

A path leads through a wood to the upper pastures. The way to the summit lies west of a frozen tarn and up an easy glacier. It was first climbed by Grove's party in 1874. Many other spurs of Elbruz will doubtless be found to be easily accessible and serviceable as view-points by future travellers. [See *Frosty Caucasus*, p. 202, and *Alpine Journal*, vol. vii. p. 102.]

Khotikam Pass (11,634 feet)—used by natives—foot-pass, three days from Urushieh to Utshkulan, said to have been crossed in 1889 by Baron Ungern Sternberg.

From the Terskol Kosh, near the source of the Baksan, a tract mounts along the left bank of the Azau Glacier, which is crossed to the rocks that separate its two branches and form the base of Khotitau (12,131 feet). The route lies up stony slopes to the edge of the *névé* of the north branch, which is crossed in a north-westerly direction to the gap between the peak of Ullukam Bashi (12,690 feet) and the southern spurs of Elbruz. A steep descent over rocky slopes leads down into the Ullukol Glen on the west side. Further details are wanting. M. de Déchy has described and photographed the scenery at the sources of the Kuban. [See Royal Geographical Society's Collection, and Chapter xxi.]

THE NAKHAR RANGE

The Klukhor Pass (9240 feet) is described in the text and the Nakhar (9415 feet) in Grove's *Frosty Caucasus*. The latter is a rough foot-pass: four days from Utshkulan to Shkalta. No information is forthcoming as to the passes between the Nakhar and the junction of the Elbruz spur with the main chain. A pass is marked on the five-verst map at the head of the valley of the Gvandra, but its indications are not always trustworthy. On that map the main chain west of Ushba is misplaced several miles, and the glaciers are generally omitted. Cartographers and travellers are again warned not to rely on it for any natural features above the forests and beyond the frequented tracks of men.

THE BAKSAN SOURCES GROUP.

The boundaries of this group are the Jiper-Azau Pass and Nenskra Valley on the west, and the route of the Chatuintau Pass on the east, the Baksan Valley on the north, and the Mulkhura torrent and Ingur on the south.

Jiper-Azau Pass (10,717 feet; Déchy, 10,911 feet).—A native foot-pass from the Baksan to the Nenskra Valley. Crossed by M. de Déchy with Urushieh men in August 1885, and by Mr. Littledale in 1886. The route leaves that to the Khotikam Pass at the foot of Khotitau, and leads south straight up the easy Azau Glacier to the crest of the chain, which is crossed about half a mile east of the junction with the watershed of the spur of Elbruz.

[*Azau Pass* (11,528 feet).—A snowy gap at the *west* head of the Azau Glacier lies north of the watershed and serves as a pass to the Ullu-Ozen Glen, joining the route of the Khotitau Pass, where the two headwaters of the Kuban join.]

The track marked on the one-verst map makes a long circuit along the slopes west

of the Nenskra Valley before descending to cross the stream at a height of about 7000 feet. M. de Déchy reached the same point by descending at once on to the lower portion of the glacier and finding a way over rough ground near the torrent.

Here the direction previously taken is crossed at right angles by a track well known in Suanetia and considered practicable for horses, leading from Utshkulan in the Karatshai, east of Elbruz, to the Nakra Valley, by two passes. The route from Utshkulan mounts the valley of the Kuban to the main source of that river. Very little snow has to be traversed, although the *Jiper Pass* of the one-verst map has a height of 10,801 feet.

The traveller to Suanetia follows the track of the lower of the Utshkulan route passes (Izkhuat Pass, Déchy), *Bassa Pass*, 9954 feet, which leads from the Nenskra to the valley of the Nakra. It presents no difficulty, and but small glaciers are crossed.

The Nakra Valley is reached somewhat below the point where a large glacier descends from Dongusorun opposite. Here the track of the Dongusorun Pass is joined. It is two long days' journey from Terskol Kosh to Chiubikhevi, the lowest village in Suanetia. [Déchy's *Suanétie Libre, Extrait du Bulletin de la Société de Géographie Hongroise*. Budapest, 1886. Private information and maps.]

Mr. Littledale crossed the Jiper-Azau Pass in 1886 with native hunters, and descended the Nenskra Valley as far as the forest settlement passed by Mr. D. W. Freshfield and Captain Powell in 1889 on their way from Suanetia to the Kodor. [*Alpine Journal*, vol. xv. p. 244.]

There are no prominent peaks on the watershed between the Jiper and the Dongusorun Passes. The highest, at the junction of the spur dividing the Azau and Dongusorun basins, is 12,593 feet.

Dongusorun Pass (10,493 feet).—Cattle and horse pass, used by natives. Terskol Kosh to Chiubikhevi in Suanetia by Nakra Valley, a day and a half. It resembles the St. Théodule in the amount of glacier crossed. The crevasses and steep slopes on the north side are sometimes dangerous for animals. This is the lowest of the Baksan Passes, and the easiest over the main chain between the Edena or Pasis Mta Pass (between Karaul and Gebi) and the source of the Baksan. [Mr. Freshfield's party in 1868: *Central Caucasus*, p. 341; *Alpine Journal*, vol. iv. p. 163.]

Little Dongusorun, 14,014 feet (unascended), bears to the great peak the relation the Little Matterhorn does to the Breithorn. It is certainly accessible from south-west. [See Sella's Photographs, Royal Geographical Society's Collection.]

Dongusorun, North-west Peak, 14,553 (*Dongusorun-Ceget-Kara-Bashi* of one-verst map); *Central Peak*, 14,603 (*Ozengi-Chat-Bashi* of one-verst map).—In conformity with native usage, the Surveyors have called almost every peak on the crest overlooking the Dongusorun glen 'Dongusorun'—something or other. Carried beyond a certain point, such a system becomes too confusing for practical purposes.

Herren Merzbacher and Purtscheller, with Kehrer and Unterweger of Kals (Tyrol), on August 20th, 1892, started from a bivouac on the eastern slopes of the Dongusorun Valley (8400 feet). Climbing by steep rocks and snow to the north

base of the mountain, they forced a way up very difficult rocks on or near the north ridge to the snowcap. Passing over the north peak they gained the central peak, which is connected with it by a broad snow ridge, in nine hours from their bivouac.

This route being considered too dangerous for descent the party found a way, first down snow-slopes, then among crevassed glaciers towards the west. The watershed west of Little Dongusorun was gained by crossing into the next glacier basin to the north-west, but descent into the Dongusorun Valley seeming too difficult, it was determined to follow a glacier into the head of the Nakra Valley, which was reached at 10 P.M. [*Mittheil. des D. und E. Alpenvereins*, 1892, No. 3, p. 28.]

South-east Peak (14,547 feet).—On August 17, 1888, Messrs. W. F. Donkin and H. Fox, with K. Streich and J. Fischer of Meiringen, left at 3.20 A.M. a bivouac on rhododendron slopes above a waterfall at the head of the glen on the south side of the Betsho Pass. Climbing slowly up easy snow and rocks they reached the peak at 11.30. There is no apparent difficulty in traversing to the central peak, unless when the ridge is ice. They descended to camp in four and a half hours.

It is obvious that Dongusorun is an easy mountain on the south and west, but that the climb from the north is a *tour de force*.

Betsho or Gulski Pass (11,074 feet).—Urushieh by Ozengi Valley to Betsho in Suanetia. (The first name seems preferable, as the Gul glen has no connection with the pass, and confusion may be created.) A much-frequented native foot-pass. A detachment of Cossacks which once attempted the passage lost all its horses but one, but laden donkeys have crossed safely.

After ascending the Baksan Valley for about four hours from Urushieh, the Ozengi Glen is entered and followed for two hours to the end of the Ozengi Glacier. A faint track leads first up the moraine and then over steep shaly slopes on the eastern bank, till the level of the upper plateau of the glacier is gained. This is crossed in a southerly direction to the foot of snow-slopes leading up to the col, which is reached in nine hours from Urushieh.

The descent on the Suanetian side is first by slopes of snow, which are crossed as far as a crevassed glacier, and then by the rocks on its left bank to the valley; the left bank of the torrent, the Dola Chala, being followed the whole way to Betsho.

The descent lies through a fine gorge to the point where the torrent from the west glacier of Ushba is crossed (with difficulty in afternoon). Thence a good path leads through most beautiful woods to Mazeri. [M. de Déchy, with Alexander Burgener and P. Ruppen, August 31, 1884: *Alpine Journal*, vol. xii. p. 97.]

Time.—Urushieh to Betsho, about 17 hours' walking. Laden natives take three days.

East of the Betsho Pass the watershed rises rapidly to a flat-topped snowy eminence, from which the spur dividing the Ozengi and Shikildi Valleys diverges. A couple of hundred feet lower, on the Shikildi side, a snowy gap connects the

western *névé* of the Shikildi Glacier with a glacier descending into the glen south of the Betsho Pass. This is known to Urusbieh hunters as the

Akhsu Pass (about 12,500 feet).—Mr. D. W. Freshfield and Captain Powell, with K. Maurer and a Urusbieh porter, starting from the Shikildi Kosh (five hours from Urusbieh) at 5 A.M. on August 12th, 1889, ascended the stony Shikildi Glacier to the junction of its east and west branches, and without serious difficulty reached the pass mentioned above in six hours. Care must be taken to bear continuously to the right or west, and not make for the gaps visible south till the highest snow-basin has been gained. The view of Elbruz and Dongusorun from the snow-dome west of the pass is very fine: that from the gap itself is limited. The descent by the steep, narrow Akhsu Glacier and snow-beds to the foot of the Betsho Pass is easy, but dull. Betsho was reached in seven hours' fast walking from the pass. [*Alpine Journal*, vol. xiv. pp. 441-443.]

The snowy gaps east of the last pass would lead to the north tributary of the glacier (nameless on one-verst map) at the west base of Ushba. There is no record of their passage, but several of them appear to be practicable. The range now rises in a rocky comb of great steepness, crowned by the twin towers called by Signor Sella *Little Ushba* (one-verst map *Chatuintau*, 14,175 feet). As the pass at the extreme east head of the Shikildi Glacier is known at Urusbieh as the *Chatuintau*, I reserve this name for the summit near it, nameless on the map, which has sometimes been called Shikildi or Mestia Tau.

Beyond *Little Ushba* an extremely steep and possibly impassable tributary of the Shikildi Glacier leads to a snow-plain and saddle, in the centre of which rises a blunt rock-tooth. [See M. de Déchy's and Sella's photographs.] The snow-crest west of the tooth probably overlooks the heads both of the west glacier of Ushba and of the Chalaat Glacier: in other words, the Ushba spur abuts against its centre. From the gap east of the tooth very steep snow-troughs run down to the head of the Chalaat Glacier. It is possible that passes may be forced here across the chain east and west of Ushba, but the expeditions would be formidable, and the side by which it is proposed to descend should be reconnoitred carefully before any attempt. It may be found practicable to cross from the Chalaat Glacier to the western glacier of Ushba. It may prove easier to do this by crossing the watershed twice than by crossing the Ushba spur, which rises very steeply from the watershed.

East of the saddle, the shoulder of *Chatuintau* (14,315 feet), Sella's *Mestia Tau*, Mikhailovsky's *Shikildi Tau*, rises in a beautiful snow-ridge. This mountain, nameless in map, has two distinct peaks, one a snow-pyramid and the higher a rocky mass. The latter stands, like the Ortler, just off the watershed. It may be reconnoitred from Gulba, or the pass under it, crossed in 1893 by Mr. Woolley and his friends. The ridge falls to the north in a rock-precipice to the *Chatuintau Pass* (about 12,000 feet), marked on five-verst map as *Jalsky Pass*—perhaps a corruption of *Mujalsky*. It is known at Urusbieh, but rarely used, and not yet crossed by travellers.

The route to this pass leads up the east tributary of the Shikildi Glacier past the site (left) of the great rock-fall, the stones of which are still being carried down by the glacier, and under the cliffs of Little Ushba to the broad saddle at the end of the deep trench in which the Shikildi Glacier lies. The final ascent is over rocks.

On the south side it may probably be best to keep to the left of the upper ice-fall, and go down the rocks to the lower branch of the Chalaat Glacier, continuing the descent by its left side.

SOUTHERN SPURS. SHTAVLER SPUR

This ridge divides the Nakra and Nenskra, both tributaries of the Ingur. It leaves the watershed between the Jiper and Dongusorun Passes, east of the Elbruz Spur.

Kuarmash (12,101 feet), a tent-shaped snow-peak, is well shown in Déchy's photograph from Jiper-Azau Pass. South of this lies the Izkhuat or Bassa Pass. (See above.)

Shtavler, one-verst map; Sella's *Otur* (13,146 feet).—This fine summit is conspicuous throughout Suanetia, and must rival the Laila in its view. It is undoubtedly accessible by the north ridge from either the Nakra or Nenskra Valleys.

The Utbiri Pass south of Shtavler (about 7875 feet), was crossed by Mr. D W. Freshfield and Captain Powell on their way to the Kodor in 1889.

The route leaves that of the Dongusorun Pass beyond the village of Chiubikhevi, and first descends to the Nakra torrent, then climbs steeply through a magnificent forest to the rolling pastures which stretch back to the pass, marked by three stones. In the descent the track soon traverses a ridge into a glen south of that falling from the pass, and by bearing constantly to the left, often through pathless woods, a hunter's settlement may be reached. A track goes down the Nenskra Valley to the Ingur. [*Alpine Journal*, vol. xiv. p. 444; xv. p. 241.]

ZALMIAG SPUR

This spur runs due south from a point just west of Dongusorun along the east side of the Nakra Valley, and then bends sharply east, dividing Lower Suanetia from the head of the Dola-chala Valley. At the angle stands the solitary and shapely rock-pinnacle apparently known as *Zalmiag* (13,094 feet). Its other eminences are relatively insignificant.

A Pass may doubtless be made (about 11,000 feet, one-verst map) over the glacier south of Dongusorun from the true head of the Betsho Valley, which opens west, a mile below the foot of the Betsho Pass, to the Upper Nakra.

Three broad snow-saddles east of *Zalmiag* afford routes from the head of the Betsho Valley to Lower Suanetia. The easternmost, lying at the head of the glacier due south of the foot of the main glacier of the valley, is known to the natives as the *Bak Pass* (10,220 feet). It leads on the south side to Pari.

Zalmiag (13,094 feet) may be attacked from a bivouac above Chiubikhevi, or better from the Betshe Valley by its east ridge. It is likely to prove a sharp climb and to afford a magnificent panorama.

Bak Peak (11,739 feet).—This summit, east of the Bak Pass, is conspicuous from the ascent to the Betshe Pass. It is a good view-point, easy of access. It was first ascended by Messrs. Collier, Solly, and Newmarch in 1894. They started from the Betshe Valley and ascended a lateral glen above Mazeri. [*Alpine Journal*, vol. xvii. p. 265.]

USHBA SPUR

This spur leaves the watershed behind the high snow-saddle east of Little Ushba. After a few hundred yards it rises suddenly towards the north peak of Ushba.

Ushba, North Peak (15,400 feet).—Mr. Cockin, with U. Almer, on the 28th September 1888 left a bivouac above Betshe, near the foot of the Gul Glacier (reached by a good path), and ascended by the steep glacier and the snow and ice slopes above to the gap between the two peaks (1.10 P.M.). These slopes are often in an impracticable condition, and always more or less exposed to falling stones. Keeping near, but mostly to the right of the ridge, they reached the northern peak at 3.45 P.M. It is possible that the north peak is accessible from a saddle at the head of the west glacier of Ushba.

Southern Peak (15,409 feet, unascended).—Possibly accessible from the saddle between the peaks by a difficult traverse on the west face of the mountain and the south-west ridge. Alexander Burgener favoured an attack by the south face and this ridge. But falling stones would probably have to be reckoned with, and the precipices that gird the top appear most formidable. [See note of 1894 party in *Alpine Journal*, vol. xvii. p. 266.]

It is possible the cliffs of the east face may be surmounted by a long, complicated, and arduous climb. In appearance they are not unlike those of the Meije, but on a grander scale.

A narrow, steep-sided saddle at the foot of the south-west ridge of Ushba may afford a passage from the Gul Glen to the west glacier of Ushba. The snow-slopes on the west side appear, however, to be steep, and the rocks on the Gul side are very steep. They have, however, been climbed at one spot.

Mazeri Peak (12,800 feet?).—This broad and high rock-ridge is conspicuous from the whole of the Betshe Valley. It forms part of the crest south of the west glacier of Ushba, and is probably difficult but not inaccessible from the south. [See Sella's Photographs.]

GULBA SPUR

This spur abuts against the north peak of Ushba. The dominant point of this short ridge (about 12,500 feet), called Gulba by Mr. D. W. Freshfield, was climbed by him with Michel Dévouassoud and J. Désaillood on July 29, 1887, in four

hours from the foot of the Gul Glacier. The upper level of the Gul Glacier is gained by the rocks and snow-beds on the east of the ice-fall. The ordinary route would lie up steep *névé*-slopes and round the north-west buttress of the peak to a snowy recess behind it, whence its rocks may be easily scaled. A sharp climb leads up to the ridge of the mountain by which the two tops, separated by an ice-gully, are gained. The eastern is the highest. Betsho was regained in four hours—very quick glissading and walking. An easy pass east of Gulba leading from Betsho to the Chalaat Glacier was crossed in 1893 by Mr. Woolley's party. [*Alpine Journal*, vol. xvi. p. 524; vol. xvii. p. 265.]

NORTHERN SPURS

On the ridge projecting from the watershed west of the Dongusorun Pass, between the glen of that name and the source of the Baksan and above the Terskol Kosh, rises a summit obviously easy of access, called by S. Sella *Ceget-Kara-Bashi*, but on the one-verst map *Dongusorun-Bashi* (12,355 feet). This confusing denomination should not be adopted.

A buttress of Dongusorun, called by S. Sella *Cut-Bashi* (*Kogutar-Bashi*, one-verst map, 12,537 feet), west of the Ozengi Valley was climbed by his party in 1889. [*Bollettino del Club Alpino Italiano*, vol. xxiii. No. 56.]

THE SUANETIAN GROUP

The boundaries of this group are on the west the route of the Chatuintau Pass, on the south the Mulkhura torrent, on the east the route of the Zanner Pass, and on the north the Baksan and the horse-track from Uruslieh to Bezingi.

