mountains as he is a good guide upon them. In winter, Melchior occupies himself with wood-carving. Hitherto his work, though distinguished by taste and skill, has been conventional and common-place in character; but I have now the pleasure of announcing that he is ripening from a carver into a sculptor. In the year 1872 we were resting for a moment, during the descent of the Wetterhorn, when the question of Melchior's doing some carving for me during the winter first cropped up between us. It was decided that he should do *something* for me, and the only point of apparent difficulty was the selection of the subject. 'Would you like a chamois, Herr?' asked Anderegg, cheerfully. 'No, Melk, I won't have anything to say to a chamois.' 'Perhaps you would prefer a cow?' suggested my guide. 'Well, do you know Melchior, I hate cows—in wood—rather more than I hate chamois in the same material. No cows for me.' Melchior hesitated a moment, and then asked, doubtfully, 'Would you like a châlet, with rocks?' 'No, Melk, I won't have a chamois, a cow, or a châlet; but I will tell you what I will have.' 'What is that, Herr?' 'Why, a portrait of yourself, carved by yourself, in wood; and about—let us say, about two feet high.' Melchior looked dismayed. 'I couldn't do it!' he exclaimed; 'I never carved a figure, and I don't know at all how to set to work. I am afraid that I could not do it.' However, I pointed out that he had nothing to fear; that the work was a commission; that I wanted him to make a trial, and would take the figure whether a failure or a success. At last he undertook, though with some diffidence, to execute my commission, and the result of his labours reached me in the early summer of this year. I was surprised, as well as delighted, with Melchior's production; and members of the Alpine Club can judge for themselves whether my admiration be well founded by inspecting this portrait of Melchior Anderegg, by himself, in the Dudley Gallery, which is now open. There are, of course, defects. Some of the proportions of the figure

are not quite correct—nor was it to be expected that they could be in a first attempt to model a figure; but Melchior is studying diligently, as I know, and will soon succeed in mastering such difficulties. The feeling for texture is quite remarkable; the portrait is fair; the attitude—one which I suggested—is well managed; and the whole work is full of ‘go,’ truth, and life. I do not, however, now want to criticise beyond calling sufficient attention to its merits to induce men to go and see it. My motive in inducing Melchior to try sculpture (at present only in wood) was this: I thought a day would come—may it be far distant!—when Melchior would have to quit the peaks and to retire to the flat. I thought that it would be pleasant to many of us if our greatest guide turned from guiding into art—a better career than keeping a small hotel, or a horse and chaise. Melchior has, I feel sure, very great natural ability and aptitude; and he is bent on studying hard. Why should he not become—perhaps—a Thorwaldsen of Helvetia? Why should we not respect our old guide in the young artist? If this prospect seems a pleasant one to members of the Alpine Club, I would invite them to inspect the statuette in the Dudley Gallery; and if they like it, and think that it affords a promise of better things, I would suggest that they should encourage the artist-guide by giving him winter commissions for art-work.

H. SCHÜTZ WILSON.

Mr. Moore sends us the following note:—

‘JAKOB ANDEREGG BURNT OUT.—On August 26 last the house of Jakob Anderegg, the well-known guide, at Unterbach, near Meiringen, was totally destroyed by fire, with all its contents, representing the savings of a lifetime. Nothing was saved, and the property was insured to the amount of only 1,000 fr. After allowing for this insurance, Jakob’s actual loss is no less than 6,880 fr. Thanks to the exertions of Messrs. Pratt-Barlow and Grove, and the liberality of sympathising friends, a considerable sum has been raised for the poor man’s relief, but the money collected still falls short by about 100% of the amount of his loss. I think it probable that many of our members and others, to whom it has not been possible personally to apply, may be disposed to assist in the good work, when informed of the circumstances in your pages. Any sums which may be sent to me, addressed A. W. Moore, Hon. Sec. A. C., 8 St. Martin’s Place, I will thankfully take charge of and acknowledge.

‘Amounts received: Sir. C. Mordaunt, 5*l.*; T. Middlemore, 3*l.* 3*s.*; M. W. Whitmore, 1*l.*; F. F. Tuckett, 5*l.*; G. E. Foster, 10*l.*; L. Stephen, 2*l.* 2*s.*; H. P. Thomas, 10*s.*; E. Gonne, 1*l.*; C. J. Thomas, 1*l.*; J. H. Fox, 2*l.* 2*s.*; Eliot Howard, 3*l.*; S. Howard, 2*l.*; Commander Salmond, R.N., 2*l.* 18*s.*; E. Neel, 10*s.*; E. N. Buxton, 10*l.*; A. W. Moore, 10*l.*; C. G. Heathcote, 5*l.*; W. Trotter, 2*l.*; C. E. Mathews, 2*l.*; G. S. Mathews, 1*l.*; D. W. Freshfield, 1*l.*; Horace Walker, 10*l.*; Mrs. Walker, 2*l.*; Miss Walker, 5*l.*; J. Walker, 1*l.*; W. M. Pendlebury, 10*s.*; F. Gardiner, 3*l.*; Miss Barrett, 1*l.* 10*s.*; J. Camenisch, 1*l.*; Anon, 10*s.*; G. H. Strutt, 1*l.*; W. Peachey, 1*l.*; Miss Butler, 1*l.*; T. Cox, 1*l.*; A. Boyson, 3*l.* 3*s.*; W. Longman, 10*l.*; R. Still,

3*l.* 3*s.*; S. F. Still, 6*l.*; F. Pratt-Barlow, 3*l.* 3*s.*; F. Pratt-Barlow, jun., 10*l.*; F. C. Grove, 5*l.* 5*s.*; Mrs Grove, 1*l.* 1*s.*; H. Malan, 2*l.*; J. H. Pratt, 2*l.*; J. O. Maund, 4*l.*; J. H. Peebles, 4*l.*; E. Whympcr, 2*l.*; F. Morshead, 2*l.*; Rev. J. Bramston, 10*s.*; Rev. C. Hawkins, 10*s.*; T. Kensington, 10*s.*; F. W. J. Vecqueray, 25*fr.*; Mrs. Vecqueray, 25*fr.*; T. Brooksbank, 20*fr.*; R. N. Hayward, 10*fr.*; Mrs. Jackson, 25*fr.*; H. S. Hoare, 25*fr.*; Mrs. Hoare, 20*fr.*; Hamilton Hoare, 25*fr.*; the Misses Pigeon, 60*fr.*; J. L. Johnson, 10*fr.*; Mr. Ramadge, 20*fr.*; G. W. Prothero, 10*fr.*; Mr. Brackenbury, 10*fr.*; Mons. A. Seiler, 10*fr.*; Mr. Leaf, 50*fr.*; Mrs Leaf, 20*fr.*; H. Marinadin, 20*fr.*; Mons. E. Selignan, 20*fr.*; E. Hulton, 25*fr.*; G. G., 10*fr.*; W. P. W., 10*fr.*; Anon, 10*fr.*; small sums under 10*fr.*.—21*fr.*’

BALLOONS FOR MOUNTAINEERS.—The following letter has been received:—

‘Sir,—Will not some enterprising member of the Alpine Club test a plan of mine for climbing mountains which I elaborated some years ago, but have had no leisure or opportunity to put in practice? It is in brief as follows: When about to climb a mountain, having selected a still day, with what wind there is (if any) blowing at your back, attach to a strong leathern girdle, by a hook or other means, a small balloon, capable of supporting from 50 to 100 lbs., and thus reduce your weight by the same amount. The ease with which a man would make even a very steep ascent, when his weight is diminished by 80 or 90 lbs., and his muscular power unimpaired, needs no comment; and the risk of a false step in descending would be reduced to little or nothing. Moreover, if a party so provided got fairly fixed, by unhooking a balloon and applying two to each individual they might mount even perpendicular rocks, regulating the ascent by ropes in the hands of those below. Of course as the atmosphere became more rarefied the ascending power would diminish, but not to any great degree. It seems to me that a party of three or four, so equipped, might venture with impunity on the most dangerous ground; and by uniting their balloons, when necessary, even a precipice would not stop them.

‘I remain, Sir, yours faithfully,

‘C. W. GOODHART, M.A.’

The advantages here offered rather concern the general public than the Alpine Club, to whom ‘nothing is impossible,’ and who can have no wish to see ‘climbing made easy.’

REVIEWS.

UNTRODDEEN PEAKS AND UNFREQUENTED VALLEYS.*

ALPINE writers—except, of course, those who reserve their confidences for the select readers of this journal—are either the most hypocritical or the most illogical of the human race. They utter perpetual professions of their delight in the existence of regions where every beautiful

* *Untroddeen Peaks and Unfrequented Valleys: A Midsummer Ramble in the Dolomites.* By Amelia B. Edwards. London, Longmans & Co., 1873.

spot is not yet an anthill of their fellow-countrymen, where the morals of the peasantry have not yet been corrupted by couriers, or their manners spoilt by contact with British vulgarity. At the same moment, almost in the same breath with these professions, they do their best to destroy the silence and simplicity they pretend to love by directing a whole tide of tourists into the quiet waters they have themselves chanced to drop into. 'Après moi le déluge' would have been, perhaps, the most appropriate motto for the handsome and lavishly illustrated volume now before us.

For Miss Edwards has little to tell which will be new to those who already possess or have read with care Messrs. Gilbert and Churchill's 'Dolomites,' and her object is not so much to increase as to render popular the knowledge of the Venetian Alps. She has, it is true, by ascending a secondary summit, which had escaped the attention of previous travellers, added one to the excursions from Caprile, and she has given us an interesting and novel sketch of the wood-carvers of the Grödnerthal. But for the rest she left her untrodden peaks in their natural state, while her valleys, though correctly called 'unfrequented,' had all been previously described to English readers.

In one respect, however, Miss Edwards has an advantage over Messrs. Gilbert and Churchill. Her book is the result of a single visit, and her route is consequently more easily followed on the map than the more complete but somewhat intricate rambles of her predecessors. She may fairly claim to have brought the Dolomites within the reach of those who either will not or cannot piece together from a map and guide book a tour for themselves, that is, of the mass of tourists.

A want of sympathy, which is we suppose selfish, with Miss Edwards's aim must not, however, influence our judgment of the use she makes of her means. Her descriptions of mountain landscapes are clear and unaffected, and the story of her personal adventures and intercourse with the people of the country is told with spirit and as little egotism as possible.

Moreover—a rare excellence—the difficulties of the way are seldom, we may say only once, exaggerated, and the information given is as a whole, considering the shortness of Miss Edwards's acquaintance with the country, singularly accurate. On this account it seems the more worth while to correct the few mistakes or omissions in detail into which the author has fallen.

The 'unknown mountains near Cortina' are surely the pinnacles of the Sasso di Bosco Nero, represented from another point of view in one of the illustrations to Mr. Gilbert's 'Cadore.' The Durren See, the waters of which are said to be always at the same level, was empty in Sept. 1872, and is, we were told, generally so at this season. The pass (Oberbacher Joch), from the upper valley of Auronzo to the Sexten Thal, is not 'dangerous' in any way. The general experience of the inn at Agordo is, we believe, the reverse of Miss Edwards's,—probably the cook was out for the day at the moment of her visit. Mr. Tuckett has strolled up alone the Cima di Fradusta spoken of in the preface as unascended and of the greatest difficulty. Of the length and difficulty of the frequented mule-path from Agordo to Primiero Miss Edwards has, we

think, given a very exaggerated account. She also fails to notice the completion, accomplished only a few weeks after her visit, of an excellent carriage road the whole way from Primiero to Predazzo in Val Fassa. In conclusion we must protest against an outline sketch representing the peaks of Primiero in a reeling and disorderly condition as an insult to the weird grandeur of that noble group. But most of the illustrations are excellent and repay the pains bestowed on them, and the volume as a whole thoroughly deserves the popularity its publishers' liberality will doubtless secure for it.

PEAKS IN PEN AND PENCIL.*

Mr. Walton's Alpine drawings have long been familiar to mountaineers, and there is no occasion to dwell here on their many beauties. But we are anxious to repair an omission, and to call attention to the photographic reproductions of some of Mr. Walton's finest sketches lately published by Messrs. Longmans. The English painter has studied rocks and clouds with the same devotion which M. Loppé has given to snow and ice. In 'Peaks in Pen and Pencil' we find specimens of the best of his work; these photographs, the subjects of which are taken from all parts of the Alps, but chiefly from the Dolomites and Dauphiné, show us the strength and firmness with which he seizes the mountain outlines and the knowledge and skill with which he treats rock structure; while the mannerism in foreground, and the apparent want of solidity of the crags in some of his later works, are here happily absent. The introduction and hints to students are so good that we wish there had been more of them.

GERMAN ALPINE LITERATURE.

'Aus der Firnenwelt' † is a collection in two small volumes of the papers on Alpine subjects of a well-known Swiss mountaineer. Herr Weilenmann's exploits do not rank with those of Mr. Stephen or M. de Fellenberg; but if he has not measured himself against any of the more formidable giants of the central chains, he has done a good share of snow and icework, for the most part in very out-of-the-way districts. His pages are consequently more than mere records of mountaineering adventure; they contain much valuable information and many amusing sketches of Alpine life and character in the remote corners of the mountains.

A large portion of the first volume is devoted to the snowfields and peaks at the head of Val d'Héremence, the least visited valley in the Pennine Alps. In the second we are introduced to a region still less known to Englishmen, the Silvretta Alps, lying north of the Lower Engadine, with the primitive valleys which stretch down along their northern flanks towards the Rhine and the Inn. Herr Weilenmann

* *Peaks in Pen and Pencil, for Students of Alpine Scenery.* By Elijah Walton. Edited by T. G. Bonney, London. Longmans & Co.: 1872.

† *Aus der Firnenwelt.* Weilenmann. 2 vols., with maps and illustrations. Leipzig, A. G. Liebeskind.

tells his story with great spirit and liveliness, to which a spice is here and there added by a good-humoured touch of Anglophobia.

In retort, we may be excused a remark which has often before occurred to us, and is again suggested by these volumes—How is it that the, on most points, minutely accurate information of Swiss mountaineers so seldom includes the doings of our own Club, brought within their notice though they are both in the *Schweizerführer* and Herr Studer's volumes? We find, for instance, Herr Weilenmann talking of the mountains of Val Masino as a 'fast jungfräulichen Tummelplatz,' and recommending them to such of his fellow-countrymen as thirst for new and noble conquests. It is fair to warn the first 'Klubist' who takes the advice, that where he has been led to expect a bevy of maiden peaks he will find himself surrounded by a fine family of stone-men of Anglo-Saxon parentage.

A POCKETBOOK FOR MOUNTAINEERS.*—We noticed last year Herr Liebeskind's 'Pocketbook for Mountaineers,' and ventured some suggestions for its improvement in one or two matters of detail. In this year's edition we have no longer any faults to find. The pocketbook, which is convenient in form, now consists of a diary, followed by a list of huts of shelter, yearly becoming more numerous in the German Alps, and a catalogue of the guides in every Alpine valley. Some information of secondary importance, such as the history of the Alpine Clubs and the rules of the various guide corporations, has been relegated to a supplement. The work may well be useful in future years to English as well as German climbers, and the publisher deserves great praise for the pains he must have taken to obtain such complete information from so many remote quarters.

Besides the volumes mentioned above, Herr Liebeskind advertises a work of high interest to readers of this Journal, 'Gesammelte Schriften von F. F. Tuckett,' two vols., with maps and illustrations.

We are asked to state that the principal portion of Mr. E. Whympers' 'Scrambles Amongst the Alps' will reappear next season under the title of the 'Ascent of the Matterhorn,' with numerous fresh illustrations, amongst which will be a new frontispiece by M. Gustave Doré, and some chamois subjects by Joseph Wolf. The work will not be reprinted in its original form.

* *Kalender und Notizbuch für Alpenreisende.* 11^{ter} Jahrgang, 1873. Leipzig, A. G. Liebeskind.

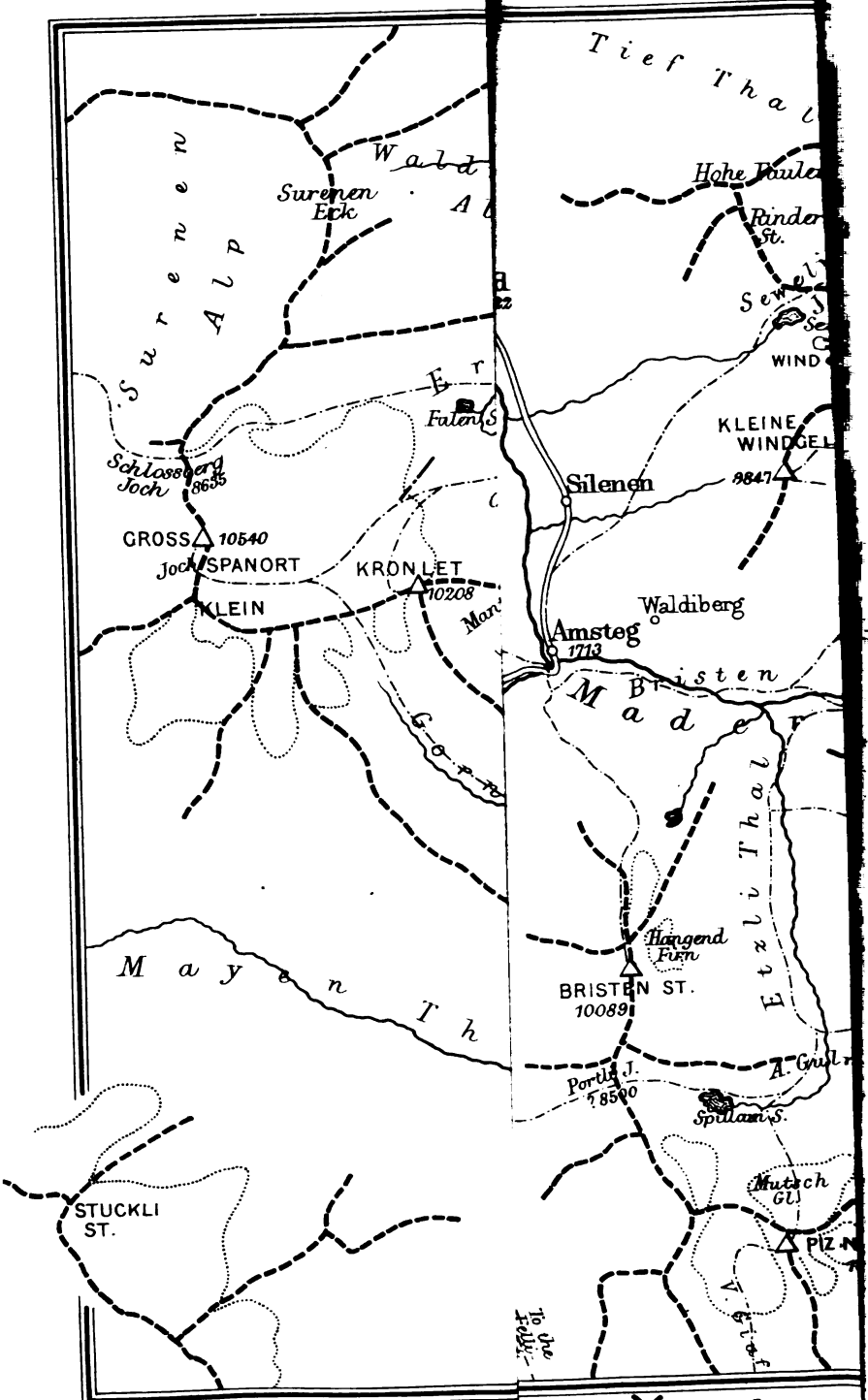
NOTICE TO CONTRIBUTORS.

Communications to the Editor should be addressed 6 Stanhope Gardens, S.W. Notes for insertion in the forthcoming number should be forwarded by the 15th of the month preceding publication. All contributions should be written only on one side of each leaf.


ERRATUM.

Read Ostspitze for Estspitze throughout in the paper on 'Monte Rosa from Macugnaga,' in the last number.

MAP OF RETHAL AND



Thomas Kell, Lith 40, King St, Covent Garden.

Glaciers  Peaks ascended
 scale, $\frac{3}{4}$ inch to the Mile.

THE
ALPINE JOURNAL.

FEBRUARY 1874.

ROUND THE MADERANERTHAL. By J. SOWERBY.

AS the traveller ascends the Valley of the Reuss from Fluelen, he passes in succession on the left hand the mouths of the Schächenthal, Maderanerthal, and Fellithal, opening respectively at Altorf, Amsteg, and the Fellibrücke on the St. Gothard road.

The mountains of the Maderanerthal are bounded by the first and last of these valleys, and partly also by the Vorder Rheinthal and its tributary the Val Rusein.

On the north side of the valley they rise abruptly in terraces separated by ranges of cliffs. On the south the summits (except the Dussistock and Bristenstock) lie farther back round the heads of two tributary glens, the Etlithal and Brunnithal, which penetrate deeply into the mountain mass.

The former side is composed chiefly of mountain chalk; the latter of crystalline rocks.

Before visiting this district, my attention was directed to it by reading a work entitled 'Berg-und-Gletscher Fahrten,' containing an account of various expeditions by Swiss climbers, and amongst them several in this neighbourhood. These were made by George Hoffmann, a tradesman of Basel, an ardent lover of nature, who, in spite of weak health, and the calls of business, yearly more importunate, made the ascent of most of the peaks in this district, many of them for the first time. He died in 1858; and an interesting memoir of him by Deacon Pestalozzi is prefixed to the first volume.

The expeditions I have made range over ten years, from 1862 to 1872, and in many cases I have preserved no record of them, and must depend upon my memory. It seems best to me to arrange them in topographical rather than chronological order. I shall therefore begin at Amsteg with the northern range, return to it by the southern group, and end with the excursions in the district west of Amsteg. The map prefixed

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to this paper will, it is hoped, be sufficient to indicate the position of the main points, and the general direction of the routes.

On Saturday, June 25, 1864, I walked from Fluelen to Unterschächen, hoping to cross the Krukeli (or Rauch-Kehle, or Ruchi-Kehle) into the Maderanerthal. I had sent a message to Z'graggen to join me; and spent Sunday in a stroll to the Klausen Pass. Z'graggen arrived in the evening. He said he did not know the Krukeli, but would take me to Amsteg by another way. Monday morning was ushered in by a pouring rain, which lasted, without intermission, for nearly thirty-six hours. When it began to clear off, we could see the pines a few hundred feet above us white with snow. We took a walk as far as the Brunni Alp; but could see very little, though we heard enough, as the roar of the 'Staublawinen,' on the grand cliff-face of the Ruchi, was incessant. On Wednesday the weather was perfect. We started at 5.30. Forty minutes brought us to the Brunni Alp. Here we struck off to the right through the pine-woods. A very few minutes brought us to the new-fallen snow, which we did not quit for many hours. An hour's ascent brought us into a highland valley, the Griesthal. On the more level ground the snow was deeper; not even a rhododendron bush showed its head. Z'graggen had a nice time of it; and I profited by his stumbles, but could not always escape. At nine we halted at a châlet for breakfast—glad to find a space clear of snow to sit down in. Here we were nearly below the Grosse Windgelle. Between us and its base were two curious peaks, called the Wyssstöchli and Schwarzstöchli—the one of limestone, the other of tertiary rocks. With the few ledges on which snow could lie newly covered, the latter looked like a little Matterhorn. Between these two peaks and the base of the Windgelle is a hunter's pass. After pushing on a little further up the valley, we climbed the ridge connecting the Grosse Windgelle and the Rinderstock, called by Z'graggen Mantlisergrat. This was the Seweli Joch, called also Seweli Furke. We reached it about ten, and were able to rest a short time, as the wind had swept the snow off the crest. The thermometer was 38°; and from an aneroid observation I calculated the height, taking the differences from both Unterschächen and Amsteg, at 7,200 feet. For so low a pass the view was singular. Except a few pines on the Kinzig Kulm, nothing was visible but snow and rocks. The peaks of the northern range were seen to advantage. Grandest of all were the cliffs of the Grosse Windgelle, and of the ridge join-

ing it with the Kleine Windgelle, which seemed utterly impassable. Below us lay the little Seweli See in a waste of snow. Descending, we crossed the outlet of the lake, and began to follow a grass terrace between ranges of cliffs. The appearance of the grass, which looked as if it had been hard raked, showed the recent passage of avalanches. Presently we came to a patch of avalanche snow, about thirty yards square, from which the further and lower quarter had gone, leaving the patch something like a carpenter's square. I proposed to go above it under the rocks. Z'graggen objected, on the score of possible avalanches from above; so we began to cross it at the narrowest part. Hardly had we taken half a dozen steps on it, when we saw the upper and further quarter begin to move, and we ran for our lives, just clearing it before it rushed with a loud roar over the cliffs. With this exception, our descent was uneventful. We rounded the Kleine Windgelle, whose peaks stood out finely above us, descending from one terrace to another over slippery grass slopes, till we reached a rough path which brought us into the high road, about half a mile from Amsteg, which we reached at 3 P.M. We were five hours in the new snow; and I should think that under ordinary circumstances the walk would not exceed seven hours. I have often felt since this excursion that we ran much more risk than I thought at the time, as avalanches were frequent for the next two days; and moreover when subsequently, in the ascent of the Gross Ruchi the same summer, we passed the cliffs above the Hufi Glacier, I felt thankful we had not tried the Krukeli on this day.

The Kleine Windgelle is the most westerly peak of the northern chain, and the lowest, being only 9,847 feet above the sea-level. It is not visible from Amsteg. As you ascend towards Intschi (about 20' from Amsteg), on looking back it appears with great grandeur as a fine pyramid, of more than 8,000 feet from base to summit. It was first ascended by Hoffmann, in July 1847, with Johann Epp, of Waldiberg, as guide. Without crossing the Kerstelenbach, they ascended directly behind Amsteg, passing through Frenchberg (or Dächli), Waldiberg, the Alps Niederstäffeli, Oberstäffeli, and Im Ruck, to the base of the first range of cliffs (about 8,000 ft.), which they succeeded in crossing. The upper range of cliffs seemed impassable; but, on bearing to the east along the terrace, they found a gully, by which they reached the summit in nine hours from Amsteg, including halts. In July 1862 I made the ascent with Z'graggen by a different route. Starting at 3 A.M., we crossed the Kerstelenbach, and followed

the usual route up the Maderanerthal. Just before crossing the stream for the second time, we turned to the left and followed a path which zigzagged amongst the cliffs to the village of Golzern. Leaving this to our right, we kept up the slopes behind it to the Alp Oberkasern, which we reached at 6.30. Here we halted for twenty minutes, and then advanced leisurely up the hollow between the two Windgellen. This is a fine example of the barren limestone plateaux locally called *Schratten*, though not to be compared with the *Steinerne Meer* and others in the Eastern Alps. They are always awkward to cross, particularly in wet weather. Some of the cracks in this were of great size and depth, resembling crevasses in a glacier. At my age I had not much elasticity left, and was occasionally driven to a circuit. At 7.30 we gained its upper part, and overlooked the comparatively level basin between the Windgellen, of which the small glacier called 'Älpli Firn' occupies the eastern side, below the cliffs of the Grosse Windgelle, which rise more than 2,000 feet above it. One part of this under the rocks of the Furggeli (the spur running south from the Grosse Windgelle) was of an inky black colour, said to be caused by the presence of anthracite coal. The glacier hardly extends beyond the base of the Grosse Windgelle. The rest of the space is occupied by a snow-bed of greater or less extent, according to the time of year. The ridge which borders it is fantastically jagged, and has a peculiar red pinnacle in the middle, called the *Rothhörnli*. This colour is probably due to the presence of iron. In the hollow through which we had just passed are several old shaft openings, which were worked in the early part of the sixteenth century by an Italian named Madrano, who is said to have given the name Maderanerthal to the valley, divided previously into the Ruppelenthal and Kerstelenthal. Here we halted awhile, then bearing to the left up a slope of shiver, a few minutes brought us to the terrace below the upper cliffs. This presented, with care, no difficulty, except where it was covered by hard snow. We had no rope, and for security we generally avoided these places by creeping between the snow and the cliff where the *schrund* caused by the warmth of the rock afforded a tolerably commodious passage. The upper cliff is broken in several places by gullies. After rejecting the first of these, the second gave us access to the summit after a rough scramble, with no difficulty except from the rottenness of the stone, and the sharpness of its edges, which more than once gave me something to remember them by. The gully led to a little hollow about twenty feet below the

ridge which forms the summit. We climbed to the eastern end of this. It is about twenty yards long, and three or four feet wide, except at the western end, where it opens out into a small plateau. We reached this at 9.30, in $6\frac{1}{2}$ hours from Amsteg, including halts, the difference of level being 8,134 feet. We could see little but the valley of the Reuss and the opposite mountains. The Grosse Windgelle, however, was a magnificent object, its cliffs rising more than 600 feet above us. A cutting north wind soon drove us to the little hollow below the top, where we dined. The summit of this mountain is composed of porphyry, and is so disintegrated that we had to take great care not to drop anything. We were warned by the disappearance in the crannies of several choice morsels; my favourite pocket-knife was only rescued with much difficulty. We started for the descent about 11, and this time followed the first gully, which saved us several hundred yards of terrace. After leaving this, we lay down for a short nap, and I never was so much struck by the blue colour of the limestone as on waking in the blazing sunshine. The effect was almost magical. From this point we followed the route of the morning, and reached Amsteg at 3 P.M.

In 1869 I repeated the ascent from the hotel in the Maderanerthal. We gained the Bernetsmatt Alp (the western part of In den Staffeln), crossed the spur from the Grosse Windgelle into the hollow beyond, and held westward without rising much till we found a cleft (the same by which the first ascent was made), which enabled us to clear both lines of cliff in a continuous ascent. We were $5\frac{1}{2}$ hrs. on the ascent, the difference of level being 5,441 feet. But seven years makes a difference in one's walking powers; and we botanised a little. Returning we followed the upper terrace, and Trösch (Joseph Maria) thought it best to use the rope. This mountain is said to be easy when the Grosse Windgelle is hard, and *vice versa*, as the snow facilitates the ascent of the latter (at least by the route now used), while it increases the difficulties of the former.

The Grosse Windgelle, which exceeds its namesake by 616 feet, lies further back to the N. and is not so easily visible. Mr. Ball ('Central Alps,' p. 262) says, that this mountain and the Scheerhorn, as well as the Kleine Windgelle, are visible from the road at Intschi or thereabouts. As far as my recollection goes, you can only see the last. In fact, the map seems to show that the Kleine Windgelle at that point covers the Grosse, and that the slopes of the Bristenstock must shut out the Scheerhorn.

The Grosse Windgelle rises from the Äpli and Staffel Glaciers in vast limestone precipices, forming a pyramid of most forbidding appearance, which might well be supposed inaccessible until fairly tried. It was first ascended by Joseph Maria Trösch and Melchior Trösch, August 16, 1848, and 15 days later they conducted Hoffmann to the summit by the same route. This was along a gully on the SE. face. Though the slopes were very smooth and steep, they seem seldom to have climbed hand-over-hand. The chief difficulties were the passage of the bergschrund, and one or two queer places amongst the rocks. Hoffmann describes one in particular on the descent, where they had to pass sliding a smooth rock that bulged out, with nothing apparently between them and the glacier, 2,000 feet below. The ascent from the Bernetsmatt Alp took $5\frac{1}{2}$ hrs., the descent $4\frac{1}{2}$, some time being lost owing to a fog.

In August 3, 1863, the second ascent was made by a young Englishman, named Ralph Milbank, but I know no particulars. In 1864, Messrs. Raillard and Fininger, S. A. C., of Basel, made the ascent by a new route, which has since been uniformly followed. Keeping up the glacier nearly to the ridge which joins the Windgelle with the Gross Ruchi, they were enabled to reach the summit by snow-slopes, which, though steep, presented no difficulty. Their times are not very intelligible.*

I made the ascent with Mr. Thompson on July 11, 1866. The evening before we walked up from the upper hotel to the Alp, accompanied by J. M. Trösch and A. Z'graggen, and the latter's son, Hansli, as porter—a fine boy, who unfortunately perished two years after on the cliffs of the Erstfeldthal. Seldom have I seen an evening when the stars glittered more brightly, or that gave fairer promise for the morrow. We started next morning at 2.50. We kept under the east base of the Furggeli to the glacier, whose centre we followed to its head, and then turned sharp to the left up the snow-slopes. A few days earlier, our guides said, these had been continuous to the summit. They were now interrupted every here and there by patches of bare rock, very smooth, very wet, and covered in many parts with loose rubbish. These alone gave us some trouble, as they were excessively slippery—and the inclination was often above 50° . After about $1\frac{1}{2}$ hrs. of this work, on making a bend to the right towards the main ridge, the top came in sight close to us, and we reached it in 10 minutes more, at 6.50.

* 'Jahrbuch,' vol. ii. pp. 140-144.

The day was perfectly fine and the view magnificent. We were on the more easterly of the two peaks, which are apparently of equal height. Hoffmann says, the hollow between them is 500 feet deep, and the distance about a gunshot. Messrs. Raillard and Fininger say it is several hundred feet deep. These statements are much exaggerated, except the gunshot, which is of course an indefinite distance. I do not suppose it is 50 feet deep. Trösch and Z'graggen descended into it and crossed to the base of the other peak, probably not more than 30 yards off. The rock faces at its base were too smooth to admit of further progress, but with a ladder of 12 or 15 feet we might have succeeded. We left the top at 9, and following the same course reached the chalets again at 11.

The Alp 'In den Staffeln,' lying along the base of the Grosse Windgelle and the Gross Ruchi, is a terrace-like plateau, varying in width and elevation. The western part of it is the Bernetsmatt Alp; the eastern the Alp Gnof, from which the Gross Ruchi has the name Alpgnoferstock. The whole surface has more or less the character of the Schratzen, but is seldom so bare. Like the Steinerner Meer, which on a small scale it strongly resembles, it is covered with irregular eminences, amongst which it is easily possible to lose the direction. I have seen the best guides in the valley puzzled on it in a fog. The drainage of the western part wholly, and of the rest to a large extent, finds its way to the valley by subterranean channels, which in some cases send forth streams of considerable volume, as the Milchbach, near the Blindseeli Alp, not far from the upper hotel. On the Bernetsmatt Alp spring water is a scarce article, the only spring I know producing but a few drops per second. Eastward from the Staffelfirn are two small glaciers lying under the cliffs of the Gross Ruchi. This mountain is invisible, but the Äpli (or Tschingelfirn) shows in places above the cliffs. As you go eastward the Alp gradually narrows, and the upper and lower cliffs approach each other till but a narrow, and in some places unsafe, terrace affords a passage. A cattle track leads from the Blindseeli Alp ($\frac{1}{2}$ hr. east of the hotel) to the Alp Gnof, and between this and the path to Golzern there are but two footpaths, one almost unsafe, that lead to the alp.

On July 1864 we reconnoitred the Gross Ruchi from the Oberalpstock, and two days later we made the ascent, after sleeping at a chalet in Waldibalm, which the landlord of the 'White Cross' at Amsteg had fitted up with three beds. Fearing soft snow, we started at 2 A.M. The morning was dark, with some thunder and rain, so that we were obliged to

use a pine torch, made of a number of thin splinters fastened together. This gave a good light, but was liable to go down suddenly—once when I was in an unpleasant situation, on a slippery stone in the middle of a torrent. We climbed by the cattle track to the Alp Gnof, and then followed the terrace, which narrowed till we had to look carefully to our feet. One part is called the 'Böse Tritt.' About 5 we emerged from the terrace on the Geiss Alp, where we rested. An hour up the snow-slopes brought us to the upper névé, when the object of our attack made its first appearance as a narrow and steep snow-ridge, surmounting several hummocks of névé, which broke away right and left in blue ice-cliffs. We held nearly due N. across the glacier and then turned W. to the peak. After surmounting the hummocks, which were each of considerable height, the final ridge was before us. It was so steep that the snow was coming down in small avalanches, and I began to fear a failure. Having left everything but the rope, we approached the ridge just above the last hummock where the snow had slid away most and formed a furrow. I was last, and went in deep, but we got on steadily, and were on the ridge exactly at 8.30. This ran N. and S. about 15 yds., just wide enough to walk on, and opened out a little at the N. end, so that we could all stand together. To our right was the steep slope we had ascended; to the left a dark precipice; in front, as we looked down, the first objects that met the eye were the chalets of the Brunni Alp, 6,000 feet below. We almost seemed suspended in the air above them. The sky was cloudless and the view perfect. After a series of jodels from the guides to celebrate what was supposed to be a first ascent, we left the top at 9.15, and after carefully descending the steep slope soon rejoined our baggage. After clearing the hummocks, we at once struck off S. across the glacier, and then followed the route of the morning to the chalet, which we reached at 1. The weather, which had been perfect for nearly 12 hours, now broke suddenly, and I went down to Amsteg in one of the heaviest storms I ever saw. The hail was so heavy that I was too thankful for the loan of a stout cotton umbrella, and the streams from the steep *runsen* on the S. side of the valley came down so speedily that we were barely in time to get across them in safety.

The route to the Ruchen Pass* is the same as that followed

* Zraggen asserted in 1872 that the name Krukeli properly belonged to a pass leading by the Hutstockli and behind the Klein Scheerhorn to the Gries Glacier, at the head of the Schächenthal.

on the last excursion. On arriving at the summit level of the Tschingel (or Älplfirn) you must bear away to the NE. angle of the glacier, descending slightly to the point where it joins the cliffs of the Bockzingel. At this point you are at the head of a long ravine, or rather steep narrow valley of shiver, often covered with snow, enclosed by cliffs, and running nearly E. to W., which leads to the Brunni Alp, at the base of the Gross Ruchi, and thence to Unterschächen in 8 hours from Waldibalm. I was at the head of this ravine in 1864, and have crossed it twice since, in 1867, from the Maderanerthal to Unterschächen, and in 1872 in the reverse direction. These passages were all in the first week of July; on the first two of them the valley (Ruchi-Kehle?) was covered with snow for a vertical distance of nearly 3,000 feet, which afforded some fine glissading. On the last the snow lay only in patches, and the glacier on the other side was much diminished. In the Maderaner Brunnithal I have made excursions in the years 1864, 1866, 1872, all in the month of July. In the first two of these the bed of the stream was often choked with snow, which afforded a most convenient passage, and it was the commonly expressed opinion that the Waltersfirren Alp was never clear till the latter part of August. In 1872 there was hardly any snow in the valley. We had to cross bad bridges, and make troublesome ascents and descents, and the Brunni Glacier had shrunk much. Probably a rapid retrogression of all the glaciers in this neighbourhood is going on at present. Hoffmann observed that, whilst the Hufi Glacier, which has a gentle inclination, was advancing between 1837 and 1847, the Regenstaldenfirn (on the S. slopes of the valley above the Lungenstutz), which is very steeply inclined, was retreating during the same time. Probably these motions, if observed for long periods, will be found to be oscillatory.

