

strong reasons indeed for concluding that our friends lie in the upper névé, buried beneath the avalanche snow that fell during the last winter and spring. Those who know the mountains best will recognise that, in ignorance of the exact spot, further search in the snowfields at the base of the cliffs would have been utterly futile; none was made, at the time or after. Save for some chance discovery, we must wait until, twenty or thirty years hence, the downward movement of the glacier may conceivably reveal that the story we have founded on this circumstantial evidence is accurate. For my own part, I hope that the secret may be preserved.

EXPLORATIONS AND ASCENTS IN THE CAUCASUS IN 1889.

[N.B.—Since 1887 the three great peaks of the central group of the Caucasus have been referred to constantly in these pages by the names given to them in the 5-verst map. M. Djukoff, of the Russian Survey, has, however, recently ascertained that the Dych-tau of the 5-verst map (and, consequently, of European literature) is locally called Koshtan-tau, and he has so called it on his new map, not yet officially issued. For this change there is much to be said. But M. Djukoff has further transferred the name of Dych-tau to the '5-verst' Koshtan-tau (Mr. Dent's Guluku). This appears a very unfortunate proposal. That peak stands quite outside the Dych-su basin, and the peak called Dych-tau by the Tartars is naturally that at the head of the Dych-su Glacier, the Shkara of Suanetia. Until a new nomenclature is definitely sanctioned by the Topographical Department at Tiflis that of the 5-verst map will be retained in these pages, with such explanation as may be needful.]

ON July 14 Mr. C. T. Dent and Mr. D. W. Freshfield, with Captain C. H. Powell, of the 1st Ghoorkhas (to whom, in order that he might be able to place his knowledge of Russian at the disposal of the search-party, extended leave of absence from his regiment had been generously granted, at the request of the President and Council of the Royal Geographical Society, by the Secretary of State for India), joined Mr. Hermann Woolley, who had already arrived with C. Jossi, J. Kaufmann, K. Maurer and A. Fischer, at Vladikavkaz (see p. 445).

The united party drove over the Mamisson Pass, sleeping at Allagyr and Teeb, to the Kasarma, 1,100 feet below the top on the southern side. Thence it is but a short walk of 1 to 1½ hour to the brow of the high pasturages to the W., which command a noble and topographically instructive view of the Rion basin, the gorge through which the river breaks through the hills, and the S. face of the Adai Choch group with its glaciers.

Ceja Pass.—On July 19 the party started from the Kasarma at 2 A.M., and, after recrossing the Mamisson Pass, left the road at the first zigzag. Ascending beside and over the glacier which feeds the source of the Ardon, they reached the crest by easy slopes about 8 A.M. The pass, which lies a few hundred yards E. of the point where the granite chain ceases to be the watershed, is shown on Monsieur de Déchy's photograph of the Ceja Glacier.* It is to the right (E.) of the rock-finger on the sky-line. The view in both directions was fine. A snow-peak lying behind the 'double-headed peak' of Mr. Freshfield's 'Central Caucasus' overtopped the Adai Choch of that book, ascended by Monsieur de Déchy.†

The névé of the Ceja Glacier was cut off by some 400 feet of very steep rock and ice, the descent of which took 4 hours, despite the help of some soft snow near the bottom, down which a ladder was kicked to the upper edge of a bergschrund, which was not beyond a jump.

The descent of the three ice-falls of the Ceja Glacier offered no difficulty (on their left side), and after a pleasant halt among white rhododendrons, followed by a long stretch of very tiresome moraine, the foot of the glacier was gained about 6 P.M., and the engineer's house at St. Nikolai, on the Mamisson Road, by 9 P.M. The forest and rock scenery of the upper part of the Ceja Valley, near the remarkable old shrine of Rekom, is bold and very romantic; and from the hamlets of Ceja (to reach which the path makes a long ascent) there is a fine view of the snow-peaks.

From St. Nikolai the party travelled through Sadon and Kamunta, and across three mule passes to the foot of the Karagam Glacier, in the Uruch Valley. From the last pass there is a noble view of the Uruch peaks and Shkara. They made a very beautiful excursion to the bivouac of the 1868 party on the Karagam Glacier, by the path leading to the Gurdzi-vsek (vsek = pass), which bore signs of frequent traffic. There is a good log hut near the end of the glacier.