The path up the Adylsu leaves that from Urusbieh to the Shikildi Kosh below the junction of the Shikildi torrent, and crosses to the right bank of the Adylsu. This stream carries the drainage of at least three glaciers—the Jantugan, Bashkara, and Ullukara.

The first conspicuous summit in the main chain east of the Chatuintau Pass is a fine rock-dome, called *Bshedukh* (14,013 feet). From the saddle on its southern shoulder a glacier descends west towards the Shikildi Glacier. Another steep glacier flows from the peak north into the Adyl Valley. The one-verst map in this portion is not accurate in its representation of the heads of the glaciers. The Leksur Glacier appears to occupy much of the space given to the head of the Chalaat Glacier.

It is separated from its sister peak, *Ullukara* (14,112 feet), a snow-dome supported by very bold, rocky buttress-ridges—well seen from the Upper Baksan—by a high gap, formidably defended by the ice-falls of the Adylsu Glacier on the north, and steep rocks and gullies on the south, or Leksur Glacier, side.

Beyond these fine peaks the range sinks somewhat, and a glacier falls from it into the Leksur basin, while the Bashkara Glacier descends precipitously to the north. A two-headed peak—the Kuamli of S. Sella; *Bashkara* (13,916 feet), and

Jantugan (13,093 feet), is followed by a broad, deep depression, from which to the south flows the central branch of the *Leksur Glacier*, now intervenes. The lowest gap (the westernmost) is the *Adylsu Gap*, (11,389 feet). It appears easy of access by the *Jantugan Glacier* on the north; on the south is an ice-fall which may best be overcome probably by its left side, and may prove a serious obstacle.

Farther east is a pass leading from the *Leksur Glacier* to the *Adyr Valley*, known to hunters. The name obtained for it by Mr. D. W. Freshfield was the *Gorvash Pass* (11,718 feet). It does not appear difficult on the north side. On the south the descent, principally by rocky slopes, looks steep and rough. The next peak, *Gumachi* (13,482 feet), is seen on the east from the head of the *Adyr Valley*.

Latsga, East Peak (13,803 feet); *West Peak* (13,790 feet).—This fine summit, a long rock-wall, is conspicuous from *Urusbieh* at the head of the *Adyr Valley*. Round its east flank lies the route of the

Adyr or *Mestia Pass* (12,012 feet), well known to natives—a glacier-pass of the nature of the *Lysjoch*—first crossed by travellers in 1887 (M. de Déchy and Mr. D. W. Freshfield). It is free from difficulty on both sides.

Mount the *Adyr Glacier* or the slopes on its (true) right bank, bending east, with the ice, until long broken banks of rocks and steep slopes lead up south to the snowfields east of *Latsga*. Turning south-west from the highest rocks, traverse gentle snowfields to the broad saddle, which commands a superb view over the *Leksur* basin. In descending to the main glacier, bear to the right to avoid crevasses. At the junction of the ice-streams take to the left-hand slopes for half an hour, returning lower down to the ice to avoid the deep ravine of the torrent from a glacier lying under the *Murquam* of *S. Sella* (see *post*). Beyond this the ice is finally left, and a track is found along the east slopes to the open valley. [*Alpine Journal*, vol. xiii. pp. 355 and 502; *Proceedings of the Royal Geographical Society*, June 1888, p. 338.]

Fast walkers might reach *Mestia* in a long day from the *Kosh*, four hours above *Urusbieh*. Natives like to make a day and two halves of the journey from *Urusbieh*.

The extreme head of the *Leksur Glacier* is a snow-basin, south-east of that leading to the *Mestia Pass*. There is no difficulty in crossing the watershed to the *Bashil Glacier*, and the descent of the latter lies on its true right bank. [See *Alpine Journal*, vol. xiv.] This route may be called the *Leksur Pass*. Mr. A. F. Mummery, with H. Zurfluh and a *Bezingi* porter, on July 19th, 1888, left a bivouac near the upper limit of trees in the *Tuiber Valley* (two hours above *Mujal*), and keeping on the true right bank of the torrent reached the *Tuiber Glacier*. Leaving on their right the *Tuiber* route, they ascended easy snow-slopes to the second gap west of the *Tuiber*, a pass leading on to the *Leksur Glacier* (12,000 feet). Ascending this glacier to its extreme head, a few feet of rocks led to a second pass from which the *Bashil Glacier* was reached by a steep slope of snow and ice. The ice-fall of the *Bashil Glacier* was turned by its left bank, where extreme difficulty was experienced: it was subsequently seen that the right

bank was perfectly easy. The highest Kosh was reached at 6.30 P.M. [*Proceedings of the Royal Geographical Society*, June 1889, p. 354; Mummery's *My Climbs in the Alps and Caucasus*, p. 305.]

According to the new one-verst map, two separate peaks, *Sarikol Bashi* (13,965 feet), and *Bashil Tau* (13,615 feet), stand here about a mile apart, separated by a deep gap. On the map the lower peak is placed near the junction of the spur, separating the Tuiber and Leksur Glaciers, with the main chain, the higher on the watershed between the Bashil and Leksur basins. It appears probable that an error, of a character familiar to those acquainted with the early cartographical history of the Mont Blanc group, has been here committed, and that *Sarikol Bashi*, which appears on the verge of the least trustworthy sheet of the new map, is a duplication of *Bashiltau*.

Bashiltau is a very fine peak—on the south side all rock, on the north sheeted in snow and ice, recalling the *Dent Blanche*: it has a massive rock-tower on its east ridge.

A gap, probably the *Bashil Pass* of the natives, intervenes between this peak and the great block north of the *Tuiber Pass*, called *Zagheri* by S. Sella, and *Skala Bodorku* (13,720 feet) on the one-verst map. Its highest point is north of the watershed, which here turns south suddenly, and is crossed by the

Tuiber Pass (11,760 feet), well known and used by natives with cattle as the highway from *Bezingi* and *Chegem* to *Mujal* in *Suanetia*. A battle is said to have been fought on it 'long ago,' and old arms, spears, etc., were recently discovered on the moraine on the *Suanetian* side. [*M. de Déchy in Suan-tie Libre.*]

M. de Déchy was the first traveller to cross this pass in 1886. In 1889 and 1895 *Signor Sella* and *Mr. Dent* crossed with horses.

Leaving the *Kosh* near the end of the *Tuiber Glacier*, the right lateral moraine is ascended to the almost level upper plateau of the glacier. Hence a slope of 500 feet leads to the pass. On the north side a snow-slope of about 1600 feet gives access to the highest plateau of the *Kulak Glacier*. After taking to the left-hand moraine to avoid *séracs*, the glacier is descended to a lower plateau, and then the right moraine followed to the valley. [*Bollettino del Club Alpino Italiano*, vol. xxiii. No. 56.]

South-east of the *Tuiber Pass*, and between the *Tuiber* and *Kitlod Glacier*, stands a bold rock-peak (13,328 feet), dwarfed by its gigantic neighbour.

Between it and *Tiktengen* a practicable pass leading from the *Kulak* to the *Kitlod Glacier* can be made by mountaineers.

Tiktengen (15,267 feet, unascended): two tops, of which, according to the one-verst map, that north of the watershed is the higher. The difference in height is very small, and the distance between them not great. This noble peak is best seen from the *Gara-uz Valley* on the north side, of which it is the most striking feature, resembling in outline the *Schreckhorn*. From the southern glaciers it appears as a broad rock-screen. A point on the west ridge, estimated at 250 feet below the top, was gained, from a camp on the left bank of the second ice-fall of the *Zanner*

Glacier, by Messrs. Woolley, Cockin, Solly, and Newmarch in 1893. Further examination will no doubt result in the discovery of a practicable line of ascent from the south. [*Alpine Journal*, vol. xvi. p. 525.]

East of Tiktengen a long, fairly level ridge divides the Upper Zanner basin from that of the Shaurtu Glacier. Here a fine pass (12,796 feet) remains to be made. If the right point in the ridge is struck, no serious difficulty will probably be found by experienced climbers on either side. The south is the easier.

Zanner Pass : Upper Pass (12,967 feet).—From Bezingi by Bezingi Glacier to Mujal (Suanetia). Messrs. D. W. Freshfield and Déchy, with F. and M. Dévouassoud and J. Désailloud, on the 7th August 1887, an hour and a half after passing the lower ice-fall of the Zanner Glacier, struck up the rocks forming the west bank of the upper ice-fall: some of the party found an easier route by the east bank. Owing to mists and the delay of porters the crest was not reached till 6 P.M. A steep descent by rocks and snow led to a small basin of *névé*. Having crossed this, they descended in the dark long slopes of loose stones north of Kelbashi, till they found a site level enough for a camp. Next morning they ran down to the Bezingi Glacier. [*Alpine Journal*, vol. xiii. pp. 364-65, and xiv. pp. 1-9.]

Lower Pass (12,859 feet).—This is the easiest route, and the ancient native pass. It lies a mile farther south-west, and the ascent to it from the Bezingi Glacier is up the left bank of the main western branch of that glacier. There is little difference in height or distance, but the old pass avoids the snow-wall and is quite free from difficulty. An active party may reach Mujal in one day from the Missess Kosh.

SOUTHERN SPURS. SVETGAR SPUR

This spur may best be understood by reference to the map.

It is shaped roughly thus:

It is not necessary here to catalogue all its peaks. West of Bashiltan, the pass crossed by Mr. Mummery (on his way from Mujal to the Bashilsu), leads to the *névé* of the Leksur Glacier, and affords a route from the Tuiber Glacier to the Bashil in conjunction with the Leksur Pass. (See above.)

West of the next summit in the ridge is a gap accessible from the south, but probably precipitous on the Leksur Glacier side. The glacier leading to it is distinguished on the one-verst map as the *Tot Glacier*.

Beyond this, where the ridges meet, is the fine double crest, conspicuous from the Mestia Pass, called Svetgar (13,482 feet) on the one-verst map. [See Déchy's Photograph, *Alpine Journal*, vol. xiii. p. 504.] It was attempted in 1894 by Messrs. Collier, Newmarch, and Solly from the saddle north-west of the peak, and may probably be

climbed in more favourable conditions and by keeping more to the rocks on the south-west of the first ridge. [*Alpine Journal*, vol. xvii. p. 266.]

The rock-peak which terminates the ridge south of the Leksur Glacier is called *Margyanna* (11,704 feet) on the one-verst map.

No heights are given on the one-verst map on the cross-ridge running north and south between this peak and *Bangurvyan*, 12,544 feet (S. Sella's *Latraldash*), but judging from photographs of Déchy's and Donkin's, a fine accessible peak, Sella's *Murquam*, divides two broad and easy snow-saddles, leading from the affluents of the Tuiber to the (*Murquam*?) glacier, the stream from which flows down towards the lower end of the Leksur Glacier.

Bangurmyan stands on the lower intersection of the cross-ridge, with two lesser peaks to its east. [See map.] All these summits are accessible from *Mujal*. In September 1890, S. Sella made the first ascent of the highest of these peaks from a camp near the small glacier above *Mujal*, which lies east of the peak. [See Photographs; *Bollettino del Club Alpino Italiano*.]

The two summits (12,145 feet and 11,844 feet) in the ridge east of the one-verst *Bangurvyan* have not been climbed. A rocky western spur, known to S. Sella as *Kasagar* (*Latraldash* of Survey, 11,056 feet), was used as a point of observation by the surveyors.

KITLOD SPUR

Kitlod Pass (12,607 feet, Russian Survey) —Messrs. Cockin, Newmarch, Solly, and Woolley (July 26, 1893) left a bivouac on the right bank of the Zanner Glacier between the first and second ice-falls at 1.30 A.M., and ascended the glacier above the second ice-fall to the point where it forks. Here they left the Zanner Pass route, and turning to the north walked up easy snow-slopes to the pass, which was gained at 7.15 A.M. They descended on the west by gentle slopes of *névé* to the *Kitlod* Glacier, the ice-falls of which were passed by keeping first near the right bank, and then crossing to the left. Three hours from the pass the junction with the main *Tuiber* Glacier was reached, and the path on the left bank of the torrent was followed to *Mujal*. [*Alpine Journal*, vol. xvi. p. 525.]

NORTHERN SPUR. URUSBIEH SPUR

A glacier-clad ridge runs out at right angles to the main chain west of *Latsga*. Close to the watershed, it is easily traversable by the *Koi-Avgan-Aush* Pass (11,484 feet). The ascent from the *Adysu* is doubtless by one of the glaciers which fall from the west into the head of that valley.

After a sudden bend back to a direction parallel to the main chain, the ridge, rising to a thick cluster of bold rock-peaks, divides the *Adylau* from the *Baksan*.

The highest of these peaks, *Kurmuichi* (13,314 feet), though very steep on the north, is apparently easily accessible from the *Adylau*, and must afford a superb and very interesting panorama of this portion of the chain.

CHEGEM OR URUBASHI SPUR

A long ridge, glacier-clad for at least twelve miles, stretches from a point slightly east of the Mestia Pass, first to the north and then to the north-east, dividing the Baksan basin from the waters that flow towards Chegem.

Close to the main chain, at the east head of the Adyr Glacier, steep snowy gaps, about 13,000 feet, well seen from the north side of the Mestia Pass, overlook on the other side the Bashil Glacier: whether they are practicable is unknown. To the north of the Adyr Glacier rises a very fine, broad, snowy peak, well seen from above Urusbieh. [See Mr. Woolley's Photographs.]

Adyrsu Bashi (14,673 feet).—It appears accessible by steep snow-slopes from the north-west. From its northern flanks it sends down feeders to an important glacier, nameless on map. This ice-stream and its affluents fill a large basin, the waters of which join the Adyrsu two and a half hours above Urusbieh, through a narrow defile. It lies in a gently sloping trench, closed at its head by a steep rock and snow wall, which protects the only low and conspicuous gap in this lofty and otherwise continuous chain.

Urubashi Gap (12,348 feet).—This is too steep for native use, but will doubtless be made a way for mountaineers. Nothing is known of its east side; the descent would lead on to a tributary of the Bashil Glacier. North of the gap rises a snowy eminence (14,210 feet), which may easily be reached from '*Freshfield's Pass*' (about 13,500 feet), as the point in the ridge crossed by Mr. D. W. Freshfield and Captain Powell, with K. Maurer and A. Fischer, on August 9th, 1889, may be provisionally called.

The ascent to this pass from the nameless glacier is up screes and across ice-gullies. On the east side gentle snow-slopes lead down on to a large glacier. Its ice-fall is best turned on its true left. The glacier ends on the verge of a steep hillside above the highest Kosh in the Bashil Valley, which is situated about two miles higher than the chief Kosh (a large hut, 6840 feet), and about a mile below the main glacier at the head of the valley. The first party, crossing in the opposite direction, reached the pass in six hours from the highest Kosh, and descended in six and a half hours to Urusbieh. [*Alpine Journal*, vol. xiv. p. 440.]

There are no conspicuous peaks in the main ridge for some distance.

An important spur, branching east from this part of the ridge, divides the Jailik Glacier from the south-east glacier traversed by Mr. Freshfield's party. On this stands the fine peak, apparently unmeasured, seen in S. Sella's Elbruz panorama behind the watershed to the right of the two summits subsequently mentioned.

Donkin's Pass, 13,030 feet (Donkin's measurement).—Mr. Donkin and Mr. Fox, with Streich and J. Fischer, on August 22nd, 1888, left a camp near the nameless glacier. They mounted to the level of the glacier, then by rocks (an hour's climb), gained the snowfield of its eastern tributaries, whence an hour and a half over snow brought them to the pass. Three-quarters of an hour step-cutting in 'a wonderfully steep bank' led down to the Jailik Glacier, which they descended on

its right side. Four glaciers flow in on the left, the first led to a lower gap—next to the north—which might be an easier route than that taken. (May lead to Tiutiu Glen.) The descent through the glen of the Jailiksu from the pass to the great Kosh (6840 feet) in the Bashil Valley occupied six hours. [Fox's private diary.]

Jailik Bashi (14,868 feet) is the loftiest summit on this spur, and surpasses all the peaks between Ushba and Tiktengen in the main chain. [See Sella's panorama from Ciat Bashi.] It is a very formidable but fascinating peak, and deserves attention.

It is apparently at this point that the range bifurcates, separating the glaciers of the Tiutiu Valley, which lie in its fork, from those of the Bashil and lower Adyrsu. There are in this part of the chain several summits between 13,500 and 13,800 feet, and extensive glaciers, but the peaks are less bold in form.

The next conspicuous gap leads probably from the Adyrsu to the Tiutiu Glen.

Tiutiu Bashi (14,497 feet), a double-headed peak, is remarkable, seen from Elbruz, for the precipice on its north side. The northernmost of these peaks—13,930 feet—Adyrsu Bashi of one-verst map, but properly *Sullukol Bashi*, was climbed by Herren Merzbacher and Purtscheller, with Kehrer and Unterweger of Kals, from the Sullukol Glacier. Starting on August 25th, 1891, from a camp in the Sullukol Valley, three and a quarter hours from Urusbieh, they reached in an hour and a half the moraine of a western tributary of the Sullukol Glacier. Ascending the glacier in an easterly direction, they reached at nine o'clock a rocky spur. At eleven they reached the crest of the chain over snowfields, and turning left gained before mid-day by the ridge, without serious difficulty, a summit, recognisable by its dwarf tower-like top. The descent was made by the snow-slopes and glaciers north of the peak in three and three-quarter hours. [*Mittheilungen des D. und Ö. Alpenvereins*. 1892, No. 4, p. 39.]

The only known pass (12,537 feet) from the Bashil to the Tiutiu Glen is by the northern of the three eastern glaciers of the Bashil. Baron Ungern Sternberg has informed me that he crossed it in 1889 with natives and a Tyrolese guide (Hofer of Kals), and that Jailik Bashi bore due S. : Tiutiu Bashi, S., 43° W. from the Pass.

Owing to the unfortunately faulty detail of the sheet of the one-verst map for this district, it is as yet difficult to lay down its orography with precision. A revised sheet is promised, and some notes by M. N. Jukoff have been here used.

The Sireen Pass (11,257 feet) crosses the ridge which unites the Adyr range to the isolated limestone group west of Chegem and north of the Bashilsu. Its highest summit is Kom (12,374 feet).

Mr. Grove's party in 1874 explored the fine gorge of the Jilkisu for four and a half hours above the village. According to native report, its head opens out into a basin—a garden of wild fruit, shared with bears by the inhabitants of Chegem who make excursions there. Wild goats also abound. There is said to be a way from the Jilkisu to the upper Bashilsu. Photographs of the panorama from the culminating point of the limestones would be valuable.