The Scheerhorn (10,814) is the highest summit of the northern chain, which is here crossed by a spur at right angles reaching nearly to the Dussistock, and leaving but a very narrow outlet for the Hufi Glacier. It was first ascended by Hoffmann with Jos. Gysler and Peter Imholz, Aug. 9, 1842. From Unterschächen they gained the Gries Glacier and the Scheerlucke, and then went up the steep eastern face of the peak. The second recorded ascent (and the first from the south side) was made by Herr Fininger, of Basel, with Trösch and Z'graggen, Aug. 11, 1863. Sleeping at the miserable hut of the Hufi Äpli, they started at 4.7 A.M. They ascended the slopes above the hut, and reached the glacier in 45 m., at a point above the icefall. At 6.15 they were opposite the spur

of the Scheerhorn, turned N. to the Scheerlucke, and at 7 were at the base of the mountain. The glacier at this time presented more difficulties than usual; there was much hard ice on the upper slopes; and they took two hours to gain the ridge, about 150 feet below the summit, which was reached in a quarter of an hour more, at 9.30. This is the highest point in an irregular, jagged, and frequently very narrow ridge.

I made the ascent from the hotel on July 8, 1869, with J. M. Trösch and Albin Baumann. We started at 2 A.M. with a lantern. Walking with a lantern is a very disagreeable proceeding, as you generally are frightened at the shadows, and courageously charge the stones; but on this occasion it did us good service, as on descending the dark path to the snow-bed by which the Kerstelenbach is generally crossed, the light showed us that it had disappeared in the night. Should we return to the nearest bridge, or advance and cross the glacier? In an evil hour, deciding on the latter—I suppose on the principle that retreat is disgrace—we gained the foot of the glacier, over some very rough ground, and with some trouble got on to it. Unfortunately at this early hour it was hard frozen, and we had to cut steps on slopes of the gentlest inclination. I believe the passage of some 300 yards cost us three-quarters of an hour, and we then had a little bit of a scramble to gain the track to the Hufi Älpli. From this, following the same route as Herr Fininger, but with less trouble, as we had not a single step to cut, and were rather troubled with the softness of the snow than otherwise, we reached the top a few minutes after 9. After staying about $1\frac{1}{2}$ hours, we reached the hotel again by the same route at 4 P.M.

The pass between the Scheerhorn and Kammlistock is called the Scheerlucke or Scheerjoch. It is marked in the map 2,825 m. = 9,266 feet, and must be nearly the same height as the Clariden Grat. The first passage I have seen any notice of was made by Messrs. Grove, Macdonald, and Stephen, July 31, 1864.

Messrs. Mansell, Thompson, and myself crossed it with Zgraggen in 1865, after sleeping at the poor inn, 'Rose,' at Urnerboden. We started at 3.15 A.M., July 12, and after reaching the Klausen Pass, followed the slopes to the left to the Kampli Alp, and the Gries Glacier beyond. Partly ascending the glacier, and partly the slopes at the base of the cliffs of the Kammlistock, we gained the summit of the pass at 9. Here we rested three-quarters of an hour. From this point our descent to the Maderanerthal was by the route already described to the Scheerhorn. The day was very fine, and the

view of the northern range after we cleared the spur of the Scheerhorn singularly fine. The glacier at this point is greatly compressed and dislocated, and forms on its south side many wavelike ridges, which run into each other in a perfect maze of crevasses. In passing one of these Z'graggen was sounding in a queer-looking place, and I had gathered up the slack of the rope to hold him up, when suddenly I went right overhead into a crevasse so small that, as I swung in it, when my knee touched one wall, my heel touched the other. My head was about four feet below the surface, and as my knapsack had tilted up when I went through, they had some trouble in pulling me out. I have often felt ashamed of this since, for had either the rope been tight, or the alpenstock in its proper position, it could not have happened. Indeed, had I but kept my feet apart, I could not have fallen in—the crevasse was not wide enough. The rope had a very fair trial, for with my knapsack I must have been nearer 15 than 14 stone. We reached the hotel, after paying a visit to the Stauberbach, at 2.30.

Opposite to the Scheerhorn, between the Hufi Glacier and the Brunnithal, is the Dussistock, or Hufistock (10,712), one of the most beautiful peaks in the valley, and which, from its prominent position, is better seen by the traveller through the valley than any other except the Bristenstock. More than three parts of it are surrounded by the Hufi Glacier, the Cavrein Glacier, on the N. and E., and the Tschingel Glacier on the S., which sends down a long narrow tongue of ice into the Brunnithal, reaching nearly to the Waltersfirren Alp (1,930 m. = 6,340 feet). On its northern slopes it bears several hanging glaciers, whose avalanches often threaten those who traverse the Hufi Glacier late in the day. The Dussistock was first climbed by Escher von der Linth in 1842. The next recorded ascent that I know of was made by Herr Bischoff Meyer, President of the Bale section of the S.A.C., in 1864. I made the ascent August 3, 1868, with Z'graggen. We left the hotel at 2 A.M., with several other parties, one for the Grosse Windgelle, and two for the Oberalpstock. We followed the ordinary track into the Brunnithal, lighted by a glorious full moon, till about half-way between the Renderbühl Alp and Waltersfirren. Here we took leave of the Oberalpstock party, and started up the slopes to our left. At 5 we were on the névé, which was in beautiful order, and we made our way up without any difficulty to the Klein Dussistock. The usual route is to climb this, and to follow the ridge to the summit. Instead of this, we followed the snow-slopes below

the ridge, until we were compelled to get on to it about 10 minutes from the summit, which we reached at 8. There was not the least difficulty anywhere. Only at one point, close to the top, Z'graggen had to pull himself up with the spike of his axe, and then held out the handle to me. The view was singularly good—above all, for the almost entire survey which you have of the Hufi Glacier, on this side of the Clariden Grat. It was evidently easy to pass from the Hufi Glacier to the Val Cavrein. In 1864 Herr Bischoff Meyer descended from the top into the Val Cavrein by the glacier immediately S. of the summit, reaching the valley near the point marked on the Fed. Map, 2,101 mètres. We sat on the top for an hour enjoying the view and looking in vain for the party on the Grosse Windgelle; they gained their summit just as we left ours. The Oberalpstock party were visible on the upper névé of the Brunni Glacier. We left the top at 9, and, returning by the same route, reached the hotel at 12.

From this mountain the border-chain of the valley sweeps round the head of the Brunnithal in a great curve to the Oberalpstock. The Tschingelfirn is terminated on the S. by the Stotzigrat, and between this and the Piz Cavardiras is the Cavardiras Pass, called also Cavrein Pass (2,705 m. = 8,885 ft.), which offers an easy passage to the Ruseinthal, which we took advantage of in 1866 on our way to the ascent of the Tödi.

Between Piz Cavardiras and Piz d'Aclelta on the west, is the Brunni Pass, by which you can easily reach Disentis from the hotel in 8 or 9 hours. This pass is well known, and has been described in the pages of the Journal by Mr. Brooks-bank.

The bounding ridge continues westward to Piz Ault, where it suddenly turns to the N., and culminates in the triple peak of the Oberalpstock, also Piz Tgrietschen, or Cotschen (10,925), at once the highest mountain of this district, and that which possesses the greatest historical interest. The first known ascent was made in 1799, by Pater Placidus à Spescha, Abbot of Disentis, one of the most remarkable men of his time, of whom a very interesting biography is given in Professor Theobald's 'Bundner Oberland.' Accompanied by his servant, he slept at the Alp Runs, above Disentis. In the morning, following an Alpine valley called Laiserein, he gained the upper névé of the Brunni Glacier, and traversed it to the base of the actual peak, which rises about 2,000 feet above it. They found the steeper slopes much crevassed. No date is given, but it must have been late in the year, as in the early

part of July hardly any crevasses are visible. After climbing for two hours, partly on the ridge, partly on the glacier, they encountered a crevasse so large that they were obliged to turn it. In ascending the slope above it, they narrowly escaped destruction from an avalanche of fresh snow lying on old. Spescha sprang up to fix his feet and alpenstock as deeply as possible in the firmer layer beneath. He succeeded in maintaining his position; but his servant was greatly frightened, and he had much difficulty in reassuring him. In an hour more they reached the top. On the descent they came to a narrower part of the same crevasse, and Spescha desired his servant, a young man of twenty-four, to leap over, while he held the rope. So unnerved was he by terror, that he jumped short and fell in. Spescha had to pull him out and help him over. They reached home without further adventure.

Spescha made two other ascents of the Oberalpstock from Sedrun, following the Strimthal, and then the lateral valley opposite the Kreuzli Pass. Keeping up the glacier, immediately S. of the summit, he gained the ridge dividing it from the Brunni Glacier, and joined the route followed in the former ascent. This occupied only $6\frac{1}{2}$ hours—much less time than the previous attempt. As the view was bad, the ascent was repeated three days later, and Spescha describes the panorama as incomparably wide and varied. The first route followed by Spescha after they attained the névé of the Brunni Glacier is undoubtedly the same as the route from the Maderanerthal; and the second is the same as that now used from Sedrun.

In 1847 George Hoffmann attained the summit by a different route. Guided by J. M. Trösch, then a young man of 25 years of age, he left the Etzliboden at 3 A.M., August 13. At 6.15 they reached the Kreuzli Pass, and thence followed the slopes of the Weitenalpstock to the upper névé of the Strim Glacier, which was reached at 7.30. This they crossed in half an hour, to the foot of a long and steep gully, partly ice, partly snow, leading continuously to the summit. The ascent of this was laborious, and occupied 4 hours. They remained $3\frac{1}{2}$ hours on the summit, and, returning by the same route, were benighted at the Alp Gulma, or Gulmen, in the head of the Etzlithal.

In 1864, having been out with Z'graggen for several days, I engaged Trösch as second guide, and we went over the Kreuzli Pass to Sedrun to make the ascent. We must have followed nearly the same route as Spescha in his later ascents. We left Sedrun, July 10, at 4 A.M., in a dense fog, and in two hours were near the Strim Glacier. The fog began to clear

away, and the snow-peaks were seen glittering in the cloudless blue. Then up a lateral valley to our right, till we reached the snow in about an hour at a small plateau called Calmot. Here we halted for refreshment. On starting we found the snow in first-rate order, just letting the foot bite well. We reached the ridge about 9, and the summit, by an ascent in parts very sharp, about 9.45. The view was indescribably beautiful. With the single exception of the Tödi, we overlooked every neighbouring summit, and seemed to see nearly the whole of Switzerland. The temperature was 52° F., and we spent two hours on the summit in the utmost enjoyment. Trösch searched in vain for the bottle left by Hoffmann 17 years before, but it was buried too deep. It was first found three weeks later by another party. Returning to the point where we first struck the ridge, we cleared the snow-slopes in twenty minutes, by a series of magnificent slides, and spread ourselves out to dry on the plateau where we had breakfasted. Sedrun was reached at 3. Here, to my regret, I found that Herr Bischoff Meyer had arrived from Amsteg, greatly disappointed to find that the guides whom he had engaged for this very ascent had taken up another before him. Trösch remained to accompany him the next day, while Z'graggen went down with me to Disentis to cross the Bruni Grat. We ought to have gone direct from the summit into the Maderanerthal; but that was reserved for the S.A.C. a little later.

In 1872, with several friends, I crossed the Oberalpstock from the Maderanerthal to Sedrun. It struck me as being a very tedious route. The circuit of the head of the Bruni Glacier was especially wearisome. It appeared to me that the icefall might be turned on the left, or western side, and so at least a couple of hours be saved. It would be worth while also to try a direct ascent from the Maderanerthal by the Regensteinfirn. Z'graggen said he thought it would be hard, but not impossible.

In 1866, after ascending the Tödi, Mr. Thompson and myself, with J. M. Trösch as guide, crossed the ridge between the Oberalpstock and Weitenalpstock. Leaving Sedrun at 4.50 on July 16, we reached the Strim Glacier, and keeping up a long snow-bed on its left bank were on the névé at 7.30. We halted for breakfast at the base of the gully by which Hoffmann effected his ascent, and Trösch proposed to repeat it, but we were too lazy after a day's idling at Disentis, and declined. The upper part of the glacier is tolerably level, and the ridge at its head, though jagged in a fantastic manner, rises very little

above it. We reached the lowest point in the ridge at 8.50. The small glaciers on the other side lie more than 1,000 feet below the ridge, and the face looked so steep that I felt very doubtful; but Trösch, who had doubtless often been there chamois-hunting, assured us it would go quite well. I made the height 9,250 feet, which is probably rather in excess. We first scrambled down the rocks a bit, and then took to a narrow gully; but as this side was all in shadow, the snow was too hard, and we again took to the rocks at its edge for several hundred feet. Then, finding the snow soft enough to kick steps in, we resumed the gully, and were soon glad to glissade out of the cold narrow ravine into the open névé and the bright sunshine. We soon were off the snow, and went down the Sellinen Tobel into the Etlithal, and by the usual route to Amsteg, which we reached in 4 hrs. from the top, the rock descent having taken $1\frac{1}{2}$ hrs. The whole time, exclusive of the halt at the top, was about 8 hrs., and this pass, though higher, need occupy little more time than the Kreuzli, as it is more direct.

I climbed the Weitenalpstock the same summer with J. M. Trösch. We left the hotel, July 9, at 4 A.M., and descended the valley to the Lungenstutz in 40 minutes; then, turning up a narrow valley to the left (Griesserthal?), we gained the ridge called Seeleck about 6.30, without any trouble except from the steep slippery grass slopes towards the top. The view of the peaks on the N. side is very good from this point, and it was selected by Hoffmann as a station for his panorama of that side. From this part we descended nearly 1,000 feet into the Sellinen Tobel, and began to ascend the NW. spur of the Weitenalpstock, till we were stopped by the rocks. We then followed a narrow and in some places unsafe footpath nearly at a level to the upper part of the Weiten Alp. This lies between the W. and SW. spurs of the mountain. We gained a snow-bed which fills the upper part of this hollow, and crossed it to a suitable point in the SW. spur. Here, at 9.30, we attacked the rocks, which Trösch remarked were 'etwa streng,' and got to the top at 11.50, having been 7 hrs. 50 mins. on the ascent. The descent, however, into the Sellinen Tobel lost us a good deal of time. The clouds were about our level, and we had hardly any view. Descending the rocks, I had to use my arms so much, that I took the cramp, and had to wait every 10 minutes to quiet the muscles. On reaching the Weiten Alp, we went straight down into the Etlithal by a footpath, which, like that of the morning, crossed rock faces in a very precarious manner, and occasionally followed the bed of a stream.

Then down the Etlithal, refreshing ourselves at Trösch's house by the way. On reaching the top of the steep descent into the Maderanerthal, we held to the right at a level to gain the Lungenstutz; but the way was so bad, and there were so many obstacles to be crossed, that I lost my temper, and I shall never try the short cut when I go that way again, unless I hear the path is improved. We did not reach the hotel till 7 P.M., both pretty well tired.

The boundary line of the group now sweeps round by the Kreuzli Pass, through the Mutsch, Piz Ner (or Crispalt), and Piz Giuf to the Bristenstock.

We went over the Piz Ner to Sedrun, July 17, 1865, two days after crossing the Scheerjoch. We slept at Trösch's house, in the Etliboden. He had but one spare bed, and the very doubtful honour of occupying this was assigned to me, as the senior. However I slept well. In the morning we followed the Etlithal to the Kreuzlistutz (where you turn left to the Kreuzli Pass), and following the right branch for a short time, we turned south to the glacier which lies between the Mutsch, Piz Ner, and Piz Giuf. There was no difficulty in crossing this, and the ascent of the NE. face of the peak, which looks very steep from a distance, only required a rough scramble. At the Alp Gulma (on the Kreuzlistutz), we learned that Z'graggen, with a S.A.C., had failed on the Crispalt the previous day (I can hardly think it was Z'graggen's fault) and had started this morning to try again. When we got on the Mutsch Glacier, we saw them on the opposite side making for the col between the Piz Ner and Piz Giuf, and a good way ahead of us. But they were only on the top 5 minutes before us. The top is a short irregular ridge only a few yards long, the blocks in many cases overhanging. All the valleys which it overlooks are very barren and savage. The weather was delightful. We were more than two hours on the top, and amongst us we took an outline of three quarters of the panorama. Our guides asserted this to be the Crispalt. Hoffmann also, in his panorama from the Bernetsmatt Alp, names it the Crispalt. It is marked on the Federal Map 3,059 m., but we all agreed that it was higher than the peak named Crispalt on the map, to which the height 3,080 m. is assigned. It is not unlikely the Piz Ner has been underrated. The S. A. C. in some notes in the visitors' book at Amsteg gives the height at 10,264 feet (? Swiss feet). We descended on the SW. face, which was not particularly difficult, but very rotten; it was very hard to avoid dislodging small stones, which raised the wrath of those below. By bearing a little to the N. we got off the rocks on

to the little glacier at the head of Val Giuf. This has a moraine quite out of proportion to its merits, about ten times its size. Down the Val Giuf into the Vorder Rheinthal and to Sedrun. I have no notes, but I believe the ascent took about 5 hours and the descent 3 hours.

In 1869 I had a fine walk up the Etlithal and round the Bristenstock over the Portli Joch into the Fellithal* and so to Amsteg. It is possible by this route to ascend the Bristenstock. I think Mr. H. P. Thomas, in 1869, went over it from the Maderanerthal to Amsteg. The ascent of the Bristenstock from Amsteg is now well known. The experiences of Messrs. Hardy and Kennedy in the first series of 'Peaks and Passes,' will enable anyone to reach the summit who will make the attempt seriously, and start in good time from Amsteg.

All round the village of Amsteg are charming walks, that wind through the pine-forests from one alp to another on the lower slopes of the Kleine Windgelle, the Bristenstock, and the Arniberg. One day in 1864, I walked with Z'graggen up the summit just behind the Arniberg marked in the Federal Map Grossgant. Here we had a fine view, but immediately behind us was a rocky double-toothed summit, which shut out nearly all the view to the W. The view from this must certainly be much finer, and we began to work towards it along the ridge. We soon found this was the worst possible way, and several times we were almost stuck fast, but after a severe struggle we reached it. The view to the W. was still cut off by the Mantliser and others, but as these were more distant, we willingly conceded to them the right of forming the western boundary of our panorama. There was a most convenient natural armchair on the top, where I enjoyed myself greatly for some time. Z'graggen asserted we were on the Grossgant; but from the map it must have been the peak marked Ottersbalm. The height I estimated at about 8,000 feet. I thought this was from its accessibility in a comparatively short time the Amsteg mountain *par excellence*, and one day in a subsequent year I repeated the ascent, intending to sketch the view, but was defeated by the weather. I got, however, a list of most of the prominent objects seen from it. These, beginning W. and going round by N., were the Schlossberg, and the range N. of the Erstfeldthal (over it the Blackenstock and Rothstock, the bay of Uri, the Rigi Scheideck, Brunnen, Altorf and the Reussthal to Silenen, the Zuger See, the Albis

* From the head of this valley it is easy to cross the Felli Pass (8,000), and descend to the Oberalp See.

and Zuricher See, the Rossberg (N. of Schachenthal), the Schwarzstock, and Rinderstock; the Seweli Alp, the Grosse and Kleine Wingelle, the Scheerhorn, Claridenstock, Tödi, Dussistock, Oberalpstock, Kreuzlistock, Bristenstock, Mat-tenstock, the Fellithal, Crispalt, Andermatt, and the moun-tains round it—the Fibbia, Spitzliberg and its satellites; lastly, the Kronlet and Mantliser, in the same range as ourselves; a circle of no great extent; but on a fine day very beautiful. We of course found the descent much easier. I believe on the first occasion we were 7 hours up and 3 down; and on the second I could not find the way very well, as clouds were hanging about. But I should say 8 hours as a rule would suffice, and it would be a very nice excursion for an off day. In going up the Maderanerthal this peak is conspicuous in the centre of the view looking back from about Bristen.

The three remaining excursions were all made from the Erstfeldthal.

On Saturday, July 2, 1864, just three days after passing the Seweli Joch—where we had so much new snow—I went with Z'graggen by this valley to Engelberg. We drove down from Amsteg to Klus, and got fairly off from Erstfeld about 3.15. Twenty minutes brought us into the valley, up which we followed the usual track till we passed the first châteaux and entered a gorge, at the head of which we breakfasted about 6. Passing the upper châteaux and the fine waterfall formed by the stream from the Ober and Unter Fülen See, we reached the glacier at 7.30. This is an extensive ice-field, bounded by the Schlossberg, Gross and Klein Spanorter, Kronlet and some subordinate peaks. As we entered on its surface, the day, which had been unpromising, began to improve; the first thing which cheered us being the snowy summit of the Schlossberg flashing brightly through the mist. It seemed feasible to go right up the middle of the glacier to the notch between the Schlossberg and Gross Spanort, but Z'graggen objected on the score of the new snow. We worked gradually up patches of old snow and rocks to the slopes under the cliffs of the former mountain. The snow was already soft, and before long we were going frequently knee deep. Every few minutes we had to cross the remains of avalanches fallen during the last week, and these afforded firmer footing. About halfway up, when on an interval of smooth snow between two of these, we heard a faint noise from above. We listened; it was repeated. Z'graggen, said 'Lawine,' and as I looked round in some perturbation for a place of shelter, he observed that we were on smooth snow and the avalanche would only descend by its usual

channel. During this the faint murmur changed to a deep rumbling sound, then to a rattling roar, and with wonder not unmixed with terror I saw the mass of snow burst like a huge waterfall over the edge of the cliff in front, here some 350 feet high, and fall with deep dull thuds on the slope within 50 yards of us. Almost immediately after, another flew over the cliffs just behind us. These were not merely masses falling down, but formed continuous streams for nearly a minute. When all was quiet, we once more commenced our wading, and by slow degrees reached the pass, but not till 12 noon, exactly $8\frac{1}{2}$ hrs. from Erstfeld. The oppressive heat was here exchanged for a cutting wind, so that we did not stay long. I made the height 8,721 feet (8,635 by the Federal Map), so that we had climbed more than 7,000 feet from Erstfeld. The space between the cliffs of the Schlossberg and Gross Spanort is only about 100 yards, and the view is very limited. From the top we kept down the slopes on the side of the Schlossberg, and presently ventured into a snow hollow just under the cliffs, but finding that stones from the cliffs occasionally fell into it, we held down its left edge till we reached the top of the lower cliffs. Here we were compelled to cross the snow channel and keep round nearly to the E. side of the mountain to find a practicable slope. We complained that the Schlossberg had today first snow-balled us and then stoned us, but we had yet to learn the extent of his malice.

We had got down into the valley and were on the horse-track from the Surenen, when we heard a crash, and looking up at the face of the cliff opposite, saw that a great rock as big as a house had broken away from the face. It first plunged into a rocky ravine, where we lost sight of it, but we could hear it grinding furiously along and see the puffs of smoke darting out from the force of the collisions. In a few seconds it emerged broken into three pieces, and these at every bound parted into more, so that in less time than it takes to read this, the green slopes of the alp opposite to us were covered with pieces of all shapes and sizes rushing furiously down. Being at a height above the stream, we seemed to be in perfect security, but some of the blocks crossed the water and came many feet up on our side. Soon the hurly-burly was over, and we heard the lowings of the frightened cattle (Z'graggen said he saw one struck), while the cloud of dust still hung high in the air like a funeral pall. We owed no doubt all our experiences of this day to the late heavy fall of snow. Engelberg was reached at 4 P.M.

In 1867 we ascended the Gross Spanort. Having met our old guides, Trösch and Z'graggen, at Erstfeld, we walked up

the Erstfeldthal to the first châteaux (3,418), where we passed the night. For bread, milk, and a hay bed, we were charged 20 francs, an extortionate demand even for six people. I believe the not unfrequent passage of tourists to Engelberg or to the head of the valley, which is marked in some maps as a speciality in scenery, has demoralised them. Next morning, July 9, we left at 3.15 A.M., and followed a very rough path to the Ober See. The stream from this was crossed on a snow-bed. Then by the rocks and snow-slopes on the S. side of the glacier (near the principal ice-fall) we reached the upper level of the névé between the Kronlet and Gross Spanort, close to the peak marked 2,374 m. We gained the base of the Spanort over slopes which (otherwise easy) were rendered wearisome by new snow, at 9.20 A.M. The peak appeared very difficult of access, and we bore round to the Spanorter Joch. Here we ascended a steep snow-slope between two rock walls. This in a few minutes brought us to a small snow-terrace. We had now a clear view of the peak, which is formed of a fantastically arranged group of rocks of a columnar form, separated in many cases by deep perpendicular gullies. The rocks were covered in a wonderful manner by the frozen snow, which ornamented every ledge and projection with the most graceful feather-like plumes. Ascending a slope of rubbish covered with snow, we attacked the rocks at the lowest point, and though the foothold and handhold were of the scantiest order, we made our way to the next snow-terrace about 60 feet above. The next set of rocks, about 80 feet high, was worse. Z'graggen had first to push Trösch up a chimney (part of the way at least), and he then managed to get a secure position and helped each of us up by the rope. Then a few minutes over easy snow-slopes along a tolerably broad ridge brought us to the top at 11.25. This falls away in precipices on all sides but that by which we ascended. The actual top is at the N. end, and consists of a mass of rocks about 8 feet high, projecting on all sides from its base, the top being perhaps 8 feet across. We shoved two of the party up, and then handed them up stones to make a man. Unfortunately we had no distant view, but we saw enough to assure us that we were on the highest point of the mountain. The guides at Engelberg say that a peak of the Spanort which they ascend from the N. side (i.e. from the Erstfeld Joch) is the highest. It may look so from their valley, but when on the top its inferiority is beyond doubt. There were no signs of any former ascent. We left the top at 12.25. Trösch let us all in succession down

the first rocks. When we were at the bottom, as we looked up at him, he appeared surrounded with prismatic colours. I could only attribute this to the quantity of fine particles of snow in the air, which we dislodged in our descent, but I do not see why the glory should have surrounded him. All the same he deserved it. The Joch was gained at 1.25 P.M., and we bore across the glacier to a pass between the Kronlet and a nameless peak marked 2,947 m. From this we descended by very steep snow-slopes into the head of the Gornenthal. The snow was left at 3.45, and Amsteg reached by the village of Gurtellen at 6.45 P.M. I made the difference between the top and Amsteg 8,827 feet, which, added to 1,713 feet, the height of Amsteg, gives for the Gross Spanort 10,540, which agrees more nearly than usual with the Federal Survey. There is no doubt, however, that only the mean of a number of observations with an aneroid is at all reliable.

In 1868 I ascended the Kronlet with Trösch and Z'graggen; not that two guides were wanted, but it was the last excursion, and as it turned out it was the last time I ever had them together. After ascending the Dussistock on August 3, we went into the Erstfeldthal to sleep at the Eyen Alp, which lies on its S. slopes, under the Raukenstock, at a height of about 5,000 feet. I was heartily tired with the day's work, having ascended and descended more than 9,000 feet; and I was unfeignedly glad when I learned next morning there was no chance of an early start. The weather improving rather, we got away at 5.40, climbing round the shoulder of the Raukenstock; we soon reached the Ober See, which lies immediately under the Kronlet. After searching in vain for means of crossing the stream, we were obliged to wade it. It was not knee deep, nor flowing very fast, but I had no feeling in my legs when I got across. Continuing on our way under the Kronlet, we were much amused with the pranks of a 'gems' who performed a 'pas seul' for several minutes in a gully not far above us. I thought he was mad. He ran up 20 yards or so, and then down again in two or three frantic bounds, and kept repeating the operation till we all burst out laughing, which frightened him into propriety. I never witnessed a 'gemsen-spiel' before or since. Something approaching to it I once saw in a wild hollow below the Gelmerhörner in the Haslithal. Ourselves concealed behind a rock we saw four of these animals not fifty yards from us go round and round in a circle regularly till disturbed by the shrill whistle of my guide. Our direction was much the same as for the Spanort, except that we held more to the left. Arrived at the glacier, we gradually ascended, bearing always to the

left; and struck the ridge W. of the Kronlet, not a quarter of a mile from the summit. The ridge was perfectly easy; on our left a glacier fell away steeply towards the Ober See; to the right were irregular slopes apparently terminated by cliffs overhanging the Gornerenthal. Half-way along the ridge we saw some sheep which had strayed over the glacier to this height (at least 10,100 feet). They came to us, but as we happened to have no salt to attract them, they shrank away again on to the glacier. We soon reached the peak (10,208) which is not 20 feet higher than the ridge. Curiously enough, the actual summit is not in the ridge itself. It consists of two small peaks flattened at the top, one about 6 and the other about 10 feet high. They are approached by a bridge at right angles to the ridge, and there is a space of about 4 feet between them. The top of the larger is about 12 feet by 8; of the other a little less. We gained the top of the higher by creeping along a ledge at 10 A.M. Great white fleecy clouds were sailing about at our level, which spoiled the view, though they framed some beautiful pictures. From the top you look down very steeply into the Erstfelderthal and the Intschthal. The slopes were too steep to descend into the latter, so we returned as we came. We saw the sheep on the ice, in a most unsafe position on a steep slope, where they could but just keep their footing. On arriving at the Ober See, we followed the Spanorter route to the lower châteaux, and told the occupants of the distressed sheep. We reached Klus about 6, and bidding farewell to Trösch and Z'graggen, I got to Amsteg about 7; and I am afraid I only got up next morning in time to catch the 2 o'clock boat comfortably at Fluelen.

Thus ends the roll of my excursions in this district. Since the new hotel was opened in the Maderanerthal in 1865, the number of expeditions has of course very much increased.*

* I had the curiosity to get an extract from the 'Visitors' Book' of the number there recorded, between 1865 and 1871 inclusive, with the following result:—

| | times |
|---|-------|
| Windgelle (both together) | 21 |
| Bristenstock | 12 |
| Claridenstock | 30 |
| Düssistock | 24 |
| Hufi glacier to Stachelberg | 53 |
| Oberalpstock | 40 |
| Ruchen Pass, to Unterschächen | 20 |
| Scheerhorn | 24 |
| Schlossberg | 20 |
| Brunni Pass | 42 |

It is to be lamented that there is no tariff, and that the Swiss Alpine Club have not taken upon themselves to modify charges which must be considered excessive. I have seldom suffered myself, as I was generally travelling with a guide for a lengthened period, but there is no doubt that charges for individual excursions are high.*

When looking over the numbers of the ALPINE JOURNAL to verify some of the dates and statements made above, I came on an article in the first number about guides when past work, and their claims upon employers whom they have served faithfully. It brought Trösch to my mind. He was very unwell in the spring of 1869, but recovered sufficiently to walk for a week with me, as my pace did not kill him. But he has hardly done anything since, and is now, I fear, quite laid on the shelf; and he is only a year older than I am. Z'graggen too is not the man he was; he was very unwell last spring, and did not walk half as well as usual; indeed up the Oberalpstock he went very badly. I am sure men like him and Trösch are lost when they might still do much valuable work, merely because they are engaged by young climbers whose only ambition is to force the pace, and to do the thing in as short a time as possible. I have heard Z'graggen complain of it years ago.

I feel I owe an apology for laying before the Club such a string of statements about a number of comparatively insignificant excursions. Yet though the peaks be wanting in height, and the excursions in difficulty, I think I may venture to say, that all who travel in this district will find themselves repaid by the variety of the mountain forms and the beauty of the scenes they present. In gathering together my notes and recalling events to my memory, I have travelled again over many happy days, some spent in active exertion on some mountain walk, others in indolent enjoyment on some alp, searching for the finest specimens of the Alpine flora, or enjoying the view, that changed with every hour, with every

The name Bruni Pass is generally applied in this locality to the pass to Disentis over the ridge called the Brunnigrat; and Ruchen Pass to that leading to Unterschächen. I should hardly have reckoned the Schlossberg as a Maderanerthal excursion. No doubt the pass to Engelberg is meant.

* I only paid 10 francs in 1862 for the Kleine Windgelle, and the same in 1863 for the Bristenstock. Now, I believe, there are hardly any under 20 francs, and this compares very unfavourably with the charges fixed by the Austrian (now German) Alpine Club, such as 6 florins (= 10s.) for the Wildspitze, or 8 florins (= 13s. 4d.) for the Gross Glockner.

passing cloud. But I, too, like my old guides, have cause for regret when I feel that my strength is failing, when I feel how much worse my wind and my legs are than they were ten years ago. With time and patience I may yet for a few years be able to make excursions in the mountain region that I love so well. I trust that I may be long able to enjoy that mountain beauty, the love of which, as one of our members has written, 'if not stronger than the love of woman, is more enduring.'

THE DREI ZINNEN AND MARMAROLE. By W. E.
UTTERSON-KELSO.

SCHLUDERBACH is a good head-quarters for mountaineers, and the accommodation of the little inn has been lately much increased by the addition of a 'dépendance' on the opposite side of the road—at the same time, it is said, that Herr Ploner and his good wife have extended their ideas as to the increased dimensions of English pockets, and the gullibility of British tourists; with all this, however, neither host nor hostess are bad people, as the world goes, and the inn is very comfortable both as regards fare and accommodation.

Schluderbach is nearly, if not quite, 800 feet higher than Cortina, and distant from it some ten miles by the high road. At least four different cols may be taken in going across country between the two places; the finest is the glacier pass of the Cristall Joch. Monte Cristallo and Piz Popena form together a noble and stupendous natural gateway to this pass, which is neither a long nor generally at all a difficult one until late in the season. Its attractions are, in my opinion, greater when it is taken from Schluderbach. Mr. Trueman and I crossed it from Cortina in July, with Santo Siorpaes, and the following day I recrossed it alone; fresh snow had fallen in the interim, filling up many of our steps, so that I had to open new ones where the descent was steep for a certain distance below the top on the Cortina side. The ascent of Monte Cristallo is made from the col itself; Santo related to me how he had once made it with two Prussian students, whom he greatly praised for never having required the use of the rope either up or down. I have never made the ascent, but have heard it spoken of as one of the more difficult of the Ampezzo Dolomites.

Stretching at the foot of lofty pineclad precipices, between Schluderbach and Landro, with a glacier and savage crags in

the background, the little Dürren See has, to my eye, few equals among Alpine tarns; the prevailing colour of its waters is light emerald often varied by shades of purple and blue, most troublesome to reproduce faithfully and effectively on canvas, although it is not unfrequently made a study of by persevering German artists, of whom many are found spending their vacation in this neighbourhood. A striking picture is presented by the gaunt and perfectly upright cliffs of the Drei Zinnen, seen through an opening close to Landro. Some connoisseurs prefer the view of this mountain from the Mesurina Alp, with its lake in the foreground; but I think it one of the most characteristic specimens of the dolomitic type, and remarkable from whatever quarter it may be seen; it bears the reputation moreover of being one of the stiffest climbs in this district, as does also the Drei Schuster Spitze in the Sextenthal, which is perhaps one or two hundred feet higher. Both mountains, I understand, were first ascended, a few years ago, by Grohmann, and like all other mountains, will lose much of their reputation for difficulty by repeated ascents. Whatever the Drei Schuster Spitze may be, I certainly did not find the Drei Zinnen so formidable as it had been represented by Santo and Herr Ploner, who had been to the top of it; it is, nevertheless, a stiff little peak, and gives one a capital idea of a good dolomite rock climb.

Starting for the Drei Zinnen, or 'Tre Cime' from Schluderbach with Santo before daybreak on July 15, 1872, I picked up at Landro M. de Falkner and his guide, Peter Salcher. We all left Landro about 5 A.M., passing the 'Katzen Leiter' and the Italian châteaux of Rimbianco: it is curious to observe that the châteaux upon this part of the Italian frontier—which comes in comparatively close to the Pusterthal—are at once distinguishable from those on the Austrian frontier by their circular form; the different houses, byres, and sheds are enclosed by a circular wall, with an open space in the centre, giving to the whole structure when first seen from the heights rather the appearance of a big well. These châteaux are indeed great manufactories of butter, which is made up in colossal pats, worth perhaps a hundred francs apiece, and ready for transportation to Venice and other towns of Venetia; the machinery for churning is still of a very primitive order. Near the base of the Drei Zinnen is a passage into the Sextenthal. Our course lay up a short gorge between the highest and lowest peak; on the right of this is a sort of couloir filled at the top with snow, which afforded us access on to the rocks of the former. Here Peter's hat fell off: after marking it down in

the gorge, he said, with a laugh, that it would be time enough to pick it up on his return! We had to climb some chimneys and pass through one or more jagged clefts, but the worst places—especially to descend—were on the open face of the ‘Croda;’ had the rocks been rotten, and more or less masked with snow or varnished with ice, in place of being tolerably firm, and perfectly dry and exposed to view, they might, with their steepness, have been considered decidedly difficult. Not very much below the summit we got into a gully, shut in by rough walls of rock. Happening to be here a little in advance of the others, I began climbing a sort of chimney, but was stopped near the top of it by a projecting knob, over which I struggled in vain to hoist myself. Peter, seeing my position, came up after me, and giving me a butt or powerful toss with his head, sent me, more effectually than agreeably, over the obstacle. We stood upon the summit of the peak within 5½ hours after our start from Landro, the buildings of which we saw down in the green depths below through a momentary break in the dense mists. A glimpse was next obtained of the topmost crags of the Drei Schuster Spitze, and then the curtain fell altogether. We had just time to observe that the second peak of our mountain rose close beside us, and was a little beneath us, while the third, nearest the Sextenthal, was quite out of proportion to the other two.

Peter showed himself a fine cragsman during our descent, surprising even Santo, who afterwards said to me, ‘I had no idea that Peter had been so good a mountaineer.’ He was at one time a ‘gemsjäger,’ and on the present occasion he might, with the addition of his rifle, have served as a good model of the old Tyrolese chamois-hunter one sees represented in the windows of printshops at Innsbruck or Munich. Fancy a big powerful man, about forty-five years of age, without coat, and bare-headed, shirt and waistcoat thrown open at the breast, a pair of crampons with enormous spikes upon his feet, passing in the most apparently reckless manner, and independent of cord or alpenstock, over steeply-shelving rocks, or swinging himself from one point to another in the cracks and chimneys of the cliffs; such is the picture Peter has left in my mind in connection with the Drei Zinnen. Near the bottom of the rocks we again came into the zone of sunshine. Hearing a rattling of stones, the guides were of course the first to descry a troop of some seven or eight chamois scuttling along a ledge of one of the minor peaks or outlying crags of the mountain. We had now a fine view before us, into the Auronzo valley, and of the summits of the Marmarole beyond,

upon which we already had an eye to placing our feet. Close to us was the Col Agnello, a virgin peak over 10,000 feet high, with high mural cliffs all round; this must be one of the principal summits of 'the mountain mass lying west and north of Auronzo,' alluded to by Mr. Ball as 'not satisfactorily laid down on maps, and somewhat intricate.'