On July 25, after an afternoon and night of pouring rain, the party crossed the Stule-vsek (9,500 feet). On the 27th preliminary explorations were made (see p. 433).

Ullu-anz Pass (14,350 feet).—On the 28th the party (without Kaufmann) bivouacked in a deserted kosh at the head of the Tutuin-su (a torrent which joins the Cherek 1½ hour below Karaoul), and immediately at the foot of the great

* *Alpine Journal*, vol. xii. p. 217. † *Ibid.* vol. xii. pp. 314–319.

icefall of the Tutuin Glacier. The rocks on its right were easily climbed, and then the séracs were crossed from the right to the left bank without serious difficulty, and a way found through the upper crevasses. The névé of the Tutuin Glacier slopes gently between steep ranges of rock and ice. At its head are two terribly steep ice-troughs, and to their right (N.) a broad slope leading towards the S. ridge of Dych-tau. The Ullu-az Pass does not become visible until a projecting crag has been passed. A long, steep bank of rock is then seen leading up from just above the bergschrund almost to the crest, and separated from the neighbouring cliffs by two broad ice couloirs. The rocks give good hold, and the ice- or snow-slope that has to be traversed to reach the pass is short, and not steep. The descent on the Ullu-az side is at first by gentle snow slopes, and the séracs lower down appeared easily passable. Apart from the peculiar and mournful interest this pass must always possess, it is a practical and useful route leading directly from Bezingi *viâ* the Doumala glen to Karaoul. It commands a superb distant panorama of the chain eastwards on one side, and a near view of Dych-tau on the other. In combination with the Dych-su and Mishirgi Cols it affords a high-level tour through the central group. Late in the season, however, the Tutuin ice-fall may be impassable. In this case an escape might be found over a false col from the head of a snowy trench opening to the E. of the ice-fall, and communicating with the glacier which falls into the N. branch of the Tutuin, and is conspicuous from the Cherek valley.

On August 4 (thick fog in the valley discouraging the rest of the party) Mr. D. Freshfield ascended with Fischer the Mishirgi Glacier. The mist ceased at 8,500–9,000 feet. Climbing beside the avalanche tracks at the base of Koshtan-tau to a height of over 10,000 feet, they obtained a perfect view of the W. face of Dych-tau, and of the ground traversed by Donkin and Fox a few days before the fatal expedition in their first attempt. The peak is certainly accessible by the Kundium Mishirgi Glacier and the N. ridge. The principal difficulty would be in gaining the ridge, to do which it would be best to cut up a snow wall S. of a dome at the foot of the long rising crest. Fox and Donkin's guides appear to have attacked the rockribs on the W. face. The cirque of the Mishirgi Glacier is one of the most stupendous scenes in the Caucasus, and climbers should not be led to neglect it by the more obvious splendours of the Bezingi Glacier.

Saluinan Chiran Pass (13,622 feet).—On August 6 the party left the Missess Kosh for the Saluinan Chiran (chiran = glacier) Pass. Mr. Cockin, who reached the top from this side last year, had stated in print that 'the descent seemed easy.'* The ascent by the left bank of the glacier and the rocks on the same side of the last ice-slope took 7 hours. The western view from the top was very fine, including the Leila, Ushba, and Dongusorun. But by far the most prominent peak was Tichtengee (15,134 feet) (Tiutiurgu of 5-verst map), which (completely masking Elbruz) towered above the lower portion of the great Shaour-tu Glacier, an ice-stream fed by a number of converging glaciers, and flowing, not, as represented in the 5-verst map, northwards into the Bulungu glen, but (roughly) W. to the Gara-su. The upper névé lay some 1,500 feet below, cut off by broken cliffs. On the left a small glacier hanging on the Saluinan Chiran peak (14,700 feet) impended over a steep ice slope. The rocks at first, while very loose and steep enough to require care, were not difficult. Lower down difficulties increased, and were greatly aggravated by volleys of stones, which as the sun struck the western slope fell with greater frequency. Their track could not be altogether avoided, and to avoid it at all involved hard climbing among the cliffs. In several places it was thought prudent to let down one traveller at a time. At last comparative shelter was obtained on the edge of the ice-slope, along which steps had to be cut. The bergschrund was not reached till 7.30 p.m. There lanterns were lit, as, though the moon was up, the route lay mostly in shadow. By keeping well to the right, past some Grands Mulets-like rocks, the upper fall of névé was avoided. After some hesitation at the junction of a large glacier from the N.E., it was decided by Maurer's advice to cross the right-hand moraine. Beneath it a series of snow slopes led down the hollow between the mountain side and the moraine. At last, on a bed of small granite pebbles, the party halted about 10.30 p.m. The weather was perfect. Starting again at dawn they reached in some 3 hours a kosh between the stream from their glacier and the Gara-su, flowing from the Thuber Pass, about 4½ hours above Chegem. Here they had the good fortune to encounter