Horse-road from Urusbieh to Chegem and Bezingi.—It is a dull ride of two days from Urusbieh by Osrokova on the Baksan to Chegem. Mountaineers do well to send heavy luggage only by this road, and to take one of the glacier passes. From Chegem to Bezingi is a four hours' ride.

KARGA-SHILI TAU SPUR

Dividing the Chegem and its affluents from the Western Cherek.

Salynan Bashi (14,700 feet).—The rock of which this ridge is composed is a very friable shale, and falling stones are frequent and dangerous.

Messrs. Cockin and Holder, with U. Almer and C. Roth, left the Missess Kosh at 4.55 A.M. on September 3, 1888, crossed the Bezingi Glacier, and followed the moraine on the left bank to the foot of the slopes leading to the Zanner Pass. After ascending these for some time they crossed a basin to the foot of a snow-couloir running up to a depression in the west ridge, which was gained at 10 A.M. Ascending the ridge they reached the summit—a snow-dome—at 11.30. Descending by the same route, they regained the Kosh at 5.10 P.M. [*Alpine Journal*, vol. xiv. pp. 92 and 194.]

Salynan Chiran Pass (13,622 feet).—From the Bezingi Glacier to the Shaurtu Glacier and Chegem, September 11, 1888, Mr. J. G. Cockin, with Almer and Roth, went from the Missess Kosh to the pass and back in nine hours, including a long stay on the top. [*Alpine Journal*, vol. xiv. p. 198.]

Messrs. D. W. Freshfield, C. T. Dent, and Captain Powell, with K. Maurer and A. Fischer, left the Missess Kosh on August 6, 1889, and ascended by the left bank of the Salynan Glacier to the pass in seven hours. They had some difficulty, and much step-cutting, in passing the first ice-fall on its true left. The final climb was easy.

The pass was left at 1.30 P.M.; on the west side the descent lay at first over loose, steep rock-slopes, followed by precipitous cliffs and gullies. After some difficult climbing, much exposed to volleys of falling stones, the great ice-trough falling from Salynan Bashi was gained, and steps cut in such partial shelter as could be gained on its right-hand edge to the *Bergschrund*, which was not crossed till 7.30 P.M. Descending by lantern-light the crevassed *névé* of the Shaurtu Glacier to the junction of its two branches, they left the ice for the mountain-side to the right, where a succession of snow-banks led them past the ice-fall to a hollow under the moraine, where they halted for the night at 10.30 P.M. Next morning three hours' walking beside the moraine brought them to the junction of the Shaurtu torrent with the stream from the Tuiber, whence it is five hours to Chegem. [*Alpine Journal*, vol. xiv. p. 439.]

There appears to be no easy descent from this range towards the Shaurtu Glacier. The ridge running north is very formidable for some distance. It is attainable, however, from the west by the Tiutiurgu Glacier, and a descent to the foot of the Bezingi Glacier may be practicable.

At the extreme head of the Tiutiurgu Glacier and at the meeting of the ridges which enclose the Bulungu Glacier, which flows north, rises *Shorasht-kirtaran* (14,160 feet), a snow-peak.

THE CENTRAL GROUP

The boundaries of this group are—On the west, the Zanner route from Mujal to Bezingi; on the north, the horsepath from Bezingi to Balkar; on the east, the Pasis Mta route from Balkar to the source of the Rion; on the south, the path from Mujal to Ipari, the river Ingur, and the track from Ushkul to the source of the Rion.

The horse-pass from Bezingi to Balkar occupies a day, and the ascent on either side is long and steep. The summit is a rolling pasturage, whence in clear weather there are fine views of Koshtantau and Ulluauz Bashi. Otherwise the route, lying among the friable and featureless shale ridges which border on the granite, is not picturesque. [See Grove's *Frosty Caucasus*, p. 121.]

There are two routes from Bezingi to Balkar—one by the Dumala glen and over the Dumalavsek; the other, more direct, over a higher pass (Bezingivsek, 10,111 feet), lying more to the north, and commanding more extensive views. These routes unite on the east side.

Gestola (15,932 feet).—Messrs. Dent and Donkin, with Alexander Burgener and B. Andenmatten, on the 27th August 1886 left a bivouac on the left bank of the Bezingi Glacier (at the southern foot of the screes of Kelbashi) at 3 A.M. Quitting the route to the Zanner Pass, they crossed the glacier to the foot of the snow and ice slopes leading to the watershed. This was reached at 9 A.M., and was followed for a short distance; it then became necessary to quit it for the southern face. After a considerable traverse, the ridge was regained and followed more or less closely to the summit (1.15 P.M.). Owing to the steps having melted out, and the snow on the ice-slopes below the point where the ridge was first struck having been softened by the sun and become very dangerous, extreme difficulty was experienced in the descent, and the camp was not regained till past midnight. [*Alpine Journal*, vol. xiii. pp. 220-42.]

Katuintau: the Saddle Peak (16,296 feet).—On August 24th, 1888, Messrs. Holder and Woolley, with U. Almer and C. Roth, left Missess Kosh at 2.25 A.M., and walking up the Bezingi Glacier, arrived at 4.35 at the foot of the rocks, which are conspicuous in views of the mountains from Missess Kosh. They attacked these rocks at the point which faces down the centre of the Bezingi Glacier, and inclining to the left ascended them for about an hour and a half, when they reached a ridge of shattered red rocks well above a steep glacier to the east (down which avalanches fall from the ice-cliffs above). Here they changed their direction, turning to the right (S.W.), and having followed the ridge until it became merged in the face of the mountain, cut steps up the steep ice-slopes (inclining always to the west

in order to avoid the ice-cliffs above), until 12.25, when they reached the snow-plateau sloping downwards toward the base of the cone of Gestola.

Ascending in a south-west direction, they reached at 1.10 P.M. a higher plateau, from which an ice-slope led in forty-five minutes to the *arête*. They followed this towards the south, and reached the summit at 2.25 P.M. Leaving the summit at 3.5 they regained the Kosh at 10.10 P.M. [*Alpine Journal*, vol. xiv. pp. 91 and 167].

The name Katuintau is one of the oldest in Caucasian records, being found in this place in Koch's map (Berlin, 1850), and is here retained for the higher summit, although the New Survey calls it the Adish Peak.

Adish Gap (14,819 feet).—In 1893 Mr. Woolley's party ascertained the possibility of reaching the upper *névé* of the Adish Glacier from the south by a very laborious rock-climb on the spurs of Janga. A pass is therefore not impossible, but its extreme length and the steepness of the ground on both sides would render the risk of being benighted very serious.

Janga, West Peak (16,569 feet).—Unascended.

Janga, East Peak (16,527 feet).—On September 12th, 1888, Mr. Cockin, with U. Almer and C. Roth, left the Missess Kosh at 2.45 A.M., and walked up the Bezingi Glacier till 6.10, when they breakfasted near the rocks at the base of Janga, and then turned to the right up the ice-fall and *névé* filling the recess between Janga and Shkara. On reaching the foot of the steep narrow glacier which descends from the depression between the two mountains, they took to the rocks on the west side at 8.43. After about three hours' climbing they reached the top of these rocks, then cut steps up to the ridge of the mountain, and followed it in a west direction to the summit, which they gained at 2.46 P.M. Leaving the summit at 3.12, they arrived at Missess Kosh at 10.30 P.M. [*Alpine Journal*, vol. xiv. p. 199, and xvi. p. 483.]

Janga Gap (uncrossed).—Mr. Cockin's ascent showed the possibility of reaching from the north the gap between Janga and Shkara. But in 1893 the climb to this point from the Kalde Glacier was, in the judgment of experienced climbers, rendered too dangerous by the risk of ice-avalanches.

Shkara (17,038 feet).—Mr. Cockin, with U. Almer and C. Roth, left a sleeping-place at the foot of the rock-ridge which descends from Mishirgitau to the Bezingi Glacier at 4.55 A.M. on September 7th, 1888, crossed the Bezingi Glacier, and ascended the side glacier which is enclosed between the great buttress of Shkara and the northern ridge which connects the peak with the Dykhsu Pass. Having reached the almost level plateau of *névé* near the head of the lateral glacier, they left the latter on its true right bank and cut steps for two hours up snow-slopes to the crest of the ridge, which was gained at 10.25 A.M. After halting here till 11.12 they followed the ridge—for the most part a narrow *arête* of hard snow or ice, necessitating continual step-cutting—till 3.42 P.M., when the summit was reached.

The descent to the sleeping-place occupied about six hours. [*Alpine Journal*, vol. xiv. p. 197; xvi. p. 477.] In 1890 M. N. Jukoff, of the Russian Survey, with Cossacks, starting from a bivouac on the Bezingi Glacier, reached the Dykhsu Pass at 9 A.M. He states that by following a ridge that falls from Shkara towards the pass, they gained in four hours, without serious difficulty, a point measured as 14,994 feet. [*Proceedings of the Royal Geographical Society*, February, 1892, p. 114.]

Nuamkuam Pass (about 13,398 feet).—Between Shkara and Nuamkuam. From Ushkul to Karaul.

On August 13, 1893, Messrs. Cockin and H. Woolley quitted a camp at the Ingur sources, ascended the left moraine of the Nuamkuam Glacier until above the lower ice-fall, and then crossed the glacier, reaching the right bank at the foot of the upper ice-fall.

After ascending, first the snow-slopes and then firm granite rocks on the right bank for an hour, they halted for the night on the rocks overlooking, and about half-way up, the ice-fall. Starting next morning at 4.15, they traversed good granite ledges till they reached the basin or cirque of *névé* enclosed between Nuamkuam and a spur of Shkara. About half-way round the semicircular ridge, which forms the main watershed and encloses the basin, is a notch, below which the rocks descend to within 200 or 300 feet of the *névé*. Cutting steps up to the rocks, and climbing the latter, they gained the pass at 8.40 A.M.

The pass was not crossed; but the descent on the north side to the Dykhsu Glacier appeared to be feasible. [*Alpine Journal*, vol. xvi. p. 525.]

On August 8, 1895, Mr. H. Woolley, with K. Maurer, starting from the Dykhsu Kosh, gained the crest of the same ridge from the north side. On account of the unfavourable condition of the snow-slope they were obliged to attack the ridge more to the west, and consequently struck the crest at a point a considerable distance to the west of the gap gained from the south in 1893. [*Alpine Journal*, vol. xvii. p. 593.]

Nuamkuam (13,975 feet, unascended).—East of this summit, at the head of the Zena Valley, the crest of the chain is apparently at one point easy of access from the south side. On the north, however, it is protected by very formidable slopes, the descent of which should on no account be attempted. [See Signor Sella's and Mr. Woolley's Photographs.]

Ailama: Koreldash (14,854 feet).—Mr. H. Woolley, with C. Jossi, left the Dykhsu Kosh (at the junction of the Khrumkol with the Dykhsu Glacier) on August 19, 1889, descended the Dykhsu Glacier to the ice-fall of the Ailama Glacier, ascended the left bank of the latter, and near its head crossed to the foot of Ailama. Two ribs of rock run up the north face of the peak.

Having passed the night at the foot of the western rib, the party started next morning at 4.45, climbed first up the rocks of this rib, and then cut steps straight up the northern face of the mountain, crossing several crevasses and gaining the

summit, a snow-dome, at 10.7 A.M. The descent was commenced at 11.45, and Dykhsu Kosh was reached at 6.30 P.M. [*Alpine Journal*, vol. xiv. p. 448.]

Zurungal Peak (13,916 feet); *Nameless Peak* (13,300 feet).—Two rock-peaks, bold in form, and projecting from the chain to the southward, rise beyond Ailama on the rim of the Ailama Glacier. They tower in high cliffs over the glen of the Zeskho. [See *Alpine Journal*, vol. xiii. pp. 371 and 373, and S. Sella's Panoramas.]

Fytnargyn (13,789 feet, unascended).—S. Sella attained a point on the ridge about 600 feet below the top; but his object being mainly photographic, he did not complete the ascent, which may be made from the Agashtan Glacier. [*Bollettino del Club Alpino Italiano*, vol. xxiv. No. 57, 1890.]

Fytnargyn Pass (11,131 feet).—From Balkar to Zeskho Valley.

On August 17, 1890, Messrs. Mummery and W. J. Petherick, with two Karaul porters, left Karaul at 7 A.M., and ascending by the Fytnargyn or Agashtan Glacier, reached the lowest point on the watershed at its head at 3 P.M. The slopes on the southern side are steep and slightly crevassed, but offer no difficulty. The descent of the Zeskho Valley, owing to the absence of any path, took much time, and the huts in the Zena Glen were not reached till 3 P.M. the next day.

The *Sharivsek* crosses at a higher point (11,564 feet), a little farther to the east. [See Sella's Panoramas.]

This is the most frequented native pass across the chain west of the Mamison Well-marked zigzags climb from the Goribolo pastures the rocky slopes of the main chain nearly to its crest. A traverse west, over snows feeding the Skenis Skali, leads to the broad watershed. The natives often prefer to avoid this traverse by descending, crossing the source of the Skenis Skali, and climbing the slopes west of it to the pass. The descent lies over the slightly crevassed *névé* of the Shtulu Glacier, and then by the slopes on its left into the glen of the Akhsu, which soon joins the stream descending from the direction of the Shtuluvsek Pass. It is two days with animals, a day and a half on foot, from Gebi to Karaul. [Grove's *Frosty Caucasus*, pp. 76-97.]

The little group of passes in this part of the chain are a consequence of its easier slopes and those of its geological character. Ailama and Laboda are both granitic; but between them the watershed is composed of crystalline schists—of which the Gezevsek group is composed. They slope steeply to the south, gently to the north, and being extremely friable, furnish great moraines. Hence a curious phenomenon common in Arctic, but rare in glaciers of the temperate zones, was noticeable in 1889. The glacier at the western foot of the Shtuluvsek had retreated, leaving behind it a mass of ice buried, but protected from dissolution, under rocky debris.

The Edena Pass (11,370 feet), the ancient Pasis Mta, lies east of the last-named. The ascent is direct from the source of the Rion by the ridge west of the Edena Glacier, and the descent on the north by the right bank of the Shtulu Glacier. It is less used by natives than the *Sharivsek*. The name Gezevsek is given to this pass on the one-verst map; but as the same name is retained for a pass leading from

the Rion to the Urukh, which has long borne it, it seems necessary to suggest an alternative and distinct title.

The route from the Goribolo pastures, or even from the hut near the Rion sources, through the Skenis Skali forests to Ushkul, might possibly be accomplished on foot in two days: with horses it takes three, owing to the absence of tracks and the difficulties of the ground on the ridge west of the Skenis Skali and in the Zeskho Valley. The scenery is throughout romantic, and the Zena Glen one of the most beautiful in the Caucasus. This, however, can easily be made the object of a day's excursion from Ushkul. The track is the same as that to the Sharivsek as far as the Skenis Skali. The point at which the Goribolo ridge is crossed is known as *Vatsistveri* (9562 feet).

Gebi horsemen force their animals over the ridge at the head of the first west tributary of the Skenis Skali to the Zeskho Valley. Mr. Phillipps-Wolley went down the Skenis Skali Valley and to the junction of the streams. [*Savage Svätetia*, vol. i. p. 240.]

SOUTHERN SPURS. TETNULD SPUR

This ridge strikes off from the main chain near the south base of Katuintau, and divides the *névé* of the lower Zanner basin from that of the Adish Glacier. To cross it would be a formidable task. The face of Tetnuld that descends to the gap is steeper than the ridge by which the mountain has been climbed.

Tetnuld (15,918 feet).—Mr. D. W. Freshfield, with F. and M. Dévouassoud and J. Désailoud, left a camp (about 9000 feet) on the right bank of the Nageb Glacier, which at its lower extremity joins the Zanner Glacier, at 12.45 A.M. on the 6th August 1887. Turning the lower ice-fall by avalanche debris and moraine, they forced their way through some formidable *séracs* to the great central plateau of the glacier. Another long slope of *séracs* gave access to a narrow snow-terrace, which brought them to the southern ridge at 9 A.M. This ridge was then followed without difficulty, but with much step-cutting, to the summit (1.15 P.M.). The camp was regained at 7 P.M. The *séracs* were avoided in the descent by taking a course to the left of the rocks that break the middle ice-fall. [*Alpine Journal*, vol. xiii. pp. 363-4, 517-21.]

On the 3rd August 1891, Herren Merzbacher and Purtscheller, with J. Kehrer and F. Unterweger of Kals, starting from a bivouac above Adish at 11,700 feet, joined Mr. Freshfield's route near the top of the glacier, and reached the peak without step-cutting in 6 hours and 45 minutes, returning to camp in 3 hours and 30 minutes. This is the natural and shortest line of ascent, when the people of Adish are not unfriendly.

NORTHERN SPURS. DYKHTAU SPUR

Koshstantau-Dykhtau Spur.—From the northern base of Shkara a comparatively low ridge divides the deep trench parallel to the main chain occupied by the Bezingi and Dykhtau Glaciers, and unites the unbroken turreted wall that overlooks

Suanetia to the bolder pinnacles that crown the great horseshoe which almost encircles the Mishirgi Glacier. This horseshoe may best be described, without reference to its connection with the main chain, by taking the peaks in their order from Ukiu on the north-west round to the summits over the so-called Missess Kosh.

A very unfortunate confusion has arisen as to nomenclature of the two highest summits. [See *Proceedings of the Royal Geographical Society*, May 1890.] English mountaineers have hitherto adhered to the names given them in the five-verst Russian map, and accepted for twenty-five years in English and German geographical literature. The authors of the new Survey have revised the names on the strength of local usage. That the old names were not in accordance with local usage is undeniable. But it seems impossible to show that the peak of 17,052 feet, the Dykhtau of the new map, which stands entirely away from the Dykhsu Glacier, has any proper claim to the name finally given it.

It would, however, be useless to dispute further the decision of the Surveyors, now that it has been definitely embodied in the new maps of the Survey. Henceforth the Koshtantau of English literature must be called Dykhtau, and the English Dykhtau, Koshtantau. This course has been adopted in these volumes.

We deal first with the comparatively low ridge which links the outlying peaks to the main chain.