One of my companions in the Dolomites, M. de Falkner, a member of the Italian Alpine Club, and an excellent mountaineer, expressed a wish to make the first ascent of the highest point of the Marmarole, an Italian mountain, which he heard had been the aim of two Austrian gentlemen. Mr. Trueman and I consequently agreed to join him in the attempt. We started from Schluderbach on the 17th July, for the hay barns of Stabiciani in the valley of Auronzo. Our guides, Santo, Peter Salcher, and Luigi Orsolina of Auronzo, were laden with the necessaries of life for two or three days, as we had been warned that we might not find even milk where we were going. As we descended on the south side of the Mesurina Alp, we passed large bodies of men, women, and children engaged in making a carriage road, to be carried between Auronzo and Landro. The whole population of the former place seemed to have turned out to the work; wooden huts had been put up for night shelter in the forest, and even boughs of trees, turf, and green leaves had been extemporised for the same purpose. The young women among this throng of workers displayed great superiority in beauty both of face and form over the women of the Pusterthal, or even of the Austrian population of the Ampezzo valleys; and the careless yet graceful manner in which they bind their heads with a dark coloured handkerchief adds not a little to the effect of their natural charms. As the evening had set in wet before we reached Stabiciani, we were glad to find large roomy barns, with abundance of clean hay for our night-quarters, in place of dirty châteaux; our only hardship was scarcity of milk, for I believe there was but one old nanny-goat to supply the whole community of haymakers. The proprietors of the barns were clean, well-to-do-looking men from Auronzo; they knew the peak we were after—which in fine weather is visible from Stabiciani—and assured us that it had never been ascended. The 18th was very wet and unpromising in the morning, so we walked four hours down the valley to the large straggling village of Auronzo, where we got a very fair dinner, and returned towards evening to Stabiciani.

We were off about 2.30 A.M. on the 19th. After crossing the stream to its right bank, and mounting by a steep and tor-

tuous path, through forest and brushwood, over grass, rocks, and débris, we gained the brow of the great slope which bounds the valley on the south; still ascending for a short time over rocks and scanty vegetation, we entered upon a gently inclined snow-field, which brought us into a snow or glacier basin, enclosed by a group of the principal peaks of the Marmarole. We saw what was evidently the highest one straight before us, appearing in the form of a large block of rock separated from the ridge on either side by snow-rifts; two snow-couloirs came down from below these into the glacier basin where we were. The easternmost one did not seem to be so excessively steep, while it had the advantage of leading up directly under the summit rocks. I suggested we should make use of this couloir, but Santo did not see it in the same light; he thought it would be better to skirt the precipices of the ridge on our left, and so reach the main ridge by a more circuitous, but, as he thought, easier route. However, after crossing a bergschrund many steps had to be hewn in the hard snow still clinging to the cliffs, and the rocks were very treacherous, detaching when least expected in fragments of all sizes. Much time was lost by this flank movement, before we reached the foot of the highest peak just below the summit, and here was the difficulty of the ascent. We found a little cliff, which from its steepness at first appeared to defy direct assault; this again was defended by steeply sloping plates of rock, with precipices beneath; a narrow streak of insecure-looking snow, some 18 inches deep, stretched from the bottom of the cliff, perhaps 12 or 15 yards above us to our feet. After an examination of the ground, we resolved that it would be safer as well as shorter to try and climb the cliff directly above this snow than to wind round it over these dangerous slabs without any secure hold. Santo tied one end of a long rope round his body, while we held the other, went straight up the snow to the foot of the cliff, and commenced climbing it resolutely with hands and feet, breast and chin. Ten or twelve feet from the bottom he appeared to stick, when Orsolina sprang gallantly up the snow to the rescue with De Falkner's new ice-axe—a startling halberd nearly eight feet long—which now became really useful, and propped Santo's feet one after the other till he could find better hold. Santo now got on, and after struggling upwards some thirty feet higher, he shouted out to us that the difficulty was over, and the summit at hand. He then steadied the rope over a knob of rock, and we all followed one by one. The summit was a mere ridge crested with snow, which had melted away on the southern rim, leaving sufficient material exposed to

build a cairn with; but, alas! we had brought up no glass bottle to leave our cards in. Orsolina, always 'ready at a pinch'—may I be excused a bad pun?—now came forward and presented his snuffbox, which was 'not to be sneezed at' on the present occasion. We deposited the box along with our names on the western side of the cairn facing the 'Meduzzi.' We found no trace of any previous ascent, nor could we discover any other practicable way of getting up. We stood upon the highest point of a ridge, running, so far as I recollect, nearly east and west. Two rather lower ridges ran out northward from it, and on the eastern one, under the crags of which we had come up, was a comparatively distant and decidedly lower peak with a 'stoneman' upon it. This, Santo told us, was the point ascended by the Italian gentleman, and probably confounded by Mr. Ball with the highest point of the Marmarole. We carried no aneroid, nor had we any means amongst us of determining the height of the mountain; although, comparing our elevation with that of the Cristallo, Drei Zinnen, Col Agnello, and others which we saw clearly in the distance, I should not be disposed to estimate it at over 10,000 feet. Clouds prevented our seeing distinctly either the Antelao or Croda Malcora. Looking through the telescope towards Stabiciani, we observed a flag hoisted on the shed in which we had passed the two previous nights, and which eventually proved to be in recognition of our cairn. Before descending the cliff from the summit, we fastened to the rock a rope nearly sixty feet long, to enable the last man to get down the steepest part of it, and we left it hanging as a monument to our success. Lower down we saved much time by taking advantage of the couloir, which Santo now acknowledged would have been also our best way up. At Stabiciani we found that we had nothing remaining to eat or drink, except polenta—polenta without milk; and nearly five weary hours between us and Schluderbach. All the way between Auronzo and the former place no humble auberge or cantine is to be met without making a considerable détour to Bastian's hut, which is on the way to the 'Tre Croci' Pass. But, as Orsolina remarked, a diligence may perhaps be running on the new road before a couple of years are over, and then the valley will certainly become more civilised.

My own experience of the guides of the Ampezzo district, has given me a favourable opinion of their merits as mountaineers. I have never found any deficiency of courage or want of capability upon rock, among any of them, with whom I have had to do. Good ice-men they cannot be called, but as this is essentially a rock country, it could hardly be expected,

or would seldom be required of them, to be such. At the same time, I am sure that neither Santo Siorpaes nor Alessandro Lacedelli would be afraid of a little snow or ice. Santo has, I believe, secured the good opinion of Mr. Tuckett, and I can conscientiously endorse, so far as my acquaintance with him goes, all that has been said in his favour by so great an authority; he gives me the idea of possessing a good knowledge of the mountains in his own immediate neighbourhood, besides knowing something of others a little beyond it, and of combining judgment and intelligence with intrepidity. He is moreover a very good fellow, and I should say thoroughly trustworthy.

Peter Salcher and Luigi Orsolina are probably little known to Englishmen. The former, though now employed as outdoor servant at Landro, is a native of Lugao in Tyrol. He was employed by Herr Grohmann in different new ascents accomplished by that persevering mountaineer. Peter is a powerful rock climber, and does not cringe under weight; he is a staunch guide, and a civil good-natured man; but the bottle must be kept from him, as he has rather a weakness for alcohol. Young Orsolina, son of Pietro, the well-known chamois-hunter of Auronzo, is quite an Italian both in language and appearance, and is considered a first-rate cragsman, wanting only experience to make him one of the best guides of the country. Although a young man, he is already an old soldier, having gone through the campaign of 1866 against Prussia. He is sober, civil and obliging; he was employed all last summer by the landlord at Schluderbach, who I think induced him to demand too high charges from Englishmen, if ever employed by them. Franz Innerkoffler, of Innichen, or Sexten, was another of Grohmann's guides; he is said to be a good man for difficult work, although a slow goer, and inclined to be extortionate. I know for a fact that he behaved very badly to my friend Trueman who once employed him. He has a younger brother, servant at Schluderbach, who is accustomed to rock climbing as a chamois-hunter; he is a very powerful young fellow, and Herr Ploner speaks well of him as a mountaineer. The pay of guides in the Dolomite country is considerably less than in most parts of Switzerland; two guldens a day, with another one for living, is very good, when a man is engaged for some days at a time in his own country. The above rate is supposed to provide for the most difficult work, and for days of rest, taken together. I understand that Herr Grohmann considered a still lower rate sufficient when the guide is paid by the month. A 'trinkgeld'

at the termination of the engagement is optional, but would generally be expected, as a mark of satisfaction on the part of the employer.

Towards the end of July the weather became very favourable, but I was by this time obliged to leave the Dolomites. I had, nevertheless, the satisfaction of climbing, after I left them, the Gross Glockner and Gross Wiesbachhorn, which I accomplished in two successive days, the former from Hoffmann's hut on the Pasterze glacier, and by Hoffmann's route across the glacier, and up the ice-fall; the latter from the same hut going over the top of the Glocknerin. The ascent from this side is free from difficulty, but we had a long plough through soft snow, which I felt the more, carrying my own knapsack. We employed $5\frac{1}{2}$ hours including all stoppages from the Johannishütte to the summit, and about 4 hours down to the Wasserfall Alp at the head of the Kaprunerthal. My guide on this occasion was Trebüsser, whom I discharged at the Wasserfall châteaux. The previous day I had taken leave of my friend Trueman—who had made the ascent of the Glockner with me—at the 'Adler'sruhe,' from which point he descended by the Leitherthal to Heiligenblut, to return, much to my envy, once more to the Dolomites.

A NEW PASS IN THE CHAIN OF MONT BLANC. By
L. STEPHEN. Read before the Alpine Club, Dec. 16, 1873.

A QUEER sensation which sometimes comes over me on the sight of some familiar Alpine view may best be illustrated by a literary parallel. In reading some genuine old English cramatist, I have been tempted to exclaim, What does this fellow mean by imitating Lamb's 'John Woodvill,' or Taylor's 'Philip Van Artevelde'? Why doesn't he see the absurdity of mimicking a man who was his junior by two centuries? His local colouring is the same, if it is not quite so obtrusive, as that of our modern Elizabethans. In the same way the view from the Weugern Alp, or the Görnergrat, or the Montanvert strikes me as little better than a plagiarism. Have we not seen the very same design used over and over again for the lids of carved boxes, and worked to death by the artists of those pictures with blue glaciers, and white peaks, and melodramatic chamois which stare at us from every shop-window in Interlaken or Chamonix? Why should the eternal Alps enter into rivalry with such puerile performances? In no place have I been more frequently seduced into this whimsical inversion

of logic than at the Montanvert. The Montanvert, in fact, is, with the possible exception of the Wengern Alp, the most cockney-ridden of all the well-known points of view. Within a few hundred yards of the inn, lies a monument which strikingly illustrates this truth, and which, I fear, hardly receives from members of this club the attention which it deserves. On the old moraine, just above the place where the solemn echoes of the mountains are waked for the sum of ten centimes, lies an ancient gray stone, on which are carved the names of Pocock and Windham. Some Old Mortality of the district appears to have preserved this inscription which marks the bivouac of the first British tourists 130 years ago. Having surmounted the peril of the ascent to Chamonix, these primitive adventurers, whose memory should surely be dear to us, succeeded in scaling the Montanvert, and doubtless felt that they had well earned their night's rest beneath the now historical block. Perhaps the Alpine Club might do worse, in case of necessity, than apply a few francs towards the preservation of this memorial of their ancestors' heroism. Another inscription commemorative of tourist enthusiasm never aroused my conscious attention, often as my eyes must have rested upon it, until this summer. All who have made expeditions from the Montanvert remember that queer little octagonal edifice opposite the door of the inn, which seems to be a compromise between a stable, a kitchen, and a sleeping-room for the guides. Here, I have sometimes fancied, were held the private sittings of the Everlasting Club commemorated in the 'Spectator.' I have never, at least, looked in at any hour of day or night without seeing a guide seated by the fire—eating, drinking, or smoking with stolid persistency, and generally conspicuous for that air of extreme personal comfort which is only produced by the consciousness that you are keeping somebody waiting. The impatience which is naturally produced in the mind of an external observer had, I presume, hitherto prevented me from noticing that above the door are engraved the words, *A la Nature*. In fact, the building was erected by a prefect of some half century ago, who indulged in the good old-fashioned sentimentalism of the Rousseau school, and devised this rather pagan edifice for the benefit of his fellow-creatures. Then it was probably an almost solitary example of a building intended for the accommodation of Alpine sightseers. Since that day, two or three generations of tourists must have gazed from its doors up the ice-stream of the Mer de Glace, and admired the great block of the Géant and the Jorasses framed so symmetrically between the gigantic portals of the Charmoz and

the Verte. The view has indeed become so familiar that almost every Alpine traveller, and many travellers who have never been to the Alps, could draw a recognisable outline of its main features with their eyes shut. My present audience, I doubt not, is as familiar with its details as with a well-known passage beginning 'dearly beloved brethren;' and, as the statement that 'the Scripture moveth us in sundry places' sometimes reaches their ears without exciting a very vivid emotion, so the eye glances along the well-known ridges without setting up any conscious train of reflection. To some such cause, at least, I must attribute the really curious fact, that up to the year 1873 nobody had yet attempted one of the most conspicuous passes in the whole range of the Alps. The grand block of the Jorasses is abruptly cut away, as we all know, at its northern end, and thence to the wild labyrinth of ridges which culminates in the Aiguille de Léchaud, there stretches a level saddle, over which, as is obvious to the meanest capacity, there must lie a route to Courmayeur. Indeed it would be the natural route for anybody intending to cross the Col du Géant by the light of nature. If you would make a bee-line from the Montanvert to the nearest points of the Italian valleys, your route would take you straight across this col, which is as obtrusive as the Théodule from Zermatt, or the Jungfrau Joch from the Wengern Alp. The apparent steepness of the final barrier indeed was forbidding; but in an ascent of the Mt. Mallet, which I described to the Club two years ago, we had gone near enough to see that this appearance, as in so many other cases, promised to be illusory. M. Loppé was especially impressed by the view, and had frequently suggested to me the propriety of an assault when arranging the plans of coming campaigns. The discussion assumed fresh prominence during certain tobacco parliaments held in the beginning of July last in front of Couttet's inn at Chamonix. It took a practical turn on the arrival of Messrs. T. S. Kennedy and J. G. Marshall, who contemplated the same expedition, and brought two excellent guides, Johann Fitscher of Meiringen, and Ulrich Almer, son of the hero of Grindelwald. Kennedy and Marshall had already acquired useful information by examining the col from the other side, and were eager to add this to their previous conquests. Loppé was naturally keen about the best pass of really first-rate excellence in the district which may fairly be called his own. For my part, I have long abandoned difficult and dangerous expeditions. Moreover, I was at Chamonix in the interesting character of invalid. I was suffering from a state of mind and

body which wives and mothers generally attribute to overwork, and which one's masculine friends consider as a pronounced attack of idleness. Whatever the origin of my symptoms, I took a course which I can strongly commend to all my hearers. I consulted a distinguished physician who to his great medical skill adds the special merit of being a member of the Alpine Club. He prescribed—less to my surprise than to my satisfaction—Alpine air and indolence. The last phrase I took to include moderate walking exercise, and, though abjuring anything bordering upon the performance of athletic feats, I felt myself at liberty to accompany my friends in the humble character of historiographer, with liberty to turn back if the danger or the fatigue should prove excessive.

And so it came to pass that once more I was sleeping at the Montanvert, on the night of Sunday, July 13. The weather was so questionable that I had delayed my departure till the last possible moment. Throughout the early summer we had a series of thunderstorms, the temperature, lowered by each storm, gradually becoming almost unbearably hot, till we were relieved by another explosion. On this occasion a storm had just passed, but as Loppé and I climbed the well-known Montanvert path in the late evening, the heavy pine-branches were still dripping with moisture, and an occasional thunder-growl muttered amongst the distant ranges. I had therefore turned in with some doubts as to the next day's weather. A happy faculty of sleeping soon produced utter oblivion, though my couch was little softer than Pocock and Windham's stone. What passed for a mattress seemed rather to be a cylindrical bolster of abnormal hardness, and reminded me of that dummy which Jack the Giant-killer placed in his bed in one of his adventures; as it would have been only too well calculated to withstand the most vicious blows of an infuriated Blunderbore. I see that I am inevitably falling into the old groove. I am treating the Club to the thousand and first description of the discomforts of bad beds. My only excuse is, that the grievance is as lasting as the grumbling. The Montanvert inn is a disgrace to the district. The commune of Chamonix receives, I am told, a rent of some 500*l.* a year for this dirty, tumbledown, old hovel, which has received no improvement or addition since it was first erected. The number of visitors must have multiplied tenfold, but the accommodation is strictly stationary, and the prices steadily advancing. This phenomenon is quite in accordance with the laws of political economy. Monopoly, whether of railways or innkeepers, is fatal to the comforts of travellers. To complain is probably mere waste of ink; and

yet one would fain hope that the good people of Chamonix may be impressed in the course of a generation or two with the conviction that better accommodation on so celebrated a point of view would provide an excellent investment for some of their spare capital. In Switzerland the Montanvert would have been rebuilt and enlarged a dozen times over; and the example of their enterprising neighbours should be set before these good stolid Chamoniards as vigorously as possible. Meanwhile, in spite of dirt, discomfort, a squalid bedroom, and a close atmosphere, I was sleeping peacefully on the early morning of the 14th, lapped in some dim consciousness that I had still an hour and a half before the inevitable hour of starting, when a stentorian voice resounded through the house—‘*Ohé ! là-bas ! Aufstehen ! Garçon ! get up !*’ were some of the fragmentary utterances which rang like a trumpet through my dreams; and led me to realise the fact that my young friend Marshall, boiling over with the impetuosity of youth, was resolved to avoid any danger of oversleeping by premature vociferation. Some wretched tourists, it was true, were beginning to fortify themselves by a few hours’ repose for the toils of an expedition to the Jardin. They must take the consequences of venturing into the haunts of the enthusiastic climbers, and speedily they had a lively accompaniment to the vocal music played on the planks by a pair of sturdy hobnailed boots. Lulled by this music, I endeavoured to compose myself once more to rest by carefully extending myself along that granite column which played the part of mattress. Alas ! my efforts were in vain. The voice became more emphatic.

Still it cried ‘*Sleep no more !*’ to all the house ;
Marshall hath murdered sleep ; and therefore Loppé
Shall sleep no more ; Stephen shall sleep no more.

Nay, if I am not mistaken, a personal application was given to some of the more energetic remonstrances ; and, finally, I found myself dozing over the usual fragments of dry bread and tepid coffee, and endeavouring, according to a principle which I observe with undeviating punctuality, to shirk all responsibility in the matter of ordering provisions or otherwise arranging for a start. Still drowsy and dull, I turned out about three o’clock into the drowsy night. The prospect was equivocal. Torn fragments of vapour floated aimlessly above the valleys and clustered in long streamers upon the mountain sides. The pyramid of the Aiguille Verte was nearly hidden ; on the opposite side, the Aiguille de Charmoz appeared, as it were, in a ragged dressing-gown, resembling the costume of Mr. Pick-

wick's companions in the Fleet Prison. A maudlin kind of monster it seemed, apparently reeling homewards from some debauch in a general state of intellectual haziness. One huge finger—well known to all buyers of photographs and coloured drawings for the last fifty years—was held up, pointing, with a muddled significance, towards the heavens. Doubtless some sort of meaning might lurk in that intoxicated gesture; but I am no diviner of omens. Whether the old Charmoz intended an encouragement or a warning was to me an impenetrable secret. Perhaps, too, my language is rather profane. The mountain, gleaming in the dim moonlight through the veil of mist, and revealing that strange pinnacle of rock which, as I have since seen it from a nearer point, is one of the most daring of mountain spires, should have excited awe rather than unseemly familiarity. I do not profess, however, to have my emotions at command; solemn objects sometimes fail to create in me that 'great disposition to cry' which is the becoming mode of testifying sensibility to natural beauty. Moreover, I have a spite against the Charmoz. I tried to climb him a few weeks afterwards, and his scarp'd cliffs foiled our best efforts; and, therefore, I take the liberty, not unprecedented under such circumstances, of attacking the character of a mountain which has shown itself too hard for me. We had soon turned our backs on the Charmoz, and, as we advanced, two facts became evident: the sunrise was healthy, giving promise at least of a tolerable day; and the pace speedily threatened to be tremendous. Our party was of heterogeneous composition. Experience was represented by the elder travellers, and youthful precipitance by our friend Marshall. Youth accordingly set out, in spite of sage warnings, at a brisk rate, and was soon leaping crevasses in a playful spirit far ahead of creeping age. Had we been united we might have succeeded in suppressing this undignified impetuosity; but the guides, as well as their employers, were divided. Loppé and I had engaged Henri Devouassoud, a younger brother of the well-known François. Now, Henri, and I am glad to make the remark in view of some recent criticisms upon Chamonix guides, is a strong, willing, and pleasant fellow, though not, as I judge, more than second-rate as a leader of a party. He caught the contagion from Marshall, and was willing to show his Oberland companions that a Chamonix guide could make the running. Accordingly, we crossed the glacier at a pace which brought us to the foot of the final bergschrund in little over three hours. It is, I am aware, contrary to all rules of Alpine writing to reach a berg-

schrund so early in the narrative of the expedition. But I have a sufficient apology. It is as easy to get to this bergschrund as to reach the Jardin—as easy as another process which I need not particularly mention, and the facility of which needs no demonstration to an audience of travellers by profession. There is simply a gently sloping snow-plain to cross, where the few crevasses could be turned by trifling deviations from our route; and thus our only mentionable adventure was the inevitable quarrel with the porter from the Montanvert, who asked more for going part of the way to the Jardin from the inn than he would have received, according to the tariff, for going the whole way from Chamonix and back. Moreover, I am not going to let my hearers off too easily. For here I must insert a brief digression whilst we are eating our breakfast and speculating upon the best line of assault. A day or two before we had committed the usual folly of an exploring expedition. It had the normal fate of such performances. We had climbed to nearly our present position and had thence watched a noble bank of boiling cloud, which effectually screened from sight every detail of our proposed route. One incident, however, deserves fuller commemoration. As we began to climb the snow-slopes we observed at a little distance ahead certain mysterious objects arranged with curious symmetry in a circle upon the glacier. Some twenty black spots lay absolutely motionless before us; and as we approached we became aware of their nature, and not, as I will venture to add, without a certain feeling of sadness. In fact, we had before us a proof of the terrible power with which tempests sometimes rage in these upper regions. The twenty objects were corpses—not human corpses, which, indeed, would in some sense have been less surprising. As a melancholy accident has lately shown, man may easily be done to death by the icy winds which have such terrible power in these exposed wastes of snow. But the poor little bodies which lay before us were the mortal remains of swallows. How it came to pass that the little company had been struck down so suddenly as their position seemed to indicate gave matter for reflection. Ten minutes' flight with those strong wings would have brought them to the shelter of the Chamonix forests, or have taken them across the mountain wall to the congenial climate of Italy. Whether the birds had gathered together for warmth, or been stupified so suddenly by the blasts as to be slain at once in a body, there they were, united in death, and looking, I confess, strangely pathetic in the midst of the snowy wilderness. I mention it here, not merely because none of us had met with such an incident

before, but also for another purpose. We proposed at the time to give to our pass the name of the *Col des Hirondelles*, which may be justified by the precedent of the Adler Joch at Zermatt. First discoverers have, I believe, a right to christen their passes; but, unluckily or otherwise, it is one of those rights which is not very valuable, because it cannot be enforced. If future travellers choose to call the pass the Col des Jorasses, or the Col de Léchaud, we cannot exact any penalty from them. So far, however, as our authority is recognised, I beg to state that we in all due form passed a resolution declaring that henceforth the col which I am about to describe should be known to all whom it concerns by the sole style and title of the *Col des Hirondelles*. And having thus done my duty to the swallows, and given satisfaction, as I hope, to such souls as Mr. Darwin and the Thirty-nine Articles may allow them to possess, I will return to the narrative of our adventures.

As I have already said, a precipitous wall stretches northwards from the foot of the Jorasses. On the French side it consists chiefly of rock; on the Italian it is covered by the wild Glacier de Friboutzie. As we approached it we recognised various routes, each of which appeared at times to be easy, and then again put on an appearance of inaccessibility from some different point of view. Close to the Jorasses there descends a broad couloir of ice, crowned by a wall of serac, as to which it is still a matter of controversy whether it ever does or does not discharge avalanches. I cannot decide the point, not having made the necessary observations; but I may briefly say that anyone who likes to risk these possibly non-existent avalanches might probably shorten his route to the summit. It would, perhaps, be possible, moreover, to reach the top of the col by climbing the lower rocks of the Jorasses, and so keeping entirely to the right, or south, of the great couloir. To the left, or north, there is a long rocky wall, seamed by deep narrow couloirs of much smaller dimensions, occasionally varied by steep snow-slopes, by scarped surfaces of rock, and by huge ribs which descend steeply from the summit and are more or less cut off at their lower extremities. More than one route might, perhaps, be discovered amongst them. Our attention, however, was fixed upon the ridge which bounded the great couloir immediately to the north, and upon a very deep and narrow couloir, which again lies immediately to the north of the ridge. This last couloir was filled with snow at the time of our passage, and, as seen from the Montanvert, appeared to us like a bright white thread. The snow, however, frequently disappears, and the whole wall then seems

to be little more than a mass of rock. To be clear, I shall call this last narrow couloir the chimney, and I may proceed to describe our assault.

The chimney opens out at its lower end, and is lost in the main slope above the bergschrund. At 6.45 we attacked this natural fosse with the usual gymnastics. They involved no particular difficulty, and I only had to complain of a decided propensity of the rope to get itself entangled in my hat. The said hat, having shrunk, was easily knocked off my head, and the fact that I was constantly struggling to preserve it against the skilful assaults of the rope may show that the line of ascent was tolerably steep. For a time, however, the climb was perfectly easy. Digging our feet into soft but tenacious snow, we speedily reached the chimney and found it in good condition. The snow-bed which lined it enabled us to climb hand over hand without a check for some considerable distance. But by degrees, Fischer, who was leading, became nervous. He has a prejudice, in which I admit that I share, against stones bigger and harder than the human head, and subject entirely to the force of gravitation. Loppé, who is always loudly proclaiming his own extreme prudence—it is his pet virtue, and the only one upon which he prides himself—is a sceptic in the matter of stones. Whether he has confidence in the strength of his skull, or a faith in his capacity for being missed, I cannot say. However, he assured us emphatically that stones would not fall, or if they did fall, would not hurt us. Deaf to these arguments—I call them arguments for want of a better word—Fischer insisted upon leaving the chimney and climbing the rib between ourselves and the great couloir. And hence arose a division of the party, and a certain amount of emulation, though no want of cordiality. Whilst Loppé and Devouassoud as representatives of Chamonix stuck to the chimney like men, we effected a flanking movement on to the rib. Now, as all climbers know, these transverse performances, which, if I may say it, take a mountain across the grain, are apt to lead to difficulties. For about fifty yards we had, what seemed to me, a really nasty bit of climbing. The rocks were powdered with a layer of snow, sufficiently deep to aggravate seriously the difficulties due to their rottenness and irregularity. I will not presume to say that the consequence of this was any real difficulty. Objectively speaking the rocks may have been easy; subjectively considered I heartily condemned them. A different word has been used in some translations from the Greek. At any rate, I was reduced to a state of mind of which many

travellers have never been conscious; that is to say, I got so far as the incipient stage of a resolution never to trust my precious neck (the word precious, again, is used in a subjective sense) in discovering new Alpine passes. One or two positions, distinctly imprinted upon my memory, could be easily represented by Mr. Whymper's pencil, but are not so easily translatable into language. Nor, indeed, is it worth while to tell the old story over again. The discontent incident to precarious scrambling was aggravated by the sight of Loppé and Devouassoud climbing their chimney with great ease and rapidity and greatly gaining upon us in height. Soon, however, the tables were turned. Once on the backbone of the ridge we had the best of it. In fact all difficulty was over, and we moved at breathless speed towards the top. Fischer was excited, and felt that his reputation was more or less at stake. We were bound to be first on the top, lest those *verrückte Französer*—the name, I deeply regret to say, which he applied to our excellent friends in the chimney—should laugh at our beards. We saw, indeed, and the sight was balm to our souls, that they had left the chimney on the opposite side, and were pressing, with some difficulty, up a steep snow-slope which led them to a part considerably to the north of that at which we were aiming. It brought them, however, to the side of a great knob which here crowns the ridge, and we were therefore invisible to each other during the last few hundred feet. All the more we strained every nerve to reach the top; and a new cause increased our anxiety. I had pointed out to Kennedy the beauty of certain light clouds which were drifting over the col from Italy, and tinged by prismatic colours as they came above our heads. Unluckily they came thicker and deeper. As we reached the snow-mound on the summit-ridge we were enveloped in a light vapour which effectually hid from us the grand precipices of the Jorasses, and, for a time, concealed all but the snows in our immediate neighbourhood. We raised a shout, partly of self-applause and partly as a challenge to our rivals. Had we reached the top first? I have an opinion upon that subject, and it is one which I think I could support by sufficiently conclusive facts. I will add, however, that no persuasion, short of absolute physical torture, shall induce me to reveal it even to this Club which has the first right to my confidence. Far be it from me to give the slightest sanction, direct or indirect, to any spirit of rivalry between climbers. Racing in the Alps is an utter abomination, and I have never been guilty of such a crime; except, indeed, once in an ascent of Mount Blanc, and again, I

fear, in a dashup the *Æggischhorn*, and yet once or twice more on some of the Oberland peaks, and perhaps on a few other occasions which I decline to mention more particularly at the present moment. But my principles are good if my conduct is occasionally inconsistent. And therefore, without throwing any light upon the question, I will merely remark that our party reached the summit about nine; having thus occupied a little over two hours in climbing the last rocks. I should guess their height very roughly at some 1,200 feet; and, as the process involved some step-cutting, and the passage of the *bergschrund*, it will be seen that no serious difficulties were encountered. I will add further, that though our col was the point which would naturally be selected from the French side, the descent upon the Italian side was probably easier from *Loppé's*. The difference, however, is trifling.

To lie on the summit of a new and first-rate pass is a pleasure which, in the nature of things, can be but rarely enjoyed. Our spirits were naturally exuberant. What was it to us that imagination instead of bodily eyesight had to picture the butt-end of the lion-like mass of the *Jorasses*, the wild sea of unfrequented peaks towards the *Léchaud* and *Triolet*, the long vista down which the *Mer de Glace* flows to the *Chamonix Valley*, and the purple hills towards the *St. Bernard*? If to us it makes little difference, it clearly makes less to my hearers, except that it saves them a passage of description which they can imagine for themselves quite as easily as we imagined the view. They may take it for granted, too, that we were hilarious, excited, full of fellow-feeling, and very much inclined to such sky-larking as can be indulged upon a glacier. And I may add, that, the sky-larking was of a very superior order. A momentary rent in the clouds had revealed the green valley floor of the *Val Ferret*, some 7,000 feet below us, and showed, too, the right way to reach it. From our feet the grand glacier, strongly resembling the upper part of the *Viescher-firn* below the *Mönch-joch*, hurled itself madly downwards from the mighty cirque of cliffs. It was a glacier of a rollicking spirit, given to plunge in broad curves over hidden ridges of rock; playing all kinds of practical jokes with grotesque masses of serac; sometimes allowing us to indulge in a glissade where we had expected to be cut off by an ice-cliff, and sometimes playfully opening a large crevasse beneath our feet, and forcing us to take a flying leap which was decidedly more convenient from above than it would have been from below. It was a grand sight to see the heavy weights of the party hesitating for a few moments above

some such chasm, and then come flying through the air with the swoop of an eagle and the grace of a coalsack. It was delicious to go head over heels in a huge bank of knee-deep snow, and feel that the farther you fell the more trouble you saved. Without a single serious check we rushed at the *pas gymnastique* from the foot of the first snow-slope, which was a little too steep to be trifled with, to the point where we had to leave the glacier. And it is only necessary to say, for a rule to our followers, that they will not go far wrong if they keep as much to the left as possible during the descent. The knowledge acquired by Kennedy's party on their former expedition was of material service to us in discovering the precise route to be followed. The Glacier de Freboutzie itself falls over cliffs through which it is impossible to find a way. But, by crossing the ice which descends from the Aiguille de L'échaud, just above the point where the torrent bursts forth in a waterfall, a lofty patch of grass is reached on the northern side of the lateral valley. Thence to the floor of the Val Ferret there is a rather troublesome walk. It is necessary to find a passage through some rather slippery rocks, and when at their base to cross a region covered with huge loose stones, which appear to be the ruins of a gigantic moraine. For half an hour, I should think, we were risking sprained ankles across this detestable wilderness; but safety and luxury were at the other end. It was a delicious walk that afternoon down to Courmayeur. Delicious was the milk which an old woman brought from a *châlet* in return for a franc, volunteering to throw a prayer for our souls into the bargain. Delicious, too, was the rest under a clump of fragrant pines, rendered still more fragrant by our fumigation, on the edge of the flooded meadows. And most delicious was the view of the soft Val d'Aosta which opened upon us as we rounded the Mt. Saxe, and saw the group of inferior mountains round Courmayeur, whose graceful forms and rich hues announce their Italian character. With all my love for the sterner scenery of the hither side of the Alps, and my dread of demoralisation in the lazy atmosphere of the South, I cannot deny that Courmayeur is one of the very most exquisite of all Alpine scenes. I felt friendly towards the good-natured Italian bathing guests, who stared at their uncouth visitors from the ice-world as their classical ancestors might have stared at a newly-caught Briton. Even that noble creature who rejoiced in the costume of our operatic bandit by way of tribute to the general spirit of the place, was pleasant in my eyes; for was not his

presence suggestive of good inns, where we might luxuriate in some comfort, and with less interruption from Cockneydom than at Chamonix? The next day was spent as the day after a grand expedition should always be spent—in chewing the cud of our recollections whilst lounging about the lovely Courmayeur meadows. We lay in the sun in company with basking lizards, alternately watching the idiotic pranks of the grasshoppers, who are always taking the most violent and purposeless exercise in the middle of the day, and speculating on the possibility of making a direct escalade of Mont Blanc by the southern buttress. That feat still waits for a performer. Loppé and I returned next day to Chamonix by the Col du Géant, arriving at about the same time with the telegram which we had despatched on our arrival at Courmayeur.

And now it only remains for me to give an impartial estimate of the merits of our pass. Its height is not marked upon the French map, and I can only conjecture that it is approximately the same as that of the Col du Géant. Comparing it with that king of passes, I may say, in the first place, that it would probably occupy a rather longer time on an average. Six hours brought us from Montanvert to the summit, and six more took us to the inn at Courmayeur. The first six might have to be indefinitely extended in unfavourable conditions of the snow. I do not think, with some of our party, that we were exceptionally lucky in this respect. I am rather inclined to the opinion that the new snow bothered us on the rocks more than it helped us in the chimney. This is a matter on which subsequent experience must decide. The climb, however, of the last ridge will always present greater difficulties than any part of the Col du Géant route, unless, indeed, it should happen that the passage through the seracs, now so easy, should again become troublesome. On the Italian side, again, the Col des Hirondelles, though not exceptionally bad, lies over a very contorted glacier, and may at times be toilsome, especially in the ascent. It, of course, will require more labour than the delightful walk over the Mont Fréty to the Col du Géant. On the whole, therefore, our pass will probably be the more laborious of the two. Comparing them in regard to scenery, I fear that there can be but one reply. The Col du Géant is and must always remain one of the first two or three, if not actually the first, in beauty of all Alpine passes. The partiality of new discoverers has set up rivals to it at one time or another; but its grandeur and variety are always fresh, and nowhere, in my

knowledge, to be fairly equalled. The view towards Italy, the magnificent view of Mont Blanc, the grand basin of the upper glacier, the icefall, still noble in its decay, may be separately equalled elsewhere; but I do not think that any pass, even in the Oberland or at Zermatt, presents so marvellous a combination. The Col des Hirondelles, shut in by the Jorasses, must have but a limited prospect if any, of the great peaks. To my mind, its great charm is in the wild Glacier de Freboutzie, which is the perfection of savage seclusion. I always love these recesses of the great chasm, where the spirits that haunt solitudes have not yet been finally exorcised. Centuries will elapse at our present rate of progress before the Freboutzie will become a sight-seer's glacier, and perhaps by that time it will be a glacier no more. All that I can fairly claim, however, for our new pass is that it may afford a useful alternative to the Col du Géant; but it is eminently beautiful, though decidedly inferior to its superlatively beautiful rival. Moreover, no true Alpine traveller can look at it from the Montanvert without wishing to cross it. If he does, it is my last warning to him that the descent towards Italy, easy enough when the right way is known, requires some local knowledge or careful steering. May our successors have as good fortune as fell to our lot in this as in all other respects. If so, I have no fear that they will be ungrateful to the fortunate discoverers of this, amongst the most familiar of all great Alpine passes as part of a view, though the last to be recognised as a practicable route.

ALPINE NOTES.

THE SOUTHERN ALPS OF NEW ZEALAND.—The following extract from a despatch from Sir G. F. Bowen to the Earl of Kimberley, dated Wellington, New Zealand, February 20, 1873, has been forwarded for publication.

‘A graphic and scientific description of the Southern Alps, explaining their geology and physical geography, will be found in the twenty-first chapter of Dr. Hochstetter's work, which embodies the researches of Dr. Hector, Dr. Haast, and other explorers and naturalists.

‘The Southern Alps proper commence south of the Saddle between the Teramakan and Hurnuni rivers, on the boundary between the provinces of Nelson and Canterbury. Here, in the middle of the southern island, the mountains attain their greatest height, and as far as Haast's Pass, on the boundary of the province of Otago, leading from

Lake Wanaka to the west coast, a distance of 200 miles, they form, in the direction from N.E. to S.W., a chain of towering mountains, which, as to the height of their summits, and as to the size and extent of their snow-fields and glaciers, rival the Pennine and Rhætian Alps. The first navigators on the coast of New Zealand looked already with wonder at those magnificent Alpine heights, clothed in perpetual snow, the giant summits of which now bear the names of Cook and Tasman. The wild forms of the huge rocky masses on the west coast, towering to the skies and bidding defiance to the terrific breakers, were always an object of deep admiration to the sailors visiting these shores; but up to our times, this mountain region remained a wilderness untrodden by the foot of man. On the discovery of New Zealand it was uninhabited, for the natives shunned this solitary mountain wilderness, and it has remained uninhabited to this very day; incontestably one of the most remarkable and grandest objects which have been reserved for the physico-geographical and geological investigations of our times.

'As members of the Alpine Club have already scaled even the peaks of the Caucasus and of North America, it is hoped that some of them may one day be induced to devote their courage, skill, and experience to the full exploration of the Alps of New Zealand. I would repeat that the colonial authorities would doubtless give every assistance in their power to an enterprise which could not fail to add largely to the general stock of geographical, geological, and botanical knowledge.'