* Mr. Holder (*R. G. S. Proceedings*, vol. xi. p. 365) is in error in stating that the Saluinan Chiran 'is not cut off by a rocky ridge from, but runs up to and forms a part of, the great snow-basin which extends to Tiutiurgu on the north-west.' The exact contrary is the truth.

M. Djukoff, the Russian topographer, who took a leading part last year in the search. He was now camped at the junction of the Gara-su and Bashil-su, and engaged in mapping this part of the chain. The figures given above are from his observations. The Shaour-tu Glacier is well shown in some of M. de Déchy's photographs with the Saluinan Chiran peak and pass at its head.

It will be obvious from the above account that this pass cannot be unreservedly recommended. It can only be attempted with prudence early in the day, and from the W. side. The number of stones lying round the base of the wall (as well as the enormous moraines lower down) bear witness to the friable and treacherous character of the rocks, and the velocity with which they fall is deadly. There is apparently an easier and lower pass farther north, which might be reached from opposite the Mishirgi Kosh, or by a stream that falls a little higher on to the Bezingi Glacier.

*Pass,** from Bashil to Adyr Valley (12,678 feet).—On August 9, Mr. D. W. Freshfield and Captain Powell, with Maurer and Fischer, went up to the head of the Bashil-su, and slept at the highest kosh (7,126 feet) on the left bank, not half a mile from the Bashil Glacier, and close to the point where a stream falls down steep rocks from an unseen glacier to the right (looking up the valley).

Starting next morning at 4.20 A.M., they reached, by a very steep ascent, in $1\frac{1}{2}$ hour, a brow at the foot of this large glacier, which is surrounded by (in a Caucasian sense) comparatively low peaks. Looking back, the view of the whole head of the Bashil-su and its glaciers was magnificent. An ascent along the left-hand moraine of the glacier led to the foot of an ice-fall: here a choice presented itself between a circuitous but certain route on the left side, and a direct but speculative climb through the crevasses on the right. Maurer decided to speculate, and the party got through without serious difficulty, though not without delays, during which glorious views were enjoyed of the eastward chain. Tichtengée and the Saluinan Chiran peak and pass were backed by Koshtan-tau and Dych-tau, which show from here as brilliant pyramids, and entirely eclipse the too closely clustered summits south of the Bezingi Glacier.

After an upper névé fall had been surmounted easily by its right bank, the head of the glacier opened out, a wide cirque shut in by steep, low snow- or ice-walls and rocky crests,

* The naming of this pass is postponed until the new survey is completed.

except to the S.W. (the climber's left), where a broad bay was discovered filled by névé mounting gently to a snow-ridge. This ridge was gained in $6\frac{1}{2}$ hours (including short halts) from the Kosh. The view southward and westward was still unclouded and glorious. A noble rock-peak, with Mr. Mummery's passes at its base, stood up above the Bashil-su and at the head of the Gvalda. Close at hand, above the head of the glacier falling to the Adyr-su, was one of those inaccessible-looking pinnacles which are the glory of the Caucasus. Further distant Ushba, Dongusorun and the Shichildi peaks towered above the nearer crests. The range ended and culminated in the vast bulk of Elbruz, the snows of which shone all day with a peculiar golden radiancy. Two hours and a half were spent on the pass. The descent lay at first over broken rocks, and it was needful to cut across one or two ice-banks to reach the scree that ran down nearest to the glacier. At its head is a lower but much steeper pass, which may lead to a branch of the main Bashil-su Glacier.