Dykhsu Pass (12,719 feet).—From Bezingi, by the Bezingi and Dykhsu Glaciers, to Karaul and Balkar. Mr. Mummery, with Zurfluh and a Bezingi hunter, on the 12th July 1888 left the Missess Kosh at 4.30 A.M. They kept up the middle of the glacier, and ascended the slopes to the pass without difficulty (10 A.M.) Some steep snow-slopes lead on to a large and nearly level glacier, a tributary of the Dykhsu. To avoid the ice-fall by which this joins the main stream the party struck on to the rocks on the right, and descended by a fairly easy route to the Dykhsu. A suitable place for a camp having been found close to the foot of the ice-fall, the Bezingi hunter was sent on to Karaul for provisions, reaching it the same afternoon. [Mummery's *My Climbs in the Alps and Caucasus*, p. 235.]

Sella's Pass (about 14,000 feet).—North branch of the Bezingi Glacier to Khrumkol Glacier. Signor Sella reached this pass from the west. It is circuitous, but apparently not difficult. The upper *névé* of the Khrumkol Glacier is not correctly shown on the one-verst map. [Sella's *Panorama from Fytnargyn*; *Bollettino del Club Alpino Italiano*, vol. xxiii. No. 56.]

Taking the horseshoe from its north-west extremity, the first summit worth notice is Ukiu (14,266 feet). Mr. D. W. Freshfield and J. Désailoud on the 12th August 1887 left a camp in the Ukiu Glen (9000) at 2 A.M., and having climbed into the small glacier basin west of the peak, cut up frozen snow-slopes to the north ridge. This was easy for some distance till broken by a tower, which was turned by a ledge on the climbers' left, and at 9.30 A.M. the summit was reached by easy rocks. The party descended without difficulty the east slopes of the peak on

to the Ukiu Glacier, and returned by it to their bivouac and Bezingi the same evening. [*Alpine Journal*, vol. xiv. p. 10.]

Ukiu Gap.—The gap between Ukiu and Ulluaux Bashi may doubtless be crossed. On the north side it is easily approached by sloping glaciers. [Signor Sella's Photograph.]

Ulluaux Bashi (15,351 feet).—Signori V. and E. Sella, with G. Gilardi and two porters, on the 6th August 1888 left a camp on the left moraine of the Ulluaux Glacier. Having ascended the glacier some distance, they turned up its north-west tributary, and subsequently ascended by easy snow-slopes to a point overlooking the Kundium Mishirgi Glacier. Leaving the two porters behind at this point, Signor Sella and Gilardi attacked the rock-buttress of the peak. On reaching the ridge, they were soon compelled to leave it for the ice-slope on their right. Higher up it was regained and followed to the summit. [*Bollettino del Club Alpino Italiano*, vol. xxiii. p. 270-4].

Malatau, (14,952 feet).—This is a lower peak on the same crest as Ulluaux Bashi, unascended but accessible.

Mishirgi Pass (13,630 feet, Donkin's measurement), between Koshtantau and Ulluaux Bashi. From the Ulluaux Glacier to the Kundium Mishirgi Glacier.

Messrs. Donkin and Fox, with K. Streich and J. Fischer, on August 27th, 1888, reached this pass by the route subsequently taken by the Signori Sella in climbing Ulluaux Bashi, and by step-cutting up a steep ice-wall. They descended some little distance on the Kundium Mishirgi side. The lower region of that glacier was explored by Mr. D. W. Freshfield in 1889. The unattempted upper ice-fall of the Kundium Mishirgi may present some difficulty. [*Alpine Journal*, vol. xv. p. 26.]

Ulluaux Pass (14,300 feet). From the Ulluaux Glacier to the Tiutium Glacier.

Messrs. Donkin and Fox, with K. Streich and J. Fischer, crossed this pass from the north on August 30, 1888, and bivouacked on the rocks of the southern slope, a few hundred feet below the pass, with the object of attempting Koshtantau. [*Alpine Journal*, vol. xiv. p. 432, and xv. p. 28.]

On July 29, 1889, Messrs. Dent, Freshfield, and Woolley, and Captain Powell, with K. Maurer, A. Fischer, and C. Jossi, completed the pass from the south. Leaving Karaul on July 28, they descended the Cherek Valley to the mouth of the Tiutium Glen, which they ascended as far as the Kosh near the right moraine of the Tiutium Glacier. Starting next morning at 4.30, they ascended the rocks on the right bank of the glacier for an hour or so, then crossed the ice-fall to its left bank, leaving to their right a broad gap communicating with the Ghertui Glacier, and, keeping near the rocks on the left margin, ascended to the undulating *névé* above the ice-fall. After walking westward for an hour and a half up the trough of *névé*, they arrived at the foot of the broad snow-trench running up to the pass, which is a depression on the east ridge of Koshtantau. Climbing up steep rocks on the east margin of the *couloir*, they gained Fox and Donkin's bivouac at noon. The pass

is reached in forty-five minutes from the bivouac by climbing steep rocks and traversing a snow or ice slope. [*Alpine Journal*, vol. xiv. pp. 433, 437; xv. p. 30].

Kashtan Crest (14,860 feet).—Accessible from the Ulluaux Pass: a fine view-point, unascended.

Kashtun Pass (about 11,500 feet).—This pass is gained by the rock and snow-slopes east of the Kosh at the foot of the Ulluaux Glacier. It was crossed by Baron Ungern Sternberg in 1889, and the view was photographed by Signor Sella in the same year. The Baron described the descent into the Kashtan Glen on the Balkar side as steep and exposed to stones, but the pass is frequently used by native hunters. *Kayashki-su-bashi* (12,750 feet), north of it, is the last snowy summit in this part of the chain.

N.B.—There is no doubt that the name of Koshtantau is derived from this Kashtan Glen. I leave to the Surveyors the responsibility of a distinction they have deliberately made.

Koshtantau (16,880 feet).—On August 8, 1889, Mr. H. Woolley, with C. Jossi and J. Kaufmann, left Karaul at 5.30 A.M., and following the route taken by the search party to the Ulluaux Pass, ascended the glen, crossed the Tiutium ice-fall to its left bank, and advancing up the *névé* of the same glacier halted for the night on rocks at the foot of the *coulouir* running up to the Ulluaux Pass. Starting next morning at 3.50, they continued westward till they reached the foot of the ice-slopes running up into the angle formed by the south and east ridges of Koshtantau. Cutting steps up these slopes and taking advantage of two ribs of rock jutting through the ice, they gained at 10 A.M. the southern *arête* at the point where the snow-ridge is broken by a crest of rocks. At 11 A.M. the rocks were passed, and Kaufmann remained behind. The others ascended along the snow-ridge to its junction with the east ridge, a point marked by a great rock-tower. Climbing to the left (W.) round the base of the tower, they gained at 1.15 the foot of the ice-slope rising from the east ridge to the summit, which was reached at 3.47 P.M. The descent to the sleeping-place occupied about 5½ hours. Karaul was regained on the afternoon of the 10th. [*Alpine Journal*, vol. xiv. p. 447, and xv. p. 173.]

Tiutium Gap.—Uncrossed and not to be recommended.

Two very steep ice-gullies at the head of the *névé* correspond to long rock-chimneys on the Khrumkol Glacier side.

Tiutiuntau.—South-west of the *névé* stands a fine snow-peak (15,113 feet), which partially masks Koshtantau from many points near Karaul. It is probably accessible from the south.

Beyond this the spur rises again to a summit, *Karatau* (12,830 feet), which appears easy of direct access from Karaul and made for a panoramic point. The crest between the Khrumkol and Dykhsu Glaciers is almost equally well placed.

Khrumkol Gap (about 13,000 feet).—This conspicuous gap in the Mishirgi horseshoe, south-west of Koshtantau, is defended by steep rocks on the south side, and on the

north could only be reached by a long traverse across the snow and ice slopes under Koshtantau from the highest snowfields of the Kundium Mishirgi. To attempt a direct descent would be disastrous.

From this point to beyond Dykhtau the precipices are continuous on the Mishirgi side.

Khrumkoltau (14,637 feet, unascended), a bold rock-peak, sometimes described as Mishirgitau, rises above the upper branch of the Khrumkol Glacier.

Mishirgitau: Eastern Peak (about 16,350 feet).—From the east this mountain appears part of Dykhtau. On August 5, 1889, at 5.30 A.M., Mr. H. Woolley with C. Jossi left a bivouac on rocks in the lowest depression of the ridge which separates the Khrumkol from the Dykhsu Glacier, and ascended the Khrumkol Glacier in 2½ hours as far as the foot of the snow-couloir which runs up the south face of Mishirgitau to the gap between the west and the east peaks. Ascending first by the gully, and then by the rocks on its east margin, they gained the col at 1 P.M. After a halt of about thirty minutes they turned to the east, and reached the eastern peak (a narrow snow-ridge) at 2.30 P.M. The west summit (a rock-pinnacle) appeared to be about fifty feet higher. [*Alpine Journal*, vol. xiv. p. 446, and xv. p. 176.]

Western Peak (16,408 feet, unascended).—The ridge rising from the Dykhsu Pass, and dividing the *névé* of the Khrumkol and Bezingi Glacier abuts against this peak. S. Sella thinks it may afford an access to it.

Dykhtau by southern face (17,052 feet).—Koshtantau of five-verst map and English literature.

Mr. Mummery, with H. Zurfluh, on the 24th July 1888 left a camp on the *seracs* above the upper Bezingi Glacier at 2.30 A.M., and ascended beds of winter snow and a small glacier to the gap between the peak and its great western buttress. They then turned on to the south face, and bearing to the right reached the belt of red rock which seams the face at 7 A.M. A short distance farther they reached a long *couloir*, but finding it full of ice it was soon quitted for the rocks on its eastern side. Still bearing to the right, a secondary ridge was gained. After being twice forced off it to the left, it became possible to cross to the right into a deep crack which led to the summit ridge a few feet from the highest point (11 A.M.). From the point where the secondary ridge was struck to the summit the rocks were very formidable, and compare in character and steepness with the Chamonix Aiguilles. The descent was begun at 11.45 A.M., and the tent regained at 4.30 P.M. [*Proceedings of the Royal Geographical Society*, vol. xi. pp. 351-9; Mummery's *My Climbs in the Alps and Caucasus*, pp. 258-284.]

By northern ridge.—Messrs. Cockin, Holder, and Woolley, with U. Almer and C. Roth, left the Missess Kosh at 2.30 P.M. on August 19th, 1888, and ascended the Missess Glacier, which is contained between the north and north-west ridges of Koshtantau. About 2000 feet up the glacier is divided into two branches by a

Bergli-like rock-ridge. Turning up the north branch, the party gained at 5.30 P.M. a comparatively level plateau, and passed the night on rocks on its north margin at a height of about 10,750 feet.

Starting next morning at 4.45, they ascended the glacier and névé slopes above it in about three hours to the col or depression at the foot of the north arête of the mountain. Leaving this col at 8.45, they ascended the arête to the summit, which was gained at 2.5 P.M.

The descent to the sleeping-place occupied about 8 hours, and on the morning of the 21st Missess Kosh was regained by going down a wide rock-gully a little to the north of the Missess Glacier. [*Alpine Journal*, vol. xiv. pp. 90 and 185.]

On the same ridge to the north are the Missess Gap at the foot of north arête of Koshtantau (untraversed), and Missess Tau (unascended, 14,490 feet).

THE ADAI KHOKH GROUP

The boundaries of this group are: On the west the Pasis Mta path, on the south-east the Rion and the Mamison Road, on the north the path from Sadon to Stir-Digor, the Urukh and the Shtuluvsek.

Gezi (12,699 feet).—This bulky, and on the north heavily glaciated mass, feeds the sources of the Rion, the Cherek, and the Urukh. Its summit may doubtless be reached without serious difficulty by mountaineers from the west foot of the Shtuluvsek.

South of it, projecting between the headwaters of the Rion, stands Edena (12,663 feet).

It is certainly possible to find a pass from the Mosota Glacier, which supplies the source of the Urukh, to the glen of the first tributary of the Rion, filled at its head by the Zopkhito Glacier. In the next cluster of summits the main chain recovers its dignity and boldness of form.

Laboda (14,168 feet), Ziteli or Tana (13,930 and 14,028 on different sheets of new map), Vastak Khokh of five-verst map. This fine cluster of peaks, four in all, of which Laboda, the north peak, is the loftiest, are the Wetterhörner of the Caucasus. They rise in tiers of precipices on the east of the head of the Urukh opposite the ascent to the Shtuluvsek.

On August 1st, 1895, Messrs C. T. Dent and H. Woolley, with K. Maurer and S. Moor, left a camp in the Stir-Digor Valley, crossed the ridge which extends eastward from Laboda by the low depression marked 6762 feet in the one-verst map, and descending slightly, reached the Tana Glacier. Proceeding up the middle of the glacier to the foot of the rock-ridge which separates the two main branches of the glacier (marked 8596 feet in one-verst map), they ascended by the rocks till above the south ice-fall, and bivouacked on the south side of the ridge. On August 2nd they went up the south branch of the glacier almost to its head,

skirted the rocks of the east ~~side~~, and finally gained the summit by a snow-ridge which runs up from the south-east. [*Alpine Journal*, vol. xvii. p. 593.]

Two of the summits are accessible from the snowfields above the Novo Kavis cirque, well seen from Stir-Digor. The others are seen from the Goribolo, and may perhaps be reached by the southern glaciers.

Gerdzisek (11,473 feet).—This is described as a horse-pass by Klaproth, A.D. 1823, apparently from hearsay. The Gurdzisek is now preferred by the people of the country. The path from Stir-Digor mounts slopes east of the glen above Kussu (no name on the one-verst map), and finally a short, steep *névé* to a gap west of a rocky dome (*Zikhvarga*).

The descent to Gebi is said not to be difficult. It lies over the Kirtisho Glacier and down the Choshuri Valley. No traveller has crossed this way.

Beyond this peak the first conspicuous summit is *Zikhvarga* (13,380 feet, one-verst map; Holder's *Tsfora*).

Messrs. Holder and Cockin, with U. Almer, left Gebi on August 19, 1890, and keeping to the eastward through birch-woods and over fields and pastures, reached a southern spur of *Zikhvarga*. Leaving their camp at 2.45 A.M. they kept along the ridge connecting this spur with the summit, but after two and a half hours it was found better to descend to the glacier on their right (eastward), keeping for the most part to the true right of this glacier, and having ascended through the ice-fall without much difficulty; they took to the rocks and ascended to the final ice-slope and the lower or eastern summit (11 A.M.), previously ascended by Signor V. Sella. After an hour's rest they went along the ridge in forty minutes to the western or highest point. [*Alpine Journal*, vol. xv. pp. 515-16.]

Eastern Peak.—Signor Sella, with three Italian porters, left a camp in the Karagom Valley on the 30th July 1890, and followed the Gurdzisek route to the steep slopes leading up to the pass; here they bore well to the right, and striking the eastern ridge of the peak high above the pass, they followed it to the summit [*Bollettino del Club Alpino Italiano*, vol. xxiv. p. 274.]

Gurdzisek (10,976 feet).—The route to this pass from the Uruk is by a well-traced path up the right side of the Karagom Glacier, and then across it to the opening of the Gurdzisek glen, the (true) left bank of which is followed to the glacier, which is easily ascended to the pass at its head. The descent on the south side, mostly by rocky slopes, leads to the Cheskhura Valley, whence a high spur has to be crossed to reach Gebi.

Messrs. D. W. Freshfield, Moore, and Tucker, with F. Dévouassoud, left Chiora at 1.30 A.M. on the 10th July 1868, and reached in ten and a half hours a conspicuous gap at the head of the Burdjula Glacier, more than two versts east of the Gurdzisek. The descent on to the glacier on the north side was by an ~~excessively steep~~ snow-couloir, 2000 feet high, only practicable when the snow is in very good condition; below this the ordinary native route practicable for sheep was reached. [*Alpine Journal*, vol. iv. p. 161; *Central Caucasus and Bashan*, pp. 245-52.]

Burdjula (14,294 feet).—Messrs. Holder and Cockin, with U. Almer, left a camp at Notsanzara above the Rion Valley at 2.35 A.M. on the 23rd August 1890, and followed first an ancient grass-grown moraine, and subsequently the right bank of the torrent, to the westernmost of three small glaciers. Having ascended this for some distance, they reached a rib of rock dividing it from the next glacier. This was ascended, and in forty minutes the undivided glacier above the rib was gained. Crossing the *Bergschrund*, they ascended over rocks, loose stones, and snow to the south-eastern ridge of the mountain (8.5 A.M.). After forty-five minutes' halt they began the ascent of the ridge, which proved to be a good rock-climb, taking nearly three hours (11.45 A.M.). On the descent they kept to the eastern face of the mountain, regaining the camp at 5.55 P.M. [*Alpine Journal*, vol. xv. pp. 518-20.]

Signor Sella, with Italian porters, left a camp under the Burdjula Glacier soon after midnight on the 30th August 1890. Having crossed the glacier, they ascended by rocks to the western snow-ridge. This they followed without much difficulty to the summit. [*Bollettino del Club Alpino Italiano*, vol. xxiv. pp. 297-300.]

Karagom Pass (11,900 feet).—Stir-Digor, by Karagom and Bokos Glaciers, to Glola.

Messrs. D. W. Freshfield, Moore, and Tucker, with F. Dévouassoud, left a bivouac at the lower end of the Gurdzivsek Glen at 3.30 A.M. on the 11th July 1868. They mounted by the grass-slopes on the left bank of the Karagom Glacier to near the foot of the great ice-fall, the ascent of which lasted six hours, and was estimated at 4000 feet. Above, slightly inclined and very soft snowfields led in four hours to the pass. The ice-fall of the Bokos Glacier proving impassable, the party returned to the pass, and, traversing some slopes to the east, crossed a snowy head which projects above the top of the ice-fall to the rib of rock forming the division between the Bokos and the next valley to the eastward. An easy descent on its eastern side was discovered. Lower down the party traversed back over rough slopes to the Bokos-skali and camped at the first trees. [*Alpine Journal*, vol. iv. p. 161; *Central Caucasus*, pp. 254-66.]

Beyond the broad saddle of the Karagom Pass the topography of the watershed of the Karagom Glacier is intricate. A low ridge, behind the apparent watershed as seen from the Rion Valley, curves back to a point a little behind the double-headed peak (14,874 feet on the map), where it abuts against the much bolder crest which forms the east limit of the Karagom basin, and is collectively known as Adai Khokh. The peaks north of the double summit, including Adai Khokh itself, lie off the watershed, but for convenience of description they are here taken in their order from north-west to south-east.