BRÈCHE DE LA CHARRIÈRE AND COL DE LA CASSE DÉSERTE.—Mr. W. M. Pendlebury and Mr. Coolidge have, on comparing notes, found that in the passages from La Grave to La Berarde made last summer by their respective parties, two distinct cols were traversed. Mr. Coolidge was therefore in error in identifying the routes, and in fancying he had been preceded.

The Col de la Casse Déserte, first completely traversed last July by Mr. Coolidge, lies between the Grande Ruine and the Tête de la Charrière, that is to say to the north of the latter summit. On the other hand, the new pass made last June by Mr. Pendlebury and his companions, and named by them Brèche de la Charrière, is situated between the Roche d'Alvan and the Tête de la Charrière, in other words, to the south of the latter peak. The two passes lie on opposite sides of a lofty mountain, and differ considerably in height, the Brèche de la Charrière being the lower of the two by from 700 to 800 feet.

TOUR DU GRAND ST. PIERRE, August 12, 1873.—Mr. Utterson Kelso, with Daniel Ballay and Jeantet of Cogne, made the second ascent of this mountain and the first in one day from Cogne. Leaving the village at 1.30 A.M. the party reached the summit at 9.45 A.M., and returned by 2.45 P.M. Ballay discovered a new way to the top after surmounting the steep iceslope, thus avoiding the rock ridge which gave some trouble to the first climbers.

THE ROTHORN.—Mr. F. Morshead, with Melchior Anderegg and Christian Lauener, started from the Zinal hut on August 9, 1873, and crossed over the top of the Rothorn to Zermatt in the astonishingly short space of nine hours (halts included).

The peak must have been unusually free from ice, but its assailants were probably three as light movers over difficult rocks as can anywhere be found. Climbers will do well not to conclude too hastily that the Rothhorn has reached the 'easy morning walk' stage in that degradation which some of the great peaks have recently undergone.

THE COLS DE BRENEY AND DE LA SERPENTINE.—The following note has been received from Mr. T. Brooksbank :—

'The nomenclature of the surroundings of the Breney glacier is somewhat confused, though, given the actual appellations, Nature has almost distributed them for us, as a glance at the federal map will show.

'In ascending the Pigno d'Arolla from the Pas de Chévres, you have a vertical height of more than 3,000 feet to surmount, and the vast snow-field from the Pigno lies towards the north in two great terraces or plateaux, each approached by a steep incline. On August 18, 1873, the snow being good, I gained, in 1 hr. 35 m. from the Pas de Chévres, the first of these terraces called by Mr. Moore (*Alp. Journ.*, vol. v. p. 312) the Col de Breney, but in reality the Col de la Serpentine, the real Col de Breney being the second and higher terrace, which I reached in about an hour more. From the Col de la Serpentine the glacier, which is properly called de la Serpentine, flows down S.S.W. between the Mont Blanc de Cheillon, N., and the peak of the Serpentine S., and at the foot of the Serpentine ridge it loses itself in the Breney glacier, which, springing from the higher terrace, flows in a direction nearly parallel to the Serpentine glacier, between the Serpentine peaks N., and the Pic d'Otemma chain S. I think that they should properly be called separate glaciers, for they are separated by a range which attains to upwards of 12,000 ft., and though they rise in the same névé there is a difference of some hundreds of feet between the levels of their respective sources.

'On August 22, Mr. Hayward and I, with Kaspar and Jacob Blatter (all strangers to our route), left the inn at Mauvoisin at 3.45. We crossed the bridge a mile up the valley, at once mounting somewhat rapidly, and so kept for 2½ hrs. skirting the mountain, till we approached a very small tarn which, though the federal map has a dotted track west of it, we left below us. We got to the Breney moraine at 6.45, took to the glacier at once, and at 8.15 halted for breakfast at its point of confluence with the Serpentine glacier. The view hence, looking up the icefalls of both glaciers, the Rouinette and Mont Blanc de Cheillon on the left, the Serpentine in the midst, and the Otemma peaks on the right, was magnificent; while behind us lay the fine Tour de Boussine, the Durand glacier and Col de Sonadon, the Mont Avril and Col de Fenêtre, the Mont Gelé and the Col de la Crête Sèche.

'The icefall of the Breney is neither long nor difficult; in an hour, half by the rocks, half by the ice, we reached the névé above it; but it would be a better course to take to the ice as soon as possible and bear obliquely across the glacier, for the cannonade of falling stones from the Serpentine is heavy and frequent. Thence 2¼ hrs. of snow-

slopes, gentle but rather soft, brought us to the Col de Breney, and in an easy 20 m. more we stood on the Pigno d'Arolla.*

'From the Pigno, in about 90 min., the snow being in wonderful condition for downhill going, we scampered to the Pas de Chévres, and from its summit reached the Arolla inn in $1\frac{1}{2}$ hrs. The excursion is one of the most varied I have ever made, and it presents a succession of the grandest views; sleeping at Mauvoisin makes it a comfortable day's journey, and it is, I should think, hardly longer thence than it would be from the Chanrion huts. The choice for the night now lies between them and that inn, for the châlet at Lancet was closed this year, and the laudable project of opening a small inn there has broken down. The distance looks on the map very great, but we were out only 13 hrs., of which actual walking occupied little more than 11.'

THE PELMO.—The following letter has been received from Mr. Packe in correction of a footnote to the article on the Pelmo in which it was stated that in his and Mrs. Packe's ascent the way described in the Journal had been followed. The curious similarity in character and even detail of the two routes which lead to the upper portion of the mountain, at first misled both Mr. Packe and the Editor. To avoid further mistake and confusion, it may be stated that the route taken by Mr. Ball and Mr. Freshfield starts where the ridge dividing the Zoppé and Ampezzo valleys abuts against the Pelmo; Mr. Packe's from the opposite, or south-west corner of the mountain. The gap between the Great and Little Pelmo might probably also be reached by step-cutting from Val Fiorentina. Some climbers should go up one way and come down the other, and draw a comparison between the two.

'I have read the "Ascent of the Pelmo" in the last number of the Journal with much interest and attention, and both my wife and I feel convinced that the route there described was different from that by which we ascended.

'Two reasons alone will show that our course must have been different. First, in our ascent along the ledges, our left shoulder was always to the rocks, and our right to the precipice; whereas, in the sketch (which represents the party on the ascent) it is the reverse. Secondly: in no part of our course did the cornice above come sufficiently low to force us to lie down, or, as far as I remember, even to stoop; though at one corner, there was a rift in the rock to step over, quite as formidable as that represented in the sketch.

'I am not well acquainted with the names or positions of the villages on the south side of the Pelmo, or the glens that lead up from them, but from the scanty notes I took, I believe I can give our course pretty correctly.

'Our guides were Angelo Dimaj and Alessandro Lacedelli of Cortina. Starting from this place about 10 a.m., July 21, 1870, we

* The Col de Breney is perhaps scarcely a Col in a strict sense, for the Serpentine peak, its boundary to the S.W., is hardly, if at all, higher than itself. In ascending the Breney glacier, however, you reach a point whence the Cheillon glacier flows down at right angles to your course, and there is nothing higher than this point, except the Pigno itself.

descended in a carriage along the road to St. Vito. Here we took to our feet, and crossing several woody ridges, thickly tangled with flowers and brushwood, we skirted the southern flank of the Pelmo till we emerged on an open grassy plateau, I should suppose to the S.W. of the Pelmo summit, but I have no note of the compass-bearing.

'On this spot we camped for the night, my guide mentioning some village (if I remember rightly, Brusadaz,) at about an hour's distance below, to which we might have descended. Upon the adjacent rocks there was a profusion of *Pæderota Bonarota*, *Campanula Morettiana* and *Aquilegia Henkiana*, the first rather past flowering, but the last two in full bloom.

'The next morning we started at 4.30 A.M. A gentle ascent of 20 min. over undulating ground brought us to a grassy mamélon, forming an outlying buttress of the mountain. Here we left the heavier portion of our provisions, and at once commenced to climb N.E. up a very steep rocky gully, which separates the detached shoulder, described by Mr. Freshfield as "the antediluvian cub crouching beside its parent." In this part of the ascent, partly over snow, partly over rocks, though the rope was sometimes brought into use, there was nothing very formidable. When at the foot of the ridge which unites the cub to its parent, we turned to the right, traversing transversely a steep talus of schist, with a precipice below, but at some metres distance. After passing this we reached a corner, where the rock came down vertically from above, falling in the same way below; and here the difficulty commenced. For about an hour we were passing along a ledge, which wound round the recesses of the mountain, in one place entirely riven away by a rent in the face of the rock, across which we had to step, while the stones we dislodged fell with a sheer descent to a depth which the eye dared not fathom, but which might have been some 600 metres beneath our feet.

'It is this system of ledges on the face of the perpendicular rock, which, moreover, is crumbling in its nature, that forms the difficulty of the Pelmo; and these cannot be escaped, though they may be varied, approach it from whatever side you will; but, that ours was not the same ledge as that by which Mr. Freshfield mounted is, I think, at once evident from the reasons I have alleged, that our left hand was always to the mountain in ascending, and that there was no place where we were compelled to crawl.

'On emerging from this ledge, the precipice on our left hand broke back, and I take it here we had reached the same spot as that reached by Mr. Freshfield from the opposite side. At any rate, from this spot, his description would exactly apply to our route till we reached the summit, which was still about 1,000 metres above us. All serious difficulty was at an end. Our course lay over steep rocks, laced with streams descending from the glacier, and the only vegetation that attracted my notice was here and there the bright yellow flowers of the Alpine poppy. Above these rocks comes the glacier basin, which we crossed, like Mr. Freshfield avoiding the lower ridges on the left, and keeping to the right close to the highest crags of the Pelmo, which we at last reached after a rough and laborious escalade.

' We seem to have been more favoured than our successors. The day was beautiful, but the view perhaps scarcely came up to what I had expected. The most striking mountain was the towering form of the Antelao, which now came into view for the first time during our course that day. The red crags of the Tofana to the north, were also imposing, but to me the most interesting object was the little town of Cortina, which lay nestled apparently almost at the foot of the mountain, though distant nearly 20 kilometres. With the aid of my telescope I could just discern that there were carts and people in the streets. On the very summit of the Pelmo, 3,163 metres (10,377 ft.), I gathered a fine specimen of *Draba tomentosa*, a plant common enough on the limestone rocks of the Pyrenees at from 2,200 to 2,400 metres, but I have never seen it at any height at all approaching this. I noticed no other flowering plant.

' We remained on the summit from 11.30 to 1 P.M., and then returned by exactly the same route, traversing the same ledge, but this time, of course, with our right shoulders to the rock. After a halt at our camp of the preceding night, we made the best of our way down to St. Vito, which we reached at 7, and drove thence in our carriage to Cortina the same evening.

' The mountain of course may be done quicker, but I give the times, if any other lady should like to try the ascent. In many a traveller the weird sphynx-like form of the Pelmo, as seen from the north, must excite a longing to explore its mysteries. I will only add that anyone intending the ascent cannot do better than secure the services of our guides, with whom in this, as well as in other excursions, we had every reason to be satisfied. Angelo Dimaj, especially, may be trusted in a difficulty, should one occur.'

THE GERMAN ALPINE CLUB AND TYROLESE GUIDES.—Herr Koch, a member of the Munich section of the Deutschen Alpen Verein, has addressed the following letter to the President of the Alpine Club:—
' Dear Sir,—I have read with the greatest interest your letter in the "Times," in which you demand a full explanation from the guides with regard to the awful death of the Russian, and I have also considered your proposal for regulating the Alpine guide system in Switzerland. It would perhaps interest you to know how the German Alpine Club has proceeded in this question in the mountains of Tyrol, more particularly as on some points they have diverged from your proposals. The German Alpine Club, of which I have the honour to be a member, has succeeded in bringing the guides entirely under the control of travellers, inasmuch as they have to give the guide a written testimonial. In a few places in Tyrol, as for instance Kals, Heiligenblut, Preggratten, they have, chiefly through the great exertions of C. Hofman, who heroically fell at the battle of Sedan, and his friend Stüdl in Prague, established Guide-Unions. The members of these unions elect one of their number as President, whose duty it is to manage affairs, to appoint the guides required for ascents, and to act as cashier. It is also his duty to superintend the huts, paths, &c. The funds are kept up by a contribution of a fixed percentage from wages earned in ascents, and

are applied to the maintenance of huts, the purchase of books and maps, and to the relief of members in need, or in case of accidents.

'Every member of the "Guides' Union" must be licensed by the Government. The license is obtained from the office of State, with which the Alpine Club has beforehand placed itself in communication, is only granted to men of undoubted character, who are healthy and strong, and have made several ascents successfully.

'The guide receives, together with the license, an officially stamped book called "the Guide's Book," which is numbered, fixes the quantity of rope required, the scale of charges and other rules. This book must, on demand, be produced to every traveller, who can on inspection easily satisfy himself what ascents, and with what amount of success, the holder has accomplished, and how much satisfaction he has given. The traveller is required, before commencing a tour, to insert his name and destination, and at the end of the journey he is obliged to add whether or no he was satisfied with the guide. In order to obtain good testimonials, a guide will take every conceivable trouble, because contrary testimonials would injure him in his calling in the highest degree; he would not be engaged by travellers for ascents, he would be excluded from the Union, and eventually lose his license.

'Besides this, the guide is aware that travellers are in most cases members of one or other of the Alpine Clubs, and that they could injure him, either by verbal information or by communications printed in the organ of their Club. The guide's book is at the end of each year inspected by the local authorities (magistrates), and, in case of no complaints therein, renewed. The German Alpine Club also derives much information by the inspection of these guides' books.

'Should a traveller desire to be accompanied by any one particular guide, no obstacle is thrown in the way, and his wishes are complied with.

'Since these regulations have been in force the jealousies previously prevalent have entirely disappeared; a general desire to co-operate has sprung up, more especially in erecting huts, and the zeal for acquiring the knowledge required for their particular calling has increased. To my knowledge there has been no complaint, since these regulations have been in force, against any member of the Guides' Unions, and the guides in some parts of the Tyrol have already a good name and reputation.'

It is to the exertions of the foreign Alpine Clubs that we must look for a remedy against the incompetence and extortions of the 'bureaux' a tourist-centres. The Swiss, German, and Italian Clubs do well to use the powerful local influences at their command in the endeavour to raise a school of guides in every valley. In Italy lists of efficient guides are being drawn up in each village by the local members of the national club, and a tariff arranged under the Club's sanction. In the less frequented valleys guides will always be found glad to earn the wages mountaineers are willing to pay for honest service. When it comes to be well understood that foreign guides will go up Piz Bernina or Mont Blanc for 40 or 50 francs, the local talent will have to wait long for a traveller who will submit to be fined 80 or 100.

There is, indeed, one small class, the members of which will be

unaffected by this consideration, and will probably continue, despite any remonstrances of ours, to do their best to frustrate every effort to settle on a fixed and satisfactory basis the relations between travellers and guides. We refer to the tourist, sometimes English, who, inasmuch as his object is to appear what he is not, may be distinguished from true climbers as the 'climbing snob.' He may generally be recognised by his careful avoidance of glacier passes, which he considers laborious and unprofitable. He is anxious, for the sake of the boast only, to reach the top of one, or perhaps two, of the most famous peaks. To insure the accomplishment of this purpose he engages a staff of guides sufficiently strong to hoist a burden of his weight and size to the desired pinnacle. But the situation of a sack is not always pleasant for an animate object; the guides, moreover, are apt to take a malicious pleasure in exciting the fears of their employer; so that the experiences of his expedition divide themselves simply enough into 'the difficulties of getting up, and the horrors of coming down.' The pleasure he looks for is in the future, and begins only when, brought back safe to his inn, he can glorify himself and his exploit by distributing among his escort double or treble the sum which they have been accustomed to ask.

To a man of this sort, who illustrates the old quotation by going up mountains

'Ut pueris pluceat et declamatio fiat,'

we cannot appeal as to a fellow-climber. But there is one reflection we would urge on his notice. How far does he succeed in his object? 'To the boys who tie him up in ropes,' to speak in his own dialect, he certainly becomes a perpetual pleasure, but it is because 'der armer Herr,' with his troubles and misadventures, affords them a subject for innumerable stories with which to enliven the bivouacs of their regular employers. Thus the fame which awaits the climbing snob is also to some extent our revenge.

We have wandered somewhat from the topics immediately suggested by Dr. Koch's letter. The German Alpine Club may be sincerely congratulated on the success of its endeavours, and it will have the hearty good wishes of English climbers in pursuing its present course. The key of its system evidently lies in the establishment of close relations between a body exerting to the full its influence as the national Alpine Club, and upright and intelligent local administrators. If we find greater difficulty at Chamonix it must be remembered that we are acting in a country which possesses as yet no Alpine Club, and until lately has had only provisional prefects.

MEDIAEVAL ROUTES ACROSS THE EASTERN ALPS.—Mr. George sends the following note: 'Frederick Barbarossa, when conducting a large army into Italy in 1158, ordered one division of it (the Austrian and Carinthian contingents) to go "per Canalem et Forum Julii atque marcam Veronensem." These are the words of the contemporary Ragewin, continuator of Otto of Freisingen (*Gesta Frederici III.* 25); and the only modern historian in whom I have been able to find any reference to the same fact merely translates the Latin words (über Canale und

Friaul). I presume the route in question to have been that of the Tarvis Pass, which was certainly used in the Middle Ages; but what is the meaning of the name Canalis? The Venetians are said to have applied this term, familiar in their own city, to the valleys running up into the Alps; but the word is here used at a date long before the period of Venetian domination, and therefore some other interpretation must be sought. Can any reader supply information on this specific point, or on the more general question of the ancient routes across this part of the Alps?

In 'The Eastern Alps,' (p. 539) Mr. Ball says: 'The valley below Tarvis is often called Gailitzthal; but the hybrid name Canaethal is more frequently given collectively to the single valley that includes the course of the Gailitz, and the headwaters of the Fella, as far down as Pontebba.' This seems the explanation of the words 'per Canalem,' sought by Mr. George, and at the same time a proof of the correctness of his theory as to the route taken by Barbarossa's army. There is, I believe, authority in late Latin for the use of 'canalis' in the sense of a natural water-channel, and 'Canale (canalium via),' is one of the 'verba expulsa' of Forcellini's lexicon. It seems quite as easy to believe that both the applications of the term have sprung directly from the Latin word, as that one is derived from the other by a fanciful analogy.

'The passes of the Middle Ages' is a chapter in Alpine literature which is still unwritten. Some of the now deserted roads of the Venetian and Lombard Alps were once the world's highways. The Field of Charlemagne and a church said to have been standing in his days are found in Val Rendena. Barbarossa in 1166 passed through Val Camonica. Readers of the 'Alpine Journal' would be grateful to anyone who could bring into a collected form the scattered facts bearing on this interesting subject.

D. W. F.

JAKOB ANDEREGG.—Mr. Moore wishes to acknowledge the following additional subscriptions received; viz.: R. Dees, 5*l.*; A. Johnson, 1*l.*; T. G. Bonney, 10*s.*; E. Clayton, 10*s.*; S. E. D., 1*l.* 1*s.*; C. T. Dent, 2*l.* 2*s.*; T. S. Kennedy, 2*l.* 2*s.*; A. Wills, 1*l.* 1*s.*; Captain Marshall Hall, 12*fr.* 50*c.*; Mr. Flinn, 5*fr.*; E. C., 10*fr.*; Sir H. Thompson, 20*f.*; E. W. Wilmot, 20*fr.*; T. Biffel, 5*fr.*; G. Chater, 10*s.*; H. Hutton, 1*l.*; J. Stogdon, 1*l.*; J. Robertson, 1*l.*; W. Bushell, 5*s.*; W. J. Bull, 5*s.*

CHAMONIX GUIDES.

The following answer was sent by the Guide Chef to the letter of the President printed in the last number:—

'Chamonix, le 2 novembre 1873.

'Monsieur le Président,—En réponse à votre lettre du 20 octobre dernier, j'ai l'honneur de vous dire que M. le professeur Fedchenko Alexis était parti le 14 septembre à cinq heures du matin de l'Hôtel des Alpes à Chamonix avec un guide et un porteur de son propre choix; il ne s'est pas adressé à la Compagnie des Guides, que je dirige, aussi la

Compagnie n'est-elle pas responsable du malheur irréparable arrivé à l'infortuné voyageur.

'Ainsi escorté il est arrivé au Pavillon du Montanvert vers huit heures, et après une trop légère collation il est reparti, emportant pour lui et ses compagnons de très-faibles provisions, se promettant de revenir le même jour.

'Ce voyageur désirait aller observer la formation des nevés sur le Col du Géant. À trois heures seulement il est arrivé au rocher nommé "La Vierge," malgré le temps qui se montrait très-menaçant, et contrairement à l'avis répété de son escorte, qui l'avait engagé plusieurs fois à rétrograder à cause de la tempête qui s'annonçait imminente.

'Se voyant de plus en plus harcelé par la pluie, l'orage et la neige, et de plus par un brouillard épais, il se décida enfin à rebrousser chemin, lorsqu'on lui eut affirmé qu'avec de tels obstacles on ne pouvait arriver au Col du Géant et redescendre à Montanvert. Il était vêtu très-légerement; une redingote et un pantalon d'été avec un chapeau de toile composaient tout son accoutrement, sauf un caleçon. Dès les premières ondées la pluie l'avait déjà tout transpercé, et ne pouvant avancer qu'à grande peine et sans pouvoir s'échauffer par la marche dans les difficultés de la traversée des seracs du Géant, par un temps affreux, le froid a glacé ses membres et une grande lassitude s'est emparée de lui, à ce point que pendant près de cinq heures il a fallu le supporter sous les bras, ou de la manière dont on pouvait, jusqu'aupres de Tacul, où ils sont arrivés vers les neuf heures du soir. Là ses forces lui manquèrent complètement; force fut à ses compagnons de le coucher sur la glace près d'une pierre, ne pouvant trouver dans ce lieu aucun refuge où pouvoir le transporter; eux-mêmes étaient dans un état pitoyable, et le froid se faisait rudement sentir.

'La nuit était des plus noires, et l'orage continuait à leur fouetter le visage. C'est dans cette situation que le guide Payot Joseph et Payot Prosper, son frère, porteur, l'ont gardé, faisant tout leur possible pour réchauffer le malheureux touriste.

'À deux heures du matin, le croyant sans mouvement, les deux frères se décident à le laisser dans cette situation, et demi-morts eux-mêmes, se traînent plutôt qu'ils ne marchent pour aller chercher du secours au Montanvert, où ils arrivent à quatre heures et demie du matin, tombant de lassitude et pouvant à peine parler.

'Quatre hommes volent aussitôt au secours du voyageur, munis de tout ce qu'il fallait pour le ranimer: peine inutile; tous les efforts ne peuvent le ramener à la vie; il était gelé—perte irréparable et regret-tée de tout le monde.

'M. Fedchenko était d'une forte complexion et apparence; peut-être a-t-il trop compté sur ses forces et négligé les moyens hygiéniques que prennent habituellement les touristes pour de telles courses, qu'il est péri. C'est l'opinion publique.

'Telles sont, M. le Président, les documents que je puis vous donner, aussi exactement que j'ai pu les recueillir, au sujet de l'infortuné voyageur que je regrette vivement. Maintenant, M. le Président, vous me demandez d'établir une série des guides par catégorie. C'est une question que je laisse à débattre; je ne puis m'en charger, surtout que

je suis dans ma dernière année de service; j'en laisse les soins à mes successeurs. Je suis loin, malgré cela, de désapprouver votre avis; il serait peut-être très utile. Cependant je me permets de vous dire que la société des guides ne mérite peut-être pas autant de diffamation qu'on veut bien lui en infliger; il est vrai qu'il n'y a pas de règles sans exception, mais si un malheur est arrivé, la dite société n'en est pas la cause. Néanmoins il existe des abus que je tiens essentiellement à corriger.

'Agréez, M. le Président, l'assurance du profond respect de votre très-humble et dévoué serviteur,

'BALMAT, Guide Chef.'

However desirable it may be to turn from fruitless discussions of the past to suggestions of practical use for the future, there are some passages in the Guide Chef's letter which cannot be passed over without comment.

The history of the fatal expedition there given may be accepted as in the main accurate, allowance being made for some natural local colouring. In two important points, however, it seems to differ from the story previously told to Mr. Wills, the remainder of whose letter to the *Times*, omitted in the last number, is now reprinted.

'The three days before September 14 had been extremely fine, and had presented all the appearance of settled weather. The barometer fell on the Saturday evening, but it was not extremely low on Sunday morning, and the early part of the day was, to all seeming, finer than ever. A critical eye could detect something too much of transparency and blueness in the atmosphere, but still there was nothing to suggest what followed. I speak from my own observation in the neighbouring valley of Sixt, not ten miles distant as the crow flies, and having had my attention directed to it at the time by the very remarkable change which ensued. From 9 to 12 o'clock the barometer fell very rapidly, but up to nearly mid-day there was not a cloud to be seen, and the sun shone with unusual brilliancy. I am told that at Chamonix the weather remained fine till a somewhat later period. All at once the temperature fell, it became chill and raw, and with a rapidity which, during more than twenty autumns spent among the Alps, I never saw equalled, dense clouds appeared all over the sky; by 1 o'clock we had a fierce storm of wind and cold rain, and thoroughly bad weather continued for several days. I do not think anyone could have anticipated so severe and so sudden an outbreak. I remember only one similar incident. Seven years ago I ascended the Pic de Tinneverges with a party of friends, including two ladies. We had slept at some chalets, so that we had no opportunity of inspecting the barometer that morning, but when we started at 4 a.m. every visible sign seemed to give absolute assurance of fine weather. When we were approaching the summit we were engaged for a couple of hours in some difficult climbing, which completely occupied our attention, while the conformation of our mountain shut out from us the distant view. We emerged suddenly on to the summit, and, to our horror and astonishment, beheld a black wall of dense cloud, which seemed to reach from the earth to the very heavens,

advancing towards us. In five minutes after our first warning of bad weather the storm was upon us, and we were enveloped in mist, snow, and sleet, and exposed to a violent and bitter wind. We escaped with nothing worse than extreme discomfort; but had we been on the upper snows of the Col du Géant, instead of upon a mountain barely 10,000 feet high, I cannot tell what our fate might have been. The first notion of the Payots, to attempt to reach the Col and descend to Mont Fréty, was right. From the top of the Col du Géant descent on the south side is safe and easy in almost any weather and under almost any circumstances. I was once caught in a *tourmente*, and a very bad one, near the top of the Col du Géant, and as soon as we could find the rocks we knew that we were safe, though we could not see ten paces before us; but in such weather as that of September 14 last it was impossible to persevere in the attempt, especially with a traveller already fatigued and exhausted.

'The story that the provisions were insufficient was, I believe, invented by the person who had recommended the expedition. It had no foundation; bread and cheese remained in Mons. Fedchenko's wallet after his death. The amount of his bill at the Montanvert, 26 francs, after every allowance made for the extortions of that place, proves their sufficiency. The two Payots were, I believe, guiltless of this invention. Prosper told his story to me without hinting at anything of the kind. The only thing they had not, which might possibly, and only possibly, have served to give the unfortunate traveller enough of temporary stimulus to have enabled him to reach a place of safety was a little brandy; but no complaint was made to me of this deficiency, and though the story was willingly adopted by the population of guides and persons of that class, "la boutique de Chamonix," I do not think the two men themselves were responsible for it.'

The story of the insufficiency of the provisions, so much insisted upon at first at Chamonix, had apparently been disproved by the production of the Montanvert bill, and Mr. Wills believed the Payots guiltless of its invention. How came it then to reappear? Again, the suddenness of the storm was the ground on which we were at first asked to excuse the guides; now their chief told us that 'La tempête s'annonçait imminente,' and asserted for the first time that the delay in turning back was due to the obstinacy of the traveller in disregarding the repeated warnings of his escort.

These discrepancies were sufficiently serious to make it seem right to endeavour to obtain from Chamonix a statement as to which of the two versions the Payots themselves finally adopted, or how they would wish them to be reconciled.

The application resulted in the following very interesting letter from Mons. Loppé:—

'Vous me demandez quelques éclaircissements sur les relations publiées à propos de la mort du professeur Fedchenko, arrivée sur le glacier du Géant au mois septembre dernier. Les récits de M. Wills et du Guide Chef, qui ont l'air de se contredire en plusieurs points, se complètent plutôt l'un par l'autre. Celui de M. Wills est de la plus grande vérité. Ainsi il est de fait que M. Fedchenko, ne devant

faire qu'une course d'une journée, n'a du emporter des provisions suffisantes que pour la course. La somme de 26 francs 50 centimes qu'il a payée prouve que pour une simple promenade d'un jour il était très-amplement pourvu. Mais forcé de rester la nuit sur le glacier par des circonstances qu'il était impossible de prévoir, ces provisions devinrent insuffisantes. À partir de deux ou trois heures de l'après-midi ces trois hommes n'eurent plus rien à manger et surtout à boire; c'est ce qui fait dire au Guide Chef qu'ils n'emportèrent que de très-faibles provisions. Partis de Chamonix par un temps superbe, le mauvais temps les surprit au-dessus des seracs du Géant; il devait être une heure ou deux de l'après-midi à ce moment. Le matin de ce même jour deux jeunes touristes, accompagnés de deux guides de Chamonix, après avoir couché la veille au Montanvert, étaient partis pour franchir ce même col à cinq heures, et ils avaient pu arriver sur le col avant que l'orage éclatât, quoiqu'ils aient eu assez de peine pour trouver le passage, à ce que m'a dit Édouard Cupelin, qui était un de ces guides.* Vous savez ce que c'est que le brouillard dans la montagne. Souvent on croit qu'une tempête menaçante se prépare, puis au bout de quelque temps un souffle de vent disperse les nuages et le ciel bleu reparait et fait regretter au voyageur prudent l'idée qu'il a eu d'abandonner son entreprise. M. Fedchenko et les guides voyaient bien le ciel tout sombre au-dessus du glacier de la Brenva et de la Tour Ronde, mais ayant les traces des voyageurs qui les avaient précédés quelques heures auparavant, ils durent penser qu'il leur serait plus facile d'atteindre le col même par le brouillard que de redescendre les seracs, que le voyageur peu habitué à ce genre de glaciers si bouleversés avait dû avoir assez de peine à escalader. C'est ce qui expliquerait sans doute le dire des guides qui prétendent que c'est le voyageur qui a insisté pour continuer la route. Mais personne sauf les Payots ne peut savoir la vérité là-dessus, et il est très-probable qu'ils n'ont pas dû faire grande résistance à cette idée, qui devait leur rapporter 20 francs de plus à chacun. Certes ils ne prévoyaient pas que ce mauvais temps (et dans les montagnes on appelle mauvais temps tous les nuages qui cachent la vue) se changerait en tempête. En effet l'orage ne fit qu'augmenter de force, ainsi que l'a si bien décrit M. Wills. La pluie, la grêle et la neige, chassées par le vent, vinrent inonder les malheureux voyageurs, qui eurent toutes les peines du monde à arriver au fond de la grande plaine de neige qui se trouve au-dessus des seracs et s'étend jusqu'aux rochers de la Vierge. Les traces des précédents voyageurs furent bientôt effacées par le vent et la neige. Leur position devenait terrible. Impossible de trouver le col par un temps pareil. De grandes pentes ondulées conduisent au seul passage par où

* The following is the account given by one of these gentlemen:—'We were sitting down near La Vierge, looking back towards Chamonix, in which direction the view was perfectly clear, when almost in a moment the storm was upon us. Ten minutes later we could not see from one end of the rope to the other. We were a little over an hour in reaching the rocks at the top of the pass, aided by tracks of the day before. There were puffs of wind at times which blew the leading guide off his legs. I shall never forget the sense of relief that seemed to come over the guides on finding the rocks.'

l'on peut descendre dans la vallée d'Aoste, et j'ai vu des guides les plus expérimentés obligés de revenir sur leurs pas dans des moments bien moins effrayants que celui où se trouvait M. Fedchenko et ses deux compagnons.

Force leur fut de revenir en arrière, lorsqu'ils avaient l'espérance d'atteindre au bout d'une heure les rochers qui étaient leur chance de salut. C'est alors que les deux Payots ont déployé une énergie et une vigueur vraiment remarquables. Leur voyageur, abîmé par l'orage, mouillé jusqu'aux os, grelottant de froid, n'ayant aucun cordial pour ranimer ses forces, s'affaiblissait à chaque effort qu'il faisait pour marcher. La descante des seracs dut être une chose bien pénible et bien difficile à exécuter. Obligés de soutenir et souvent de porter à tour de rôle cet infortuné, il est vraiment extraordinaire qu'ils aient pu descendre jusqu'au bas du glacier du Géant. Je ne crois pas que les hommes du tour de rôle qu'aurait pu recommander le Guide Chef en eussent fait autant. La nuit arrivait quand ils se trouvèrent au pied des seracs. Ils traînèrent l'infortuné M. Fedchenko pendant une heure environ plus loin dans un endroit où il faut traverser de nouveau le glacier du Géant pour arriver à l'angle d'où l'on quitte les glaces pour atteindre le Montanvert. Déjà plusieurs fois M. Fedchenko, épuisé, anéanti, avait supplié les guides de le laisser et d'aller eux seuls chercher du secours. Ils ne voulaient pas l'abandonner. Cependant l'aîné des deux frères, moins fort et moins robuste que Prosper, était lui aussi dans un pitoyable état. Son frère était obligé de le secouer, le battre même, pour le tenir réveillé et ranimer ses sens engourdis. Cette nuit dut être bien affreuse pour ces deux hommes. Pendant cinq heures ils restèrent stationnaires près d'une pierre, recevant la pluie, sentant le froid les envahir toujours de plus en plus. D'après tout ce que j'ai entendu dire de précédentes catastrophes dans ce genre, M. Fedchenko a dû s'engourdir peu à peu ; ses pensées ont dû s'éteindre avant ses sens, et quand ses guides l'ont laissé ce ne devait plus être qu'une masse inerte ne devant donner que quelques signes de vie.

Faut-il, cher monsieur, jeter une réprobation complète sur l'acte qu'accomplirent ces deux hommes dans ce moment ? Épuisés par une lutte mortelle de douze heures avec les éléments déchaînés contre eux et dans ces localités si sauvages, voyant la mort qui étreignait leur voyageur, et qui allait les surprendre eux aussi, effrayés sans doute par des idées superstitieuses qui existent toujours dans le fond du cœur des montagnards, ils se décidèrent à aller demander des secours qu'ils ne pouvaient donner eux-mêmes. Certes je n'approuve pas leur action, mais si je me transporte en idée auprès d'eux dans ce moment, je suis bien près d'excuser leur résolution, qui pouvait seule sauver peut-être M. Fedchenko s'il avait pu vivre quelques heures de plus. C'est dans le plus pitoyable état qu'ils arrivèrent au Montanvert, et il fallut même qu'on portât Joseph sur un lit, ses forces complètement épuisées ne lui permettant pas de se soulever du banc sur lequel il était tombé.

Ainsi que vous l'avez si bien dit, de même que M. Wills et ce dont a convenu le Guide Chef, lui aussi, il y a beaucoup à faire pour améliorer

et l'amener la Compagnie des Guides de Chamonix à être une société d'hommes qui puissent rendre des services aux voyageurs et regagner l'ancienne réputation qui a rendu célèbre autrefois cette même Compagnie. Les vrais coupables de cette décadence bien constatée ce sont les autorités supérieures du département qui, au lieu d'écouter les sages avis de gens expérimentés, ont décidé tout avec une infatuation incroyable et ont amené une vraie décadence matérielle et morale dans cette vallée dont les habitants sont, au fond, si intelligents et si honnêtes. Le tarif énorme des grandes courses a excité l'envie de tous les gens de la commune ; ils ont abandonné en grande partie tout travail journalier pour se livrer à un métier alléatoire, qui permet aux plus heureux de gagner des sommes considérables dans quelques heures. Un des derniers préfets d'Annecy porta le coup le plus funeste en édictant un nouveau règlement qu'on peut appeler déplorable. Les quelques garanties qu'avaient les voyageurs disparurent complètement. Les examens des guides se firent d'une manière dérisoire ; un grand nombre de les certificats présentés par les assistants guides étaient faux pour les grandes courses, et le nombre de ces guides augmenta considérablement ; on en compte maintenant plus de 320. Le guide chef est nommé par eux, et naturellement il est obligé de tout sacrifier aux caprices de la majorité. Autrefois il était nommé par le préfet, et se trouvant dans une position indépendante des voyageurs et des guides, on pouvait s'attendre à quelque impartialité de sa part. Celui qui est maintenant à Chamonix, dégoûté de tous les embarras qu'on lui suscite, ne veut plus continuer ses fonctions, qui sont devenues intolérables pour un homme de cœur. Et pour fermer la bouche à ceux qui pourraient se récrier contre cet état de choses, l'avant dernier article du règlement déclare que tout étranger à la Compagnie des Guides, habitant ou non la vallée, qui se mêlerait en quoi que ce soit de cette compagnie serait poursuivie devant les tribunaux ! Je vous ferai remarquer, cher monsieur, que c'est un préfet nommé par M. Gambetta, un homme qui se dit républicain depuis nombre d'années, qui a édicté une pareille ordonnance, qui ferait rougir un Cosaque ou un Turcoman. Aussi pour ne pas avoir maille à partir avec les autorités françaises et être à l'abri de poursuites judiciaires, si je dis que le règlement des guides de Chamonix n'est pas le plus excellent de tous les règlements, je vous écris ces quelques pages depuis Genève, hors de France, et elles vous seront envoyées en Angleterre. Voilà où conduisent l'arbitraire et les privilèges. Je ne doute pas cependant que si les clubs alpins faisaient des réclamations au ministre de l'Intérieur à Paris, on ne prenne en juste considération les demandes raisonnables qui lui seraient présentées. J'ai lu dans des journaux que le nouveau gouvernement que possède la France veut rétablir et faire fleurir l'ordre moral dans ce pays. Ce serait une chose bien nécessaire que de commencer par la vallée de Chamonix. Quand le ministre de l'Intérieur aura pris connaissance du règlement des guides promulgué le 10 avril 1872 et signé " Jules Philippe, préfet de la Haute-Savoie " (un chef-d'œuvre d'arbitraire et de communisme mélangés), il faut espérer qu'il donnera des instructions précises au nouveau préfet de département. C'est aux clubs alpins anglais et suisses à tenter de nouvelles démarches à

Paris. Il serait très inutile de s'adresser aux habitants de la vallée de Chamonix pour introduire des améliorations dans le règlement qu'ils possèdent. Leurs idées et leurs instincts sont en complet désaccord avec ceux des voyageurs, et ce n'est certes pas leur guide chef qui pourrait les convertir. Ce n'est que leur employé, leur factotum, l'homme payé pour tenir les écritures et avertir les possesseurs de mulets pour le tour de rôle. Du moment où ils pourraient penser qu'il ne suit pas leurs sentiments, il serait forcé de se retirer s'il ne voulait pas être délaissé l'hiver suivant en faveur d'un autre plus dévoué et plus en concordance avec leur manière de voir.