The glacier is broad, straight, and gently inclined. Its general direction is N.E., or directly towards Elbruz, one of the finest possible views of which is gained from it. There are numerous smaller glaciers descending from the chain N. of the pass. When the ice becomes steep, an easy descent over moraine and rocks is found on the right hand. After traversing a wilderness of stones the first firs appear, and a well-marked track leads down into the valley of the Adyr-su, about $2\frac{1}{2}$ hours' sharp walking above Urusbieh. Descent: left pass 1, reached valley 4.30, arrived at Urusbieh 7.30 P.M.

This pass is not the same as that crossed by Donkin and Fox in the opposite direction. Their ascent was, doubtless, by the same glen, but they must have taken one of the more northern glaciers, and reached the crest a little S. of the peak marked 14,273 feet on the R.G.S. map, and at a point overlooking a glacier which flows in a different (more easterly) direction to that of the one traversed this year. Its stream descends in a waterfall to join the Bashil-su at a large kosh (6,840 feet) $\frac{3}{4}$ hour below, and out of sight of, the head of the Bashil valley.

The pass described above has been used by hunters. Another over the glacier by which Donkin and Fox probably descended, but more to the N., is known in the country. It leads into the Tutu glen, which joins the Baksan below Urusbieh. Donkin and Fox's pass must lie between the two.

Achsu Pass (about 13,000 feet).—On August 11, Mr. D. W.

Freshfield, Captain Powell, and Maurer, with a Urusbieh porter, went up to the Shichildi kosh, which is close to the glacier, and some 5 hours from Urusbieh. Starting next morning at 5 A.M. they scrambled over the extraordinary piles of rocks which cover the whole lower portion of the Shichildi Glacier, up to the point where its feeders unite at the base of the precipices of Shichildi-tau (see M. de Déchy's photographs). The cause of this extravagant moraine is to be found, not, as some scientists may imagine, in any particular boring efficacy in the Shichildi ice, but in a great rock-fall, which took place in the year 1866, in the range N. of the upper glacier, and between it and the Adyl-su. The western tributary is a remarkably clean ice-stream. Up this the course to the Ach-su Pass lies. A recess beside it, and above a lower ice-fall, offers a feeding-ground for 'tur,' or mountain-goats, a herd of which was met. The remainder of the ascent, which is long and steep, is along the true (left) bank of the principal glacier, flowing from a recess W. of Shichildi-tau. Except in one place, where rocks have to be resorted to in order to avoid crevasses and falling stones, the track lies up ice and snow, and is free from difficulty.

Three very fine rock-towers, buttresses of Shichildi-tau, are notable on the other side of the glacier. In place of making for an icy ridge seen from the wild goats' pasture, the track to the pass bears to the right up a steep bank of névé to a small plateau (very conspicuous from Elbruz) lying on the spur which limits the Shichildi basin to the W. From this the W. side of Ushba is seen. There appears to be a way from the saddle to the S. peak by traversing ledges on the W. face, and then climbing directly to the top. The pass itself is a narrow gap, at the extreme S.W. corner of the Shichildi basin, with no extended view except due S. A short ascent to the right, however, shows Elbruz and other summits. It is high, about 13,000 feet. The ascent took over 6 hours. It overlooks another pass at the further or E. extremity of the Shichildi Glacier, known to the natives as the Cheteen-tau, and leading on to the W. branch of the Gvalda Glacier. A third pass is possible at the immediate back of Ushba; the ascent is by very steep snow seamed with gigantic crevasses, doubtless sometimes impassable. Probably there is a double descent, right on to the W. glacier of Ushba, left on to the Mestia Glacier. There appears to be no known pass from the Adyl-su over the watershed; its heads are, to a great extent at any rate, overlapped by the Shichildi névé.