Karagom Peak (14,805 feet).—A double-headed rock-peak. Its north face, draped in glaciers, forms the most striking feature of the scenery of the Karagom Glacier. The Sandur Ridge breaks off from its eastern and higher peak.

Nameless Summit (14,602 feet).—An insignificant crag. Broad gaps right and left of it, easily accessible on the Karagom side, should both lead to the Songuta Glacier. These two summits are accessible also from the Sandur Pass (see *post*).

Adai Khokh (15,274 feet).—Messrs. Holder and Cockin, with U. Almer, left their camp at Notsanzara at 12.30 A.M. on the 26th August 1890. They reached the watershed at 5.5 A.M. Crossing the great snowfields to a mass of rock, they ascended this to its summit (8 A.M.), and then descended its eastern face to the snowfield below. They crossed this to the lower ice-fall (9.20 A.M.), and then in fifty-five minutes cut up the face of the mountain to a plateau, where they halted for half an hour. Starting again at 10.45 A.M., they made for the *Schrund* immediately under a well-marked depression in the ridge. Crossing the *Schrund* at 11.10 A.M., the ridge was reached at 11.30 A.M. They followed this ridge, snow at first, and then stones, to the summit (12.50 P.M.).

On the return, instead of crossing the mass of rock rising out of the great snowfield, they kept to the south of it, and subsequently worked back to their morning's track. Owing, however, to crevasses and *séracs*, this course involved considerable loss of time. [*Alpine Journal*, vol. xv. pp. 521-2.]

South of *Adai Khokh* is a broad gap, easy on the west, defended, according to Mr. Mummery, by steep but practicable slopes on the east or *Zea Glacier* side, which forms the natural connection between the two great glaciers of the group.

South of this gap the watershed abuts against the north spur of the forked peak (14,812 feet), which consequently is on the main chain. There is a deep narrow gap between it and the next summit, connecting the *Zea* and *Bubis névés*.

Bubis Khokh (14,497 feet, unascended).—A beautiful double-peak, conspicuous from the *Rion Valley*. The formidable gap at its east base separating the *Bubis Glacier* from the *Zea* has not been crossed.

Khamkhakhi Khokh (14,063 feet, one-verst map).—This bold rock-peak stands at the junction with the main chain of the short ridge separating the two heads of the *Zea*.

M. de Déchy, with Alexander Burgener and P. J. Ruppen, left a bivouac at the foot of the *Zea Glacier* at 7 A.M. on the 23rd July 1884. The passage of the upper ice-fall of the glacier proved formidable, and it was not till 5.45 P.M. that the party were able to find a suitable site above the upper plateaus of the glacier. Starting at 5.30 A.M. the next morning, they climbed on to a ridge, partly by rock, partly by a snow-couloir. The ridge itself proved formidable. A lower peak was crossed, and the actual summit was not reached till 1.30 P.M. They regained their sleeping-place at 7 P.M. Owing to the melting of snow-bridges they were unable to follow the route through the *séracs* taken in the ascent, and the camp at the foot of the *Zea Glacier* was not reached till 6 P.M. on the third day. [*Alpine Journal*, vol. xii. pp. 91, 209-19, 314-20.] There is some uncertainty as to which peak was gained.

Zea Pass (about 12,000 feet).—From the *Mamison Pass* to the *Zea Glacier* and *St. Nikolai*.

Messrs. D. W. Freshfield, C. T. Dent, H. Woolley, and Captain Powell, with Jossi, Kaufmann, Maurer, and Fischer, left the Hospice south of the *Mamison Pass* at 2 A.M. on July 19th, 1889. Having ascended to the *Mamison Pass*, they

left the road at the first zigzag on the northern side, and ascended past the source of the Ardon. They reached the crest by easy glacier about 8 A.M. The pass is a few hundred yards east of the point where the granite chain ceases to be the watershed. It is shown in the plate (*Alpine Journal*, vol. xii. p. 217), lying east of a rock-tower on the skyline. The *névé* of the Zea Glacier was found to be cut off by 400 feet of *very steep* rock and ice, the descent of which took four hours. The descent of the three ice-falls of the Zea Glacier proved easy, and the foot of the glacier was reached at 6 P.M., and St. Nikolai at 9 P.M. (The upper ice-fall of the Zea Glacier is in some seasons formidable.) [*Alpine Journal*, vol. xiv. pp. 436-7.]

The Mamison Pass (9282 feet) is the second carriage-road over the main chain. It was passable for carriages in 1889, but no adequate provision had then been made for its maintenance, and in default of this it can hardly remain permanently passable for wheels, even for three months in the year. There is no postal service beyond Sadon on the north or Oni on the south side. Were the road in good order, three days should suffice from Vladikavkaz to Kutais: five are more likely to be taken. There are rough *dukhsans* or roadside inns on the south side, and good sleeping quarters at Ardonsk and St. Nikolai on the north. The scenery of the Kassara Gorge is very fine, and the view from the Mamison Pass (improved by ascending a few hundred feet to the south) extends to Shkara and Ushba. The Upper Rion is beautiful, and the whole drive to Kutais pleasing.

NORTHERN SPURS. KALTBER SPUR

North-east of watershed, dividing Zea Valley from Saramag Valley.

For some distance east of the Mamison Pass this ridge is exceedingly formidable on the north side.

The only conspicuous summits are *Kaltber* (14,462 feet, unascended), which rises at the head of the Saramag Valley, and another (13,331 feet) at the head of the Arnag Glacier. A pass may probably be made from this glen to Rekom, and the peak ascended. The scenery and view would well repay the attempt.

THE SANDUR SPUR

separates the lower Karagom basin from the Skatikom Glacier. It is a long and fairly level rock-ridge, 12,000 to 13,500 feet in height. Signor Sella in 1890 reached a practicable pass across it from the head of the west Skatikom Glacier, but did not descend to the Karagom. [*Bollettino del Club Alpino Italiano*, 1890, vol. xxiv. No. 57].

THE ZEA KHOKH SPUR

This ridge extends along the north side of the Zea Valley, dividing it from the ice-streams that flow north towards the Kamanta Valley. It presents to the view a bristling ~~face~~ of granite teeth. Three of these, east of the head of the Songuta Glacier, reach heights of 14,094, 13,825, and 14,259 feet.

The summit projecting on the east of the Zea snowfields, and conspicuous from the lower Zea Glacier, should afford a good view-point for reconnoitring purposes.

THE BOGKHOBASHI GROUP

This granite group is geologically part of the main axis of the chain. The watershed opposite its west portion, from the Agashtan Glacier, probably as far as—but not including—Laboda, is composed of black, friable schists. The upper gorge of the Urukh is therefore analogous to the Kassara and Darial Gorges.

No traveller has as yet explored these mountains; their extremities only have been touched.

The natural limits of the group are defined on three sides by the courses of the Cherek and Urukh and the track of the Shtuluvsek. On the north a horse-track from Stir-Digor to Balkar, of which we have no description, crossing several ridges and valleys, but preferred by the natives to the Shtuluvsek, forms a convenient limit.

The *Shtuluvsek Pass* (Shtuli-vsek in early maps), 10,857 feet, is a horse-track open for two months in the year only. It is a day and a half's journey from Stir-Digor to Karaul. (See Chapter vii.)

A point, visible from Karaul (11,500 feet), on the long ridge projecting from Gulchi towards the Cherek, was climbed in July 1888 by Mr. D. W. Freshfield, with A. Fischer: five hours up, one and a half down. It is a magnificent view-point.

Gulchi, 14,680 feet [see plate in *Central Caucasus*, p. 411, and Sella's Photographs], is a fine mountain, very precipitous towards Karaul, but probably accessible by the glacier on its south-east face, that is drained by a torrent forded at the west foot of the Shtuluvsek. It culminates in two snow-points and a rock-peak of almost equal height.

It may be accessible on the north side, of which nothing is known to climbers.

A deep gap accessible from the south by the glacier descending east of the Shtuluvsek would afford a pass into the glen of the torrent which joins the Cherek in the Balkar basin.

Sugan Bashi (14,730 feet), the highest point of the group, is probably attainable. It is a massive and imposing summit, rising where the Shtuluvsek ridge meets the northern range. A glacier from its south-east flank, above which rise two other summits of almost equal elevation, feeds the tributary of the Urukh, along which the track to the Shtuluvsek passes.

A high saddle joins it to the next summits, *Doppakh* (14,420 feet), and *Nakhashbita Khokh* (14,406 feet), a bold rock-wall.

Beyond this a continuously lofty and precipitous rock-screen, surmounted by bold, but not very prominent, craggy eminences stretches above the Urukh.

The summit at its east extremity, opposite the Karagom Glacier and above Stir-Digor, is known as *Dashi Khokh* (12,500 feet). This was climbed in 1890 by S. Sella for the sake of the panorama. [See Photograph also *Bollettino del Club Alpino Italiano*, 1891, vol. xxiv. No. 57.]

THE OSSETE RANGE.

The Watershed from the Mamison Pass to the Krestovaya Gora.

The Caucasian chain undergoes a sudden change east of the Mamison Pass. The granitic range, that has almost continuously served as the watershed, is cleft by gorges, and the southern and northern rivers are divided by the continuation of the parallel slate-ridge, which culminates south of Suanetia in the Laila peaks. It is naturally less lofty and abrupt; the peaks are inferior, and the passes mostly under the snow-level, while the glaciers are few and small.

The district will hardly prove attractive to mountaineers for some time to come, but its peaks, lying close to the Mamison road, are worth a mention. There are no references to it in mountaineering literature.

Several bold peaks marked on the map, of which *Kozi Khokh* (12,059 feet) is the highest, rise south of Glola and Gurshevi: the pass east of *Kozi Khokh* may furnish a short cut (?) from Oni to the Ardon.

Khalatsu (unascended, 12,915 feet) is a fine dome-shaped snow-peak, well seen from the ascent to the Mamison Pass. The passes on either side of it (*Sedo Pass*, 9856 feet) lead along the valley of a tributary of the Rion to Oni. The ridge dividing the tributaries of the Rion and the Kur, the waters of the Black Sea and the Caspian, abuts against the west summit.

Zikara (unascended, 12,570 feet) is flanked by glaciers.

The *Zikara Pass* (10,479 feet), a footway crossing glacier, leads over its eastern shoulder.

Brutsabdzeli, a bold rock-peak (12,040 feet), projects south from the watershed. It has made a great impression on some of the travellers from Tiflis who have passed this way.

Behind and beyond is the *Bakh-fandak Pass* (9569 feet), a frequented horse-path, the forest and rock scenery on the south side of which is said to be very fine. It mounts the valley of the Liakhva on the south, and descends to the eastern branch of the Nardon. It was formerly a frequented route connecting the Ossete communities on either side of the chain.

The farther range, above the Nardon source, bears no glaciers, but sinks to no lower passes. The most frequented is the *Roki Pass* (9814 feet), which has been surveyed for a railway. The chain rises round the extreme head of the Terek to a cluster of peaks, of which the highest—*Zilga Khokh*—stands a little south of the point where the ridge dividing the Terek and Nardon joins the watershed.

Zilga Khokh, the highest point (12,646 feet), was ascended by General Chodzko in the Fifties while engaged on the five-verst map. The surveyors camped near the top.

From this point to the *Krestovaya Gora* (7973 feet) there are no peaks that call for mention here, and only one pass, the *Urustaltevsek* (9053 feet), leading from the valley of the Liakhva to that of the Terek. South of the chain (it is said on a limestone plateau) lies *Lake Keli*, the largest sheet of water in the whole region here described.

THE KASBEK GROUP.

The mountains between the Ardon and the Terek.

The *Kasbek Group* is a section of the central granitic chain, cut off from the rest by the Kassara and Darial Gorges. It is almost completely surrounded by the sources of the Nardon and the Terek, and sends all its waters to those streams and their affluents. The upper valley of the Terek above Kobi, where the highroad descends into it from the Krestovaya Gora, is a treeless and monotonous tract. The eastern sources of the Nardon rise in a number of secluded basins, separated by high grassy ridges and ravines. Three valleys run north from the crest towards the steppe, the *Genaldon*, *Lagzdon*, and *Fiagdon*.

The *Genaldon Valley* leads to a great glacier which flows from the united snow-fields of Kasbek and Gimarai Khokh. The huts at its head, used by the Ossetians, who here and elsewhere indulge in the most primitive form of mineral baths, have been found a convenient base for the ascent of both peaks. [See *post.*] The *Lagzdon* leads to the western glacier of Gimarai Khokh, and the *Fiagdon* to a horse-pass, the only one across the group between its two chief glacier systems. The lower parts of these valleys are finely forested. In their upper portions they are wild and barren, but thickly inhabited, the villages lying behind the shelter of the outer limestone chain. The *Fiagdon* appears to traverse a narrow and long defile between the peaks of Arkhon and Suirkhuborzon. This valley and the Kolota Pass at its head deserve to be explored and described.

Between the Kassara Gorge and the Kolota Pass rises a small glacier group, crowned by bold rock-peaks hitherto unexplored.

The chief summits are *Tepli* (14,510 feet)—this peak is conspicuous from the Mamison road; *Arkhon* (13,958 feet); a nameless peak (13,555), which rises in tiers of cliffs above St. Nikolai in the Kassara Gorge.

The *Kolota Pass* (10,633 feet), used by animals, leads from the headwaters of the *Fiagdon* to Abaiti-kau or Zakka, the highest villages on the Nardon.

The minor peaks of the Kasbek Group have been hitherto neglected. The principal are on the west, Suirkhuborzon (13,637 feet), Ziti Khokh (12,957 feet), and Shau Khokh (14,336 feet).

Nearer Kasbek, on the ridge between it and Gimarai Khokh, are two peaks of 14,790 feet and 15,092 feet respectively.

South of Gimarai Khokh are two peaks of 14,406 feet and 14,672 feet, all nameless on the new map.

Gimarai Khokh (15,672 feet).—On October 4th, 1890, Herr Merzbacher, with J. Kehrer and J. Unterweger, of Kals in Tyrol, left the huts (7644 feet), at the mineral springs at the head of the *Lagzdon Valley*, and ascended the moraine for 1½ hours to the edge of a very fine amphitheatre of glaciers, and in 2½ hours more reached the foot of a steep ice-slope leading to a snow-dome on a ridge west of the summit. They climbed along this ridge for 1½ hours, when their way was barred by a steep ice-bank in the ridge. One and a half hours were spent in cutting steps to

the saddle beyond it. The ascent of the final peak, by a steep ice-wall and difficult rocks, took $2\frac{1}{2}$ hours, the summit being reached at 9.50 A.M. in 9 hours 20 minutes, including halts, from the huts. The descent occupied 4 hours 45 minutes. The rocks of this peak proved to be of crystalline schists and basalt, whereas Kasbek itself is composed of lava. [*Mittheil. und des D. O. Alpenvereins*, 1892, No. 6, p. 65.]

Kasbek (16,546 feet) one-verst map, *Mkuinvuri* in Georgian.—By the south and north faces, and passage of the Kasbek Saddle, July 1, 1868, Messrs. D. W. Freshfield, A. W. Moore, and C. Comyns Tucker, with François J. Dévouassoud of Chamonix, left a bivouac six hours above the post-station on the left bank of the Ortsveri Glacier, which flows under the southern face of the peak. [*Alpine Journal*, vol. iv. p. 160; Freshfield's *Central Caucasus*, p. 196.]

Ascending the glacier by easy crevassed slopes, they reached the base of the ice-wall connecting the two peaks in 3 hours 45 minutes. The wall was in a bad condition, fresh snow lying on it, and its descent would have been extremely dangerous. Climbing carefully, they reached the saddle in 4 hours. Hence easy banks of frozen snow led to the top of the eastern and higher peak, $9\frac{1}{2}$ hours from the bivouac.

After returning to the saddle, they descended without difficulty by snow-slopes to the *névé* north of the peak, and bore to their right to the commencement of a rocky ridge, the northern limit of the Devdorak Glacier. Keeping near the crest of the ridge, past a conspicuous rock-castle, they left it to run down the slopes on their left which overhang the Chach glen, and following the Amilishka torrent, reached its junction with the Devdorak torrent in $7\frac{1}{2}$ hours from the peak. On the following day they returned to the station in $3\frac{1}{2}$ hours. [*Travels in Central Caucasus*.]

Variation.—On July 12, 1889, Mr. H. Woolley, with C. Jossi, J. Kaufmann of Grindelwald, and A. Fischer and K. Maurer of Meiringen, starting in the morning from Vladikavkaz, bivouacked on the Devdorak side of the rock-ridge mentioned above at about 9000 feet, about $2\frac{1}{2}$ hours above the lower end of the Devdorak Glacier. By a rough scramble they reached the rock-castle in 4 hours and the top of Kasbek in $11\frac{1}{2}$ hours from the bivouac, to which they returned in about 6 hours the same evening. [*Alpine Journal*, vol. xiv. p. 445.]

By the East Face.—In September 1887 Signor Lerco made a direct ascent of Kasbek—the second ascent of the peak—by the face seen from the post-station. They climbed the great buttress from its north base, reached its ridge some way below its brow, and then went straight up the face. [*Bollettino del Club Alpino Italiano*, September 1887, and marked Photograph, Royal Geographical Society.]

In 1889 this ascent is said to have been repeated in a single day of $16\frac{1}{2}$ hours from the post-station by Herren E. Ruckdeschel and G. Hirsch, with F. Hofer of Kals. The total ascent from the station to the summit is not less than 10,900 feet. [*Mittheil. des D. und O. Alpenvereins*, No. 13, p. 160; 1889, No. 6.]

From the Mineral Springs in the Genalden Valley on the north-west.—On September

30, 1890, Herr Merzbacher, with J. Kehrer and J. Unterweger, of Kals in Tyrol, starting from the huts at the mineral springs, climbed, chiefly by the rocks north-east of the glacier to the edge of the great snow-basin in 6 hours 20 minutes, and then climbed by a succession of snowy basins and steep slopes to the saddle, reaching the top in 12 hours from the huts. The descent occupied 5 hours.

Herr Merzbacher considers that these 'times' were only rendered possible by the hardness of the snow, and that earlier in the summer a much higher bivouac would be necessary. [*Mittheil. des D. und Ö. Alpenvereins*, 1892, Nos. 5 and 6, pp. 52 and 64.]

In the ridge connecting Kasbek with Gimarai Khokh are two nameless snowy summits of 15,050 feet and 14,798 feet, both unascended.