'Ce qu'il y aurait de préférable, ce serait si le préfet choisissait en dehors du pays un homme intelligent, ferme, rompu aux affaires—par exemple, un ancien sous-officier de gendarmerie—pour être nommé guide chef. Il serait bientôt au courant des courses de la vallée et de la valeur de chaque guide. Au bout d'un mois il en saurait autant que les derniers guides chefs qui ont soit-disant dirigé la Compagnie. Il pourrait être juste et impartial entre les guides et les voyageurs, et je suis sûr qu'au bout d'un certain temps les habitants de la vallée s'apercevraient qu'ils auraient singulièrement gagné au changement de situation, quand bien même les grandes courses seraient réduites à un taux raisonnable, pareil à celui des vallées suisses—c'est à dire, moitié moins élevé qu'il ne l'est maintenant. Ce tarif n'est qu'une prime accordée aux imprudences; c'est en vue des dangers à courir qu'il est établi et non pour remunérer les peines, les fatigues et l'intelligence d'un homme. C'est ce qui explique le nombre considérable d'accidents arrivés dans les montagnes de la vallée de Chamonix, qui à elles seules ont vu plus de voyageurs et guides périr que dans la Suisse toute entière. Comment résister à l'appât d'un gain de 100 francs pour l'ascension du Mont-Blanc, quand bien même il y a un grand danger à affronter la tempête? Si le plaisir et non les risques de mort était seul payé dans des courses pareilles, les guides battraient prudemment en retraite au premier indice de danger. C'est ce qui arrive pour l'ascension du Mont-Rose payée aux hommes de cette localité 40 francs seulement, quoique cette course soit plus difficile que celle du Mont-Blanc par le beau temps. Il en est de même pour toutes les autres vallées de la Suisse.'

With regard to the Payots we feel more difficulty than Mons. Loppé in reconciling the diverse stories which have been told, but we have gladly put forward every reason which can be offered to prove that the fatal event was under the circumstances inevitable.

On the more general question Mons. Loppé, as a resident of twenty-five years in Savoy, as well as an ardent mountaineer, writes with peculiar authority, and his statements and remarks form the best possible comment on the further correspondence printed below.

'Alpine Club, St. Martin's Place, London,

November 11, 1873.

'Dear Sir,—I beg to acknowledge the receipt of your letter of November 2, relative to the death of M. Fedchenko, and I must admit that, so far as the choice of guides by M. Fedchenko is concerned, the Bureau is completely exonerated.

‘With reference to the guide system of Chamonix, it gives me great pleasure to learn that you are fully sensible of abuses which demand correction, and that you are far from disapproving the advice which I have ventured to give you. I trust therefore that, notwithstanding the approaching termination of your term of office, you will not leave to your successor the correction of abuses the existence of which you admit.

‘This is especially desirable because it is important that the necessary changes should be made before the next travelling season. I shall therefore anxiously await a further communication from you, and I trust you may be able soon to inform me what steps towards improvement have been taken.

‘I thank you for the promptitude and courtesy of your communication, and remain,

‘Monsieur le Guide Chef, faithfully yours,
‘WILLIAM LONGMAN, President of the Alpine Club.’

‘Chamonix, le 30 décembre 1873.

‘Monsieur le Président,—En réponse à votre lettre du 11 novembre dernier j’ai l’honneur de vous dire que je ne suis guide chef que dans les attributions du règlement approuvé par l’autorité, et non comme un autocrate dirigeant tout à sa guise.

‘La division en catégories des guides de Chamonix que vous proposez sous certains rapports serait assez juste et raisonnable, si de graves inconvénients n’y mettaient obstacle; car on ne peut pas admettre que tous aient les mêmes talents, la même science, la même intrépidité (c’est ce qui existe dans tous les pays); mais comme ce triage, très-épineux à faire, n’est pas de ma compétence, je vous prie d’agréer que je reste au rôle tracé par mon règlement, hors duquel mon autorité n’est rien.

‘D’ailleurs je ne vois pas la nécessité de cette classification que les membres de l’Alpin Club réclament, puisqu’ils possèdent déjà tous les facultés de choisir eux-mêmes leurs guides dans la Compagnie selon leur bon plaisir, et qu’ils en usent assez largement.

‘J’ai moi-même à me plaindre assez gravement de ce que certains membres de votre société se permettent fort mal à propos de critiquer publiquement la Compagnie que je dirige, et de faire circuler des idées sur cette Compagnie qui faussent l’esprit du public étranger en tendant à démontrer injustement qu’elle se trouve mal dirigée. Ces écrivains accusent les guides de Chamonix d’être inférieurs à ceux des pays étrangers—Suisses, Allemands ou Italiens. Ces messieurs doivent bien savoir que les voyageurs sont parfaitement libres dans un pays libre de choisir les guides qu’ils désirent dans un pays ou dans un autre.

‘Mais je puis vous assurer sans crainte d’être démenti que les guides de Chamonix sont pour la plupart des hommes courageux, dévoués et intrépides, qui ont donné des preuves non équivoques d’habileté, et qui en sont récompensés chaque année par des lettres flatteuses de remerciement et même des pensions pour avoir affronté une mort imminente à sauver les voyageurs qui s’étaient confiés à eux.

‘On nous accuse de violer le règlement, tandis que ce sont quelques

personnes en dehors de notre société qui se donnent la triste satisfaction de le mépriser * en s'immiscant dans nos affaires, en choisissant par une sordide speculation d'économie des guides en dehors des règles de cette Compagnie établie pour la sauvegarde des voyageurs. Ils préfèrent suivre les avis d'un sommelier obaéqueux intéressé à faire passer un guide médiocre et à bon marché, qui lui promet la bonne main, au lieu de s'adresser au bureau de la Compagnie, qui n'a qu'un seul bout, celui de satisfaire les voyageurs. Ces messieurs devraient savoir par expérience que les bons guides sont trop fiers pour se faire recommander par cette voie peu honorable, et que ce mode est loin d'être une recommandation pour eux.

'Vous me dites, M. le Président, que l'innocence de la Compagnie est bien établie au sujet de la mort de M. Fedchenko,† mais je m'aperçois aux récriminations de quelques membres de votre Alpin Club qu'ils n'en sont pas persuadés comme vous, puisqu'ils font publier dans les journaux des accusations blessantes pour les guides de Chamonix. Ils demandent une guide chef qui soit comme un maître absolu. Ils demandent l'abaissement des tarifs, et c'est là le nœud gordien de l'histoire. Ils désirent fixer eux-mêmes sans tarifs les grandes courses. Ils voudraient par conséquent que le guide marche l'espérance seule dans le cœur, sans savoir à quoi s'en tenir, sur un salaire bien péniblement gagné à gravir les pentes les plus escarpées. Le réglemeut est bien plus sage; voyageur et guide savent ce qu'ils auront à donner ou recevoir pour chaque course. Si les taxes sont un peu élevées, c'est que le montagnard n'a que deux ou trois mois pour faire quelques minces bénéfices pour lui et sa famille, qu'il abandonne sa terre dans le moment seul où il peut la travailler. Sans cette juste rétribution, ne pouvant vivre dans la montagne, il irait au loin chercher sa vie dans des contrées plus hospitalières.

'Vous me pardonnerez, M. le Président, cette longue lettre, mais j'ai voulu vous faire connaître les sentiments qui animent tous les membres de la Compagnie. Persuadez bien à messieurs les touristes que nous ferons tout pour les obliger dans la limite de possible, et que ceux qui s'adresseront à nous trouveront toujours des serviteurs dévoués.

'Agréez, M. le Président, l'assurance du plus profond respect de votre tout dévoué serviteur,

'Le Guide Chef BALMAT.'

Of Balmat's second letter we shall say but little. It would be easy to dispose of the inaccurate assertions and to tear in pieces the flimsy arguments of a production which displays most of the faults of which the 'Bureau' is generally accused, and shows us modern Chamonix reflecting others in the mirror of its own mind. But we cannot afford

* Rule 64 of the 'Règlement' is here referred to. It runs as follows:—'Il est interdit à tout étranger à la Compagnie qu'il soit du pays ou non de s'immiscer dans les affaires de cette Compagnie, soit de se mêler aux questions de réglementation de direction d'administration ou de finance, sous telles peines que de droit.'

† The President's expression was, 'so far as the choice of guides by M. Fedchenko is concerned the Bureau is completely exonerated.' The important qualification has been overlooked.

space to do more than call attention to the guide chef's first misrepresentation. He has, it is true, no power himself to alter the 'Règlement,' but he might, had he chosen, have given effect to our communications, by recommending them to the attention either of the Conseil d'Administration, of which he is, *ex officio*, a member, or of the Préfet of the Department, the authorities empowered to deal with such matters.

In place of doing this he has preferred to contradict, and to impute unworthy motives to, those members of our Club who have spent many summers at or near Chamonix, and have been the most constant employers of Chamonix guides. He must take the consequences of his action, the first of which will be that the Alpine Club will henceforth address itself solely to his superiors.

Good will come out of evil if the contumacy of the 'Bureau' leads to a more thorough exposure of the present abuses at Chamonix, and to the establishment of a new system, which may prove a protection to travellers and exercise a healthy influence on the people of the valley. How the Alpine Club can best effect this, the main object of their interference, has been the object of serious consideration on the part of the Committee. There are two questions to be decided: the authority to be addressed, and the precise nature of the reforms to be insisted upon.

It is now clearly useless to trust to any action on the part of the 'guide chef' or his successors under the present regulations. We must abandon any hope of persuading Chamonix itself, and address ourselves to the French Government. The Club is justified and encouraged in making such an appeal by the success which attended its previous representations made on the same subject shortly after the annexation of Savoy.

The reform we have to press for is not so much the creation of new regulations, as a loyal adherence to and carrying out of those that already exist. The evidence now before us shows that at present those rules which form the only protection of travellers are habitually evaded or violated. Candidates are admitted with sham qualifications, little or no attention is paid to properly-lodged complaints, frequent instances of drunkenness are left unpunished. The existence of these evils points to the need of a stronger and more active controlling authority. We are scarcely surprised to learn that the present 'guide chef' had for several years before his appointment to his present post ceased to act as guide, and had been engaged in the interval, when he was without other employment, as a firer of cannon at the Montanvert and a waiter in several of the inns in the neighbourhood of Chamonix.

Chamonix is evidently not yet capable of self-government, or of exercising, with reasonable discretion, the power of electing its own head. Those who know the valley best have no hope that any chief elected by the suffrages of the present Company will have the power, even supposing him to have the will, to enforce discipline. We must ask, therefore, in the first place, that the rule formerly in force may be reverted to, and the 'guide chef' appointed by the Government. It is necessary that the post should be filled by an officer capable of acting independently of local interests, and of protecting travellers as well as guides. Balmat justly declares that the Company was founded for the protection of travellers, and we have a right to insist that its object

shall be no longer lost sight of, or deliberately set aside, by the narrow and short-sighted selfishness of some of its members.

Our first object is the enforcement of the rules already existing by the restoration of an upright and intelligent controlling power. But there are some other respects in which the 'Réglement' of 1872 requires modification. The rule respecting the qualifications necessary for membership must be made clearer and more definite. Means must also be provided by which ambitious but inexperienced tourists may be assisted, as well as allowed, to select the best guides for glacier excursions. If the classification already proposed, with the consequent degradation into 'mule-passmen' of the greater number of the bureau, is thought too severe a shock on the feelings of its present members, the same object might be effected less invidiously by distinguishing by a star on the printed list the guides who have made over a certain number of 'grandes courses' to the satisfaction of their employers. The names of the expeditions made should also be printed on the list, which it would be the duty of the 'guide chef' to submit to applicants, and which might advantageously be posted in the principal hotels, where it would serve as the best preventive of the touting practices of which Balmat complains. Any such distinction will no doubt be a blow to the communistic principle of equal pay for unequal skill, and as such unwelcome to the Company. But the 'Bureau' is furnished by one of the present rules (article 19) with the means of acquiring all the information requisite for carrying into effect this suggestion, and we can see no reasonable objection to a plan which would reward merit, and, it may be hoped, encourage a spirit of honourable emulation.

The tariff is in general fair and sometimes very moderate, but it should be equalized by the reduction of the charge for Mont Blanc (100 francs). This charge must be altered, not so much for the sake of travellers' pockets, as on account of its demoralizing influence on the valley. The disproportion of the sum gained to the labour or risk incurred, induces all the idlers of the neighbourhood to place themselves on the Roll, and, by making the guides generally unwilling to undertake, or half-hearted in attempting, other ascents more difficult and less remunerative, at once narrows their experience and diminishes their efficiency.

PROCEEDINGS OF THE ALPINE CLUB.

Tuesday, December 16.—MR. W. LONGMAN, *President, in the Chair.*

Messrs. W. Potter, A. P. Boyson, E. W. Ruck, Monier F. Williams, H. Seymour Hoare, E. Gurney, A. F. Leach, Commander H. Salmond, R.N., Rev. F. T. Wethered, and the Chevalier Luigi Gottardo Prina were elected members of the Club.

Messrs. F. Pratt Barlow and C. T. Dent were elected members of Committee, in place of Messrs. Hall and Ormsby, who retired by rotation. The President, Vice-Presidents, Secretary, and other members of Committee were re-appointed for the ensuing year.

The PRESIDENT, after briefly alluding in sympathetic terms to the death of Professor Agassiz, introduced to the meeting Dr. Koch, a distinguished member of the German Alpine Club, and welcomed him warmly as a representative of that Club.

Dr. KOCH returned thanks for his reception, and expressed the great desire of the body to which he belonged for closer relations with the English Club. He went on to give some details of the rapid progress of the German Club, which, founded only in 1869, has recently united with the Austrian, and now numbers over 3,000 members, distributed into thirty-four sections.

Mr. SCHWEITZER read a letter from Mr. Budden, of the Italian Alpine Club, describing the highly creditable efforts lately made by the peasants of Ollomont, in the Val Peline, to convert the Col de Fenêtre, leading into the Val de Bagnes, into a mule-road. For this purpose they have subscribed amongst themselves a considerable sum, which has been supplemented by grants from the Italian Alpine Club.

Mr. STEPHEN read the paper on 'A new Pass in the chain of Mont Blanc,' contained in the present number.

Mr. WILLS congratulated Mr. Stephen on having accomplished a pass which he had himself often thought of attempting. Notwithstanding, however, all the rivals which the enterprise of the Alpine Club has created for the Col du Géant, he still looked on that pass, which he had crossed many times and in all weathers, as the most beautiful of high Alpine routes.

Mr. D. FRESHFIELD thought that in magnificence of scenery even the Col du Géant must yield to the Col de la Tour Ronde, which leads from the *névé* of the Col du Géant to the Brenva Glacier, and adds to the *séracs* and distant panorama of the more famous pass a wonderful near view of the eastern precipices of Mont Blanc, and the glorious ice-scenery of the upper Brenva.*

Mr. MOORE, adverting to observations which had been made as to alternative routes up Mont Blanc from the south, mentioned that last summer a serious attempt was made on the southern rock-face by Messrs. Girdlestone and Utterson-Kelso, with guides of Courmayeur. Leaving that place shortly after midnight, they were by noon only at the foot of the rocks at the head of the Glacier du Brouillard, and were therefore obliged to return to Courmayeur, which they did not reach till 10 P.M.

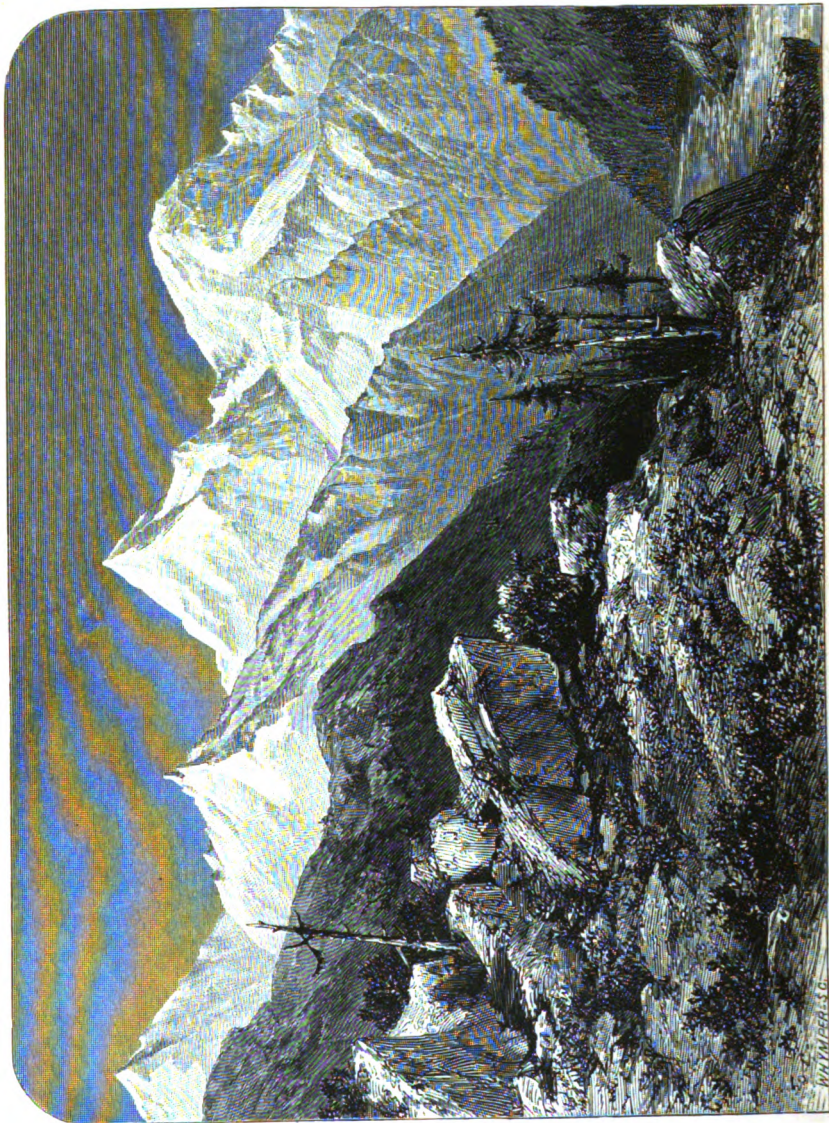
Wednesday, December 17.

The annual winter dinner took place at Willis' Rooms, when 130 members and their friends sat down; Mr. W. Longman, President, in the chair.

Mr. Croft exhibited a large collection of water-colour drawings, and Mr. Coleman some sketches of British Columbia.

Amongst the guests of the Club on the occasion were Professor Marcet and Mr. Shirley Brooks.

* See 'Alpine Journal,' Vol. V. p. 280. A variation of this Pass was made last summer by Mons. and Madame Millot, who crossed on the W. instead of on the E. of La Tour Ronde, and descended to Courmayeur.



THE CANGOOTRE PEAK,
FROM A SKETCH BY W. SIMPSON.

THE
ALPINE JOURNAL.

MAY 1874.

GANGOOTRE; A JOURNEY IN THE HIMALAYAS, TO THE 'COW'S MOUTH,' OR SOURCE OF THE GANGES. By WILLIAM SIMPSON, F.R.G.S. Read before the Alpine Club, February 3, 1874.

AN outfit for Himalayan travelling may be got at any of the hill sanitariums, such as Simla or Mussoorie. Almost no accommodation can be obtained in the villages, because from the notions of the Hindoos on the subject of caste a European would, by his mere entering one of the houses, spoil all the food within it. Hence tents are an essential part of the outfit; also kitchen utensils for cooking, as well as plates, knives, forks, &c. The tent should be what is called a *shouldaree*, which one man can carry on his back, for the roads are such that in many places two men could not act together. A piece of water-proof and some matting or carpet does very well to put your sleeping things on as a bed, and, if rain should come down, your men will always make a *pie* or gutter to lead the water away. Flour and sheep, or bread and mutton, are about the only supplies to be got in the hills, so that tea, sugar, spirits, wines, &c., have all to be carried along with you, and if you are going for a long journey, a good number of men are necessary to carry the stores. Everything is carried on the back in a basket called a *kilta*. Coolies are engaged at times to go right along with travellers, and they may also be engaged at the villages for each march. In a long journey I would recommend having a few men to go on with you, and hire whatever more are wanted at each village, for as your stores get used up, fewer carriers are required. As most travellers have an eye to shooting in the Himalayas, a little variety is by this means added to the daily bill of fare.

The camping ground is generally chosen at a village, so that the servants and coolies may be able to purchase whatever they want, but there is no direct necessity for this. You

carry your house along with you, and you may call a halt at any place. I know of no kind of life so charming as the travelling I had for two seasons in the Himalayas. Your tent is a safe refuge from the weather; you may have almost every comfort. Indian servants cook well, even on a hill side, and you bathe in the stream, which is generally not far from your tert door. It is a healthy life, for you are up in the morning with the sun, and have the march over by breakfast time. Ten or fifteen miles a day is about the average of Indian travelling in camp. Much more could be done, but the servants have to do their day's work, cooking for themselves as well as for you; and this, for the same reason, is about the distance, even on the plains, which a military camp moves. This gives the traveller in the Himalayas about the one-half of each day to himself to shoot, botanize, geologize, sketch, or do whatever his hobby may dictate. Sketching being my object, I was often in the villages. And in these out-of-the-way places the natives believe that every European sahib must be a doctor, so they came to me with their ailments. I did a good deal of medical practice, and in some cases I even earned reputation in that line. My whole medicine chest was contained in my brandy-flask. I cannot affirm that the work could be called profitable, but at last I managed to get a little return for it. My khansaman, or head servant, complained to me that the villagers would not produce some white kind of honey which he wanted for me, nor a particular kind of wool for my hill shoes, and he suggested the use of *bamboo buchsheese* to attain our ends. This is not a good system, and I would only use these means in an extreme case of self-defence. So I said that I thought it could be accomplished in another way, and added that when anyone enquired again about medicine he was to bring them to me. I saw a smile spread over his face indicating the dawn of intelligence, and at the next village two victims were found. I was at some trouble feeling the pulse and looking at the tongue, and then I announced that my medicine chest contained the very thing for their maladies. But there was white honey and wool I required very much; if they could get me some of these articles they would be properly treated. My principal servant was a serious man, and not given to fun or jest, but I could see that he was suppressing a laugh all during the performance. He went off with the two men to get the things required, and reporting that all was right, I gave my two patients half a glass of brandy each, which in actual value in that out-of-the-way locality was worth about ten times the wool and honey. I would recommend all travellers in the

Himalayas to use tact instead of force, and, under cover of being a *hakeem*, or doctor, you may easily attain any reasonable object.

The nearest hill station to Gangootre is Mussoorie; the usual arrangement for the journey is about fifteen marches to the temple, and it is about twenty miles beyond that to the glacier, so that it requires about a month to go there and back.

It may be stated that this journey took place in April and May, 1861.

I shall here give the usual list of marches, and a rough guess at the distances:—

| | Miles |
|-----------------------------------|-------|
| From Mussoorie to Phedi | 11 |
| ” ” Balah | 12 |
| ” ” Lalooree | 12 |
| ” ” Than | 10 |
| ” ” Doondah | 12 |
| ” ” Barrahath | 11 |
| ” ” Moneri | 11 |
| ” ” Batwarri | 12 |
| ” ” Yalung | 12 |
| ” ” Dongully | 11 |
| ” ” Maicha or Sookee | 15 |
| ” ” Jhala | 10 |
| ” ” Deralie | 11 |
| ” ” Biram Ghatee | 9 |
| ” ” Gangootre Temple | 9 |
| ” ” Glacier | 20 |

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Mussoorie stands high, and the route from it descends to the eastward. After getting down into the valleys we found it hot towards the end of April. At midday the thermometer stood at 94° and 105° in the shade, but it was always cool in the evenings.

On the fourth day's march we came upon 'Gungajee,' as the natives call the sacred river. It has four sources—the Bhagiratha, the Aluknanda, the Jahnuvie, and the Bishengunga.* All these sources are sacred, but the Bhagiratha is esteemed to be so the most of all, and it is the most frequented by pilgrims. They are all large bodies of water, and the Aluknanda is reputed the largest; but when the 'source of the Ganges' is spoken of, it is always understood to be the Bhagiratha that is meant; and it is along the course of this

* Bishen is from *Vishen* or *Vishnu*.

branch that our route now lies to the glacier from which it issues.

I shall quote from notes made at the time, as they will give the best idea of our marching.

On the fourth march, about half way, we came in sight of the Ganges, and our tents were pitched close to the bank of the river at a very pretty spot. Met a lot of men travelling; one of them wanted medicine. I felt his pulse and looked at his tongue; after this each came up to be operated upon in the same way. One of them was a very stout fellow, with a great development of calves. He presented his wrist and tongue for inspection, with a serious complacency which was very ludicrous in such a healthy subject. After some laughter I told him he was in good condition, and would live to be a very old man, whereat he went off highly pleased. They all manifested a desire, although nothing was the matter with them, to have their pulses felt. One fellow rather amused us by the description of his disease, which was a little too complicated for our *materia medica*.

The march to Doondah is a long one. It is on the right bank of the river, and is tolerably level. The scenery is not particularly grand, the snowy peaks not being visible. There are many flat patches on the banks of the river, and the water-worn boulders of all sizes indicate that its bed has often changed, not only in its course but also its height. Some thunder to-day and a few drops of rain, which made it cool.

The next march to Barrahath is very level. A great deal of flat land on the right bank of the river, all alluvial. Passed many comfortable-looking villages, at one of which I stopped and got some milk, and in return prescribed for all sorts of malady. Barrahath is a large place, villages all round. There are a good many temples, and one with a large brass trident was said by the villagers to have been built by Maha-Deo himself. I found here, as in the season before, that the villagers, when you wanted anything, always replied 'Ooper milliga,' or You will find it when you go higher; but when it is a commodity they do not wish to part with, you never reach the spot where it is to be found. We expected to get hill shoes at this place, but were disappointed. We found here a strange encampment of Llamas, Chinamen, Ladakees, or, as they are called, 'Bot log,' and many types of people from all parts of the Himalayas. Thunderstorm came, with wind in such gusts that our tents were in danger of being blown away, but it made the air cool.

The next march was to Moneri, and was pretty level the

whole way. Passed a couple of villages, at one of which we found a maker of hill shoes, who undertook to supply an unlimited order, and to execute it he came on with our camp. These shoes were made of leather and wool; they only lasted a few days, but they were very cheap, and being comfortable we rather liked them. A woman was brought to me here with a very large tumour in the neck; it was quite as large as her face, but she felt no ill effects from it, only that from its compression of the throat there was a slight difficulty in breathing. A crowd gathered, and I noticed how prevalent tumours were among these hill people. On being asked if I had any medicine for this disease, I held up my penknife, and said that was the only remedy. The meaning of this figurative reply they quickly understood.

Batwarri was our next halting place, and rather a long march. A good deal of thunder, and about two hours' rain, which made it cool. Still, in the sun at midday the thermometer stood at 85°. There was a temple in this village in rather a dilapidated condition, and remarking to some of the villagers that it would most likely tumble down some day soon, they said, 'No, Sahib, it will not fall, because it was built by Maha-Deo—this is one of the titles of Siva. On hearing this I inquired if Maha-Deo was a stone-mason? This question produced a grin on the face of some of our coolies. Seeing that the roof of the temple was of wood, I backed up my first interrogation with another—'Is Maha-Deo also a carpenter, and does he practise all trades? for if he could manufacture hill shoes we would engage his services.' Our coolies now laughed quite outright at the simple villagers. This struck me as being a very good illustration of what seems to hold true in all times and places, that no matter how absurd a man's own notions may be as to what he believes in points of faith, he will yet laugh at what cannot be more absurd on the part of others. Some of these coolies were Brahmins, and they cooked their food apart by themselves, so that it would not be defiled. The day before I had passed the place where they were, and seeing one of them preparing some soup, I stopped to enquire where he got the vegetables. He said in the woods, and at the same time lifting the dish, he emptied it on the ground and told me I had spoiled it all. I felt annoyed and angry at this, for I had, knowing their caste prejudices, kept myself about 4 or 5 yards away; but having taken advantage of a fallen pine to make his fire against it, he pointed out that as my foot was touching the tree, it was of course touching the wood of the fire that was preparing his

food. I called him a fool and the son of a fool, a donkey and the son of a donkey, and heaped upon his head many of the idiomatic forms of abuse peculiar to that part of the world.

The march to Yalung we found the longest, or it was perhaps the hardest, we had encountered so far. No part of this march was level: all up and down. We stopped the coolies with the cooking utensils, and sent on the others to have our tents ready, and we had breakfast on the way. Although tired on getting to the camping ground, a bath in a cold stream and a change of clothing completely refreshed us. At this point the scenery begins to change and present some of the features of grandeur. We are nearing the snow, and could get peeps of it at points. The bed of the river is formed of gigantic masses of rock, among which the grey waters of Gungajee toss wildly about.

The road to Dongully was very fine, and the scenery still improving. We did not require to pitch our tents at this place, for we got housing under a large mass of projecting rock, where we had perfect shelter, although it rained all the afternoon. The khitmagurs construct the small fires for cooking with three stones at any convenient point, and at this place they had their kitchen in what turned out to be the dry bed of a stream. This from the rain became a torrent. The fitting of such a simple kitchen was an easy affair, but all the dinner had to be carried through this rushing cold water, and at one moment our currie was in imminent peril from the khitmagur stumbling as he waded through.

The next march, to Maicha and Sookee, was about the most trying on the route. We first crossed to the left bank of the Ganges, and then up a steep ascent of almost perpendicular rock, where we had to pass what was confidently believed to be a bridge. It was something of a half-breed between a shelf and a hen-roost, with a waterfall coming down on the middle of it. The truth is that no respectable hen would have risked herself upon such a fragile structure. The question naturally arose, 'Is Maha-Deo the pontifex maximus in this quarter?' If so, he is evidently no better at making bridges than in building temples. I watched a coolie or two go over with their burdens, and I came to the conclusion that Maha-Deo must perform the part of a local providence at that spot, for upon no other theory can I explain how we all got over that loose, shaky piece of wood without an accident. All the first part of this march was up and down over rocks, sometimes on all fours, with numerous shelves and ladders to pass, but none of

that nerve-trying fragility which had to be faced in the first one. We had breakfast on a level bit of ground near the bank of the river at Maicha, which is the usual march, and then went on to Sookee. At Maicha is a very fine pass, called Kapper Ghatee, with perpendicular cliffs overhanging the river. We noticed a small tributary stream here which left a snuff-coloured deposit upon everything, even upon the vegetation at the sides, and it seemed to harden upon every object like a petrification. We also passed some gold-washers. They had a rude kind of cradle, and a scoop to lift the sand, and a dish to pour water while they washed. They showed us a very small morsel of gold, which they said was the result of two days' work.

Having come on to Sookee the day before, the march to Jhala was only four miles, but we wanted to arrange about leaving some of the coolies and stores till our return. And this is the point where a route begins which we intended branching off upon to visit Jumnotree, or the source of the Jumna. Sookee and Jhala are in a very beautiful situation. There are low, well-wooded hills, and fine views of the higher snowy peaks. The apricot trees here are the finest I saw in the Himalayas. We measured one which was 12 feet in circumference. The apricot is much used by people of the hills, but they value the stones more than the fruit itself, on account of the oil which they extract from them. If you see any of the puharis eating apricots, you will notice the care with which he puts the stones in his pocket.

As the valley of the Ganges is wide here, the roads were not limited to a single mountain path, and as I struck the wrong route from Jhala, I found myself, when I got to Derali, with the river between me and that place. The Ganges is wide and shallow at this point, so it is easy to ford it. Some villagers offered to carry me over, but I refused their offer and waded, and at no place did the water reach above the middle. This formed part of my morning bath, which I finished on the other side, where my tent and baggage had arrived, and found a change of clothes. It was at Derali that I met a man whose life indicates in the most marked manner an intense love of mountains. This was James Wilson, celebrated as 'the shikaree of the Himalayas.' A very slight sketch of his life will illustrate what I say. He first came to India as a private soldier in a cavalry regiment, and during an illness had been sent up to the hospital at Landour, which is a part of Mussoorie. Here he fell in love with mountains, for there is a glorious view of them as you look eastward. He was afterwards sent home to England and discharged. He managed to

buy a gun, and worked his passage out to Calcutta again before the mast. From Calcutta to Mussoorie is over 1,000 miles, and this he tramped to return to what had become the devotion of his heart. He reached the mountains, and with his gun began a new phase of life. As he had calculated, he managed from the first to earn a living. When he shot a bear, he potted the grease and sent it to Mussoorie for sale. He stuffed all the birds of the hills, and managed to find customers for them. The bag of the musk deer brought about 30s. Thus he lived a life among the mountains in which his heart delighted. He made money and became respectable. We found that the name of 'Wilson Sahib' was a password of use over all that part of the Himalayas with the natives. His reputation stood so high that the Rajah of Gurwhal, which is the name of the territory, took him into his confidence and made him his friend. He consulted him in many matters of politics, particularly in those affairs in which he had to deal with the Indian government. As a mark of his esteem he had made Wilson a present of a village, of which he was lord and master. This was the village at which I had arrived on the other side of the Ganges in the morning, and their offer to carry me over the river was due to the influence of its head. On entering I could not at first make out how it was that the people were so different in their behaviour from those in other villages. In these out-of-the-way places women, girls, and children always ran away on the approach of a European, so I was astonished on this occasion to find a pretty puharie girl of about fifteen coming up and making a salaam to me; and, instead of running away, the children gathered round, and explained to me the mistake I had made. Wilson had married a hill woman, another illustration of his love of mountains, who came out to see me with one of her sons, and I was treated with every attention. The little boy got his attendant to carry him over the river with me, and he remained my companion all day. Wilson himself at last appeared, and spent the most of the day with us. What a fund of stories and information he had! After dinner we sat at a fire in front of our tents till long past midnight, listening to his many experiences all over the mountains. We had Ladak and Cashmere in our plan of summer travel, and he made out rough charts of our route the whole way, with the names of the marches, and I did not find him wrong in a single point. He marked the places where we might find the wild horse, the wild yak, and the *Ovis Ammon*, or wild sheep. At the time we found Wilson he was connected with a Company whose object was to cut the pines in the hills and send them floating down the Ganges to

the plains, where they were made into sleepers for the railways. Wilson, from his knowledge and influence among the people of the hills, could command the labour necessary. This was important and valuable, and we understood that he was becoming a rich man. He dined with us again as we returned, and I shall never forget the two days I spent with him, for a more charming character I have rarely met.

The next march, to Biram Ghatee, is very fine, through woods of splendid deodar and pine trees. The scenery here is not only grand, but from this mixture of forest and mountain it is also very beautiful. The Neelung river joins the Ganges at Biram Ghatee. Its water is much clearer than that of the sacred river, and its name is, I suspect, derived from *nil*, which means blue.

The march to the temple at Gangootre is also very fine. Derali is about the last village on the way, and there is none at the temple. A few hill Brahmins attend here in the summer months to guide the pilgrims in the ceremonies to be performed. These consist principally of bathing in the river, and praying, and making offerings to a female figure in marble of Gungajee in the temple. As far as I can remember, we represent rivers by male figures, such as old Father Thames, but the Ganges is always represented as a woman. The temple is 20 miles from the source, but as the peak of Gangootre can be seen at this point, and prayed to, this is the end of the Hindoo's pilgrimage.

There is no path or track above this; it is all jungle, and although rough in places, there is no great difficulty in getting over the ground. We crossed the river at one place on a snow bridge. We arranged to march about two-thirds of the distance, and camp, leaving enough only to go to the glacier and return again the next day. The pines ceased a few miles after we left the temple, and only small groups of birch were to be found, and the last of these were not far from the glacier. We had a few coolies with us carrying cooking things, and had a warm breakfast at the spot. It was very cold when starting in the morning, but by breakfast time the sun had come on the scene and made it very pleasant. The facility with which Indian servants can produce a good comfortable meal, even in one of the most out-of-the-way places, is one of the great charms of all Indian travelling. While the cooking was going on, my companion went off with his gun to try and get a shot at a burrel, a very large deer which is to be found in this locality. I filled up the time sketching, and had my morning bath in the largest pool I could find, a

little below the glacier. The water here is very muddy, of a dirty grey tint, and well iced, for I found lumps floating in my bath. I took care to drink some of the water, so as to be able to say that I had complied with all the necessary conditions of the pujah, for bathing and drinking the sacred Gunga at the Cow's Mouth is a ceremony of the very highest efficacy for the purification of all sin. It is the Brahminical idea that all stains are wiped away from the soul by these acts, so I thought it was an opportunity not to be lost, and took advantage of it to get what I suppose might be called a 'whitewash.' On my return to the plains I used, when I met holy men about the temples, to tell them that I had been to the Guy Ke Mukh, and that I had bathed in the Gunga pani there, and had also drunk the water. They used always to look very seriously, and say, 'Ah, Sahib, these are great words.' It may be remarked that the use of water for washing, or lustrations, combined with drinking it, is not confined to the Hindoo religion. The pilgrims do both at Mecca, and Baptism in the Christian Church is the lustration; and we have the other in the use of water in the wine, which, if I mistake not, is considered to be 'High Church,' but it is only a continuation of the ancient idea.

The glacier is generally put at about 13,000 feet above the sea, and the peaks around rise to nearly 23,000 feet. These peaks are very varied and beautiful in their forms; they are on each side of the valley; in fact, they seem all round, and look like white-robed deities gazing down on the birth of the sacred river.

To attach sacredness to sources of water was not in past times peculiar only to the Oriental mind, but at the present day we have it as a culte almost exclusively confined to the East; and in our time I think it may be said that there is no river source which has so many pilgrims, and so much worship devoted to it, as the Cow's Mouth. Even in the past it must have been the same. I know of only one other place which could equal it, but from its remoteness, although more sacred, it never could have been visited by so many devotees. That is the Mansarowar Lake, which, with the Rawan Rhad, stands on an elevated point near the sources of the Brahmapootra, the Indus, and the Sutlej. Even the source of the Ganges is at no great distance from these lakes, giving us four mighty streams flowing in different directions. Mansarowar is celebrated in connection with many of the Buddhist legends, as Anotatta-Wila, and was a most holy spot. It is still a place of pilgrimage, and there is a lamaserie there, but our know-

ledge of the place is at this moment very slight, for the difficulties of getting to it are great. It presents new ground for any enterprising member of the Alpine Club to reach, and give us correct information about it.