The descent on the S. side of the Achsu Pass is, when a bergschrund has been passed, extremely easy. A succession of glissades down a narrow glacier, and then on snowbeds on its right bank, conducts to the valley at the foot of the Betsho Pass. It is a long day's walk from the Shichildi kosh to Betsho. The descent occupies about seven hours, but is too varied and beautiful to be tiresome. A pastoral valley is succeeded by a rugged path, through a gorge muffled in foliage and flowers. Below the gorge the torrent from the western glacier of Ushba has to be over-leapt, and in the afternoon is formidable. Then follows a beautiful forest with lovely views of the Leila, until, after a steep descent, meadows open in front, and smooth grassy cart-tracks lead past the castles and farms of Mazeri, to the collection of ruinous sheds and mean dwellings which constitutes the seat of Russian administration in Suanetia.

On August 16 the same party (without the porter) went up to the head of the valley that opens into the heart of the Leila chain nearly opposite Latal. There is an excellent horse-path all the way, and the woodland scenery is enchanting. After the stream has been crossed, the forest opens out into glades, where the varied foliage and the beautiful undergrowth produce naturally the effects imitated by landscape gardeners on a small scale round our country 'seats.' Higher up the valley bends westwards, and the glaciers lying under the highest peaks of the Leila come into sight. The largest terminates on a cliff, down the face of which constant avalanches fall. Close to the head of the glen a bed of yellow lilies, blooming ten to fourteen on a single stalk, was found; and, a little higher, a pool of clear water fringed by maples—a charming spot for a bivouac, about 4 hours above Latal.

The sunset on the twin peaks of Ushba was magnificent. A thunderstorm broke, however, soon after dark, and the weather next day put a stop to further exploration; perhaps fortunately, as it appeared from above that the glaciers on this flank of the Leila are very formidable, and that any ascent would have had to be made by a circuitous and tiresome route.

Ascent of N.W. Peak of Leila (13,300 feet (?)). August 20.—The same party, with Prince Atar Dadish Kilian and four native hunters, started on the 19th from Ezeri for the Leila. On that night they slept at a hut 2 hours above the junction of the Betsho torrent with the Ingur. A very steep ascent leads from the hut to a pass into the wooded valley which receives the W. glacier of the Leila. This is a large ice-stream flowing from a broad saddle between the highest

crest of the Leila and a row of icy peaks. A descent of 1,000 feet leads to the moraine. A pass over the glacier to Lentechi is occasionally used by hunters, but is reckoned dangerous on account of crevasses. The Suanetians insisted that 'there was no way' anywhere but up this main glacier, and the Prince unfortunately believed them.

The rest of the party went straight up a small and easy glacier on their left to the ridge overlooking Suanetia, and walked along it across a snow plateau, and up a bank of loose slates, to the top of the sharp peak seen from Ezeri. The Leila has two other tops—snow-domes. The central summit seemed a few feet the higher. It is also easily accessible. The mountains were all clear and the panorama superb, extending from the Adai Choch group to beyond the Nachar Pass. Suanetia, with its towered hamlets, lay, a field of green and gold—forest, meadow and cornfield—beneath the peaks and glaciers of the great chain. The Prince and his hunters halted far below on a patch of moraine some distance short of the pass. Ascent from hut about 6 hours. Ezeri was regained in the dark the same evening. The excursion offers no difficulty whatever. A shorter route may be found.

August 21.—Mr. D. Freshfield strolled up from Ezeri to the horse-pass leading to Mazeri, and thence by a delightful path over a high pasture commanding views of Lower Suanetia, and just opposite Ushba. This walk might also be taken from Betsho, passing a small tarn and a hut on a lower spur. The views are most extensive and beautiful. From Ezeri 3 hours suffices for the round.