West of the higher peak a pass is probably to be found from the mineral spring to the Terek Valley, close to Kobi, and another between the lower summit and Kasbek to the Ortsveri Glacier and Kasbek post-station.

The ascents of Kasbek have demonstrated the possibility of a pass from the mineral spring to the Devdorak Valley.

Chau Khokh (14,336 feet).—A nameless double peak (15,015 feet), unascended.—These summits lie north of, and in the vicinity of, Gimarai Khokh.

THE LAILA GROUP

The range of mountains between the upper courses of the Ingur and Skenis Skali.

The track through the gorge of the Ingur.—Only a footpath, rough for one day, and liable to be broken by floods and swept by stone-falls. The starting-point is Sugdidi. At least three days are taken in reaching Betsho. [See Philipps-Wolley's *Savage Svanetia*, vol. ii. p. 174.]

A track barely practicable for horses leads along and over the extreme spurs of the Laila, east of the Ingur, from Sugdidi to Lower Svanetia.—It was traversed in 1889 by the sons of the late Prince Murat (long a resident at Sugdidi) in five days.

There is a track nearer the snows of the Laila which crosses the Leshnil Pass (9972 feet) from Lentekhi to Lower Svanetia.—Half-way is a lodge belonging to the Dadish Kilians, where horses are kept in summer. The track appears to be accurately shown on the five-verst map.

Two fine summits, Larakhanis-Chabi, crown the glacier-clad western extremity of the Laila chain, which does not become the Svanetian watershed between the Ingur and Skenis Skali until it approaches the *Laila Pass* (about 11,800 feet). This beautiful glacier pass, easily combined with an ascent of the peaks, offers the most tempting route for mountaineers approaching Betsho from the south.

According to the five-verst map, the ascent on the south side would be from Lentekhi by the *Kheledula Valley*, and then over a lateral ridge to the head of the *Lashkadura Valley*. [The head of the *Lashkadura Valley* does not, however, reach so far west as shown on the old map, and a direct descent into the *Kheledula*

is doubtless possible.] On the saddle between the rocks and ice which forms the pass there was in 1889 a small tarn. From this point the ascent of the three highest summits of the Laila may easily be made. Mountaineers, in place of returning to the pass or the glacier flowing from it, may from the north summit follow the ridge overlooking Suanetia to a broad saddle, and then bearing to the right of the crest, but in a W.N.W. direction, descend by S. Sella's route to the high Kosh on the ordinary track. In this way the second pass is avoided.

Laila : Northern Peak (13,046 feet, Merzbacher).—Mr. D. W. Freshfield and Captain Powell, with K. Maurer, in August 1889.

From the highest Kosh on the north side of the lower pass, leading to the Laila Pass, they were led by native companions over this lower pass into the glen through which the stream from the Laila Pass flows to join the Ingur. Leaving them near the foot of the Laila Glacier, they struck off left by a small glacier to the crest overlooking Suanetia. The route subsequently taken by S. Sella to this point is shorter, and avoids a descent of at least 1500 feet. The crest was followed over *névé* to the north peak, climbed without difficulty by a steep slope of rotten shale.

Central Peak (13,157 feet, Merzbacher; 13,400 feet, Russian Survey).—Signor V. Sellá in 1889 reached this peak without difficulty from the north summit in thirty minutes. [*Bollettino del Club Alpino Italiano*, 1889, vol. xxiii. No. 56.]

Southern Peak (13,105 feet, Merzbacher).—Herren Merzbacher and Purtscheller in 1891 traversed the two first-named peaks to the third, reaching it in half an hour from the central summit. [*Mittheil. des D. und Ö. Alpenvereins*, 1892, No. 2.]

The descent from the pass is over a considerable glacier, the concealed crevasses in which are much dreaded by the Suanetians. After leaving the ice on its right bank, and crossing the stream from the small glacier on the right, by which Mr. Freshfield's party climbed the north peak, a sharp ascent (one hour) leads to the lower pass, a gap in the ridge north of the valley, the stream of which joins the Ingur nearly at the same point as the Nakra. A very steep, zigzag path leads down to the highest Kosh, whence (it is said) Lentekhi can be reached in the day. Lower down a good path leads through beech-forests to the bank of the Ingur, whence Betsho (right) or Ezeri (left) may be gained in about two hours.

Beyond the Laila peaks the snowy crest of the range maintains for several miles a high elevation, and is not crossed by natives. The first eminence is known as

Mashkin (about 12,700 feet).—This summit was crossed on August 8, 1894, by Messrs. G. A. Sally and F. W. Newmarch. From the bridge at the junction of the Ingur and Mulkhura torrents near Latal they followed a track keeping near the brow of a spur descending from the Laila range to the foot of Mashkin (seven hours). Climbing a rocky ridge between the eastern and central of three glaciers flowing from the summit, they turned west-up snow to reach the top (seven hours). This descent to Lentekhi was, after descending the first snow-slopes,

generally in a south-east direction above the stream and on its left bank. In one place a considerable ascent had to be made to cross a tributary and avoid a gorge. From the top to Lentekhi the party spent sixteen hours, not including a night. [*Alpine Journal*, vol. xvii. p. 265.]

The Lapara Pass (over 10,000 feet) not to be confused with the *Lalpari Pass* farther east, is said to be the shortest and is certainly the most direct track between Lentekhi and Betsho. The route marked on the five-verst map involves apparently many ascents over the spur overlooking the Lakuri torrent, which runs out at right angles from the *Laila* ridge towards Lentekhi. Messrs. Dent, Donkin, and Fox in 1887 passed round the east side of the hill in which this spur terminates, crossed to its west flank, and struck the main *Laila* ridge, descending by a circuitous track to *Latal*. [Fox's Diary.]

The Lasil Peak is a snowy eminence.

The Gur Pass is a foot-track from Cholor to Ipari.

The Lalpari Pass (9256 feet), a good horse-path, is the most frequented route into Suanetia.

The track follows the stream of the Skenis Skali to the highest of the hamlets of Cholor, and then ascends, at first steeply, afterwards more gently, to the pass, which commands a superb view. The track to Kal circles round to the west, and then descends a spur. A track crossing the ridge a short distance farther east is used by the natives of Ushkul, and known as the *Gorvash Pass* (9513 feet).

Dadiash-ushkul (11,305 feet).—This is a conspicuous block—the *Buet* of the district. The panorama has been photographed by S. Sella.

By ascending past *Lashketi* to the glen of the *Zena*, the westernmost of the Skenis Skali sources, the old track from *Gebi* to Ushkul can be joined, and Ushkul reached by the *Zagar Pass* (8673 feet), the lowest of the Suanetian Passes. This is a circuitous route, seldom used by natives owing to the character of the paths in the Skenis Skali Valley. Magnificent views could be obtained by following the grass-ridge north from the pass to the base of *Nuamkuam* and returning to Ushkul along the *Ingur*.

The traveller who has arrived in Suanetia by any of the routes described above may be glad to know of the most recommendable paths within the district, which is easily traversed in every direction, the ridges which divide its cultivated basins being broad, low, and covered with forests and pastures. The horse-roads are mostly wide sledge-tracks; between cultivated ground they are often horribly stony, but footpaths, after the English fashion, so rare in the Alps, generally come to the help of the pedestrian.

The main tracks between the two centres of the future, Ushkul and Betsho, may be described as:—

1. *The Ingur track.*

The shortest, following the *Ingur* more or less from Ushkul to *Latal*, easy

beyond Ipari hilly, with beautiful views of Laila; splendid descent on Latal. One long day's ride to Betsho without baggage, two with laden horses.

2. *The Mountain track.*

Crosses the spurs between the Kalde and Adish Glens, and descends on the Mujalaliz. One of the most superb rides imaginable, an ever-varying panorama of peaks and glaciers, valleys and forests. One day to Adish, two to Latal.

The direct road leads down the hill to Mulakh and along the left bank of the river to Mestia. The most delightful paths may be found among the woods on the crest south of the Mujalaliz between Mulakh and Latal.

The direct pass from Ipari to the Mujalaliz is known as the Uguir Pass (6200 feet). It is a two hours' ride.

Two or three hours' ride below Betsho lies *Ezeri*, the summer residence of the Dadish Kilians, on a broad cultivated shelf above the Ingur. It communicates with *Mazeri* by a horse-path crossing a low grass-pass. The brow south of this pass (*Mesik* of S. Sella) commands a beautiful panorama of the district and one of the finest views of Ushba.

THE RACHA RANGE.

This is the geological and orographical continuation of the Laila, from which it is severed by the valley of the Skenis Skali, while to the east the Rion Valley forms its most convenient limit. The only peak yet visited is its highest summit, *Shoda* (11,180 feet), climbed by Mr. D. W. Freshfield with F. Dévouassoud in 1887. The panorama has been photographed by Signor Sella.

A path leads from Gebi to the glen north-east of the peak, from the head of which the small glacier on its summit is easily accessible. The ascent can be made in a day from Gebi, but it is better to sleep at the pasturage, three hours' walk above the village.

The Lukhunis-Zveri ridge farther west bears a little ice, and is probably the second in height of the summits of the range.

THE KLUKHOR GROUP.

This group has not as yet been touched by travellers. The sketch-map based on the sheets just published of the one-verst survey will furnish mountaineers with the best aid in its exploration (see p. 190).

APPENDIX C

TABLE OF MEAN TEMPERATURES AND RAINFALLS¹
(YEAR 1890)

STAVROPOL.

MONTH.	MEAN TEMPERATURE.		RAINFALL.
	Fahrenheit.		Inches
January,	24°.1		1.27
February,	19°.8		0.59
March,	39°.0		1.61
April,	48°.2		1.02
May,	59°.0		2.70
June,	64°.4		3.59
July,	72°.3		4.09
August,	72°.7		0.89
September,	59°.9		4.60
October,	47°.3		3.39
November,	38°.7		2.11
December,	20°.7		0.89
Annual,	47°.2		26.75

NOVOROSSISK.

January,	33°.3	6.40
February,	31°.6	0.16
March,	48°.2	1.22
April,	55°.0	0.13
May,	65°.1	0.00
June,	68°.9	0.83
July,	79°.2	0.26
August,	80°.1	0.16
September,	66°.6	1.59
October,	55°.2	2.78
November,	47°.3	1.63
December, . . . . .	...	...
Annual, . . . . .	...	...

¹ Extracted from *Annalen des Physikalischen Central-Observatoriums*, herausgegeben von H. Wild. St. Petersburg.

APPENDIX C

PIATIGORSK.

MONTH.	MEAN TEMPERATURE.	RAINFALL.
	Fahrenheit.	Inches.
January,	23°·0	0·24
February,	21°·2	0·96
March,	37°·8	0·91
April,	49°·6	2·30
May,	59°·9	2·13
June,	67°·5	4·67
July,	74°·5	0·71
August,	73°·0	1·25
September,	63°·0	2·15
October,	48°·6	1·04
November,	38°·3	2·01
December,	21°·7	0·76
Annual,	48°·2	19·13

ESENTUKI.

January,	22°·6	0·22
February,	21°·2	0·40
March,	37°·0	0·94
April,	48°·2	2·42
May,	58°·1	2·26
June,	64°·8	3·68
July,	72°·0	0·58
August,	71°·6	0·76
September,	61°·7	2·07
October,	47°·5	0·66
November,	37°·4	1·15
December,	21°·0	0·22
Annual,	46°·9	15·36

KISLOVODSK.

January,	21°·0	0·27
February,	21°·0	0·35
March,	40°·1	0·72
April,	48°·4	2·41
May,	57°·2	6·80
June,	62°·8	6·55
July,	68°·9	0·95
August,	68°·7	1·69
September,	59°·5	0·97
October,	46°·2	0·64
November,	38°·7	1·42
December,	22°·3	0·48
Annual,	46°·2	23·25

MEAN TEMPERATURES AND RAINFALLS

279

VLADIKAVKAZ.

MONTH.	MEAN TEMPERATURE.	RAINFALL.
	Fahrenheit.	Inches
January,	21°·7	0·38
February,	23°·2	0·39
March,	39°·9	1·12
April,	50°·0	3·00
May,	59°·7	5·46
June,	65°·3	4·13
July,	70°·7	4·29
August,	71°·4	1·23
September,	62°·4	2·89
October,	47°·8	2·09
November,	40°·1	1·22
December,	23°·9	0·46
Annual,	48°·0	26·66

LIGHTHOUSE AT SUKHUM KALE.

January,	39°·4	4·27
February,	42°·3	1·74
March,	49°·5	2·15
April,	55°·9	3·43
May,	66°·0	2·57
June,	69°·4	4·68
July,	77°·2	0·18
August,	78°·4	0·61
September,	68°·5	5·41
October,	57°·4	4·70
November,	54°·7	4·83
December,	44°·6	4·32
Annual,	58°·6	38·89

KUTAIS.

January,	36°·7	7·05
February,	42°·8	3·66
March,	54°·0	1·20
April,	59°·5	3·51
May, . . . . .	...	...
June, . . . . .	...	...
July, . . . . .	...	...
August, . . . . .	...	...
September, . . . . .	...	...
October,	60°·3	6·88
November,	56°·7	3·05
December,	45°·1	1·51
Annual, . . . . .	...	...

APPENDIX C

POTI.

MONTH.	MEAN TEMPERATURE.		RAINFALL.
	Fahrenheit.		Inches.
January,	38°·5		4·55
February,	43°·3		1·55
March,	49°·3		0·76
April,	55°·9		1·76
May,	66°·0		1·48
June,	68°·9		5·98
July,	75°·0		6·20
August,	77°·4		11·24
September,	70°·0		10·26
October,	59°·9		4·38
November,	56°·8		5·26
December,	45°·5		4·77
Annual,	58°·8		58·19

BATUM.

January,	40°·3	10·15
February,	43°·3	2·44
March,	46°·9	0·70
April,	54°·3	2·51
May,	66°·2	1·23
June,	69°·1	10·66
July,	74°·7	8·93
August,	77°·5	5·55
September,	69°·4	17·58
October,	58°·6	17·69
November,	57°·2	7·14
December,	47°·5	12·00
Annual,	58°·7	96·58

KOBI.

January,	14°·5	0·26
February,	19°·0	0·50
March,	34°·0	7·02
April,	39°·6	2·30
May,	48°·0	2·87
June,	54°·3	3·74
July,	57°·0	4·53
August,	57°·2	2·57
September,	49°·6	3·54
October,	41°·0	5·37
November,	34°·2	5·73
December,	17°·6	0·57
Annual,	38°·8	39·00

MEAN TEMPERATURES AND RAINFALLS

281

GUDAUR.

MONTH.	MEAN TEMPERATURE.	RAINFALL.
	Fahrenheit.	Inches.
January,	17°.2	1.69
February,	21°.0	1.57
March,	34°.7	4.16
April,	37°.6	4.85
May,	46°.4	4.49
June,	53°.2	6.02
July,	56°.5	4.95
August,	56°.8	6.44
September,	50°.2	3.94
October,	41°.9	4.54
November,	35°.4	7.61
December,	19°.9	0.84
Annual,	39°.2	51.10

GORI.

January,	27°.7	0.52
February,	31°.5	1.35
March,	46°.9	0.39
April,	53°.6	1.28
May,	61°.9	2.76
June,	67°.3	2.94
July,	73°.8	0.51
August,	74°.3	0.26
September,	65°.1	0.65
October,	51°.8	2.68
November,	43°.9	1.60
December,	31°.6	0.49
Annual,	52°.4	15.43

BORJOM.

January,	24°.4	0.90
February,	29°.5	0.31
March,	44°.6	0.22
April,	51°.1	1.00
May,	58°.5	2.76
June,	63°.7	2.29
July,	70°.5	1.23
August,	71°.6	1.18
September,	62°.8	1.13
October,	48°.6	2.19
November,	42°.6	2.91
December,	31°.1	0.74
Annual,	49°.9	16.86

APPENDIX C

ABASTUMAN.

MONTH.	MEAN TEMPERATURE.	RAINFALL.
	Fahrenheit.	Inches.
January,	17°.2	1.10
February,	22°.6	0.32
March,	37°.9	0.58
April,	45°.1	2.03
May,	51°.8	5.21
June,	58°.8	3.38
July,	64°.2	2.67
August,	64°.2	0.71
September,	55°.9	1.44
October,	44°.1	1.25
November,	38°.3	1.85
December,	24°.6	1.20
Annual,	43.7	21.74

TIFLIS.

January,	30°.6	0.28
February,	34°.2	1.22
March,	47°.5	0.04
April,	55°.2	2.03
May,	65°.3	3.96
June,	71°.4	3.66
July,	75°.9	4.31
August,	76°.3	0.60
September,	68°.4	2.55
October,	55°.4	0.77
November,	47°.1	2.26
December,	34°.2	0.93
Annual,	55°.1	22.61

PETROVSK.

January,	26°.6	1.82
February,	30°.0	1.85
March,	41°.2	0.06
April,	51°.8	0.88
May,	63°.5	0.57
June,	73°.4	1.11
July,	79°.7	0.35
August,	77°.7	0.03
September,	70°.0	3.25
October,	55°.4	1.28
November,	45°.5	4.50
December,	31°.3	2.95
Annual,	53°.8	18.65

BAKU (CAPE BAILOW).

MONTH.	MEAN TEMPERATURE.		RAINFALL.
	Fahrenheit.		Inches
January,	36°.5		0.76
February,	37°.0		1.60
March,	45°.5		0.02
April,	54°.7		0.13
May,	65°.1		0.14
June,	74°.3		0.02
July,	79°.9		1.09
August,	78°.8		0.02
September,	73°.4		0.70
October,	62°.6		0.61
November,	55°.6		0.76
December,	40°.8		0.67
Annual,	58°.7		6.52

In the *Caucasian Calendar* for 1896 the following figures are given for the mean annual temperatures and rainfalls of the various stations, the monthly details of which are given above:—

STATION.	HEIGHT.	MEAN TEMPERATURE.		RAINFALL.
		Fahrenheit.		Inches
Stavropol,	1906	46°.8		30.80
* Novorossisk,	65	54°.7		28.28
Piatigorsk,	1656	48°.4		17.61
Esentuki,	1988	47°.3		16.01
Kislovodsk,	2598	46°.4		19.96
Vladikavkaz,	5191	47°.7		32.53
Sukhum Kale,	30	58°.3		47.96
Kutais,	500	58°.3		52.88
Poti,	26	58°.5		62.40
Batum,	173	59°.0		92.76
Kobi,	6470	38°.3		47.36
Gudaur,	7277 "	39°.4		56.18
Gori, . . . . .	...	51°.8		21.06
Borjom,	1341	50°.0		24.29
Abastuman,	4237	43°.3		24.48
Tiflis,	1341	54°.9		19.25
Petrovsk,	-32	48°.4		16.66
Baku (Cape Bailow),	-27	58°.1		9.72

The height given for the Gori Station (8618 feet) is omitted, as it seems obviously incorrect. That at Vladikavkaz (if correct?) must be high above the town. *N.B.*—The Caspian is below the Black Sea level.