Having followed the Ganges to its very source, I propose telling you the mythic accounts of it given in the sacred books of the Hindoos, for there is not only a long history of its celestial origin, but there are numerous representations of it in old sculptures and pictures.

One of the common forms of these representations is to put Siva or Maha-Deo sitting on Kailasa, his heaven, which is a mountain. It is described as 'a throne of gems,' and is somewhere among the snowy inaccessible peaks of the Himalayas. This great god has, I think, considerable claims if any one would propose him as a member of the Alpine Club, for not only is his residence among Alpine peaks, but his wife is called 'Parbutty,' which means a mountain.* On the side of Kailasa is figured the head of the Bull Nandi, from whose mouth the water of the Ganges is seen as flowing. Hence the source is called by the Hindoos 'Guy Ke Mukh,' or the Cow's Mouth. This representation has a wonderful resemblance to what is described in the Apocalypse of the New Jerusalem, also a mountain, where the river of the water of life flows out from under the throne.

Another mode of representation is to make the water come from the head of the god; or rather, it should fall from above on his head, and then come down on the earth. The story upon which this is founded is told in the Ramayana, and the following contains the main features of it.

The King Sagara was about to perform the Aswamedha, or horse sacrifice, which was one of the most solemn ceremonies described in the ancient books of India. It requires a whole year's preparation, and when everything was ready for it on this occasion, the horse could not be found. Sagara commanded his 60,000 sons to go and seek the animal. After many doings this army of heroes found the horse with Vishnu, who, by merely breathing upon them, reduced the whole 60,000 sons of Sagara to cinders. No lustrous waters could be found to purify these remains, and without this they could not reach

* *Puhar* is the ordinary Hindostanee word for hill, but *Parbut* is to be found in connection with many mountains; there is the *Sumeri Parbut*, at Jumnotree; the *Nango Parbut*, or 'Naked Mountain,' 26,600 ft. high, north of Cashmere; and there is the *Hari Parbut*, which is the fort in Srinugger, Cashmere. *Giri* is the Sanscrit for mountain, and from it we have Dhwalagiri, and the Neilgherries.]

Paradise. After many efforts to procure water, at last Bhagiratha, the son of Dilipa, abandoned his throne, and became an ascetic on the sides of Himalaya. There, clad in skins and subsisting on roots, tortured by cold and every kind of suffering, he earned the highest renown of saintly merit. At the end of 1,000 years Brahma came and, addressing him as a 'Bull among saintly anchorites,' wished to know his desire, and it was that Ganga might be sent down with her purifying waters. To this wish Brahma refused to accede, for he said that the fall of Ganga from heaven would destroy the world. After another 100 years Maha-Deo came to this man of holiness, and offered to sustain this river of lustrous purification. Ganga came down from its celestial abode, and falling on the head of Siva, reached the earth without producing the much-dreaded destruction. All the gods, the Rishis and Brahmans, the Asuras, and even the Nagas, or Snakes, and all the hosts of heaven, came to look on at this great and marvellous event. The Ganges is supposed to flow through the three worlds, and when it reached Yama's region, or Tartarus, the ashes of the 60,000 sons of Sagara were purified and received into the celestial abode; and from Bhagirathi, this 'Bull of Holiness,' the branch of the Ganges I have described has got its name.

It will be noticed that there is a strange resemblance between this heavenly Ganga and the *Jourdain celeste* of the Gnostic and mystical writers of a long past date.

There is still another source of the Ganges to mention. The worshippers of Vishnu, for the purpose no doubt of making their god greater than Siva, represent the Ganges as flowing from the god's foot; the water then passes through heaven, and down on the head of Maha-Deo.

On the day of our visit to the glacier, I was astonished at the appearance of a figure, away perhaps about a quarter of a mile to the left. He was on the side of the hill, standing on the snow, some distance above the glacier. I was not the only one who saw him, and I was most particular in my enquiries if it was any one belonging to our party, but all the servants and coolies replied in the negative. Now there is no road in this direction; it does not lead to any of the passes crossing to Tibet, and the pilgrims never attempt to pass over to Kedarnath by the snow. As I have stated, they never go beyond the temple, which is 20 miles below, and the nearest village will be some 20 or 30 miles below that again. This phantom figure, living beyond all vegetation, puzzled me very much. I was afterwards told that some of the Hindoo devotees—what the writer of the Ramayana would describe as

'Bulls of Devotion'—will wander up among the snow at the source of the Ganges, to die there. They believe that there is a special merit in seeking death at such a sacred spot. I feel almost certain that the figure we saw was, according to his ideas, making an effort to reach heaven through that grand snowy portal, and thought such devotion to mountains worthy of recounting to you.

I confess to a feeling of great pride and satisfaction at having visited this spot. I consider it to be one of the most sacred shrines in the world. It is the source of one of the great rivers of this earth, and although not the greatest, it is at least one of the most renowned. According to Josephus, it is the Pison of Scripture, showing that its fame had extended to the shores of the Mediterranean even before the Christian era.

From my boyhood I have been a lover of mountains. My first love in art was a Highland hill, and I trust that that love will never fade. I have seen mountains since in all the four quarters of the globe, and loved them also. My feeling towards mountains is such that I should treat them as I would a lady, and say that 'I loved them for themselves alone,' and that ought, I think, to be an accepted motto of the Alpine Club. The grandeur and beauty of mountains are best known to those who climb them. Still, however beautiful they may be, we must not forget their value as the sources of streams, and that the snow on the higher ranges is a reservoir of perpetual supply to the plains below. Forget for a moment the loveliness of the snowy peaks, and think only of the Gunga as it comes forth, and the long journey it has, flowing through the hot plains of India. For about a thousand miles its way is the means of well-being and good for those on its banks. It may be said to be a temple the whole of this distance, for the Hindoo not only bathes in it, but he prays standing in its waters. Along the whole of that long space it is offered at every temple, and is the most sacred of all the offerings which are made to the gods of the Brahminical faith. It is used for the irrigation of fields, and the most important preventative from famines in India would be the extension of the means of using the waters of Gungajee for this purpose. Bringing moisture for what grows on its course, and producing food for millions, this sacred river must always seem a divine thing, a gift of the gods, given for the good of living creatures.

ASCENTS OF THE POPENA AND GAISL, OR ROTHWAND. By
E. R. WHITWELL.

IN the summer of 1870 I was fortunate in being one of a delightful party in Tyrol, and as most of our time out of an eight weeks' tour was spent amongst the Dolomite peaks, I had an opportunity of getting intimately acquainted with the strange and fantastic forms which many of these mountains assume.

Our party consisted of four ladies, Mr. Tuckett, and myself, though it was afterwards increased by the arrival of more friends from England, and, as the ladies were attended by a faithful guide and courier in the person of François Devou-assoud, Mr. Tuckett and I, accompanied by C. Lauener and Santo Siorpaes, were able to make excursions in which they could not join, and meet them again at some other point of our route. Very delightful these constant reunions were, as, especially in the remote parts of Tyrol where we chiefly were, and where you seldom meet an English face, a large party adds immensely to the fun and pleasure of the tour; and in remembrance of what has happened since, we look back with a real though sad pleasure to the many little incidents of our mountain and hotel life which at the time added so much to our enjoyment.

Mr. Tuckett and I, after spending a few days very pleasantly about Belluno and the Bosco del Consiglio, and ascending some of the hills in that neighbourhood, had joined the rest of our party at Pieve di Cadore, and much as we had enjoyed the wonderful panoramic views from some of the lower mountains, I was beginning to thirst for rather more ambitious work. Mr. Tuckett was unfortunately suffering from the effects of a severe blow which he had received on slipping through some snow on to a sharp stone, and our walking since had made it absolutely essential for him to take a few days' rest, and as by that time we should have left the district, I was obliged to make my attack on both the Popena and the Gaisl alone.

We all set out together for Auronzo on the morning of the 15th of June. Thence I started with Christian Lauener and Santo Siorpaes in an 'einspanner,' intending to drive as far as we could up the valley of the Anziei, and to find a suitable bivouac for the attack on the Popena next day; whilst the rest of the party were to cross the Monte Croce Pass to Innichen,

in the Puster Thal, joining me at Cortina, by the Ampezzo Road, on the following evening.

We drove for, perhaps, two hours, till we came to a little roadside inn which marked the termination of the char road; hence an hour's walk through a delicious pine forest brought us, about midday, to a farm-house where a sister of Santo's lived, from whom we obtained the provisions for our expedition. Whilst these were being prepared, we spent two or three of those delightfully idle hours for which mountaineering gives such a zest. A more ideal spot for a midday halt could not have been chosen, as we were able to get the shade of the upper pine forest, and enjoy one of the most charming views of meadow and mountain scenery that I have seen. The pleasant tinkling of the cow bells, and the sound of running water close by, only required what Mr. Stephen calls the 'hallowing influence' of tobacco to complete the enjoyment which a thoroughly idle hour amidst work gives.

Everything however pleasant comes to an end, and the time warned us that we should be moving, especially as we wished to reach some point from which we could see the Popena, and so make our plans for the morrow's campaign. We found a man who was willing to act as porter to carry the blankets and restore them on the following morning, and after an hour or two's pleasant walk we reached the limit of the pine forest where we determined to pass the night. From this point we obtained a capital view of the mountain, and Christian was able to decide the exact route by which we hoped to reach the summit on the following day. The weather had been very threatening for some little time, and we had hardly finished our survey and gathered sufficient wood for a fire before the rain came down in torrents, and we found that an overhanging rock under which we had decided to sleep would give us no shelter, owing to a cleft down which the rain made a pleasant waterfall on our heads. We therefore adjourned to the largest pine tree we could find, which proved to answer our purpose capitally. We made the fire under another one close by, and soon had our 'Liebig' ready, which I think is the best thing possible to prepare you for a night in the 'open.' Santo and the porter decided to pass the night by the fire, whilst Christian and I adjourned with the blankets to our selected pine tree. It was still raining as heavily as ever, and if it had not been that the roots of the tree had formed a slight watershed in the opposite direction to the general slope, we should have had a very wet berth, as the water was running down the hill in streams on each side of us. Unfortunately

for the interest of this paper, in a weak moment I lent my watch to Santo that he might be able to call us in good time in the morning; but, from a no doubt praiseworthy desire after knowledge, he must have opened the works and got some ashes into them, as from that time it never went except in the most fitful manner, so that I cannot say exactly either the times of ascent or descent. I do not know even the hour at which we started, except that we lost at least an hour of daylight by oversleeping ourselves; but as we reached Cortina at about four o'clock in the afternoon, such hours as I shall name I think will be approximately correct.

I am sorry that I have no very thrilling adventures or hairbreadth escapes to relate, as fortunately in these mountains our chief enemy, the avalanche, is not to be feared except after a heavy and recent fall of snow. It was extremely well, however, that we had planned out our route beforehand, as we found that if we diverged from it the rocks became very difficult, and when we were once fairly committed to the labyrinth of crags that form the south face of the mountain, we might easily have been stopped if we had not known exactly the direction in which we wished to go.

The morning was as clear as we could have desired and, thanks to Santo having kept the fire burning all night, we were not long in breakfasting and getting away after being called. We started probably about 5 o'clock, and a short stroll over the grass slopes brought us to the foot of a steep snow couloir by the side of which we mounted to a col, whence we had a fine view of the strange pinnacles of the Drei Zinnen. From this point we had a capital view of our mountain, which rose up grandly on our left, and we saw that a slight scramble up not difficult rocks would place us on a kind of gallery running nearly horizontally along the face of the mountain, over the couloir which we had just ascended. The gallery was not difficult to traverse, and leads to what I believe is the only way up the mountain. The rocks now became decidedly steep, but afforded everywhere capital hold, so that it was very easy and quick going up to a belt of snow which we had seen from below. Round this we passed in an easterly direction, and up a snow couloir which terminated in some overhanging rocks, blocking it up, and affording a very pretty scramble for a few feet. This we avoided in descending by keeping rather more to the west, and so getting into the couloir lower down. An easy climb up the face and another short couloir led us on to the ridge a few feet from the top, which we reached, I should think, at about eight o'clock.

We at once set to work to build an immense cairn, to be seen by my friends on their way to Cortina, but unfortunately it could not be distinguished by them from the weather-worn cliffs on which it was placed. The day was so fine that the view was superb, the Cristallo not seeming to hide a great deal. I cannot but think that the measurements either of it or the Popena are incorrect, as we all thought that 50 or at the most 100 feet is the outside difference in height between them. The two peaks are very close together, and we calculated the respective heights by means of a water-cup placed on an ice axe—not a very accurate way, but the only means we had at our disposal. The Gaisl, just across the valley traversed by the Ampezzo Pass, looked a most imposing mountain from this side, and as its highest summit had never been reached, I determined that we should try it, if practicable, before leaving the Cortina neighbourhood.

A couple of hours were very pleasantly spent on the top, the guides sleeping, whilst I feasted on the beauties of the view, and indulged, I am almost afraid to add, in the still greater enjoyment of my pipe! Certainly there are few more delightful feelings than that of having reached a virgin summit, and the crowning ceremony of smoking the first pipe without which no peak could be said to be satisfactorily won.

We thought we would descend by a more direct way than that taken in the ascent, by avoiding going round by the horizontal ledge or gallery, and coming down direct on to the head of the col mentioned above. Unfortunately, like many short cuts, this proved a very long one, as when we reached a point perhaps 100 feet above the col, further progress was stopped by the cliffs becoming perfectly perpendicular, with no hold whatever by which we could descend, so that we were compelled ignominiously to retrace our steps for about 500 feet so as to strike the route we had followed in the morning. On reaching the col we unroped and glissaded down the steep couloir, the snow in which was rather too hard to be pleasant, and Santo no doubt exercised a wise discretion in climbing carefully down between the snow and the rocks at the side.

About a couple of hours' walk took us to another of Santo's numerous lady friends, who occupied a ch^âlet a little above Cortina; and here we indulged in bowlfuls of delicious cream, very different from what goes by that name in most of the frequented parts of Switzerland. An hour's more walking brought us to Cortina, but before going to the hotel we stopped for a few minutes at the church, which was crowded literally

to overflowing, to listen a little to the evening service, the sound of whose music had already pleasantly reached us as we strolled through the fields above the village. In the evening I was joined by the rest of the party, which was further added to before the end of the week by the arrival of three friends from England, so that our number was increased to nine.

The weather on the next day looked very doubtful, but on that following, Mr. Tuckett's rest having been so far beneficial, we were able together to ascend the Antelao, and I hoped that he would be able to join me in my meditated attack on the Gaisl on the following Monday. His leg was, however, still giving him considerable pain, so that he decided not to try any new work, but to content himself, if he felt well enough, with ascending the Tofana, where he could stop at any moment if he felt unable to proceed. He, however, generously insisted on my taking Santo as well as Christian, trusting to the chance of finding a guide who would answer his purpose.

The next afternoon (Sunday, the 19th), after our usual little service amongst the pine-woods, we started for our sleeping place for the Gaisl, and about four o'clock reached the chalet where we intended to sleep. The native told us, however, of an unoccupied hut about an hour higher up, and as the sleeping quarters looked anything but clean, we decided on 'going further,' in the hopes of *not* 'faring worse.' The hut proved to be a mere shed, whose chief objection lay in being *minus* one end, and, as we had brought no blankets with us, we found it decidedly cool and airy before morning. We devoted the rest of daylight to ascending to a point a little above the hut from which we could reconnoitre our mountain, but it was already too dark for us to decide on the direction we should have to take. What we did see, however, was anything but reassuring, as it was evident that we were let in for attacking it on one of its steepest sides. This we afterwards found to be the case, as Santo believed that Herr Grohman, who had nearly reached the summit (from what cause he failed in attaining the highest point I have not heard), had gone by, I think, the E. side, which appeared—when we inspected it the next day from near the top—to consist, as far as we could see, at least, of easy slopes up to the last 100 or 200 feet.

The next morning we started very early, being only too delighted when it appeared late enough to find excuse for leaving our hard and cold bed, so that we reached our previous evening's view-point before it was light enough to see our way, and a very shivering half-hour we had till the morning had sufficiently advanced for us to decide on our plan of attack.

We were looking down into a kind of snow valley, with our mountain rising up in bare, nearly snowless cliffs before us, with what appeared to be a very serrated arête on our left hand leading up to nearly the summit, from which arête huge bastions of the most fantastic shape came down to the valley like buttresses of a cathedral. The guides thought it would be best to reach the arête between two of these, but I was bent on trying a partly snow and partly rock couloir, which led for a considerable way directly up the face of the mountain, but which seemed blocked a few hundred feet from the commencement by an immense boulder which might or might not stop further progress. The climb would evidently be a very steep one, and we now saw that we had chosen by no means the easiest side by which to make our attack, but it was evident that, if we succeeded, the course by which I was anxious to go would be the most direct way to the summit. It was fortunate that the guides fell in with my wishes, for I believe, if we had tried the other way, time, if nothing else, would have defeated us, as on inspection from a higher point the arête looked very impracticable. The climb up the couloir was chiefly over snow, and though steep was quite easy till we reached the spot where it was blocked by the fallen rock which, as the guides had feared, stopped further progress. Nothing was to be done, therefore, but to find some way up the waterworn sides of the gully on to the face of the mountain, and this we found extremely difficult, as the rock was worn very smooth by water and falling stones, and in addition to this was in many places covered with ice. After a very exciting scramble, however, we got out of the couloir, and the rest of the way, as far as I can remember, was almost entirely over rocks, on the whole fairly easy except in one or two parts where they were waterworn and glazed with ice. One place especially, about half way up, looked very threatening, and Christian told me that my route was going to fail after all. This he no doubt said to try me, because when I insisted on going first he was most anxious to take the lead again, but this I would not allow till we were over the difficulty; and I had the by no means small pleasure of going first up what proved to be to me a very difficult face of rock, as every slight hold one could get was so rounded and glazed with ice. When this point was won our difficulties proved to be over, as a few hundred feet of easy rock work placed us on the first peak (that the most on our left hand), from which that ascended by Herr Grohman, where we found his cairn, was easily reached.

Here we could see that had we chosen the other side of the

curious arête mentioned early in this paper, that on our left or probably the E. side (I am sorry I cannot give with certainty the points of the compass), we should have reached this point apparently without difficulty though by a much longer way, as, so far as we could judge, the slopes were very easy, and I have no doubt that if Herr Grohman had a guide acquainted with the district, he would make his attack and gain the peak on which we were standing by this route. Santo said he believed this to be the case, and was no doubt deterred from recommending us in the first place to go by the same side because of Herr Grohman's failure in gaining the summit. I have not heard why he failed, but presume it must have been owing to bad weather or some such cause, as, though the next one was cut off from us by a cleft which looked more impracticable than it proved, we reached the highest point by an easy scramble of about five minutes, and found it to be not more than ten or twenty feet higher than that ascended by Herr Grohman. Although naturally pleased in making a *first* ascent, I could not but feel sorry that he should have failed when so near success.

After building a cairn and smoking the invariable pipe, we determined before descending to climb another peak further to the W. or S.W., which looked nearly as high, and found it to be the one overlooking the summit level of the Ampezzo Pass, and on this we built another *steinmann*. The ridge leading to this was one of the narrowest rock arêtes I have ever seen, being a broken wall not more than six or nine inches wide, with nearly perpendicular sides, and with a cleft in it of about a yard wide, over which we had to step. Santo thought discretion the better part of valour, and crawled along on his hands and knees. We found, as we had expected, that the previous one was the 'Höchste Spitz,' but the view direct into the valley traversed by the Ampezzo road between Schluderbach and Peutelstein and our pleasant little climb, amply rewarded us for our needless energy.

In descending (in order to avoid the difficult part in reaching the couloir), whilst still keeping on the same face, we bore away more to our right, and again convinced ourselves of the folly of trying a new way of descent unless the ascent has been very difficult indeed. I don't think the course we chose proved any easier than that taken in the morning, and was attended by immense loss of time through our having continually to retrace our steps. The final descent of perhaps 100 feet on to the snow was really most difficult, and required the greatest possible care.

We joined the rest of our party at a delicious Alp not far from Peutelstein, at the junction of the Acqua di Campo di Croce with the stream from Val Travernanze, and found that Mr. Tuckett had been up the Tofana and had already reached the spot previously fixed upon, where they were having a picnic, having driven there with four horses and a *bergwagen*. We made altogether, including guides and charioteers, a wagonload of seventeen people, and drove our noble team of horses into Cortina much to the astonishment of the natives.

But I have already reached the limits of an Alpine paper when we have descended to roads where driving is possible, and so must not continue the record of the close of the day, which was celebrated by dancing to the band of the village (an accordion and flute) till an early hour next morning, before an audience, if I may use the Irishism, of delighted natives, who, I think, would at last come to the conclusion that, taken altogether, the English must be the most extraordinary people in the world.

THE WETTERHORN AND JUNGFRAU IN WINTER. By W.
A. B. COOLIDGE.

IT will, I think, be admitted by an overwhelming majority of my readers that the most fascinating of all summer occupations is mountain climbing, and many while admiring the indescribable beauties of the ice world at that season must wonder, however vaguely, what its appearance is in winter. It was this feeling of curiosity, greatly heightened by Mr. Moore's attractive accounts of his experiences, which induced my aunt and myself to take the first opportunity which offered itself of visiting the Alps at that season.

After a rapid journey from England we arrived in Geneva on the morning of December 29 last, accompanied by the faithful Tachingel. That evening, according to previous agreement, we were joined by Christian Almer and his son. It was somewhat strange the next morning to get into a diligence, and hear that we could get on to Chamonix that day. It was bitterly cold but very fine, and though the well-known road seemed more beautiful than ever, we were not sorry to descend from our vehicle at Sallenches. The scene here was very striking; snow covered everything, and Mont Blanc actually looked not so very much higher than the neighbouring hillocks, the uniform expanse of snow tending to dwarf the great peaks in a most singular manner. After dinner we

started in a carriage, the only passengers, for Chamonix. Unfortunately our conveyance was full of holes, and more cold air entered than was pleasant; darkness soon came on, but the moon shone out and produced a most beautiful effect on the snow-laden pine trees. The snow on the road became deeper and deeper, our progress was very slow, but at length, at 8.30 p.m., we pulled up before the hospitable doors of the *Hôtel des Alpes*, whither a telegram to announce our arrival had been sent. We awoke next morning much refreshed, and after consultation started for the *Montanvert*. We found the snow on the path very deep indeed, but the air grew warmer directly we left the level of the valley, so that we lunched with perfect comfort outside the *châlet* about half way up. Beyond this the walking was very heavy, and in several places traces of recent avalanches were plainly visible. This delayed us so much that on reaching the hut we were unable to carry out our original intention of crossing over to the *Chapeau*. The little *châlet* 'à la nature' was open, and we availed ourselves of its shelter, but after a short stay we started again, leaving a bottle with names, after the most approved Alpine fashion, on the table as a memorial of the last visitors of the year. It was of course much easier to come down than it had been to go up, and we were soon enjoying an excellent dinner.

The excessive quantity of snow was to be attributed partly to the *Montanvert* being on the south of the valley, where the sun has little strength, partly to a great snow-storm which had occurred a few days before.

We saw the old year out with all appropriate ceremonies, and retired to our rooms, which opened out on a vast sort of salon; it was impossible to get this at all warm, and every night of our stay, though a fire was kept up, the water in the jugs, sponges, toothbrushes, &c., was frozen so hard, that it was a work of some little time to restore them to a fit condition for use. I will pass over more rapidly our other excursions at Chamonix. On New Year's day we went up the *Flégère*, finding much less snow than on the *Montanvert*, but getting no view. On Jan. 2 to the *Chapeau*, and some way beyond the *Mauvais Pas* (which itself was blocked by ice and swept by falling icicles) on the *Mer de Glace*, where the deep snow turned us back; the weather was perfect, the view superb, and the air so warm that we spent an hour and a quarter before the hut in most delicious repose. On Jan. 3 we went up to the *Plan-praz* *châlets*, but were again disappointed of getting a view. On Sunday there was a great snow-storm, and next morning the snow had drifted in under the door of the house.

to the depth of several inches. Walking was almost impossible, and Argentière was said to be quite inaccessible. We therefore whiled away the time by driving over in a sleigh to St. Gervais, where the people were very much astonished to see us, and returning after a short stay. The cold the whole time at Chamonix was intense, and we were told unusual even for that season. But as soon as we mounted the slopes on either side of the valley it became much warmer, and it was often a positive relief to be able to sit down and rest. Two snow-storms following so close on one another probably made the snow deeper than it would otherwise have been; but the effect on the pine woods, especially when seen from above, was very striking. An unbroken mantle of snow covered glaciers, moraines, rocks, and grass slopes; even the great Aiguilles were not wholly free. One evening we enjoyed a very remarkable spectacle: just about sunset the Aiguille Verte (appropriately enough) became tinged with a decided green hue, which lasted some minutes and seemed almost unearthly in its strange beauty.

We were loth to quit our comfortable quarters, but this was absolutely necessary, for we had arranged to visit the Oberland also.

Accordingly our whole party started on the morning of the 6th in a sleigh for Argentière. We only got to the village after sundry adventures, not the least amusing of which was being nearly compelled to get out about 100 yards from the hotel, the snow being so deep that it was all the horses could do to drag us through it.

We hoped to sleep at the Tête Noire inn, and could not make any long halt at Argentière. We were repeatedly warned of the dangers of that somewhat humdrum pass, and started with the recollection of a certain cross on the Montets uppermost in our minds. However we managed to get over safely, though the snow in some places was deeper than an ordinary alpenstock; hence, although the views looking back towards Chamonix were very fine, it was not without pleasure that we reached the well-known little inn, after having passed two contrebandiers laden with tobacco just on the frontier. We were received very hospitably, and everything possible was done to make us comfortable, but of course no travellers were expected. Our four-footed companion, however, did not receive such a warm welcome from two magnificent St. Bernards who were prowling about.

We did not start very early next day, and reached the Forclaz without difficulty. There was quite a number of

peasants here, who assured us that ours was the first party of *bonâ fide* winter travellers which had passed since Mr. Moore's some years before. Here one of the party mounted on a 'traineau,' and proceeded by the ordinary road, but the others, taking short cuts by the smooth and icy paths down which great logs of wood came thundering every now and then, just managed to win a close race, and the whole party was re-united on the bridge leading into Martigny. On our arrival we learned that there was a great deal of fresh snow on the Gemmi, and our hopes being thus dashed to the ground, we had to make the long *détour* by Lausanne and Berne. The great Oberland giants came out superbly from the deck of the steamer on the Lake of Thun, and we hurried on to Lauterbrunnen, arriving there on the evening of the 9th. We started betimes the next morning to cross the Wengern Alp to Grindelwald. The snow was very deep, especially on the summit, but the weather was superb and the heat really oppressive. Instead of following the ordinary path, we kept higher up on the slopes to the left, but had actually sometimes to force our way through the snow. A curious sight greeted us on the roof of the Jungfrau hotel—the tracks of foxes in the snow. Just as we were passing, a magnificent avalanche fell from the Jungfrau, but it was the only one we saw.

The snow between the two hotels was very deep, and the passage was only made in two hours, including a halt of fifteen minutes. On the Grindelwald side we met with even greater trouble, but just as we were beginning to despair of getting to the level of the valley before dark, the tracks of a 'schlitten' appeared, and soon after we met the schlitten itself and two men. It was the work of a minute to mount on it; one man guided it in front while Almer held it back behind, and a delightful glissade of twenty minutes down brought us to the bridge, whence we soon reached our old quarters at the Hôtel Eiger, where we were expected.

On the 12th our party, reinforced by the knecht of the hotel, went up the Faulhorn by the Buss Alp; this way forms a very beautiful variation on the ordinary route by the Bach Alp, and took us only an hour longer, despite the snow, and the heat, which was really quite as great as on the hottest days in summer. We had the key of the hotel with us and passed a comfortable night, the view being very fine both that evening and the next morning.

We were so elated at the perfect success which had attended all our expeditions hitherto, and so delighted with the numberless exquisite things which had been revealed to us, that when

on our way down to Grindelwald Almer suggested the ascent of the Wetterhorn, we scouted all difficulties, and on our arrival set about the necessary preparations for the attack.

Hence on the morning of January 13 our party, reinforced by the addition of porters, in full marching order started along the path to the Upper Glacier, affording a rather unusual spectacle in winter. We soon turned off to the right and kept along the base of the Mettenberg, near an immense boulder locally known as the Halsfluh. Our destination was of course the Weisshorn-hütte, and we proposed to reach it by a route at least in part new along the left bank of the glacier, the ordinary route by the Enge being of course on the right bank. The way lay at first through pine forests and then over steep snow slopes (underneath which were, I suppose, grass and stones) to the base of the rocks which support the upper plateau of the glacier. This route had been discovered by two brothers Bohren, who were among our porters. They had arranged ladders in the most difficult places and propose constructing a hut and mule-path, so that even ladies will be able to reach the secluded upper regions of this glacier. We had mounted the first of these ladders and were admiring some very shaky looking séracs immediately above us, when one of the said séracs took it into its head to fall, creating some little alarm in our party, which, however, was in a perfectly safe situation. This danger would probably not exist in summer, and the great beauty of the route ought to attract many visitors. We then came to a very singular cavern in the rock through which a stream used to flow before the retreat of the glacier. I can give no idea of this very curious place but by comparing it to the Gouffre des Bouserailles in the Val Tournanche, if one could suppose this last to be placed in a nearly vertical position. Up this ladders had been placed, at the end of which we found ourselves in a sort of grotto commanding a fine view. After a short halt we continued our journey through a natural tunnel in the rock which brought us out after a scramble up a great sérac on one of the upper plateaux of the glacier at a point opposite to and about half way between the Enge and the Schönbuhl. We crossed the ice and tried to climb up to the path leading to this last-mentioned hillock, but the snow was too loose, and we had to force our way round its base through some of the finest séracs that I have ever seen, meeting with at least one formidable obstacle in the shape of a very long, very narrow, and extremely shaky snow bridge, over which however we all got without accident. A steep climb then led us to the path on the other side of the Schönbuhl, and this was followed

to the hut, the ladders being quite impassable owing to masses of ice which forced us to go round by the long way. There was a good deal of snow in the hut, but it was soon cleared out, and after announcing our arrival to the world below by waving blazing torches, we settled down for the night. The cold was not excessive, as plenty of wood and blankets had been brought up, but the night was very long and every one was glad when it came to an end. The sun of course did not rise very early, and it was 7.10 A.M. on the 15th when we got off. Our party consisted of our two selves, the Almers, and three porters to break the way. The others remained in the hut, as did Tschingel, who, having been once already to the summit, and strongly condemning the foolish habit of incurring fatigue when there was no need, spent the day I suppose in snoozing away comfortably among the blankets and hay. We followed exactly the same route as in summer. The rocks, to my surprise, were *not* glazed with ice and the snow was very good, so that there was no difficulty beyond the labour of mounting. But when we reached the saddle a fierce cold wind assailed us against which we had to fight our way to the top, the snow too being much worse here than below. At length, however, we topped the ridge, and the familiar but never-to-be-forgotten view was spread again before our eyes. The air was perfectly clear, the sky cloudless, and countless peaks were identified. Almer was naturally in very fine spirits, and declared that though he had been up the peak any number of times, he had never had so marvellous a view before. We stood in a row along the ridge, and learned afterwards that we were clearly distinguished from Grindelwald. But the wind would not allow us to stay more than ten minutes, and we turned to descend, after planting a fir tree we had brought up by the side of a green pole which was already there. The descent was not marked by anything noticeable. Instead of keeping to the right on a level before descending to the glacier we followed the ridge, which forms the left-hand limit (as seen from below) of the great couloir, straight down to the glacier, and soon regained our temporary home, Tschingel being in transports of joy at seeing us again. Next day we returned to Grindelwald by the same route, and found that great astonishment prevailed at our complete success, for the mountain had been attacked December 31, 1872—January 1, 1873, but the attempt had failed owing to bad weather. We were overdue in England, and reluctantly prepared to leave the mountains. We had reached Interlachen when Almer threw out a suggestion which made us cast all engagements to the winds and return in hot haste to

Grindelwald. This was nothing less than the ascent of the Jungfrau. We were acquainted from personal experience with this peak on the Wengern Alp and Aletsch glacier sides; and it was now decided that it should be attacked from Grindelwald by way of the Mönch-joch. The next day, however, the weather was not quite satisfactory, but it cleared up in time to allow us to start on the afternoon of January 20. Our intention was to sleep twice on the way up, for we feared that the snow would be very deep. The same party started as for the Weisshorn-hütte, with the addition of even more porters (more wood and blankets being required), though I think that perhaps one or two might have been dispensed with. We mounted the ordinary path to the Bärenegg, and had got some way beyond a wooden gate which bars the road, when a dull rumbling noise was heard and at the same time shouts from wood-cutters on the other side of the glacier. The noise became louder and louder, and finally down came a most tremendous avalanche. Most providentially we were on a little projecting ridge and quite safe, but we could realise the irresistible force and mighty impetus with which the avalanche swept by. It was some minutes before it was quite over, and we then hurried across it (at least a quarter of an hour's walk). It was composed chiefly of snow which had been loosened on the upper portions of the Mettenberg by the previous day's rain, but fragments of icicles, blocks of ice, and a few stones were also visible. We went on to the overhanging rock where the horses usually stop in summer; here we halted more than an hour to allow the rays of the sun to lose their strength, for fear of another fall; and sure enough, soon after our arrival at the hut, another one did come down, utterly obliterating our footsteps. All this had delayed us so long that we had to sleep at the Bärenegg instead of at the Zäsenberg as we had intended. Next day we went up to the Swiss Alpen-Club hut 'im Bergli,' just below the Mönch-joch. Warned by the experience of the day before, we declined the ascent of the Kalliberg, preferring the safer and more circuitous, but infinitely more beautiful way by the Zäsenberg and the peak (marked 2,343 mètres on the Federal map) which is locally known as the Zäsenberg-horn. The walk from that point to the foot of the Mönch-joch slope, along the upper plateau of the Viescher-gletscher, above the Heisse Platte and at the base of the magnificent wall of the Viescher-hörner, was very striking. We had almost to dig out the hut, which even in the height of summer is not entirely free from snow; there was a good deal inside, and it could not all be got out, which made it at first somewhat uncomfortable.

At 6.40 A.M. on the 22nd, a week after the ascent of the Wetterhorn, our party left the hut, Tschingel, for the same reason as before, preferring ease to increased glory. We soon gained the summit of the Mönch-joch, from which we had a magnificent view. It so happened that although this was the third time we had visited it, it was the first on which we had had decent weather, and we were so much the more impressed by the wild beauty of the cliffs of the Eiger. Keeping along the slopes to the right, we next crossed the 'sattel,' between the Mönch and the Trugberg, which has, I believe, been called by the Swiss Alpen-Club, Hinter Mönch-joch; then descending to the foot of the Jungfrau-joch, we had a splendid *coup-d'œil* down great part of the Aletsch glacier, with all the great peaks surrounding it. The next thing was to decide upon the exact route by which the Jungfrau was to be assailed. A close examination showed that from our standing point the best and shortest way was not by the Kranzberg, but up a sort of a hollow between it and the ridge of the Jungfrau. The snow, however, was now becoming soft, and it was decided that an advanced guard should be sent on to make the track. I went on with the Almers and a porter; we crossed the bergschrund without trouble, and then gained the Roththal Sattel. From hence we saw that the final cone was composed of pure ice, and horrid thoughts arose in my mind as to the length of time it might take to cut up it. Almer, however, is never daunted, and said that having come so far we *must* get to the top. He accordingly took off his coat and set to work. We made our way up, partly by the ice but mainly along the rocks which overhang the western face of the peak, and finally reached the summit in an hour and three quarters from the Sattel. The other division of the party, profiting by our steps, soon rejoined us, and after replacing the flag on the staff, we all descended a few steps to the highest rocks, where we remained about forty minutes, it being most delightfully warm, a very remarkable phenomenon at such a height even in summer. The view was perfect; on every side rose the giants of the chief districts; but our attention was chiefly fixed on the great peaks around Zermatt and on the Aletschhorn, so familiar a sight from the Sparrenhorn, most of which we saw for the first time this year. We would willingly have lingered longer, but prudence bade us be going, and after depositing our names in a bottle which was found there, containing the card of a German gentleman, we turned to descend. We followed exactly the same route as in the morning, but the ascent to the Hinter Mönch-joch was very long and sorely against the grain. On the way a magni-

ificent fall of séracs from the Mönch took place, the dust of which floated across our path. Daylight fades soon in January, and though there was a moon, yet light fleecy clouds floated across her face which greatly obscured her light. Still the effect from the Mönch-joch must have been very grand, but we were all too thoroughly tired out with an expedition so novel and entirely beyond our experience to appreciate it. Those of my readers who know what it is to walk and walk without apparently getting any nearer to the desired end, will be able to realise our feelings when Tschingel's loud bark was heard and we were back again in the hut. In no very long time we were all enjoying the sleep of the just, and only awoke late next morning to find that the weather was even finer than the day before. Vague thoughts arose of doing something else, but alas, there were no more provisions and also no more time to spare, so we had to make the best of our way down to Grindelwald, the only incident being a rencontre near the Zäsenberg with two well-known members of the Swiss Alpen-Club, Herr Bischoff of Basle, and Herr Bohren of the Adler at Grindelwald, who, accompanied by one of the Michels, Peter Bohren, Peter Baumann, and other guides were on their way up to the hut which we had just left. We failed utterly to elicit what their plans were, but I have since heard that they got up the Mönch, but encountered very stormy weather, and were in great danger of being frozen. We were received in triumph at Grindelwald, and found that our former ascent had got into the local papers in a highly edifying form, but nothing to compare with the statement which has appeared in an English paper, that one of the members of our party 'ascended the Jungfrau accompanied by a dozen English tourists,' guides being altogether left out!

Next day we quitted Grindelwald, and two days later we were in England.

It only remains to make a few general observations.

We were very fortunate in our weather, and also in having Almer, who organised every expedition and carried it through with his well-known daring and quiet perseverance. The work was on the whole more laborious and perhaps more dangerous than in summer, the great avalanche above described being, however, due to the unusual fact of a fall of rain the day before. Mr. Moore had given accounts of the extreme heat which we had scarcely been able to credit, but again and again the correctness of his statements was confirmed. Still it is hard to persuade persons that such is the case, as it is commonly believed that the cold in all those high regions must be intense, espe-

cially in winter. We also found that the quantity of snow on the higher peaks was much less than at lower elevations or in the valleys, being probably blown away soon after it falls. Hence it would appear that the snow which makes it somewhat dangerous to travel in May or early in June, must be the remains of that which has fallen during the spring.

The great inconvenience of winter travelling seems to me to consist in the total absence of water; we had to melt snow in order to make tea, soup, &c., and those who have tried it know what an unpleasant flavour it imparts.