August 22–29.—The travellers before mentioned, with two hunters supplied by Prince A. Dadish Kilian, crossed the great forest between the Ingur and Kodor. This route—known in Suanetia as that 'by way of Neskra and Darl' (Darl=the middle Kodor)—has fallen into disuse since the depopulation of Abkhasia. Between the Nakra valley and the junction of the Klutch* and the Kodor the track, where there is one, alternately plunges into the densest forest and climbs over wide pastures. There is one log hut in the Neskra valley, the only habitation between Suanetia and Shkaltra on the Kodor, a distance of four days' journey. The two passes, Nakra-Neskra and Neskra-Kodor, are about 9,700 feet above the sea. The Neskra torrent is crossed at about 3,000 feet. The views from the heights over

* See Grove's *Frosty Caucasus*, pp. 340–1.

Suanetia, of the Kodor valley and its peaks, the main chain, and two isolated glacier groups to the S., guarding the gorge of the Ingur, are singular and beautiful. The hunter-guides lost their way, and finally, at Shkaltra, dismissed themselves, riding off suddenly home, without food or pay, on the Prince's mules, and leaving the travellers to procure transport from Lata, 20 miles off. Lata is a long day's ride (36 miles) from Sukhum Kaleh. Although the weather was cloudless, none of the party suffered from the heat, which was certainly not so oppressive as it is often south of the Alps; nor did a stay of two nights at Lata, where Mr. Grove's party believed they caught fever, have any ill results.

It may be worth mention that the journey out, *viâ* St. Petersburg and Moscow to Vladikavkaz, took 9 days (including a day at each and 4 hours at Rostoff). The return journey from Batum to London, *viâ* Constantinople, took also 9 days, but out of these 3 days were spent at Constantinople, 4 hours at Budapesth, and a day and night at Dresden. A lift can now generally be got in a petroleum boat sailing direct from Batum to Constantinople, which reduces the Black Sea voyage from 5 days to 60 hours. The actual cost of the journey to the Caucasus and back, first class, by these routes, is from 50*l.* to 60*l.*

D. W. F.

Kazbek from the Devdorak Glacier.—At 7.30 A.M. on July 12, Mr. H. Woolley left Vladikavkaz with his guides, Christian Jossi and Johann Kaufmann of Grindelwald, for the Devdorak Glen; the party being also joined by Andreas Fischer and Kaspar Maurer, who were awaiting Mr. Dent's arrival.

On arriving at the house near the extremity of the Devdorak Glacier the clouds were so low as to conceal all landmarks, so a young Chetchen chamois hunter, Yanni Besurtanoff (son of the man met in the Devdorak Glen by Mr. Freshfield's party in 1868), was taken to show the way to the ridge, and the party, leaving the house at 4.45 P.M., ascended the path on the right bank of the glacier till well above the snout, crossed to the left bank, climbed the ridge separating the Devdorak from the Tsech Glen, and halted at 7.15 P.M. at an indifferent sleeping-place on the ridge at a height of about 6,700 feet.

There was a little rain in the night; but the following morning (13th) the weather cleared, and at 1.55 A.M. a start was made—Yanni accompanying for an hour or two—and

after following the ridge for about 4 hrs., climbing over or round the numerous teeth, at 5.45 a large tower of rock, conspicuous from the Devdorak House, and well seen in Engel's photograph of the glacier, was gained.

From this point (about 12,500 feet above sea level) no deviation was made from the route taken in the descent of the party who first climbed the mountain in 1868.

The snow was in good condition till within about 2,000 feet of the summit, which was reached at 1.30 P.M.—too late to obtain a view, as the clouds had already arisen.

The sleeping-place was regained at 8 in the evening, and Vladikavkaz at 6.30 P.M. on the 14th.

In consequence of the convenience of the Devdorak House, to which provisions, &c., can be conveyed on a good bridle-path, the route described above will probably be that usually taken in future ascents, although it is rather longer than that from the Tsech glen.

The Eastern Peak of Mishirgi-tau.—On August 4 Mr. Woolley, with Christian Jossi and a Balkar chamois hunter named Kutché Djanibergoff (Kaufmann not being well enough to go), left Karaoul at 5 A.M. for the purpose of taking photographs from the Shkara Pass, and proceeding up the Dych-su gorge, reached the end of the glacier (about 6,800 feet) in 2 hrs.