APPENDIX D

HEIGHTS OF THE LOWER TERMINATIONS OF SOME OF THE PRINCIPAL CAUCASIAN GLACIERS

ELBRUZ GROUP

Ulu-Chiran Glacier,	9576 feet.	Malka, N.
Kiukurtli Glacier,	9114 „	Kuban, W.
Ullukam Glacier,	9730 „	Kuban, W.
Azau Glacier,	7644 „	Baksan, S.
Terakol Glacier,	8610 „	Baksan, S.
Irik Glacier,	8377 „	Baksan, E.

MAIN CHAIN. SUANETIAN GROUP

Ozengi Glacier,	8071 feet.	} Baksan basin, N. side.
Shikildi Glacier,	7945 „	
Ullukara Glacier,	7679 „	
Adyl Glacier,	7735 „	
Adyr Glacier,	8162 „	
Bashil Glacier,	7140 „	} Chegem basin, N. side.
Nenskra Glacier,	8428 „	
Nakra Glacier,	8176 „	} Ingur Basin, S. side.
Kuish Glacier,	7581 „	
Betsho Pass Glacier,	7931 „	
Ushba or Sotair Glacier,	7195 „	
Gul Glacier,	7635 „	
Chalaat Glacier,	5180 „	
Leksur Glacier,	5691 „	
Tuiber Glacier,	6564 „	

URUBASHI SPUR

Jailik Glacier,	8022 feet.	} Chegem basin, E.
Tiutiu Glacier, ¹	?	

¹ The four other large glaciers of this group have no certain names, nor are the heights of their terminations ascertained.*

CENTRAL GROUP

Kulak Glacier,	7924 feet.	} Chegem basin, N. side.
Shaurtu Glacier,	7560 „	
Bezingi Glacier,	6538 „	} Bezingi Cherek basin, N.
Mishirgi Glacier,	7420 „	
Ukiu Glacier,	9996 „	
Ulluauez Glacier,	8085 „	
Tiutiun Glacier,	8491 „	} Balkar Cherek basin, N.
Dykhsu Glacier,	6650 „	
Fytnargyn Glacier,	7100 „	
Shtulu Glacier,	8078 „	
Zanner Glacier,	6804 „	} Ingur basin, S.
Adish Glacier,	7448 „	
Kalde Glacier,	8057 „	
Shkara Glacier,	7833 „	
Zena Glacier,	6860 „	Skenis Skali basin, S.

BOGKHOBASHI SPUR

Sugan Glacier, 8330 feet. River Sugan, N.

(There are at least six large nameless and unmeasured glaciers in this group.)

ADAI KHOKH GROUP

Bartuin Glacier,	7714 feet.	} Uruk basin, N.
Karagom Glacier,	5700 „	
Skatikom Glacier,	9832 „	
Songuta Glacier,	6985 „	
Zea Glacier,	6735 „	} Ardon basin, W.
Saramag Glacier,	8820 „	
Kaltber Glacier,	7855 „	
Rion Glacier,	7529 „	} Rion basin, S.
Zopkhito Glacier,	7182 „	
Kirtishe Glacier,	7623 „	
Bokos Glacier,	7644 „	
Bubis Glacier,	8666 „	
Khamkhaki Glacier,	8500 (?)	

KASBEK GROUP

Nardon Glacier,	9394 feet.	Ardon basin, S.
Kolota Glacier,	9758 „	Ardon basin, N.
Midagravin Glacier,	7700 „	} Terek tributaries, N.
Shau Glacier,	9793 „	
Genal Glacier,	7644 „	
Chach Glacier,	9579 „	} Terek basin, E. and S.
Devdorak Glacier,	7532 „	
Ortsveri Glacier,	9520 „	
Suatisi Glacier,	8610 „	

A list extending to 679 glaciers is given in M. Mikhailovsky's Paper on the Mountain Groups and Glaciers of the Central Caucasus, published at Moscow in 1895 in the *Proceedings* of the Naturalists' Society. The heights given here are from the one-verst maps. I have borrowed three or four only from M. Mikhailovsky. His heights do not always agree with my copies of the maps, and I cannot in all cases adopt his nomenclature.

APPENDIX E

NOTE ON THE MAPS AND ILLUSTRATIONS

THE large map, on a scale of 1:210,000 or five versts (3.31 statute miles to the inch), is based on the new and (except as regards the Elbruz District) unpublished sheets of the one-verst Russian Map, 1:42,000.

The Laila range has not yet been re-surveyed, and this chain is depicted from the drawings, photographs, and observations of Mr. W. F. Donkin and others. The Urubashi Spur south-east of Urusbieh, one of the first portions to be re-surveyed, was imperfectly studied by the Russian engineers, and here extensive modifications have been made. Elsewhere, the corrections introduced are confined to a few details in the upper portions of the glacier basins. The nomenclature is, with a very few exceptions, that adopted by the Surveyors. It has been followed, not from any assurance as to its strict conformity with local usage, but, as I have explained elsewhere, from motives of practical convenience. The number of heights inserted has been limited in order to avoid obscuring topographical detail. Many, it will be noted, refer to the junction of streams.

The Geological Map is based on three documents: M. E. Favre's Map, published in 1875 in his *Recherches Géologiques dans le Caucase*; the Geological Map of Russia in Europe [*Carte Géologique de la Russie d'Europe*, éditée par le Comité Géologique, 1892], and a Geological Map of the Government of Kutais [*Carte Géologique d'une partie du Gouvernement de Koutais*, dressée par S. Simonovitch et A. Solokine, 1887], with a few variations of my own. Professor Bonney has been good enough to advise me in the combination of this material (see his Note, Appendix A).

The Map of the Klukhor Group is from preliminary sheets of the new Russian Survey, kindly forwarded by General Kulberg.

In the small General Map the new railways and the lines projected or in construction are copied from a map in the *Caucasian Almanack* for 1896.

I have not inserted *Europe* and *Asia* on my maps. It is hardly needful to repeat that the Caucasian chain is the only suitable limit between the Continents. No natural boundary is perfect, but a wall is always preferable to a ditch, and the bisection of a river basin can be justified on no scientific ground. The Manych has nothing in its favour, and the Don only classical tradition.

The following list of words common in place-names may be of service in studying the maps:—

TURKISH.—*Tau*, a range, the point at which it is crossed, and more rarely a particular summit (compare Tyrolean Tauern); *Kol*, a side valley; *Chiran*, a glacier; *Su*, a stream; *Bashi*, head, top of a mountain or valley; *Auz*, pasture; *Aul*, village; *Karaul*, guard-post; *Kosh*, a shepherd's hut or shelter; *uliu*, little; *ullu*, great; *mingi*, white; *kara* or *gara*, black; *tintium*, noisy—used of a stream.

OSSETE.—*Khokh*, mountain; *Don*, river; *Kom*, valley; *Kau*, *Kaf*, *Kav*, village; *Zete*, glacier; *Vsek*, pass.

GEORGIAN.—*Chala*, *Skali*, river; *Mta*, mountain.

The following notes may give those who are interested in the details of Caucasian orography fuller information than could conveniently be comprised in the titles as to the peaks represented in the full-page illustrations. In one or two cases slight discrepancies in spelling between the titles under the pictures and those printed in the list of illustrations may be noticed. In these cases the latter must be taken as those finally adopted.

The words *left* and *right* are used with relation to the reader, holding the plate before him.

FULL-PAGE ILLUSTRATIONS.

No.

2. *Ushba Group from Ciat Bashi.*

Left—Chatuintau Pass, Chatuintau, Little Ushba, Ushba, Mazeri Peak.
Akhsu Pass in middle distance, exactly under Ushba Betsho Pass right.

3. *Tetnuld and the Adish Glacier.*

Peak of Gestola right of Tetnuld. Katuintau in cloud.

4. *Mountains north of the Uruk, from Zikhvarga.*

Left—Giulchi, Sugan, Doppakh, Nakhashbita Khokh.

5. *The Karagom Glacier and Burdjula.*

Karagom Khokh, Burdjula.

13. *Gebi from the North.*

Shoda on the right, with a snow-cap.

17. *The Adai Khokh Group from Shoda.*

Burdjula, Karagom Khokh, Adai Khokh, Double Peak, Bubis Khokh, Khamkhakhi Khokh. *

No

19. *Adai Khokh and Burdjula.*

Adai Khokh on left, distant.

20. *The Uruk Valley.*

Ziteli, Laboda and Tana Glacier.

42. *Ukru from the East.*

Salynan Bashi and Pass in distance.

49. *The Central Group from Ushba.*On left—Tiktengen, Salynan Bashi, Koshtantau, Dykhtau, Gestola, Tetnuld :
Gulba in foreground, right.55. *Mountains north of the Shtuluvsek.*

The Kashtan Ridge in front. Laboda is seen in distance over it. Giulchi farther left.

56. *The Head of the Bezingi Glacier.*

Shkara, Janga, Katuintau.

60. *The Mountains of the Adyl and Adyr Valleys from Ciat Bashi.*Jailik Bashi, Donkin's Pass, then second depression is Freshfield's Pass, followed by a snow-peak and Adysu Bashi, Latsga, all in distance.
On right Ullukara and Bshedukh.66. *The Leksur Glacier.*

The Adylsu Pass opposite. Gorvash Pass on extreme right.

APPENDIX F

A SHORT LIST OF BOOKS RECOMMENDED TO THOSE
INTERESTED IN THE CENTRAL CAUCASUS

FOR GENERAL INFORMATION

- Bryce, J.—*Transcaucasia and Ararat.* London : Macmillan and Co., 1877
 Wardrop, O.—*The Kingdom of Georgia.* London : Sampson Low and Co., 1888
 (Contains a fairly full Bibliographical Appendix.)
 Chantre, E.—*Recherches Anthropologiques dans le Caucase.* 5 vols. Paris :
 Ch. Reinwald, 1886-87
 (In the Royal Geographical Library, 1 Savile Row.)

- Murray's Handbook for Travellers in Russia. 5th edition. London: John Murray, 1893
- Mourier, J.—Guide au Caucase. Paris: Maisonneuve, 1894
- Hints to Travellers. 7th edition. Edited by Douglas W. Freshfield and Admiral Wharton. London: Royal Geographical Society, 1893
- The Caucasian Almanack (in Russian). Published yearly at Tiflis

FOR THE CENTRAL MOUNTAINS

- Freshfield, D. W.—Travels in the Central Caucasus and Bashan. London: Longmans, 1869
- Grove, F. C.—The Frosty Caucasus. London: Longmans, 1875
- Telfer, J. B.—The Crimea and Transcaucasia. 2 vols. London: King and Co., 1876
- Phillipps-Wolley, C.—Savage Svânetia. 2 vols. London: Bentley and Son, 1883
- Mummery, A. F.—My Climbs in the Alps and Caucasus. London: Fisher Unwin, 1895
- Levier, E.—A travers le Caucase. Paris: Fischbacher, 1895
- Radde, Dr. G. Reisen im Mingrelischen Hochgebirge und in seinen drei Langenhochthälern (Rion, Tskenis-Tsqali und Ingur). Tiflis, 1866
- Abich, H.—Aus Kaukasischen Ländern. Reisebriefe von H. Abich. Vienna, 1895
- Bernouille, R.—La Souanétie Libre. Paris: Morel et Cie, 1875
- Hahn.—Aus dem Kaukasus. Leipzig: Duncker und Humblot, 1892
- Fischer, A.—Zwei Kaukasus Expeditionen. Bern: Schmid, Franke and Co., 1891
- Merzbacher, G.—Aus dem Schneeregionen des Kaukasus Wanderungen: Erlebnisse Beobachtungen. Leipzig, [In Preparation]
- Dent, Clinton.—On the Vorge of an Empire. London, [In Preparation]
- Levier, E.—Enumeratio Plantarum quas in itinere Caucasico 1890 legerunt S. S. et E. L. St. Petersburg, [In Preparation]

Botanists may also consult a *Flore de la Colchide*, published by M. N. Alboff (and *Echo des Alpes*: Supplement, December 1895), and the works of M. Lipsky, procurable at St. Petersburg. A series of ethnological maps of the Caucasus have lately been issued as an Appendix to vol. xviii. of the *Proceedings* of the Caucasian Section of the Imperial Russian Geographical Society.

The *Alpine Journal*, the *Proceedings* of the Royal Geographical Society, and the *Bollettino* of the Italian Alpine Club, vols. xxiii. and xxiv., contain numerous articles on the Caucasus. List of requisites for Caucasian Travel will be found in Mr. Donkin's article (*Alpine Journal*, vol. xiii. p. 258), and in the *Report on Equipment for Mountaineers*, issued with No. 116 of the *Alpine Journal*, and also separately by the Alpine Club, and to be obtained of Messrs. Longmans, of Paternoster Row, E. C.

INDEX

- ARICH, Dr., travels of, i. 11, 176.
 Abkhazia, ii. 191-220.
 Abkhazians, i. 61; ii. 211.
 Accommodation, i. 67; ii. 238.
 Adai Khokh Group, i. 14, 126-145; ii. 267.
 Adish, i. 263.
 — Glacier, i. 193, 264.
 Adylau, ii. 137.
 — Pass, ii. 248.
 Adyrso, ii. 131, 142.
 — Bashi, ii. 252.
 Aeschylus, topography of, i. 4.
 Agashtan Glacier, ii. 73.
 Ailama or Koreldash, ii. 257.
 Air, rarity of, discussed, ii. 168.
 Akhsu Pass, ii. 244.
 Alagir, i. 107.
 Almer, C., the guide, *ij* 38 *sqg.*
 Alpine Club, i. 6, 18-21, 77.
 Altitude of Peaks, i. 55; ii. 239-276.
 Amazons, i. 86.
 Antiquities, i. 86, 211.
 Apollonius of Tyana, on the Caucasus, ii. 219.
 Arba, ii. 175.
 Architecture, i. 120, 123, 149, 160, 166, 191.
 Ardon, i. 126.
 Arkhon, ii. 271.
 Atashkutan, ii. 151.
 Atmosphere, i. 74, 207; ii. 74, 88 *note*.
 Aul Daut, ii. 181, 182.
 Aul Ossetinsky Khumara, ii. 175.
 Aul Teberdinsk, ii. 175.
 Autumn foliage, ii. 57.
 Avalanches, i. 97, 180; ii. 137.
 Azan Pass, ii. 241.
 •
 BAK PASS, ii. 245.
 — Peak, ii. 246.
 Bakh-Sandak Pass, ii. 236.
 Baksan Passes, ii. 133-148.
 — Sources Group, ii. 241.
 — Sources of, ii. 156.
 — Valley, ii. 151, 156, 190.
 Balkar, i. 115, 165-169.
 — Route to, ii. 235.
 Ballade, Suanetian, i. 219, 252.
 Bangarvyan, ii. 251.
 Banquet, Village, ii. 129. •
 Basardjusi, i. 28, 91.
 Bashil Tau, ii. 249.
 Bashilau, ii. 129.
 Bassa Pass, ii. 242.
 Baths, the Caucasian, ii. 234.
 Bayern, M., i. 86.
 Bears, i. 190, 197, 199, 252; ii. 210.
 Bernoville, M. de, i. 211, 223.
 Beshtau, i. 11.
 Betsho, i. 244; ii. 48, 141.
 — or Gulski Pass, ii. 136, 243.
 Bezingi, i. 173-176; ii. 14, 26, 118.
 — People of, i. 175.
 — Route to, ii. 235.
 Bezingi Cherek, Gorge of, i. 173, 174.
 — Glacier, i. 178; ii. 7, 117.
 Bezingivsek, ii. 255.
 Bibliography, i. 5; ii. 289.
 Birds, migrations of, i. 181.
 Bogdanoff, M., the Surveyor, ii. 85 *sqg.*
 Bogkhabashi Group, i. 156; ii. 269.
 Bourkas, ii. 155.
 Bread, Caucasian, ii. 144.
 Brutsabdzeli, ii. 270.
 Bshedukh, ii. 247.
 Bubis Khokh, ii. 267.
 Burdjula, i. 143; ii. 266.
 Burgener, A., the guide, i. 19, 135.
 CANCELLARIAS, i. 189, 244.
 Caucasian Chain, i. 27 *sqg.*
 Cetet-Kara-Bashi, ii. 247.
 Central Group, i. 157; ii. 255.
 Chalaat Glacier, ii. 147, 244.
 Chatuintau, ii. 244.
 — Pass, ii. 135, 142, 244.
 Chau Khokh, ii. 273.
 Chegem, ii. 115, 116, 126, 127.
 — or Urubashi Spur, ii. 252.
 Cherek, Gorge of, i. 163.
 Cherkess, *see* Circassians.
 Chetohens, i. 88, 95.
 Chodzko, General, i. 13, 14.
 Cholur, i. 45, 190.
 Churches, Suanetian, i. 120, 210, 243.
 Ciat Bashi (Kogutai Bashi), ii. 247.
 Circassians, i. 60-63.
 Classics, allusions to Caucasus in, i. 2-5.
 Climate, i. 53, 54, 68.