The views were generally very clear, more like those in September than anything else; and the beauties which were revealed to us are either not visible or at any rate not so striking in summer.

To conclude, I would advise every one who can to try a winter campaign. There are no doubt drawbacks, such as the extreme uncertainty of the weather; but I cannot believe that the splendid weather which we enjoyed on our expeditions was altogether exceptional. Against these are to be set the clearness of the atmosphere and the many singular and lovely things to be seen. This was our first journey in the winter, and I, for one, hope that it will not be our last.

A NEW METHOD OF MEASURING HEIGHTS.

NOTE SUR LA DÉTERMINATION DE LA HAUTEUR D'UNE MONTAGNE INACCESSIBLE, À L'AIDE DU BAROMÈTRE ET D'UN INSTRUMENT POUR MESURER LES ANGLES.—PAR M. LE COMTE PAUL DE SAINT-ROBERT.

ON sait que la méthode ordinaire pour déterminer la hauteur d'une montagne inaccessible consiste à mesurer une base horizontale, et à prendre, à chacune de ses extrémités, l'angle que fait avec cette base la projection horizontale du rayon visuel dirigé vers le point dont on cherche la hauteur.

Une fois que la base a été mesurée, on connaît un côté et les deux angles adjacents du triangle dont le sommet est le pied de la verticale passant par la cime de la montagne; on peut dès lors calculer la distance d'une extrémité de la base au pied de cette verticale. La longueur obtenue est le côté d'un triangle rectangle dans lequel la hauteur de la montagne au-dessus de la base est l'autre côté, et dont on mesure d'ailleurs directement un angle, celui du rayon visuel avec l'horizon. Le calcul de ce triangle rectangle donnera la hauteur cherchée.

Cette méthode présente des difficultés d'exécution telles qu'un voyageur isolé ne saurait surmonter, surtout dans un pays montagneux, où l'on trouve bien rarement un terrain uni permettant de tracer une base horizontale. La mesure directe d'une base est une opération longue et délicate qui exige l'emploi d'appareils coûteux.

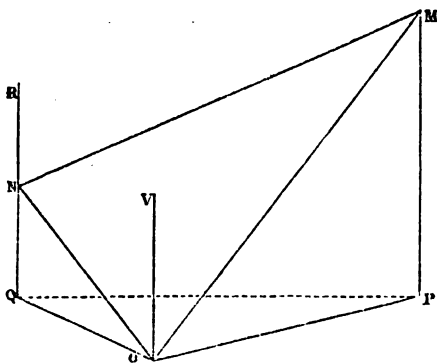
Supposant qu'on n'ait ni le temps ni les moyens de mesurer une base horizontale, il s'agit de trouver la manière d'y suppléer.

Voici l'idée qui m'est venue et dont j'ai fait l'application à quelques cas pratiques. Au lieu d'une base horizontale, j'emploie une base verticale que je mesure à l'aide du baromètre. A cet effet, je prends deux points à des niveaux différents et je détermine, au moyen d'un instrument pour mesurer les angles, l'inclinaison de la ligne droite qui les réunit, ainsi que leur différence de niveau, par le baromètre. De ces deux points je dirige des rayons visuels vers le sommet de la montagne, et je mesure les angles que ces rayons font avec la verticale.

Si les deux points choisis ne sont pas dans le même plan vertical que le sommet de la montagne, je mesure en outre les deux angles, que fait le plan vertical contenant ces deux points avec les plans verticaux contenant les deux rayons visuels dirigés vers le sommet de la montagne.

Soit M (fig. 1) le sommet de la montagne dont on veut trouver la hauteur. Je prends sur une montagne en face un point accessible N,

FIG. 1.



et au fond de la vallée un autre point O. Je tire les trois rayons visuels ON, OM, NM, dont je mesure les distances zénithales

$$VON = \alpha, VOM = \beta, RNM = \gamma,$$

et les angles horizontaux

$$PQO = \phi, QOP = \psi.$$

A l'aide du baromètre, je détermine la différence de niveau

$$NQ = h.$$

Il s'agit de trouver

$$MP = H.$$

Dans le triangle rectangle NQO, on connaît un côté NQ et l'angle.

$$ONQ = VON = \alpha;$$

on pourra donc calculer l'hypoténuse

$$NO = \frac{h}{\cos \alpha}.$$

Maintenant, si l'on conçoit le triangle sphérique qui a pour côtés

$$\begin{aligned} R N M &= \gamma, \\ R N O &= \pi - \alpha, \end{aligned}$$

et pour l'angle compris

$$P Q O = \phi,$$

on trouve, pour le troisième côté $M N O$, d'après une formule connue de trigonométrie sphérique,

$$\cos M N O = \cos (\pi - \alpha) \cos \gamma + \sin (\pi - \alpha) \sin \gamma \cos \phi,$$

ou bien

$$\cos M N O = -\cos \alpha \cos \gamma + \sin \alpha \sin \gamma \cos \phi.$$

De même, le triangle sphérique ayant pour côtés

$$\begin{aligned} V O N &= \alpha, \\ V O M &= \beta, \end{aligned}$$

et pour l'angle compris

$$Q O P = \psi,$$

fournit, pour le côté $M O N$,

$$\cos M O N = \cos \alpha \cos \beta + \sin \alpha \sin \beta \cos \psi.$$

Dans le triangle rectiligne $M N O$, on connaît le côté NO , et les deux angles adjacents; on pourra donc calculer le côté OM , au moyen de la proportion

$$N O : O M :: \sin (M N O + M O N) : \sin M N O;$$

d'où l'on tire, en mettant pour NO sa valeur trouvée plus haut,

$$O M = \frac{h}{\cos \alpha} \cdot \frac{\sin M N O}{\sin (M N O + M O N)}.$$

Enfin, le triangle rectangle $M O P$ donnera, pour la hauteur cherchée,

$$M P = H = h \frac{\cos \beta}{\cos \alpha} \cdot \frac{\sin M N O}{\sin (M N O + M O N)}.$$

Ordinairement, on peut prendre les deux points N et O de manière qu'ils soient compris dans le même plan vertical que le sommet M de la montagne. On a alors

$$\phi = 0, \psi = \pi,$$

et par suite

$$\begin{aligned} \cos M N O &= -\cos \alpha \cos \gamma + \sin \alpha \sin \gamma = -\cos (\alpha + \gamma), \\ \cos M O N &= \cos \alpha \cos \beta - \sin \alpha \sin \beta = \cos (\alpha + \beta); \end{aligned}$$

d'où l'on déduit

$$\begin{aligned} M N O &= \pi - \alpha - \gamma, \\ M O N &= \alpha + \beta, \end{aligned}$$

et par suite

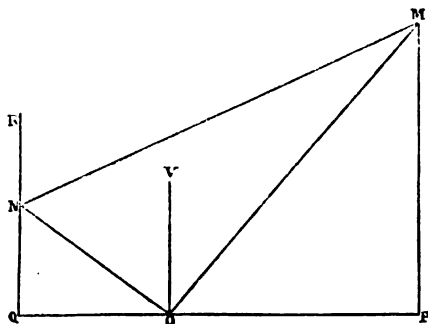
$$M N O + M O N = \pi - \gamma + \beta.$$

Dans ce cas, la hauteur cherchée devient

$$(1) \quad H = h \frac{\cos \beta}{\cos \alpha} \cdot \frac{\sin (\gamma + \alpha)}{\sin (\gamma - \beta)}.$$

On pourrait arriver directement, avec toute facilité, à cette expression, en raisonnant sur la fig. 2, sans passer par le cas plus général.

FIG. 2.



APPLICATIONS.

1^{er} Exemple.—Hauteur de la Croix de Chabrière. Près de Bardonnèche, presque à l'extrémité du contre-fort séparant le vallon de Rochemolle de celui de Merdovine, contre-fort que traverse le grand tunnel de Bardonnèche à Modane, est plantée une croix qu'on aperçoit de tout le bassin de Bardonnèche et qu'on nomme Croix de Chabrière.

Afin de mesurer la hauteur de cette Croix, je choisis deux points accessibles : l'un sur le contre-fort séparant la Vallée-étroite du vallon de la Rho, à un endroit nommé Trois-Croix ; l'autre à l'intersection du chemin conduisant au col de la Rho avec le plan vertical contenant la Croix de Chabrière et les Trois-Croix. Je marquai ces points par un jalon.

Les observations barométriques faites à ces points, comparées à celles de l'Observatoire astronomique de Turin, donnèrent :—

| | | | | |
|-------------|---|-------------------------|----------------|------------|
| Jalon | { | Baromètre réduit à zéro | millim. 642,2 | } moyennes |
| | | Thermomètre libre | dégrés c. 20,7 | |
| Turin | { | Baromètre à zéro | . . . 739,9 | } observa- |
| | | Thermomètre libre | . . . 24,2 | |
| Trois-Croix | { | Baromètre à zéro | . . . 599,6 | } moyennes |
| | | Thermomètre libre | . . . 21,5 | |
| Turin | { | Baromètre à zéro | . . . 741,5 | } observa- |
| | | Thermomètre libre | . . . 27,5 | |

. Avec ces données, à l'aide des *Nouvelles Tables hypsométriques* que j'ai publiées en 1867,* on trouve :—

* *Memorie dell' Accademia delle Scienze di Torino*, Serie II., Tomo XXV. J'emploi ces tables préférablement aux tables ordinaires fondées sur la formule de Laplace, parce que ces dernières donnent des hauteurs trop fortes, ainsi que je l'ai fait voir ailleurs, lesquelles, étant encore agrandies par suite du procédé que je propose, finissent par conduire à des résultats exagérés.

Hauteur du Jalon au-dessus de Turin . . . 1225^m, 3
 Hauteur des Trois-Croix au-dessus de Turin . . 1848^m, 0
 Hauteur des Trois-Croix au-dessus du Jalon, $h=$ 622^m, 7

Les mesures angulaires* fournirent :

Distance zénithale des Trois-Croix, vues du Jalon (division centésimale), $\alpha=81^{\circ}$, 78

Distance zénithale de la Croix de Chabrière vue du Jalon, $\beta=80$, 35

Distance zénithale de la Croix de Chabrière, vue des Trois-Croix, $\gamma=98$, 70

En mettant ces données dans la formule (1), on obtient
 $\log H = \log h + 0,05789$,

et par suite, d'après la valeur de h trouvée ci-dessus, il vient :

Hauteur de la Croix de Chabrière au-dessus du Jalon,
 $H=711^m$, 5

Hauteur de la Croix de Chabrière au-dessus de l'Observatoire de Turin, 1936^m, 8

Afin de contrôler ce résultat, je fis à la Croix de Chabrière trois observations barométriques dont la moyenne est

| | | | |
|----------------------|---|-------------------|-----------------------|
| Croix de Chabrière | { | Baromètre à zéro | 590 ^{mm} , 8 |
| | | Thermomètre libre | 15 ^o , 7 |
| Turin (Observatoire) | { | Baromètre à zéro | 739, 2 |
| | | Thermomètre libre | 25, 6 |

Avec ces données, on obtient

Hauteur de la Croix de Chabrière au-dessus de l'observatoire de Turin, 1924^m, 7.

La différence des deux résultats est de 12^m, 1. Comme la véritable hauteur de la Croix de Chabrière n'est pas connue, il peut se faire que cette différence doive être attribuée en partie à l'appréciation plus ou moins imparfaite de la caractèrè romain, laquelle a été faite uniquement au moyen du baromètre.

2^e Exemple.—*Hauteur du Pelvo d'Elva.* Ce pic est situé sur le contre-fort qui sépare la vallée de Vraita de celle de Maira, entre les deux communes de Casteldelfino et d'Elva. Pour le mesurer, je choisis deux points dans le même plan vertical que le sommet : l'un sur les ruines du Château de Casteldelfino; † l'autre dans

* J'employai pour mesurer les angles un *Aba*, espèce de théodolite inventé par M. Antoine d'Abbadie. Celui dont je me servis donne le dixième de degré centésimal (5' 2", 4 de la division en 90^o). C'est un charmant petit instrument, très-maniable, léger (3 k. $\frac{1}{2}$), que je recommande aux voyageurs.

Je n'ai pas tenu compte, dans aucun des exemples, de la correction due à la réfraction atmosphérique et à la sphéricité de la terre, parce que cette correction n'atteint pas un dixième de degré.

† L'expérience m'a démontré que le meilleur signal pour la station inférieure est un drap de lit étendu par terre et assujéti par des pierres. Il est facile, en se servant d'un fil à plomb, et en parcourant la pente de la montagne faisant face au sommet dont on demande la hauteur, de trouver un point compris dans le même

l'Elvé,* sur la montagne en face, à un endroit nommé Plan des Gorges

Les observations barométriques donnèrent :—

| | | |
|-----------------|--|--------------------------------|
| Château | $\left\{ \begin{array}{l} \text{Baromètre à zéro} \quad . \quad 654,0^{\text{mm}} \\ \text{Thermomètre libre} \quad . \quad 16^{\circ},3 \end{array} \right\}$ | Moyennes de cinq observations. |
| Turin | | |
| (Observatoire) | $\left\{ \begin{array}{l} \text{Baromètre à zéro} \quad . \quad 738,4 \\ \text{Thermomètre libre} \quad . \quad 22,6 \end{array} \right\}$ | |
| Plan des Gorges | | |
| | $\left\{ \begin{array}{l} \text{Baromètre à zéro} \quad . \quad 586,5 \\ \text{Thermomètre libre} \quad . \quad 12,0 \end{array} \right\}$ | |
| Turin | | |
| (Observatoire) | $\left\{ \begin{array}{l} \text{Baromètre à zéro} \quad . \quad 740,3 \\ \text{Thermomètre libre} \quad . \quad 24,3 \end{array} \right\}$ | |

On en déduit :

| | |
|--|-----------------------|
| Hauteur du Château de Casteldelfino au-dessus de Turin | 1040 ^m , 1 |
| Hauteur du Plan des Gorges au-dessus de Turin | 1979, 6 |
| Hauteur du Plan des Gorges au-dessus du Château | 939, 5 |

Les mesures angulaires fournirent :

| | |
|--|--------------------------|
| Distance zénithale du Pelvo vu du Château | $\alpha = 82^{\circ}, 3$ |
| Distance zénithale du Plan des Gorges, vu du Château | $\beta = 78, 1$ |
| Distance zénithale du Pelvo vu du Plan des Gorges | $\gamma = 93, 7$ |

Au moyen de ces données, on obtient, par la formule (1)

$$\log. H = \log. h + 0,27059,$$

et par suite :

| | |
|---|--------------------------|
| Hauteur du Pelvo d'Elva au-dessus du Château | $H = 1751^{\text{m}}, 8$ |
| Hauteur du Pelvo au-dessus de l'Observatoire de Turin | 2791, 9 |
| En ajoutant la hauteur de cet observatoire, soit | 276, |
| On obtient, pour l'altitude de Pelvo d'Elva | 3067, 9 |

On trouve 3064^m, pour l'altitude de ce pic, dans la carte de l'Etat-Major Piémontais au 1/50000; une observation barométrique que j'y ai faite en 1864, m'a donné 3083^m. Ici l'accord est très-satisfaisant.

3^{me} Exemple.—*Hauteur du Mont Viso*. Pour mesurer la hauteur de ce pic, je choisis deux points dans le même plan vertical que lui : le premier sur les ruines du Château de Casteldelfino, le même que dans l'exemple précédent; le second sur la crête qui fait suite au Pelvo d'Elva. Ce point résulte très-près du Col de la Bicocca ou d'Elva.

Les observations barométriques au col d'Elva fournirent :

| | |
|------------|--|
| Col d'Elva | $\left\{ \begin{array}{l} \text{Baromètre à zéro} \quad . \quad 579^{\text{mm}}, 5 \\ \text{Thermomètre libre} \quad . \quad 15^{\circ}, 5 \end{array} \right\}$ |
| Turin | |
| | $\left\{ \begin{array}{l} \text{Baromètre à zéro} \quad . \quad 734, 9 \\ \text{Thermomètre libre} \quad . \quad 22, 7 \end{array} \right\}$ |
| | |

De ces données on déduit :

| | |
|---|------------------------|
| Hauteur du Col d'Elva au-dessus de Turin, | 2028 ^{m}, 2.} |
|---|------------------------|

plan vertical que ce sommet et le signal inférieur. Il n'est pas nécessaire de placer un signal à la station supérieure, pourvu qu'on ait le soin de mesurer, à ce point, la distance zénithale du signal inférieur.

* C'est une forêt de pins de l'espèce *Pinus Cembra*, Linn., qu'on appelle *Elvo* dans ces vallées.

Dans le deuxième exemple, on a trouvé 1040, 1, pour la hauteur du Château au-dessus de Turin, par conséquent, on a
Hauteur du col d'Elva au-dessus du Château, 988, 1.

Les mesures angulaires fournirent les résultats suivants :

| | |
|--|--------------------------|
| Distance zénithale du Col d'Elva vu du Château | . $\alpha=75^{\circ}, 6$ |
| Distance zénithale du Mont Viso vu du Château | . $\beta=82, 7$ |
| Distance zénithale du Mont Viso vu du Col d'Elva | . $\gamma=91, 4$ |

Avec ces données, on trouve

$$\log. H = \log. h + 0, 41670.$$

En remplaçant h par sa valeur ci-dessus, il vient

$$H = 2579^m, 3.$$

Ainsi la hauteur du Mont Viso au-dessus de Turin résulte de 3619^m, 4, et au-dessus de la mer de 3895^m, 4.

La carte de l'Etat-Major au 1/50000 porte cette altitude à 3840^m. M. Mathews a trouvé 3861^m, à l'aide du baromètre, en 1861. M. Tuckett, 3850^m, en 1862. J'ai trouvé 3852^m, en 1863.

L'excès de l'altitude que donne la méthode dont il est ici question peut être attribué en partie à la dépression barométrique qui devait exister au Col d'Elva au moment de l'observation, dépression qu'indiquait la marche des brouillards montant de tous les côtés, qui finirent par m'envelopper, en m'empêchant de répéter la mesure des angles. Cette circonstance a dû produire une estimation trop élevée du Col d'Elva. Il aurait suffi que le baromètre se fût tenu plus haut d'un millimètre ou deux, pour mettre d'accord l'altitude calculée du Mont Viso avec les altitudes trouvées précédemment.

La mesure de la différence de niveau des deux stations d'où l'on fait partir les rayons visuels, doit être faite avec grand soin, attendu que l'erreur commise sur cette hauteur se trouve multipliée dans la hauteur qu'on cherche. Aussi sera-t-il bon de répéter plusieurs fois les observations barométriques faites simultanément à ces deux points. C'est ce que je regrette de n'avoir pas fait dans les applications rapportées ci-dessus. Le manque d'une personne pour observer simultanément le baromètre à l'autre station, et le temps trouble m'empêchèrent de faire mieux. Pour suppléer aux observations simultanées aux deux stations, j'ai été obligé de rapporter toutes mes observations à l'Observatoire de Turin, éloigné plus de 100 kilomètres.

Malgré ces circonstances peu favorables, les résultats obtenus sont assez satisfaisants pour que je me permette de signaler la méthode que je propose à l'attention des personnes s'occupant d'hypsométrie.

NOTE.—J'espère pouvoir bientôt proposer, comme complément de cette méthode, une lunette pour mesurer les angles verticaux, sans cercle gradué, donnant la tangente des angles d'élévation. Alors tous les instruments pour mesurer une montagne inaccessible se réduiront au baromètre et à une lunette. Pour ce cas, il sera bon de donner à la relation (1) la forme suivante :

$$H = h \frac{\cot \beta}{\cot \alpha} \frac{\cot \alpha + \cot \gamma}{\cot \beta - \cot \gamma}$$

MEMORIAL OF THE ENGLISH ALPINE CLUB TO THE FRENCH GOVERNMENT, WITH REFERENCE TO THE GUIDE SYSTEM OF CHAMONIX.

The following memorial has been lately presented to the French Government on behalf of the Alpine Club. For the document in its present form the President and Committee are alone responsible; but they wish to take this opportunity of recording the great service rendered in its preparation by Mr. Alfred Wills, who not only offered the assistance of his intimate knowledge of Chamonix, but found time to put into shape and draft the memorial itself.

In former years the guides of Chamonix stood at the head of their class; but latterly complaints of the difficulty of procuring at that place competent and trustworthy men have been so frequent as to have forced themselves upon the notice of all persons interested in Alpine travel. The members of the English Alpine Club naturally possess great facilities for obtaining information on this subject, and their attention has been drawn to it for some time past. Your memorialists believe that there has been for many years a gradual and progressive deterioration in the body of Chamonix guides. The glaciers of Mont Blanc are better known than those of probably any other Alpine region, and they offer no special difficulties or dangers; yet during the last few years they have been the scene of five fatal accidents, involving the loss of nineteen lives, and the most lamentable and fatal catastrophe of all occurred upon an expedition in which eight guides and porters were engaged.

Even where no actual danger is incurred, the amount of inconvenience, annoyance, and disappointment resulting from the present system is very serious, and exceedingly injurious to the reputation of Chamonix. In consequence, the stream of Alpine enterprise is setting steadily eastwards, and the spot of all others endeared to the lovers of the Alps by natural attractions and by traditional associations, is being gradually abandoned. Experienced mountaineers prefer, for any novel or difficult expedition, to rely upon the aid of foreign guides, possessing the skill and courage which they find it difficult to meet with at Chamonix; whilst many less adventurous travellers quit the district, full of annoyance and disgust at the incompetence and extortion of which they have been made the victims. Members of the Alpine Club, being allowed by the existing rules the free selection of their guides, have less personal interest in the matter under discussion than the rest of the travelling public, but they feel that it would be wrong on that account to abstain from bringing under the notice of the French Government a condition of affairs which they believe to be prejudicial alike to the safety and comfort of travellers in general and to the true interests of the inhabitants of this most interesting district.

Your memorialists believe that many of the evils complained of are due, first, to certain defects in the rules comprised in the '*Règlement et Tarif de la Compagnie des Guides de Chamonix*' (a copy of which

accompanies this Memorial), and, secondly, to the manner in which these rules are carried out.

The principal points to which your memorialists desire to call your attention are the following:—1. The system of admission to the Company. 2. The election and functions of the chief guide. 3. The power of selection of his guide left to the traveller. 4. The publication of a list of guides, with their qualifications. 5. The tariff. The present Memorial will consider each of these subjects in turn.

1. *As to the system of admission into the Company of Guides.* ('Règlement,' Arts. 1-8.)

The rules provide for an annual examination of candidates by a commission consisting of (1) the juge de paix, (2) the mayor of Chamonix, (3) the chief guide, (4) the president of the Council of Administration of the Company, (5) a guide named each year by the Council, (6) the communal instructor. The candidate must obtain the suffrages of four out of the six members of the Council. He is required to show a knowledge of the elements of primary instruction, of the different localities in the valley of Chamonix and the neighbouring district, and of the objects of interest to travellers; to prove that he has made, as a volunteer, and in company with, at least, two guides, 'all the ordinary and extraordinary excursions;' that he has satisfied the law touching the recruitment of the army; and that he exercises a calling. He must be 'of notorious good conduct,' as witnessed by the written certificates of the juge de paix and the mayor; and his physical capacity is to be established by the certificate of a medical man to be named by the council of the corporation.

Your memorialists desire to point out that the position in life of the persons whose duty it is to ascertain whether or not candidates possess the prescribed qualifications renders their conscientious discharge of this duty almost impracticable. Four out of the six members of the examining commission are certain to be natives of the valley of Chamonix, brought up amongst the very persons with respect to whom it is their duty to perform the invidious task of refusing the diploma of guide in cases of incompetency. Three of them are essentially of the same class as that to which the candidates themselves belong. The difficulty of their position is heightened, and at the same time a door of escape from the conscientious discharge of a disagreeable duty is opened by the fact that, in the most critical respect of all, the law requires an impossibility. The candidate must have made 'all the excursions, ordinary and extraordinary,' lists of which are given in the 'Règlement.' The first numbers upwards of forty separate and distinct expeditions, several of which, such as the ascents of the Aiguille de la Floria and the Aiguille de la Glière, and the passage of the Col du Dérochoir, so far from being 'ordinary,' in the common acceptance of the term, are almost unknown to excursionists, and probably have not been made by one-twentieth portion of the Company of Guides. The 'extraordinary' excursions are upwards of thirty in number, and comprise, besides the ascent of Mont Blanc, the ascents of the Aiguille Verte, of the Aiguille d'Argentière, of the Aiguille du Midi, of the Aiguille du Tour, of the Aiguille de Bionnossay, and of the Grandes

Jorasses, as well as a great number of other expeditions of great difficulty, and even hazard, many of which have been accomplished only two or three times in all, and some of which are hardly likely to be repeated. To accomplish the whole of the 'ordinary' excursions would be the work of at least two months, steadily devoted to such a purpose. To accomplish all the 'extraordinary' excursions would require the devotion of the entire fine season for several summers in succession. It is perfectly obvious that the law cannot be observed with respect to either class of expedition, and that the tendency of such exaggerated requirements must be to turn into a valueless and illusory form the examination which, in compliance with the 'Règlement,' is supposed to take place as to the candidate's knowledge of the localities and objects of interest of Chamonix and the neighbourhood. With regard to the other qualifications, it is believed that many instances occur in which persons who have been rejected as recruits for the army have been allowed to be entered upon the roll of guides; and that the exercise of a regular industry on the part of the candidate is very frequently more nominal than real. If the 'notorious good character' and the physical capacity required by the law really exist at the time the candidate presents himself for enrolment, it must follow that there is something demoralising in the profession of a guide; for the Committee of the Club have received from many most trustworthy sources complaints of intemperance and of want of physical power on the part of guides.

Your memorialists have no reason to think that the requirement of the law as to the possession by the candidate of the elements of primary instruction is not complied with; nor do they for a moment suppose that the juge de paix and the mayor have given wilfully untrue certificates of character. But these officials are the last persons to whose ear the fame of excesses incompatible with the spirit of the Article in question would come. They would be concealed as much as possible by the individual, and the strong *esprit de corps* which binds together the members of a small mountain community would make them equally reticent on such a subject to the authorities; whilst, with reference to the qualifications of the candidates in matters of mountain craft, the juge de paix, the mayor, and the schoolmaster would, of course, trust entirely to the special knowledge of the other members of the commission. It is submitted that the facts here pointed out all lead to the conclusion previously expressed, that the independence necessary to the discharge of the duties of the commission cannot be expected from persons of the same locality and class as the candidates themselves; and it is found, in fact, that the only persons who do discharge their duty as to the matters which fall within their special cognisance are those who are strangers to the neighbourhood, or raised above the ordinary local influences.

The provisions to which attention has above been called have a demoralising effect in another and not unimportant respect. All the aspirants who present themselves for examination must present certificates from guides that they have performed the necessary excursions. It is believed that these are usually in a general form; but whether general or not, they cannot be true, for no man could procure one if it

had to be true. The inevitable consequence is a wholesale system of manufacture of false certificates, which cannot fail to operate disastrously upon the character of those who are engaged in it.

On the other hand, no provision is made for any attempt to ascertain that the candidate has the least idea of the places where, or the circumstances under which, danger is likely to be experienced, or of what he ought to do in case of difficulty, peril, or accident.

2. *As to the election and functions of the Chief Guide.* (Arts. 10-20.)

The chief guide is elected once in two years by the votes of the guides inscribed on the roll, and he is capable of re-election. His salary is not less than 600 and not more than 900 francs, a sum too low to attract guides of the first order, but high enough to be an important object to those of inferior position. Moreover, it is apparently derived from the payments of those over whom he is supposed to preside. The principal duties, so far as travellers are concerned, of the chief guide are defined by Art. 14. He is charged with the duty of providing guides for travellers, of giving them information on matters appertaining to the places they desire to visit, of organising expeditions, and of seeing that the 'Règlement' is exactly observed.

It is obvious that the comfort and security of travellers must depend very greatly upon the intelligence, knowledge, and character of the chief guide. It is to him that appeal must constantly be made for the decision of a multitude of questions of great importance to excursionists, as to many of which the interests of the traveller and those of the guide are in opposition. It is upon him that must devolve the task of checking attempts at extortion or imposition, and of correcting, where necessary, by his authoritative voice, the information which the traveller may have received from idle and interested persons. That the whole of the guides of Chamonix are untrustworthy, lazy, or extortionate, is not suggested or believed for a moment; but that out of 300 members of the Company there must be a certain number in whom such faults may be expected, there can be no doubt, otherwise Chamonix would present a strange and happy exception to the ordinary experiences of life. There must therefore be constant occasions on which the chief guide must either violate his duty or offend an elector and paymaster. It is natural that the nominee of the guides should be a person who will, as a rule, take the part of the guide against the traveller, and not that of the traveller against the guide. It is believed that such has been in practice the result of the elective system as applied to the appointment of chief guide. Your memorialists venture to suggest that the chief guide should be nominated, as was formerly the case, by the superior authorities; that, if possible, some intelligent and trustworthy man from a distance, and not mixed up with local affairs and local influences, should be selected. They believe that in a very short time he would acquire the local details and the small amount of technical knowledge necessary to the adequate discharge of his duties, and that he would be far more independent and more likely to afford protection and disinterested information to travellers than a person elected under the present system can possibly be. His presence at Chamonix would be necessary only for about five months in the year, and it would

tend greatly to his independence and usefulness if he were employed elsewhere during the rest of his time.

3. *As to the power of selection of his guide left to the traveller.* (Art. 21).

The present rule is that, subject to certain exceptions, in which a choice is reserved to the employer, the guides shall be assigned to travellers by rotation; the recommendation, either by the chief guide or any other person, of a guide being rigorously forbidden (Art. 24).

The Club respectfully suggest that there ought to be entire freedom of choice on the part of the traveller; that, in cases where the traveller expresses no special preference, it should be the duty of the chief guide to recommend the most suitable individuals, whether for ordinary or extraordinary excursions; and that much greater facilities than exist at present should be afforded for ascertaining the experience and antecedents of the guides. There is no objection to maintaining the system of rotation, subject to these large exceptions; but your memorialists would respectfully represent that nowhere in the Alps, except at Chamonix, is any restriction placed upon the free choice of a guide by the traveller; and they can conceive of no principle, except that of communism pure and simple, which can justify the deliberate suppression by law of the natural rewards of superior intelligence, manners, goodwill, vigour, or capacity—qualities the presence or absence of which may be as agreeably or as painfully felt upon the minor excursions of the ordinary tourist as upon the greater expeditions of the true mountaineer.

4. *As to the publication of a list of guides, with their qualifications.*

It is further suggested that a register should be kept at the Bureau, in which the traveller may look over the names of the guides and see what great expeditions they have each made. At present there is no such record available to the public, and, except by a violation of the 'Règlement' on the part of some one, a stranger cannot obtain the needful information, and may be put off with a guide utterly unfit to take the conduct of a difficult expedition. There would be no difficulty in providing a nominal register, in which all the extraordinary expeditions taken by each guide should be recorded under his name; and it would add greatly to its value if the name of the employer were also given, and he were requested, in the case of the expedition terminating elsewhere than at Chamonix, to enter in his guide's pocket-book a certificate that the expedition had been accomplished, and in either case to append any remarks he might think fit to make upon the conduct or capacity of the guide. Good guides would find no difficulty in inducing travellers to take this amount of trouble on their behalf. The guides' books should be officially inspected at the end of each season, and the remarks contained in them added to those already entered upon the register. A list of the guides should be printed every year, with an abstract of the contents of the register, and a copy deposited in each hotel. Such a list would command a ready sale at a moderate price, and, by affording to the traveller an easy means of testing the qualifications of the guides, would subject them to the

wholesome stimulus of competition, and offer to them the legitimate rewards of superiority. Your memorialists consider that the change they are now venturing to urge upon the Government is of greater consequence, and will be productive of far more beneficial results, than any amendment in the system of admission. In fact, without the beneficial operation of natural competition, they believe that the character of the corporation of guides must only sink lower and lower.

5. *As to the Tariff.*

Your memorialists believe that the sum allowed by the tariff for the ascent of Mont Blanc is much too high, both absolutely and relatively to many other items of the tariff, and they believe that this excessive allowance has had a very serious effect in damping the energies and destroying the enterprise of the Chamonix guides. The tariff for Mont Blanc is 100 francs. This amount was fixed very many years ago, when the ascent was much more difficult in itself, and was made under conditions totally different to those of the present day. The expedition is now commonly accomplished in two days, of which the first is a very light one; and if the weather be fine and the snow favourable, the second presents nothing like serious fatigue or exhausting conditions to a healthy man, fairly accustomed to out-of-door pursuits. Under ordinary conditions, the expedition is little more than a promenade, not unfrequently undertaken by ladies. The remuneration in proportion to the fatigue and risk involved is then enormous, and the money is so easily earned that the guides who have a chance of making the ascent several times in a season have no heart for any less profitable undertaking, and enter upon almost any other expedition with regret and dislike. On the other hand, in doubtful weather, or with a tired traveller, the temptation to reach the top, or as near the top as may be, and to earn this large sum, is so great as sometimes to lead to the disregard of every warning which would induce a prudent man to turn back, and it has thus contributed to very lamentable catastrophes. A few instances will illustrate the excessive amount of this charge, as compared with those—by no means too low—for other expeditions in the neighbourhood, or in other parts of the Alps, and will sufficiently account for the reluctance of the guides to turn their steps in any direction but along the 'Chemin du Mont Blanc.' The passage of the Col du Géant, and the return journey to Chamonix, occupies three long days, of which the first is nearly as fatiguing as the second day of the ascent of Mont Blanc; the tariff is 50 francs. The passage of the Col d'Argentière to Ornières presents much more difficulty than the ascent of Mont Blanc, and the guide can scarcely return to Chamonix before the third day; the tariff is 60 francs. The passage of the Col de Miage to Courmayeur involves at least four days' work, and the col is a difficult one; the tariff is 60 francs. The same may be said of the much more serious pass of the Col de Trélatête, which is fixed at the same figure. The ascents of the Aiguille Verte, and of the Grandes Jorasses (the last requiring a preliminary journey to Courmayeur) are far more difficult than that of Mont Blanc; the tariff is 80 francs in each instance. Such illustrations might be multiplied, but enough has been said to illustrate the operation of the tariff. A few examples may

be quoted from other parts of the Alps. The ascent of Monte Rosa is accomplished in one day from the Riffelberg, but it is much more difficult under ordinary circumstances than that of Mont Blanc; the tariff is 40 francs. The Finsteraarhorn, the Aletschhorn, the Mönch, and the Jungfrau are all mountains of the first order; the tariff for their ascent from the Äggischhorn is fixed at 60, 40, 50, and 70 francs respectively. The only ascent in Switzerland for which the regular tariff is as high as 100 francs is that of the Matterhorn, which is incomparably more difficult and dangerous than that of Mont Blanc.

There is much difficulty in fixing the price to be paid for abortive expeditions; and yet, with respect to the extraordinary ascents, your memorialists believe that the temptation offered by the difference between the price to be paid for the accomplished expedition and that payable in case of failure has already been, and will probably again be, instrumental in bringing travellers into great danger. An attempt is made by Arts. 33 and 37 to fix some scale of remuneration in case of certain specified expeditions partially accomplished, but in the great majority of cases there is no rule applicable; the guide who should be compelled by bad weather to return from the Aiguille du Midi, for instance, without having reached the top, would in strictness probably be entitled under the tariff to ten francs only, as for 'an expedition on the glaciers of the chain of Mont Blanc above the line of vegetation.' So extreme a result is not likely to occur with most employers, but the fear of being exposed to the operation of such a law is very likely to give an undue temptation to persevere in spite of the dictates of prudence. A discretion might safely be vested, under such circumstances, in the chief guide, if properly nominated, in cases where the traveller and his guide cannot agree; and such a change would, it is believed, conduce to the general safety.

In brief, your memorialists suggest as follows:—

1. That the present system of admission to the Company of Guides be altered.
2. That the chief guide be an independent person, appointed, during pleasure, by the préfet of the district.
3. That unrestricted choice of guides be allowed to all classes of travellers, and that in those cases in which the traveller shall express no preference, it shall be the duty of the chief guide to recommend the guides most suitable for the expedition proposed.
4. That a list of guides, with their respective qualifications, be printed annually, and sold to the public.
5. That the tariff be modified, and, in particular, that the charge for the ascent of Mont Blanc be reduced.

(Signed) WILLIAM LONGMAN, President of the Alpine Club.
A. W. MOORE, Secretary.

We have received from Mons. Philippe, 'ex-préfet de la Haute Savoie,' a long letter, originally published in an Annecy newspaper, of which he requests the insertion. The portion devoted to justifying, as against Mons. Loppé's criticisms, his official conduct we willingly find

room for ; but it has been necessary, on more accounts than one, to omit the remainder.

‘ En 1872, les guides de Chamonix ont présenté à l’approbation préfectorale un règlement d’administration. Ce règlement était à peu de chose près, le même que celui qui avait été approuvé sous le régime précédent.

‘ Après m’être entouré de tous les renseignements propres à m’éclairer, je biffai certaines dispositions qui me paraissaient mauvaises ou inexécutables, j’en modifiai d’autres, j’en ajoutai même quelques-unes destinées à sauvegarder le plus possible les droits des voyageurs aussi bien que ceux des guides.

‘ Or, il résulta de tout ce remaniement, que les choses restèrent comme elles étaient auparavant, sauf quelques modifications de détail, dont la plus importante était l’élection du guide-chef par la Compagnie. Puis, et c’est ici qu’est le fameux grief, le prix des grandes courses, des courses périlleuses, était légèrement augmenté. Ainsi l’ascension du Mont-Blanc qui se payait au guide 80 fr. fut portée à 100 francs !!

‘ Voilà le grand crime !

‘ Et c’est si bien à cela que se sont bornées les fameuses augmentations qu’on nous reproche, que l’*Alpine Journal* avoue lui-même que le tarif des courses est assez modéré, *excepté pour ce qui concerne l’ascension du Mont Blanc.*

‘ Quel crime j’ai donc commis ! J’ai autorisé une augmentation de 20 francs pour une course aussi dangereuse que celle qui a pour but la sommité de la montagne la plus haute de l’Europe !’

Mons. Philippe goes on to support at length the increase of the tariff on the ground, that climbers are not, in cases of fatal accident, in the habit of assisting the families of the guides who have perished.

‘ L’autre grief articulé, c’est que le guide-chef n’est plus nommé par le préfet, mais par la Compagnie des guides.

‘ A cet égard, il y a matière à discussion ; la Compagnie des guides est une société particulière, tout en étant soumise à un règlement d’administration publique ; il semble naturel qu’elle élise son chef, dont les devoirs, du reste, sont écrits tout au long dans le règlement.

‘ Reconnaît-on que cette manière de faire soit défectueuse ? Qu’on la change ; l’expérience est un grand maître, et il faut savoir se soumettre à ses décisions.’