Passing over the terminal moraine and crossing to the left bank of the glacier, which is for a great distance above its snout completely concealed by rocky débris, the party walked up the left lateral moraine, and at 11 A.M. came to an excellent sleeping-place or *kosh*, under an overhanging rock (about 8,500 feet above sea level), which is much frequented by the Karaoul hunters.

Here it was found that part of the photographic apparatus had been left behind, and Kutché was sent back to Karaoul for it. At 1 P.M. the others continued up the left bank of the glacier, crossed the wilderness of rock débris which covers the junction of the Khrumkoll Glacier (flowing from the north) with the Dych-su Glacier, and at 2.30 P.M. arrived at a depression in the ridge north of the latter ice-stream, in which a succession of snow-slopes seemed to give easy access to the rocks of Mishirgi-tau lying to the N.W.

It was at once decided to attempt the ascent of that peak, and at 6 P.M., at a height of about 12,000 feet, a bivouac was made on rocks in the *névé* overlooking the upper reach of the Khrumkoll Glacier, which, fed by the snows of Mishirgi-tau and the adjacent ridges, here runs east and west, roughly

parallel to the Dych-su Glacier, until joined by a tributary from the southern and western arêtes of Dych-tau, when it turns abruptly to the south and joins the main ice-stream.

The following morning the sleeping-place was left at 5.30, and the gently sloping Khrumkoll Glacier ascended for $2\frac{1}{2}$ hrs. as far as the foot of the great snow-couloir, which descends the southern face of Mishirgi-tau from the gap between the two peaks visible.

The latter, being considered to be the higher, was chosen for attack, and the couloir was ascended for several hundred feet, when falling stones and ice necessitated a retreat to the rocks on the eastern margin of the couloir, and the ascent was continued by these rocks till the gap was reached at 1 P.M.

The snowy ridge of the mountain was now followed in an easterly direction, and at 2.30 the eastern summit (a narrow snow-ridge) was gained, and it was then discovered that the huge tooth of rock of the W. peak was about 50 feet higher. M. Djukoff gives 16,135 feet as the height of the crest above the Mishirgi Glacier, at a point corresponding with this mountain.

There not being sufficient time to undertake the ascent of the true summit, the descent was commenced at 3 P.M.; but darkness coming on before the sleeping-place could be found, a night of discomfort was spent on rocks overlooking the Khrumkoll Glacier, which was descended on the following morning to its junction with the Dych-su ice-stream, Karaoul being regained in the afternoon.

Mishirgi-tau is the name by which reference to this mountain has been hitherto made in the 'Alpine Journal,' but no name for it seems to be known at Karaoul.* The names 'Khrumkoll' and 'Ail-a-ma,' tributaries of the Dych-su Glacier, are derived from M. Bogdanoff, of the Survey.

Dych-tau (M. Djukoff's Koshtan-tau).—The same party, with the addition of Kaufmann, left Karaoul at 5.30 A.M. on August 8, and, following the route taken by the search party eleven days before, arrived at 7.30 P.M. at the foot of the couloir descending from the col made last year by

* This, at least, is the mountain I named Mishirgi-tau, when I saw it from the Mishirgi Glacier in 1887. But Mr. Holder's Mishirgi-tau, which lies (as he carefully states) W. of the ridge connecting the watershed and the range of Dych-tau and Koshtan-tau, must be another summit—probably the third peak of the same crest, the middle 'rock-tooth' marking the junction of the ridges.

D. W. F.

Donkin and Fox, and bivouacked in the rocks there at a height of about 12,000 feet.

Starting next morning (9th) at 3.50 A.M., they went up the Tutuin Glacier to its head, and ascended a snow slope running up into the angle formed by the southern and eastern arêtes of Dych-tau, apparently in the direction of the summit.

After climbing up a long rib of rocks and cutting steps for an hour and a half in an ice-slope, snow in good condition followed, and at 9.45 A.M. the party gained a point, nearly 15,000 feet in height, on the southern arête, looked down on to the Khrumkoll Glacier on the other side, and enjoyed a magnificent view to the S. and W. of all the peaks from Koruldu to the Bezingi Koshtan-tau.

