

to do with mountaineering. My excuse is that, in addition to the interest which recent events have lately given to the empire of Morocco, Gebel Musa has probably seldom been climbed by a Christian, and as far as I am aware no account of its ascent has ever been given.

---

### ENGELBERG.

By T. HOWSE, F.L.S.

HAVING spent three weeks in Engelberg last summer, I have thought that my botanical and geological observations might be useful to many who, like myself, are past the climbing age, but who are fond of combining easy excursions with some object of interest in view.

As is usually the case in the Alps, where the sedimentary and crystalline formations are seen to meet, the geology of the neighbourhood is interesting and varied. This junction is well observed in the Surenen valley, under the Grassen glacier. The southern slopes of the valley are formed of gneiss, and the following strata are found in succession: verrucano, rothodolomit, keuper, lias, dogger or brown Jurassic rock, and malm or white Jurassic rock; but the verrucano, rothodolomit, and keuper crop out at the base of the Schlossberg, and also on the other side of the glacier towards the Titlis. The junction is plainly visible from below, the red keuper shale and the yellow dolomite contrasting with the dark glacier-worn gneiss. Higher up in the Surenen valley and towards the pass the formations are mainly Eocene flysch slates and nummulitic sandstone.

The main valley of Engelberg is formed of secondary rocks, from the lias to the Neocomian; but these strata have been much disturbed by the upheaval of the crystalline rocks, and in some cases the order of succession is reversed by overthrusts—for instance, in the Hahnen, the bold peak that keeps watch over Engelberg. The summit is formed of dogger, which overlies malm, and the malm reposes on Eocene strata—a remarkable instance of the disturbing power of earth movements. These Eocene strata crop out in various places. On the Fürren Alp, above Herrenrüti, the dark flysch slates are quarried for building purposes. These quarries are very similar to those, better known, at Matt, in the Sernfthal; but I do not think that fossil fish, so abundant at Matt, have been found at Fürren.

An interesting excursion may be made through the Arnitobel to the Arnialp, and then, following a path on the N. side of the valley, to the Juchli pass. The Arnitobel is cut through lias strata, and when you have passed over dogger débris and then over Oxford shales, the Juchli pass is reached, which also is formed of Oxford shales. This locality is rich in fossils, especially ammonites. Without mounting the pass specimens may be picked up in the débris below. On either side of the pass rise steep cliffs of malm.

The summits of the Urirothstock group are formed of dogger, or brown jura; hence the name, as the brown colour of the rock, owing to the presence of iron, may appear reddish in some lights. Oxford shales, like those on the Juchli pass, lie under the dogger, and under these malm, which forms the background of the range seen from Engelberg and the cirque-like cliffs of the Horbisthal.

The flora of Engelberg, without being as rich as that of many other Alpine centres—as, for instance, that of Zermatt, the Engadine, or the valleys round the Ortler—is sufficiently varied. Alpine flowers are numerous and attractive, but there are but few rarities. Perhaps the slopes on the S. side of the Arnialp produce the largest number of Alpine plants. I noticed there *Primula elatior*, *Lilium bulbiferum*, *Anemone narcissiflora*, and many species of gentian, saxifrage, and androsace. Edelweiss is abundant higher up, and *Eryngium alpinum* is found on the eastern slopes of the Widderfeld.

In the shady woods to the N. of the village many orchids are met with. Amongst them I may mention *Epipactis rubens* and *Cephalanthera rubra*. These woods are a great feature at Engelberg; few Alpine centres are so well off in this respect. The northern slopes of the Surenen valley are rich in Alpine plants—*Primula longiflora*, *Aquilegia alpina*, *Gentiana lutea* and *purpurea*, and many others. Edelweiss is abundant near the Spannorter Club hut. *Gentiana ciliata*, *Anthericum liliago*, and many limestone-loving plants are found in the Horbisthal.

The Titlis is still a favourite playground—rather dangerous play for the inexperienced. Accidents frequently occur. I saw a man brought down on a stretcher from the mountain in sad plight through rash glissading. The Widderfeld is a favourite mountain, easy and safe, with a fine view and good ground for the botanist. I had not visited Engelberg for over thirty years. At that time there was one good hotel; now they are countless. I spent a few days

later on at Unterschächen, in the Schächenthal. There is one good hotel in the village—the Klausen. The valley is interesting, and can be reached in 3 hrs. by diligence from Altdorf. Unterschächen reminded me of pristine Engelberg. I wonder, if I revisit it, at a very advanced age, in thirty years' time, whether it will then be as like Engelberg as it is now.

Engelberg wishes to rival Grindelwald; but, I suppose owing to the influx of Germans, it does not attract many English. They chiefly congregate in the large Sonnenberg Hotel. The landlord of the Engel Hotel, where I stopped, told me that he purposes building a winter hotel to attract English visitors. Winter hotels must be specially constructed, and those at Engelberg are not sufficiently substantial for a winter season. Shut in on all sides by precipitous mountains, as Engelberg is, the climate in winter is mild and free from cold winds.

---

## THE HIGHEST MOUNTAIN IN THE WORLD.

By DOUGLAS W. FRESHFIELD.

SOME years ago (in 1886) I argued,\* with a pertinacity which I am afraid may have seemed presumptuous, against the conviction of the late General Walker, formerly the head of the Indian Survey, that Hermann Schlagintweit, together with Mr. Brian Hodgson, a witness of great weight, and more recent Residents in Nepal, were mistaken in believing that the snowy peaks visible to the E. from the neighbourhood of Katmandu, and called 'Gaurisankar' by the inhabitants, included the triangulated peak, 29,002 ft., commonly known in England as 'Mount Everest.'

Major (now Colonel) Waddell, an authority on these matters, expresses what I presume has been the popular verdict on the discussion in the following terms:—†

'On the Continent one of the vague Indian mythological names, obtained by Schlagintweit from the Hindooised Nepalese of Khatmandu, for a mountain which he supposed to be identical with the Everest of the Survey, is usually assigned to it—namely, "*Gauri-sankar*," one of the titles of the conjugal Indian god Shiva, the Destroyer, and his wife. But it is not generally known that the identity of these two mountains has been conclusively disproved by General Walker, the late Surveyor-General of India, and by Colonel Tanner, his deputy. Owing to the curvature of the

---

\* *Proceedings of the Royal Geographical Society*, vol. viii., New Series, and *Alpine Journal*, vol. xii.

† *Among the Himalayas*. By L. H. Waddell. 1899. I have not altered the spelling of the local names adopted by the author.