Mons. Philippe next explains the origin of the 62nd article, that pretending to inflict legal penalties on the critics of the ‘ Compagnie.’

‘ Lorsque l’article en question m’est tombé sous les yeux, j’en ai demandé la signification, l’utilité ; je ne comprenais pas.

‘ Veut-on savoir ce qui m’a été répondu ?

‘ — C’est un article spécialement destiné à une seule personne qui, contrariée de ne pouvoir tout mener à sa guise à Chamonix, fait une croisade continuelle contre nous ; va, vient, dit, parle et fait tant qu’il en résulte un ralentissement dans la discipline des guides, et que les contraventions au règlement se multiplient.

‘ — Mais, fis-je observer, pourquoi insérer un article pour les faits et gestes d’une seule personne ? C’est affaire au guide-chef que de rappeler chacun au respect du règlement.

'— Nous ne pouvons pas nous passer de cet article, me fut-il répondu; si vous ne l'approuvez pas, la majeure partie des guides sérieux se retire de la Compagnie.

'Que faire? On me cita des faits, et j'approuvai!'

The manner in which the revision was made is curiously illustrated by this frank confession. The 62nd article was, we are told, retained against the better sense of the préfet, in consequence of threats on the part of some of the guides—threats which no one acquainted with Chamonix could have imagined serious.

We wish Mons. Philippe had gone on to explain how he purposed to give effect to this 'Article,' and what is the exact nature of the 'pains and penalties' reserved for free discussion under the French Republic, which had he remained in office he would have been prepared, if sufficiently threatened, to inflict upon the critics of Chamonix.

But this rule, though a fair subject for a passing laugh, is quite beneath serious criticism. If it pleases Chamonix it does not hurt us. Should another préfet be found ready to sanction it we shall not protest against its retention.

The judiciousness of the more important modifications made in 1872 in the Chamonix règlement must be decided, as Mons. Philippe reasonably says, by their results. Judged by this test they have been generally condemned.

ALPINE NOTES.

FOREIGN ALPINE CLUBS.*—The founders of our Alpine Club, like those of most great institutions, had little idea of the impulse they were about to give throughout the whole of civilised Europe to mountain exploration, or of the wide-spread organisations which would arise out of the social meetings of a few English oromaniacs—if the word may be coined.

For the first five years the seed sown did not multiply. It was not until 1862 that the second Alpine Club, the Austrian, was founded at Vienna. In the following year the Swiss Club, now numbering nearly 1,500 members, and the Italian, now numbering over 1,200 members, had their origin. The German Club, lately united with the Austrian, was not established until 1869. Of all these bodies brief notices have appeared from time to time in these pages. But the English Club has other children of whose existence we believe many of its members are unaware. The 'Verein der Gebirgsfreunde in Steyermark,' has its centre at Gratz, counts 500 members, publishes an annual volume, and spends part of its income in improving mountain paths and building huts. The 'Club Alpino del Trentino' is a body founded only in 1873, but which has begun well, some of its members having already climbed the Presanella and the Brenta Alta. At Pinzolo and Primiero

* Many of the facts mentioned in this notice are derived from a short article on 'Les Sociétés Alpines,' in the last 'Bollettino' of the Italian club.

it has a noble field before it, and as it counts among its members many of the leading hotel-keepers of the country, it is reasonable to look for improvements in inns and paths which will render more generally accessible the exquisite scenery of Val Rendena and the neighbourhood of Molveno. The opening, last year, of the old hospice at La Madonna di Campiglio as a pension, is a first and an important step in this direction.

At Cracow a Carpathian Club has just sprung into being. Under, it seems, German influence, a 'Vogesen Club' has lately been started in Elsass.

In France the only similar society has up to the present time been the 'Société Raymond' of the Pyrenees, a small body (founded 1865) of under 100 members. But at last steps have been taken by some eminent Frenchmen, among them Mons. Cézanne, the deputy for the 'Hautes Alpes,' Colonel Mieulet, the maker of the French map of Mont Blanc, and Mons. Joanne, to found a National Club of a somewhat extended character. 'Ouvrez votre porte toute grande; militaires et savans, jeunes et vieux, même les femmes, même les étrangers, tous ceux qui aiment la France et la montagne, que tous soient appelés,' writes one of its promoters.

It is this absence of insistence as a qualification for membership on the candidate's having given some active proof of love for the mountains which distinguishes all these Societies from our own, and accounts for their large numbers. The English Club does not, as foreign writers sometimes imagine, absolutely require a candidate to have expended a certain amount of muscular energy in struggles against the law of gravity. But it requires that if he does not climb he shall have shown his devotion to the Alps in some other way, and shall have contributed, whether by literary, scientific, or artistic activity, to their better knowledge. In some cases we may think this test has been too completely dispensed with abroad; but in France, where interest in mountains is not as yet widely extended, its enforcement would probably be fatal to the object in view. In the absence of other converts, baptism has often been conferred wholesale by missionaries, rather in the hope of pledging the recipients for the future than because their conduct or convictions rendered them at present worthy of the rite. The promoters of Alpine pursuits in France may fairly claim a similar license. The French Alpine Club, whatever its construction, will have the warm sympathy of all English mountaineers, and any help in dealing with such subjects as guide-organisation or local tariffs which our experience may enable us to offer will be gladly given.

THE PONTRESINA TARIFF FOR 1873.—The guides of Pontresina formed themselves some time ago into an association, which, after sundry changes, has, since the retirement of Fluri and Walther, come under the headship of Hans Grass, probably the best man in the Upper Engadine. A new tariff was published in 1873, for which, if any trust can be put in common report and internal evidence, that guide and Peter Jenni, who is still on the roll, are jointly responsible. For the more ordinary excursions this tariff seems fair and reasonable, but

it is in one respect most objectionable, and in another very ludicrous. The three most tempting peaks, Piz Bernina (80 francs), Piz Roseg (100 francs), and the Monte della Disgrazia (170 francs), are each protected by a charge which will be generally deemed prohibitive. In the case of the Disgrazia the price of course includes the time spent in going and returning to Pontresina. Let us suppose, however, that the travellers use the Sella and Sissone Passes. If we allow 25 francs each for the passes, 10 francs for the half-day to the Sasso Bissolo châlet, and 40 francs for an ascent occupying from 5 to 7 hours (see *Alpine Journal*, Vol. V., p. 46 and p. 84), an overcharge of 70 francs still remains to be accounted for. The charge of 10 francs a day for a guide or porter, taken for a time, and away from home, is the highest of the kind in the Alps.

The charges just mentioned are a serious hindrance to mountaineers, but the new tariff contains others still more extravagant, yet which it is impossible to treat seriously. The Tschierva Sattel (called Güssfeldt Sattel), a local Eigher Joch, at 200 francs, is not likely to be often sought. But when Monte Zembrasca and the Pizzo di Teo, both lower than Piz Languard, and as difficult respectively as the Gornergrat and Riffelhorn, are quoted at 40 and 60 francs, Piz Kesch at 60 francs, the Cima del Largo at 80 francs,* and the Tinzenhorn at 100 francs, we can only imagine the framers of the tariff as either cruelly hoaxed or not quite in their sober senses at the time of its making.

A sufficient explanation of all these extravagant demands, which, in reply to the united remonstrances of the Swiss and English Alpine Clubs, the guides have declared their intention of maintaining, can easily be given. The very narrow experience of the men who compose the Pontresina bureau leads them to think too much of their own peaks. The nature of their ordinary occupation does not fit them for mountain emergencies. The Engadine peasantry are by nature well-to-do carters, employed in winter in conveying wine, in summer fruit and tourists, over the Bernina Pass. They have the instincts rather of the roadster than of the chamois-hunter. Colani has become a myth, and has left no successors. Consequently they look on step-cutting as a penance only to be undergone for an enormous recompense, and on a serious expedition are prone to exaggerate both the difficulties encountered and the importance of their own services. The sudden flood of foreign gold lately poured into the Engadine has disposed its inhabitants to revert to their natural tastes and the employments in which their horses' legs rather than their own earn the pay.

It seems, indeed, as if the disappearance of the old schools of Alpine guides would be one of the regrettable, but perhaps inevitable, results of the growing popularity of certain Swiss centres. The natives of Pontresina, Chamonix, even Grindelwald, are hardly to be blamed if, finding easier ways of earning money below the snow-level by cutting grottoes instead of steps, or by fastening themselves to mules' tails

* A Chamonix guide was paid for the *first* ascents of the Pizzo di Teo, Cima del Largo, and Tinzenhorn, 12, 20, and 25 francs, respectively. Fluri, being engaged for that expedition only, had somewhat more for the Cima del Largo.

instead of to ropes, they hand over their mountains to the needier peasantry of neighbouring valleys. It is no business of ours if they reject the narrow paths conducting to the Wetterhorn and Piz Bernina for the broad roads which lead to Interlaken and St. Moritz. Guides are of course everywhere free to fix their own value on their services, but we are equally at liberty to decline them at a fancy price. The practical result of persistence in unreasonable pretensions will be that English climbers will altogether cease to employ the men who make them. Swiss and German mountaineers, unless they have of late years grown suddenly prodigal, will take the same course, and such united action can hardly fail to produce a decided effect.

We recommend the Engadiners to study the list of Alpine tariffs to be found in Liebeskind's 'Notizbuch für Alpen-reisende.' There they will learn that the highest price ever asked outside their valley is 150 francs, and that this is for the passage of the Matterhorn from Zermatt to Breuil. They will find great snowpeaks like the Dom Aletschhorn and Monte Rosa charged 40 francs. If they can, let them persuade some traveller to take one of their number to Zermatt to discover what a difficult peak really is.

MANNERS AND CUSTOMS OF THE ENGADINE.—The room left by the mountaineers whom the pretensions of the guides have driven to other districts, has as yet been amply filled by a crowd of pensioners and water-drinkers. It is to these that the Engadine looks for the continuance of its present prosperity.

It is as much in the interest of the villagers as of strangers that, using the privilege of old acquaintance, I intend to call attention to sundry grievances which during the past summer sorely tried, and in some cases overcame, British patience. 'Plentiful table-d'hôtes and a daily service'—the collocation is a lady-visitor's—are no doubt very soothing influences, but they will not suffice to retain our countrymen where they are exposed to dishonesty, and to rudenesses only excusable as the offspring of stupidity rather than of any evil intention.

In the first place the condition of the post-office at Pontresina was disgraceful. Letters directed 'Poste Restante' could only be obtained with great difficulty and exertion, and sometimes were never obtained at all. The postmaster in readiness for all inquiries had a stereotyped reply of 'nichts,' which he sometimes employed when the expected correspondence was lying before him. The more experienced visitors consequently adopted the irregular but excusable habit of watching the exit of the official, and taking advantage of his absence to rush in, overpower the small boy left in charge, and lay violent hands on their letters.

On my first arrival I confess to having felt a glow of liberal sympathy for the village policeman, whose last act of daring had been to arrest a prince's ponies for trotting in the street. But my enthusiasm faded when the same official pounced on an elderly English lady, returning from her botanical rambles with a specimen of the *pinus cembra*, and detained her in the rudest custody on the charge of 'mutilating the communal forest' until a fine of four francs had been paid. After this I never picked a flower without a fear lest all the

gentians might be preserved by the manufacturers of Iva, or the edelweiss contracted for by the St. Moritz bouquetières.

Moreover, let the aggrieved or defrauded foreigner beware how he invokes the aid of the law in the Upper Engadine. The inefficiency of the local magistracy to administer justice in petty matters, and especially to hold the balances even where a foreigner is concerned, is unfortunately not confined to the Engadine, but has become a universal source of complaint with travellers throughout Switzerland.

In some cantons it doubtless arises from the dependent position of the 'judge' in daily life; amusingly illustrated by an incident which lately happened to a member of the Club. Our countryman had been sufficiently cheated to make him seek justice. On coming into court, however, his case, which he imagined conclusive, was ignominiously dismissed. When, half-an-hour later, he sent for a barber, he was promptly waited on by a peasant whose face seemed familiar. It was his late judge, who had speedily exchanged the sword and scales for the razor and basin, perhaps more appropriate symbols of Swiss justice as usually shown to strangers.

The Upper Engadine, however, has long been celebrated for its independent peasant proprietors, and there is no reason to believe that any member of its magistracy could, or would, plead as an excuse the impossibility of offending a daily customer. Yet here, as elsewhere, 'the judge' is but too often a worthy successor of Justice Shallow, ready when called on 'to bear out a knave against an honest man,' provided only that the knave be his countryman, and therefore 'worthy to be countenanced.'

In private manners, as well as in official customs, there is great room for reform.

In the morning, when the success of the expedition hangs perhaps on an hour's delay, you find the men whom you have paid as guides slothful and indifferent to everything but their personal comfort. Later in the day you observe others, nominally in charge of a party of ladies on the Roseg or Mortaratsch glacier, slouching along at their own gait, never thinking of offering any assistance, and too dull or too lazy even to be able to point out the easiest track. In the evening you sit for a while in the 'gaststübe,' watching through the clouds of smoke the shaggy, ungainly forms and slow lumbering movements of the boors who surround you, and listening to the indistinct but expressive grunts and roars which take the place of speech. A speculation which has for some time been pressing itself on your attention recurs with increased force. Here is a field for carrying out, in a fresh direction, the great modern theory of development—your companions are surely lineal descendants, not very far removed, of the bears which still haunt their mountains.

This year I fell upon the missing link in an *ursa major* who held possession of the inn on the Maloya, and took advantage of the terror his manners inspired to charge twenty centimes for a glass of water and to detain ladies until they could furnish him with the necessary coppers. When bearded, the roar of this interesting animal was audible halfway down the zigzags to Casaccia. The injuries he inflicted were,

however, hardly equal to the amusement afforded by his extraordinary uncouthness.

A serious source of complaint at Pontresina was the disappearance of any object lost sight of by a moment's carelessness. A cloak dropt on the road, or a field-glass left on a bench, was snapped up in the space of five minutes, and subsequent inquiry seldom succeeded in inducing the restoration of the treasure-trove to its disconsolate owner. It is not intended to accuse the villagers as a body of dishonesty. The losses may for the most part be laid to the charge of the men, many of them natives of the neighbouring cantons, who drive the 'bergwägen,' or to the labourers employed on the buildings always going on. I fully believe that the bad impression given by the people of Pontresina to some of our countrymen is entirely owing to their unfortunate manners. Limited experience of the world with which they have suddenly been brought into contact leads them too often to mistake mistrust of a visitor's veracity for business-like caution. But even the latter excellent quality may be carried too far. When valuable property is stolen from a bedroom, the people of the house should, in their own interest, show some concern, and not add to the indignation of the owner by treating every mention of its loss with indifference and an appearance of incredulity. I have particularly wished to avoid injuring individuals, but instances of each of the matters complained of could, if necessary, be brought forward.

Fashions change and doctors differ—even with their own former opinions. At the present moment the Dolomites are becoming rapidly popular. The Trentino is about to be opened up by a local Alpine Club, consisting in some part of innkeepers; and it is proposed to build at Santa Catarina a comfortable hotel for foreign water-drinkers. The people of Pontresina will be foolish if, while they hasten to erect large new inns, they do not also use every means in their power to satisfy their guests, and prevent them from proceeding to the discovery of new resorts equally healthy, and where the mountains are not built out by rival speculators.

The Orteler group does not yield in scenery to the Bernina, and you can ascend the Königspitze for 25 and the Trescro for 12 francs!—D. W. F.

MEDIAEVAL ROUTES ACROSS THE EASTERN ALPS.—The following note has been received from Mr. F. F. Tuckett:—

'I have suggested to my friend, Mr. George, an answer to his question in the last number of the Journal, as to the meaning of Canalis in the expression of Raguewin, "per Canalem et Forum Julii," which is, I believe, satisfactory to him.

'In the first place, I take it that the passes in the Alps made use of in the middle ages were, in at least the great majority of cases, those which had previously been opened up in Roman times. Of the various classes of roads constructed by the Romans, the first and most important were the *Via militares*, *consulares*, *pretorianæ*, and *decurionales*, maintained for strategic purposes at the expense of the state. No less than seventeen belonging to this category were carried over various portions of the Alpine chain. Omitting, for brevity's sake, further

reference to the first ten, the 11th, reckoning from W. to E., was that over the Brenner; the 12th, that which, diverging from the latter above Brixen, traversed the Pusterthal, and, crossing the pass or watershed near Toblach, connected the head waters of the Eisack with those of the Drau or Drave. The 13th, passing through the modern towns of Udine and Trigesimo ("Ad Tricesimum" of the Itin. Ant.), and striking the course of the Tivaventus (Tagliamento) at Glemona (Gemona), ascended it to Julium Carnicum (Zuglio, between Tolmezzo and Paluzzo), and traversed the Carnic Alps by the Pass of Sta. Croce (4,337 feet) to the Gail Thal,* finally joining No. 12 below Loncium (Lienz) in the valley of the Drau. No 14 is believed by some to have diverged from No. 13 at a point nearly midway between Gemona and Tolmezzo, and then, ascending the modern Val del Ferro to Resiutta, Raccolana, and Pontebba, to have traversed the Tarvis Pass (2,682 feet—the lowest in the entire Alpine chain) and reached Villach viâ Tarvis, Arnoldstein, and the lower Gail Thal. Other authorities deny the existence of any such road in Roman times, but there is no doubt that for a long period it has constituted a very important and much-frequented means of communication between Italy and Germany. No. 15 followed the course of the Sontius (Isonzo), and, after passing the modern town of Görz or Gorizia, and the villages of Canale, Tolmein, Caporetto, Flitsch, and Preth, traversed the Julian Alps by the Predil Pass (3,822 feet), and, following the Gailitz to Raibl and Unter Tarvis, reached Villach by Arnoldstein and the lower Gail Thal. The 16th road parted from the preceding one before reaching Görz, ascended the Wippach Thal, and traversed the Mons Odra (Birnbaumer Wald?) by the Pass of Longaticum (Loitsch) to Aemona (Laibach) in the valley of the Sau or Save.

'Now all these four last-named routes had Aquileia (colonised B.C. 181—the most important town of the N.E. frontier of Italy both strategically and commercially) as their starting or meeting point, and though that place never recovered from its almost total destruction by Attila in A.D. 452, the old lines of communication opened up during its flourishing days continued in use, and were no doubt more or less practicable in the 12th century. At Aquileia, Julius Cæsar established the head-quarters of his legions in Cisalpine Gaul, and, in the names of Julium Carnicum (already alluded to) and Forum Julii (the modern Cividale), we have an allusion to the great leader.

'If, then, Barbarossa wished to pass the eastern wing of his army over the Julian or Carnic Alps, with a view to its joining the main body, led by himself over the Brenner, at Verona, though there is perhaps no abstract reason why either the line of the Pass of Sta. Croce, or that of the Tarvis Pass (if it then existed) should not have been selected, the chronicler's words "per Canalem et Forum Julii" at once limit the conditions of the problem. For an army traversing either of the last-named passes (No. 13 or 14) would almost necessarily leave Forum Julii (Cividale) to the E., whilst Canale would be still further removed from the line of route. The same remark would apply, though

* See 'The Dolomite Mountains,' pp. 177-180.

in a somewhat less degree, to No. 16. I believe then that the road over the Predil was that followed, not only because it would be as well suited for the "Austrian and Carinthian contingents" as the Tarvis Pass, but also because it would be as direct as the latter if Aquileia were avoided, and rather more so if it were visited, whilst by no other course could both Canale and Forum Julii be traversed. Forum Julii was not situated, like Canale, on the actual line of the Roman road, but it was only a short distance (10 to 15 miles perhaps) to the W. of Canale, though in a different valley, and, to a force descending by the line of the Isonzo, it was easily accessible from the village of Caporetto (19 miles above Canale) by a wide gap in the mountains through which the valley of the Vatisone is readily reached.

'Alboin the Longobard is said to have led his followers by the same route into Italy, and there is a tradition that the Königsberg, a dolomite peak near Raibl, derives its name from the circumstance of that chief having ascended it to reconnoitre. Be this as it may, the fact of his passing this way is of more importance as adding to the probability of its subsequent selection, and we may well imagine that a leader encumbered with large masses of men might, on reaching Caporetto, decide to relieve the pressure on a single line of road down a narrow valley by detaching a portion of his forces *viâ* Forum Julii, with a view to their re-uniting at Aquileia, or, if that city was not visited, at some point further to the N.; possibly in the neighbourhood of Udine.

'The translation of the expression "*per Canalem et Forum Julii*" by "*über Canale und Friaul*" is misleading, from want of precision. The modern Friuli (German, Friaul), the country of the ancient Carni, is a *province*, and its name is therefore not a proper rendering for the *town* of Forum Julii (the modern Cividale), though a corruption of the latter. I know nothing of the antiquity of Canale, but as there is such a place, and it is situated near the ancient Forum Julii, and on the direct line of the old Predil road, it seems to me reasonable to recognise in it the spot alluded to by Ragewin.'

A TUNNEL UNDER MONT BLANC.—Another sub-Alpine railway scheme has lately been started in Northern Italy. The proposed line, to be known as the '*Chemin de fer du Mont Blanc*,' would connect Turin with Geneva by means of the valleys of the Dora and the Arve, and a tunnel under Mont Blanc! Its promoters urge that it would shorten the journey between Paris and Turin by about 60 miles. We presume shafts would be dispensed with, otherwise there seems a possibility that by means of a lift a new and easy route might be opened to the '*calotte*' and the profits of the enterprise materially increased.

ROTHORN JOCH.—Zermatt to Zinal 11 or 12 hrs.; 8½ hrs. from Zermatt to Mountet. This pass was made for the first time (Sept. 5, 1872), by Mr. T. S. Phillpotts, with Peter Knubel as guide, and Elie Petter as porter. As compared with the Trift it has the advantage of having a finer view on both sides, on the one showing Mont Blanc, and all the aiguilles of Chamonix, as also the Grand Combin from some points; on the other revealing a grand view of the Matterhorn from the commencement of the descent, which is wanting in the Trift. Mr. Marshall Hall ascended the ridge in 1871, but did not descend on the

Zinal side. Followed the Trift route to the point where it leaves the moraine for the Trift glacier. Here we kept up the rocks on the right on to the Rothhorn glacier, passing a broad couloir which must be crossed quickly. Then rocks on left; then crossed a snow-slope to rocks, and then across the top of the small but much crevassed glacier which descends from Rothhorn to the foot of Trift Joch. Then struck the col nearest the Rothhorn; kept always to the right in descending, till we came under the rocks of Leblanc. This long détour was necessitated by the crevassed state of the Durand glacier in September. Earlier a much quicker and more direct course might be taken. The col is the easternmost of two naked depressions in the WSW. arête of the Rothhorn. It lies on the upper part of the little crevassed glacier which descends from the Rothhorn to the foot of the Trift Joch. To avoid the falling stones of this glacier, it was thought better to take to the rocks on the right of the point where the Trift route comes off the moraine on to the Trift glacier, and then to work to the left so as to strike the upper part of the glacier. Ascent easy. On the Zinal side the snow-slopes are a little steep, and the Durand glacier in September much crevassed.

ZINAL JOCH.—Mountet to Zermatt, 7 or 8 hrs. This col, which lies between the Dent Blanche and the Pointe de Zinal, may be called the true Col Zinal, as distinguished from the Trift, which sometimes has that name. This pass was made for the first time, September 6, 1872, by Mr. T. S. Phillipotts, with Peter Knubel as guide, and Elie Petter as porter: 3 hrs. to summit from Mountet. Nearly 2 hrs. was taken descending on the right of the Schönbuhl glacier to Stockje, but an hour might be saved by keeping on the left side of the Schönbuhl glacier. Ascent and descent easy. The first part of south side much exposed to stones from Dent Blanche, and therefore had better be taken early, and from Zinal side. 2½ hrs. Stockje to Zermatt.

DISCOVERY ON THE RIFFELHORN.—The simple but exciting pastime of rolling big stones from the top of the Riffelhorn on to the glacier below was the means last autumn of bringing a curious relic to light. Two American travellers who were enjoying this exhilarating sport last August determined to signalise their visit by sending down a bolt of unusual magnitude. Having fixed upon a stone of such size that it was as much as two men could do to move it, they prized it with great difficulty from its bed, when to their surprise they found in the site thus laid bare a javelin or spear-head, which must have been lying under the stone for time indefinite. The weapon thus strangely discovered was of bronze, and may have been some seven or eight inches long; the workmanship was admirable, quite as good as the forging one sees now. The striking end was not pointed, but beaten out into a blade resembling a boldly rounded chisel; the other end must have fitted wedge fashion into a cleft shaft, and had two flanges on each side for the purpose apparently of holding the javelin head more firmly to the wood than could be done by any bending; of course bending must have been used in addition.

The American who had become the possessor of this valuable relic stated that he should, on his return home, submit it to some scientific

man competent to speak as to its possible date or period. It is to be hoped that this has been done, and that more may be heard of the javelin-head of the Riffelhorn. As it is not impossible that other weapons may be found near the place where this was discovered, it may be worth while for some travellers during the coming season to vary the sport of rolling down stones by a careful examination of the upper rocks of that often visited peak.

F. C. GROVE.

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REVIEWS AND NOTICES.

BALL'S ALPINE GUIDE.*

THE 'Alpine Guide' has been lately reissued in ten small volumes, a form very convenient for travellers intending to confine themselves to one or two districts. The new edition is advertised as corrected up to July in last year. It is disappointing therefore to find numerous cases in which no notice is taken of important expeditions chronicled not only in foreign publications but in the pages of our own Journal. The following specimens of 'corrigenda' taken at random from different sections may be useful, but might be largely added to. It is stated that the ascent of the Weisshorn from the Bies glacier remains to be tried. Mr. Kitson gave ('Alpine Journal,' vol. v. p. 305) an account of the successful accomplishment of this expedition, which was repeated (p. 277) by Mr. Coolidge. The Editor has still 'not heard of any ascent of the Bietschhorn subsequent to Mr. Stephen's' ('Alpine Journal,' vol. v. p. 277, and vi. p. 114), and believes that 'the Tschierwa Sattel still remains to be accomplished' ('Alpine Journal,' vol. vi. p. 94). Despite the account of its passage long ago published ('Alpine Journal,' vol. ii. p. 242) 'the Biferten icefall' is still said 'to have been pronounced utterly impracticable by all who have approached it.' 'The Langkofel,' we read, 'looks as if it might long continue to defy all attempts at an escalade.' It was ascended in 1869 by Herr Grohmann, and Mr. Utterson-Kelso has given an account of his own ascent in the Journal, vol. vi. p. 202.

The task which Mr. Ball brought to completion some years ago was one of prodigious labour, and it was accomplished with, at the time, marvellous accuracy. It will be a cause of serious regret to all Englishmen interested in Alpine travel if the completeness and usefulness of his book are allowed to be marred by the want of thorough occasional revision. This the Editor himself may not be able to find leisure to bestow, but we believe there would be no difficulty in finding a member of the Club competent and willing to undertake the work.

The maps also call for some criticisms. In the general maps the new carriage-roads (*e.g.* the Furca and the Albula) seem to have been in no case inserted; even the railway up the Save Thal is not shown. Some of the district maps (*e.g.* those of the Todi and Orteler groups) ought to be replaced by productions less imperfect in execution and more on a level with modern information. At present those given contrast most unfavourably with the maps contained in the 'Guides' published in Germany, where the practical details of rapid and economical handbook-production seem to be better understood than in our own country.

The absence of a separate index to each section is an oversight which can only require pointing out to be promptly remedied.

* *The Alpine Guide*. New edition, in 10 sections, each complete in itself, with general and special maps. July 1873. London: Longmans & Co.

It has been our duty to call attention to these conspicuous but easily removeable blemishes. It may therefore be right to repeat once more the opinion often expressed in this Journal—that for English travellers of every description the 'Alpine Guide' is at once the pleasantest and most useful companion. It is the only work of its kind which, taking the Alpine chain as a connected whole, treats of every valley between the shore of Mentone and the rails of the Semmering. Considered as the work of one man, it will probably long remain the most remarkable achievement in Alpine literature.

THE SWISS JAHRBUCH FOR 1873.*

THE district chosen by the Club for special examination by its members in the summer of 1872 was the Adula district, and a special map on the scale of 1:50000 was as usual issued to them.

The volume contains only three excursions in the appointed district. Herr Hoffmann Burckhardt (president) ascended the Rondadura; the Piz Scopi from the Lukmanier Pass descending to Campo; the Rheinwaldhorn, through Val Carassina, descending to Hinter Rhein; and after various excursions in the south of the district, crossed from Val Verzasca to Faido by a pass which he proposes to call Barona Pass. Bad weather defeated an attempt on the Campo Tenca.

H. Zeller-Horner communicates a series of excursions in the years 1867, 1868, and 1872, in the course of which he ascended the Frunthorn, Kirchalhorn, Marscholhorn, and Bürenhorn, chiefly to elucidate the topography and nomenclature of the Adula group. Many of his additions and corrections are inserted in the 'Excursion's-Karte.' His paper is illustrated by views of the Zavreila Horn from the village of that name; the shattered ridge of the Frunthorn; the Fanella Horn; the Lenta Thal; and of the Rheinwaldhorn and Guferhorn from the Marscholhorn.

Herr Calberla ascended the Piz Terri (3,151 m) from the S.W. side; the chief difficulty being the ascent of a very steep rockwall about 1,000 feet high, the descent being yet more hazardous. This is called a first ascent, but I believe the mountain was climbed by Spescha, though from the E. side.

He ascended also the Rheinwaldhorn and Zapporthorn (3,149 m.) The latter was reached from the Zapport Pass, but finding the W. and N. sides of the peak impracticable, they were driven to cross the Stabiogrät to the south, and gained the summit by the eastern ridge. Returning by the same route, they ascended the Poncione di Freccione (3,199 m.), and descended by the Zapport Pass into Val Malvaglia.

In crossing from Olivone to Faido over the Pizzo Molare the same gentleman was nearly carried over a precipice by the rubbish giving way in a couloir which he was crossing.

Herr Güssfeldt contributes a paper on an ascent of the Disgrazia, made August 21, 1869. From the chalets of Chiareggio he climbed,

* *Jahrbuch des Schweizer Alpenklub für 1873.* Bern.

by the Ventina glacier to the Passo di Mello, in 5 hrs. He then held left, and in about 3 hrs. gained the ridge between Val di Mello and Val di Sasso Bisolo. An attack of illness forced him to descend to the chalets in the latter; whence the ascent was effected next morning in 7 hrs. Herr Güssfeldt, with habitual inaccuracy, counts this as the second ascent, reckoning that of Jenni and Fluri, October 23, 1866, the first, but the Editor observes that the ascents by Messrs. Kennedy and Stephen in 1862, and by Mr. Tuckett in 1867, are undoubted, and that therefore this can only be the fourth ascent.*

Herr Güssfeldt's passage of the Tschierva Sattel has already been mentioned in the Journal (vol. vi. p. 94).

Herr E. J. Häberlin describes an ascent of the Hinter Viescherhorn made July 13, 1871, and one of the Ortler made July 20, 1872, by the 'Hinteren Grat,' with J. Reinstadler and Aloys Pinggera as guides. Herr Harprecht had on the previous day made the first ascent by this route since Gebhard's in 1805. The snow arête appears to be very long and narrow, and to require great steadiness. The same day Herr Dechy of Berlin, with J. Pinggera, ascended by the Stickle Pleiss, and descended by the Hinteren Grat to Sulden.

Next we have an interesting geological excursion by Herr E. von Fellenberg, in the Lotschthal district, in which he ascended the Lotschthaler Breithorn, crossed the Baltschieder Joch, and crossed from Gampel by the Jiolli-thal (Jole in Federal map) and a new pass, Jiolli-Lucke (3,300 m) to the Lotschthal. He speaks highly of the corrections of the Federal map by Herr Häberlin [Jahrbuch, vol. vi.]. The paper is illustrated by views of the Jagi-gletscher and the Jiolli-Lucke.

Herr J. Beck ascended the Mönch with a photographic apparatus, which he was fortunately able to use. Two illustrations are taken from the views obtained—the Jungfrau and the Trugberg.

The first ascent of the Grand Combin from the south side was made by Herr H. Isler from the chalets of Lancet in the Val de Bagnes, with Joseph Gillioz, September 16, 1872. Leaving the chalet at 5 a.m., they reached the Col du Sonadon at 9. Descending slightly on the other side, they gained a couloir running up towards the W. peak of the Combin. They followed this to its head, and then over steep rocks and snow, requiring much step-cutting, they reached the lower peak at 2.30, and the higher peak along the arête in 1 hr. more. The same route was followed in the descent. They were benighted, and in spite of a full moon, did not reach the chalet till 9 p.m.

Herr Dubi describes the ascent of the Basodine from Pommatt and the Hohsand Pass into the Binnenthal.

Herr C. Hauser, a visit to the Martinsloch (the first from the Glarus side), with ascent of the Segnesspitze and Vorab.

Herr L. Gerster describes a walk from Sallenches to Thones over the dividing limestone range. He accepted the guidance of a couple of smugglers, and in crossing during the night a pass more difficult

* Herr Güssfeldt will be remembered as the climber who was unwilling to allow Messrs. Moore and Walker the credit of the ascent of the final peak of the Piz Roseg.

than the ordinary routes, but less strictly watched, he was lucky enough neither to break his neck nor to be shot by a 'préposé.' These, however, we are told, are only allowed to fire when the smugglers are armed.

Then we have papers by Herr E. Imhof on 'The Progress and Mode of Execution of the Federal map'; by Herr A. Heim on the 'Theory of Glacier Motion,' and on 'Alpine Panoramas'; from Dr. C. Meyer, on Albert von Haller's poem 'Die Alpen'; from Professor G. Meyer von Knonau on 'The History of Haali and Unterwalden'; from H. Zahringer on the Mountain Campaigns of 1798 and 1799; from Herr G. Studer, 'An Account of a Visit to the Pyrenees, with a View of the Maladetta from the Porte de Venasque'; from C. Hauser on 'Some Wonderful Ice-flowers on the Piz Urlaun'; by Professor Schnetzler on 'The necessity of Climbers paying some attention to Scientific Observations,' pointing out that Herr Isler on the Grand Combin discovered the rare lichen *Umbilicaria Virginis*, known hitherto only on the Jungfrau; by Dr. Bernoulli on 'The Flora of the Special District'; by Herr F. v. Salis on 'The Marks of Ancient Glacier Action'; and by E. Lindt on 'The necessity of Extending the Limits for Alpine Flora, as in ascending the Finsteraarhorn he found *Saxifraga bryoides*, and *muscoides*, *Achillea atrata*, and *Ran. glacialis* in the last 1,000 feet: the last on the very summit, 14,106 feet.

A summary of the doings of the sections for the past summer (1872) is headed by Dr. Rutimeyer with a general account of the Adula district, its meteorological conditions, &c., followed by remarks from the President on the expeditions made in it, which he regrets were not more numerous.

Amongst the expeditions, either new or nearly so, which have not been already mentioned, are the direct descent from the Tödi to the Val Rusein, by the President; the Brunnen Kogl and Sexten Joch, by E. Häberlin; as also an attempt on the Finsteraarhorn from the north side; the Ortler by the Hinteren Grat by T. Harprecht; the Trifshorn, by Naye and Aveneyre; Trugberg, by H. Burckhardt, in 1871.

The club rejoices now in 1,474 members, and a balance of 800l. Since 1863 it has erected 10 'clubhütte,' and the Pavillon Dolfuss has just been made over to it by the relatives of the late Herr Dolfuss.

Amongst various things at the end of the volume is a proposal from the Tödi section to establish an insurance society for guides, which was warmly taken up by the central committee, and may be of much practical benefit.

The principal changes in the 'Excursion's Karte' are as follows: The glacier at the head of the Hinterrheinthal is now divided into Rheinwaldfirn on the W. and Zapport glacier on the E. The western peak of the Vogelberg retains the name, the eastern takes that of Rheinquell Horn. The peak (3,149 m) at the head of Val Calanca is named Zapporthorn: the highest summit between this and the Vogelberg is named Poncione della Freccione (3,199 m). Many subordinate peaks and passes have also received names. This will no doubt be the basis of future editions of this part of the Federal map.

J. SOWERBY.

PROCEEDINGS OF THE ALPINE CLUB.

Tuesday, February 3.—Mr. W. LONGMAN, *President, in the Chair.*

Messrs. E. P. Jackson, H. Leaf, L. Ewbank, G. W. Prothero, C. James, F. C. Hulton, M. Holzman, W. B. Rickman, A. H. Simpson, and W. B. Puckle were elected Members of the Club.

The Accounts for the year 1873 were passed, as presented by the Hon. Secretary.

It was resolved by the requisite two-thirds majority to strike out from Rule 10 the words limiting the cost of the annual dinner to one guinea a-head.

Mr. W. SIMPSON read the paper on 'A Visit to Gangootre, the Source of the Ganges,' printed in the present number.

Tuesday, March 3.—The Rev. W. H. HAWKER *in the Chair.*

Col. the Hon. W. E. Sackville West, Messrs. L. A. Walford, A. Cust, H. V. Malan, and J. Carfrae, were elected Members of the Club.

Mr. R. PENDLEBURY read a paper on 'An Ascent of the Schreckhorn from the Lauteraar-sattel.'

Tuesday, March 31.—Mr. W. LONGMAN, *President, in the Chair.*

Messrs. G. O. Spencer, W. A. Baillie-Grohman, and Capt. D. G. Sandeman were elected Members of the Club.

Mr. D. FRESHFIELD read a paper on 'The Mountains of Val Masino,' describing, amongst other expeditions, the first ascents of the Punta Trubinesca and Cima del Largo.

Mr. C. TUCKER mentioned that he had found, in 1865, a large 'bergschrund,' difficult to pass, on the N. side of the usually easy Zocca Pass. He also called attention to the fact that the S.W. limb of the mountains of Val Masino, including Val Codera, Monte Spluga, and the Monte Lis d'Arnasca is unknown to English travellers, and that the Corno Bruciato has still to be ascended.

Mr. CARSON stated that no good guides are to be found in Val Masino, the smugglers who usually accompany travellers being timorous and untrustworthy in any emergency.

Mr. F. POLLOCK, referring to some remarks made by Mr. Freshfield, hoped that the Club, as a body, was altogether disabused of the idea that any scientific object was necessary as a justification for mountain climbing. One of our first men of science who had begun to climb for instruction had gone on purely for pleasure.

Mr. NICHOLS believed the feeling of the Club was 'chacun à son goût.'

Mr. L. STEPHEN expressed a strong preference for Val Masino over the neighbouring Engadine, and recommended the 'Bagni' as pleasant head-quarters.

Corrigenda.

Page 298, 12th line from bottom, *read* 7·45 *for* 9·45.

„ 299, 7th „ from top, „ 11·30 „ 1·30.

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