- Climbers' Records, ii 233 *sqq.*
 Cookin, J. G., ii. 38.
 Communications, i. 65, 80.
 Conway, Sir W. M., ii. 172.
 Cossacks, i. 263; ii. 99.
 Costume, i. 113; Suanetian, i. 221

 DADIANS, i. 214
 Dadnash-ushkul, ii. 275
 Dadish Kilan, Atar, i. 251; ii. 192.
 ——— Constantine, i. 223.
 ——— Kiliana, i. 214
 Daghestan, i. 28, 63.
 Darial Gorge, i. 85.
 Darl, ii. 201.
 Dashi Khokh, ii. 269.
 Déchy, M. de, i. 19, 135, 259, 261.
 Dent, Clinton, i. 19 *sqq.*; ii. 61 *sqq.*
 Devdorak Glacier, i. 97.
 Dévonasoud, F. J., the gulde, i. 18, 89 *sqq.*, 261
sqq.; ii. 2 *sqq.*
 Digoria, i. 151.
 Dioskurias, i. 3 *note.*
 Dola torrent, i. 245.
 Dongusorun Bashii, ii. 158, 247.
 ——— Pass, ii. 136, 242.
 ——— Little, ii. 242
 Donkin, W. F., i. 19-20; letter from, ii. 38
 ——— and H. Fox, search for, ii. 60-62; their
 bivouac discovered, ii. 81; their probable
 fate, ii. 85-87.
 Donkin's Pass, ii. 252.
 Doppakh, ii. 269
 Dout Valley, ii. 180.
 Dragomans, i. 69.
 Dumala, ii. 15.
 Dumalavsek, ii. 255.
 Dykhsu, i. 170; ii. 70.
 ——— Glacier, i. 171; ii. 95, 96.
 ——— Pass, ii. 260.
 Dykhtau, i. 14, 26; ii. 6, 18, 31-33, 263.
 ——— Spur, ii. 259.

 EDENA PASS, ii. 258.
 Education, i. 228.
 Eikons, i. 121, 122, 211, 252.
 El Masudi quoted, i. 202.
 Elbruz, i. 16, 18, 31, 82, 193; ii. 156, 157, 166,
 167, 184, 187.
 ——— Ascents of, ii. 157-166, 168, 170.
 ——— Routes to, ii. 240.
 ——— Saddle, ii. 240.
 ——— View from, ii. 168.
 Ethnology, i. 59-61, 222; ii. 211.
 Ezari, i. 251; ii. 276.

 FAYAZ, M. E., his Geological Map, i. 15.
 Fischer, A., ii. 59 *sqq.*

 Flowers, i. 43-50.
 Forests, i. 45, 50-52, 184.
 Fox, H., i. 20; diary of, quoted, ii. 63-67 [*see*
 Donkin].
 Freshfield's Pass, ii. 131, 252
 Funeral Feasts, i. 102, 216.
 Fytnargyn, i. 169; ii. 268.
 ——— Glacier, i. 171.
 ——— Pass, ii. 258.

 GARASU, ii. 125.
 Gebi, i. 117-125.
 ——— Route to, ii. 237.
 Gebivsek or Gezevsek, ii. 265
 Genaldon Valley, ii. 271.
 Geological Map, ii. 287
 Geology, i. 29-38, 146, 204, 205; ii. 116, 117, 224.
 Georgia, i. 62.
 Georgian Highroad, ii. 236.
 Gergeti, i. 86
 Gestola, i. 19, 260; ii. 44, 255.
 Gimarai Khokh, ii. 271
 Giulchi, i. 156; ii. 70, 269.
 Glacial action, i. 37, 237.
 Glacier Passes, i. 117; ii. 133.
 Glaciers, i. 39-42, Alpine and Caucasian com-
 pared, 39, 40, 53; extent of, 16, 41; height
 of lower ends of, ii. 285; movements of, 53
 Golovievsky, M., his Map of Elbruz, i. 25.
 Gori, Routes from, ii. 236.
 Gorvash Pass, ii. 248.
 Gorvashtau Glacier, ii. 144, 146.
 Government, Russian, i. 62-4, 160, 186, 222-9.
 Grove, F. C., quoted, i. 179; ii. 191.
 Guides, Alpine, i. 69; ii. 71 *note*, 167, 217
 Gul Glacier, i. 247.
 Gulba ascended, i. 246-251.
 ——— Spur, ii. 246.
 Guldenstaedt, M., quoted, i. 5.
 Gulaki or Betaho Pass, ii. 243.
 Gur Pass, ii. 275.
 Gurdzivsek, i. 143; ii. 265.
 Gvandra Valley, ii. 241.

 HEIM, PROFESSOR, on the Caucasus, i. 16; on
 the action of ice, 37.
 Henderson, Dr., i. 10.
 History of Caucasus, i. 61-64; Suanetian,
 213-229.
 Holder, H. W., ii. 22.
 Horae, i. 70.
 Hrinesky, Colonel, i. 227.

 IREX, or Tur, Caucasian, i. 140.
 Ice, action of, discussed, i. 37.
 Illustrations, Notes on, ii. 287.
 Ingur, Gorge of, ii. 273.
 ——— river, sources of, i. 238.

- Inns, ii. 238.
 Ipari, i. 262; ii. 239.
 Iprari, i. 194.
 Irik Valley, route from, ii. 240.
- JAILIK BASHI, ii. 253.
 — Glacier, ii. 132.
 Janga, i. 179; ii. 43-46.
 Jantugan, ii. 248.
 Jason, i. 5.
 Jews, Mountain, i. 113.
 Jibiani, i. 234.
 Jilkisu, ii. 128.
 Jiper Pass, ii. 135, 242.
 Jiper-Azau Pass, ii. 241.
 Johnston (Keith), quoted, i. 9.
 Jossi, Christian, the guide, ii. 93 *sqq.*
 Jukoff, M., the Surveyor, i. 68; ii. 77, 125.
- KABARDA, the, i. 161.
 Kasmak, ii. 143.
 Kalde, i. 194.
 Kaltber, ii. 268.
 — Spur, ii. 268.
 Kamunta, i. 149.
 Karagom Glacier, i. 131-133, 153.
 — Khokh, i. 131, 133; ii. 266.
 — Pass, ii. 266.
 Karass, Scottish Mission at, i. 10.
 Karasu, ii. 24.
 Karatshai Tartars, i. 60.
 Karaul, i. 155, 170; ii. 68.
 Kasbek, i. 18, 31, 87; ii. 272; ascents of,
 i. 87-94; ii. 266.
 — Group, ii. 270.
 — Post Station, routes to, i. 84-87; ii. 236.
 Kashtan Crest, ii. 262.
 — Pass, ii. 262.
 Kassara Gorge, i. 108.
 Katuintau, ii. 34-36, 255.
 Kéfer, a drink, ii. 130.
 Khalatsa, ii. 270.
 Khamkhakhi Khokh, i. 137; ii. 267.
 Khibuli, i. 115.
 Khotikam Pass, ii. 241.
 Khotitau, ii. 184.
 Khrumkol Gap, ii. 262.
 Khrumkoltau, ii. 263.
 Khursuk, ii. 182.
 Killar, his alleged ascent of Elbruz, i. 6.
 Kirtik Glen, ii. 240.
 Kitlod Pass, ii. 250.
 Kiurtun Pass, ii. 189.
 — Valley, route from, ii. 240.
 Klinkh Pass, ii. 179.
 Kook, Map by, i. 12.
 Kodor Valley, ii. 201-12, 237.
 Kogutai Bashii or Ciat Bashii, ii. 247.
- Koi-Avgan-Aush, ii. 251.
 Kolota Pass, i. 99, ii. 271.
 Koreldash or Ailama, ii. 257.
 Kosh, meaning of term, i. 129; ii. 288.
 Koshtantau, i. 14, 26, 56, 83; ii. 73, 83; ascent
 of, ii. 99-112.
 Kotlarevsky, i. 159; route from, ii. 234.
 Kovalevsky, Professor, i. 101.
 Krestovaya Gora, i. 31.
 Kuamli, i. 36.
 Kuarmash, ii. 246.
 Kuban, sources of, ii. 174-190.
 Kulberg, General, i. 24.
 Kurmuichi, ii. 251.
 Kutais, i. 116; routes from, ii. 237.
- LABODA, ii. 264.
 Laila ascended, i. 253-257.
 — Group, i. 204; ii. 273.
 — Pass, ii. 144, 273.
 Lake-basins, origin of, i. 52.
 Lakes, scarcity of, i. 52, 74; ii. 177.
 Lakhmula, i. 214.
 Languages, Caucasian, i. 60, 221; ii. 211.
 Lapara Pass, ii. 275.
 Larakhanis Chabi, ii. 273.
 Lashkadura Valley, ii. 273.
 Lashrash, ii. 194.
 Lasil Peak, ii. 275.
 Lata, ii. 209, 212.
 Latal, i. 244.
 Latpari Pass, i. 192; ii. 237, 275.
 Latraldash, ii. 251.
 Latsga, ii. 248.
 Legends of Elbruz, ii. 167.
 Leksur Glacier, ii. 142, 146, 148.
 Lenjer, i. 243.
 Lentekhi, i. 189.
 Leshnil Pass, ii. 273.
 Levashoff, Count, expedition of, i. 223.
 Levier, M. E., on Caucasian Flora, quoted, i.
 45-50.
 Literature, Alpine, i. 76; Caucasian, 26 *note*.
- MALKA VALLEY, ii. 187, 188.
 Mamison Pass, i. 104-112; ii. 268; routes to,
 ii. 236.
 — Road, ii. 237.
 Mandeville, Sir John, quoted, i. 202.
 Maps, i. 13-16, 24-26, 158.
 Margyanna, ii. 251.
 Mashkin, ii. 274.
 Maurer, K., the guide, i. 138; ii. 191 *sqq.*
 Mazeri, Dadiash Kilian's Castle at, ii. 140.
 — Peak, ii. 246.
 Merzbacher, Herr G., his travels, i. 21; ii. 242,
 253, 271, 274.
 Mesik, i. 238.

- Mestia, i. 242
 Mikhailovsky, M., on the Caucasus, i. 17
 Mineral Springs, i. 99.
 Mineralnaya-Vodi, routes from, ii. 234.
 Mingrelians, i. 60, 63
 Mingtau, ii. 167, 168
 Mishirgi Glacier, ii. 14, 89, 90
 — Pass, ii. 65, 261
 Mishirgitau, ii. 263; climbed, ii. 96
 Missess Kosh, i. 178; ii. 27, 117
 Missionaries, Scottish, i. 10
 Mists, Caucasian, i. 177
 Moore, A. W., i. 18
 Mosques, i. 166
 Mountain Turks, *see* Tauli.
 Mountaineering, Caucasian, i. 76; ii. 57, 215-218
 — in 1888, ii. 21-58.
 Mountaineers, their tendency to specialise, ii. 218
 Mountains, structure of, i. 27-38; approaches to, ii. 233.
 Mourier, M., his *Caucasian Guide*, i. 17.
 Mujal, i. 266.
 Mulkhura, Valley of, i. 242; ii. 247
 Mummery, A. F., his ascent of Dykhtau, ii. 28

 NACHALNIKS, i. 160; ii. 23
 Nageb Glacier, i. 271
 Nakarala, i. 36, 114
 Nakhar Range and Pass, ii. 241.
 Nakhashbita Khokh, ii. 269.
 Nakra Valley, ii. 195
 Naltshik, i. 159, 160; ii. 23; routes from, ii. 235.
 Nenskra Valley, ii. 198, 238
 Nomenclature, mountain, i. 144
 Nuamkuam, ii. 257.
 — Pass, ii. 257

 OLIPHANT, LAURENCE, quoted, i. 10.
 Oni, i. 112, 113.
 Osete Range, ii. 270.
 Osetes, i. 60, 100-103, 152.

 PALGRAVE, W. GIFFORD, i. 10; quoted, ii. 211.
 Par, i. 241; ii. 193.
 Pass Mta, i. 112, 195, 261; ii. 71, 258.
 Passes, i. 57, 117; Suanetian, ii. 135.
 Peaks, i. 55-57.
 Phasis, i. 3: *see* Rion.
 Photographs of Central Caucasus, i. 135.
 Piatigorsk, ii. 150.
 Place-names, i. xvi, 144; Turkish, ii. 287.
 Poetry, Suanetian, i. 219, 220.
 Portals, i. 67.
 Poti, i. 5; Bishop of, i. 267.
 Powell, Captain C. H., i. 81
 — 140 *etc.*
 Priestava, i. 188, 265

 Priests, i. 122.
 Purtscheller, Herr, i. 21; ii. 241, 253, 274.

 QUEEN THAMARA'S CASTLE, i. 230

 RACES, CAUCASIAN, i. 60.
 Racha, the, i. 114.
 Radde, Dr., travels of, i. 12; visits Suanetia, 234.
 Railways, Russian, i. 81
 Rainfall, i. 53.
 Reclus, M. E., on the Caucasus, i. 16
 'Red Snow,' i. 181
 Rekom, i. 140
 Religious beliefs and rites, i. 88, 102, 216, 218
 Rieger, K., the interpreter, ii. 76
 Rion, i. 112
 Roads, Russian, i. 105, 186.
 Rock-climbs in the Caucasus, ii. 57
 Rock refuges, ii. 128
 Rok Pass, i. 58; ii. 270
 Routes to Caucasus, i. 80-81
 Russian Government, i. 62-64, 160, 186
 — Suanetia, 222-229.

 ST NIKOLAI, i. 108.
 Salynan Bashi, ii. 254
 — Chiran Pass, ii. 254
 — Glacier, ii. 117.
 Sandur Spui, ii. 268.
 Saranag, Route to, ii. 236
 Sarikol Bashi, ii. 249
 Scenery, Caucasian, i. 72-79, 111; Suanetian, 240, 241.
 Schamyl, i. 162
 Scientists criticised, i. 8.
 Sella, Vittorio, i. 21
 Sella's Pass, ii. 260
 Sharvasek, ii. 258
 Shan Khokh, ii. 271.
 Shebulos, i. 28.
 Sheepstealers, i. 218.
 Shepherds, Caucasian, i. 129
 Shikildu Glacier, ii. 137-139
 Shkalta, ii. 207, 208.
 Shkara, i. 56, 179, 192, 200; ascent of, ii. 39-45.
 Shoda, i. 123; ii. 276.
 Shtavler Spur, ii. 197, 245.
 Shtuluvasek, i. 154; ii. 269.
 Sireen Pass, ii. 253.
 Skala Bodorku, ii. 229.
 Skatikom, i. 140.
 Skenis Skall, sources of, i. 184; forests of, 45, 50.
 Snow-climbs and rock-climbs in Caucasus, ii. 87.
 Snow-line, i. 54.
 Sport, i. 78 *note*.
 Starshinas, i. 119, 160, 188, 222
 Stopped, etc., described, i. 108.

- Stir-Digor, i. 153; route to, ii. 235.
Strobilus or *Elbruz*, i. 5.
Suanetia, i. 202-258; *Dadish Kilian's*, i. 205;
 Free, i. 65, 193, 216, 250; paths in, ii. 276;
 paths to, i. 182-201; routes to, ii. 237.
Suanetians, i. 60, 212; their customs, i. 214-
 221; their prayers, ii. 5.
Sugan Bashi, ii. 269.
Suirkhuborzon, ii. 271.
Sukhum Kale, route from, ii. 237.
Sultran-kol-bashi, ii. 240.
Summit views, ii. 171-173.
Superstitions, ii. 167.
Surveys, i. 13-16, 24-26.
Svetgar, ii. 251.

TAULI, or *Mountain Turks*, i. 60, 161, 165,
 174.
Teberda Valley, ii. 175-178.
Telegas, i. 159; ii. 33.
Telfer, Captain, quoted, i. 224-226.
Tents, *Whymper*, i. 231.
Tepli, ii. 271.
Terek Valley, i. 100; ii. 271.
Terskol Glen, ii. 156, 157.
Tetnuld, i. 192, 193, 261, 262; ii. 259; ascended,
 i. 270-278.
Tetnuld Spur, ii. 259.
Thamara, Queen, i. 100, 213, 219, 253.
Thielmann, Baron von, quoted, i. 262.
Tiktengen, ii. 126, 249.
Tiutiu Bashi, ii. 253.
 — *Pass*, ii. 253.
Tiutiun Gap, ii. 262.
 — *Glacier*, ii. 84, *sqq.* 101.
Tiutiunsu, i. 169; ii. 100.
Tiutiuntau, ii. 262.
Tombs, i. 151.
Topographical Bureau, *Tiflis*, i. 136, 144.
 — *Notes*, ii. 233.
Towers, *Suanetian*, i. 208, 230.
Tracks, *Mountain*, i. 196.
Transport, i. 67.
Travel in Caucasus, difficulties of, i. 66, 70.
Travel in 1889, ii. 59-92.
Tee-worship, i. 218, 237.
Tucker, C. Comyns, i. 18.
Tuiber Pass, ii. 134, 135, 136, 249.
 — *Spur*, ii. 250.
Tur, or *mountain goat*, i. 140 *note*.
Tyrsui Pass, i. 99.

UKIU, ii. 16-20, 260.
Ukui Gap, ii. 261.
Ulluaaz Bashi, ii. 261.
Ulluaaz Glacier, ii. 65.
 — *Pass*, ii. 82, 261; view from, 84.
Ullukam Valley, ii. 182-184.
Ullukara, ii. 247.
Ullu-Khursuk Valley, ii. 185, 186.
Ungern Sternberg, Baron, ii. 75.
Urakh Valley, i. 146-156.
Urushieh, ii. 152-156, 190; route to, 234.
 — *Spur*, ii. 251.
 — *Princes*, ii. 154.
Ushba, i. 193, 245-248; ii. 49, 246; ascent of,
 ii. 50-57.
 — *Little*, ii. 244.
Ushkul, i. 230-237; ii. 238.
Utbiri Pass, ii. 197, 238, 245.
Utshkulan, ii. 182.
Utsora, i. 112.

VATSIKVERI, ii. 259.
Villages, characteristics of *Ossete*, i. 101;
 Tauli, i. 166; *Suanetian*, i. 208.
Vladikavkaz, i. 62, 84; routes from, ii. 235.

WALLACE, Sir D. M., quoted, i. 11.
Weather, *Caucasian*, i. 177; ii. 88, 216.
Wolley, C. Phillippa, ii. 60-68.
Woolley, Hermann, ii. 62 *sqq.*; his ascent of
 Koshtantau, ii. 93-114.

ZAGAR PASS, i. 201, 205; ii. 275.
Zageri, i. 187-189.
Zulmiag Spur, ii. 245.
Zanner Glacier, Lower, ii. 2, 3; Upper, 4.
 — *Pass*, ii. 1-13, 250.
Zea Glacier, i. 138, 143.
 — *Pass*, i. 137; ii. 267.
 — *Khokh Spur*, ii. 268.
Zebelda, ii. 212.
Zena Valley, i. 199.
Zenago, i. 150.
Zeskho Valley, i. 199.
Zikara, ii. 270.
Zikarsky Pass, ii. 270.
Zikhvarga, i. 143; ii. 265.
Zilga Khokh, ii. 270.
Ziteli, i. 153; ii. 264.
Zitella, i. 110.
Ziti Khokh, ii. 271.
Zurungal Peak, ii. 258.