At the end of forty-five minutes' scrambling up blocks of granite which surmount the ridge, Kaufmann, still suffering from weakness, was obliged to remain behind. Mr. Woolley and Jossi followed the arête to its junction with the eastern ridge, marked by a great tower of rock, by climbing to the left round the base of which they reached, at 1.15, a narrow neck, which connects the tower with the final peak lying to the west, whence they looked down on to the Ullu-anz Glacier.

Turning westward from the neck, slopes of ice, covered by a thin layer of snow in bad condition, led to the summit—a snow-ridge, nearly level for twenty yards and a yard or so broad, running E. and W. It was gained at 3.47 P.M., by which time most of the neighbouring peaks were clouded.

No trace of a cairn could be found. At 4.30, after building a small stone-man on the highest rocks to the E. of the summit, the descent was begun. The ice-slope was descended by moonlight, the sleeping-place regained at 10.20 P.M., and Karaoul at 4 P.M. on the following day.

In the new map now under preparation, this mountain will be called Koshtan-tau, by which name it is known at Balkar and also at Vladikavkaz, whence it is distinctly visible.

Ascent of Koruldu, &c.—On August 14 temporary quarters were taken up at the Dych-su kosh, Kaufmann being left with the tent at Karaoul, and on the afternoon of the same day a start was made with the native hunter for the peak opposite the kosh on the south side of the Dych-su Glacier, for which there is no name amongst the Karaoul hunters, but which is named Koruldu in the sketch-map,* and in the map in 'Geographical Pro-

* *Alpine Journal*, vol. xiv. p. 24.

ceedings,' vol. xi. Last summer Mr. Holder's party were under the impression that this peak was named Nuamquam.*

The party passed the night at an elevation of about 11,000 feet on the ridge overlooking the Dych-su Glacier, believing that this ridge was connected with the névé from which the final peak rises. The following morning the hunter was sent back, and after over 4 hrs. of hard climbing along the ridge the others found themselves separated from their peak by a deep valley containing the upper reach of the Ail-a-ma Glacier, gave up the ascent, and returned to the *kosh*.

Kaufmann having joined the party, an attempt was made on August 17 to find a way from the E. on to the arête leading to the summit of Shkara (called Dych-tau at Karaoul); but, at a height of about 11,000 feet, at the foot of the formidable ice-fall which flows into the Dych-su Glacier from the S.W., near the bottom of the slope leading up to the Shkara Pass (local name—Bezingi-vsek), a series of thunder storms with heavy rain began, and the ascent was relinquished.

The following day Kaufmann, owing to continued weakness, returned to Karaoul, and Mr. Woolley and Jossi ascended a summit of about 12,000 feet, lying nearly due north of Koruldu, between the Khrumkoll and Dych-su Glaciers, commanding splendid views in all directions, and from which Koruldu, Shkara, Mishirgi-tau, and Dych-tau can be photographed from one spot without moving the camera-stand.

The hunter Kutché having taken Kaufmann's place, the party left the *kosh* at 6.50 A.M. on August 19, descended the ice-stream for an hour, as far as the ice-fall of the Ail-a-ma Glacier (a tributary from the S., fed by the snows of the main chain), made their way along the left bank of the latter until above the ice-fall, and then followed the comparatively unbroken western branch of the glacier until high enough to gain access to the most western rocks on the N. face of Koruldu. Here a sleeping-place was found at the early hour of 3.15 P.M., at a height of a little over 12,000 feet.

In the evening snow fell for two hours; but a very cold

* This peak is very conspicuous from the south, where Dr. Radde got the name 'Koruldu' for it. Nuamquam is a prominence in the ridge E. of Shkara little noticeable from the N., but important topographically as marking the junction of the ridge dividing the Ingur and Skenes Skali with the main chain.

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night was followed by a beautiful day, and at 4.45 A.M. on the 20th—Kutché being left behind—a start was made up the firm and easy granite rocks. After an hour these gave place to a ridge of ice leading up to the steep snowslopes of the N. face, in which several schrunds had to be passed.

At 10.7 A.M. the summit, which is quite free from rocks, was reached and a fine view in all directions obtained. Judging from aneroid readings, the height of the peak is not more than 14,900 or 15,000 feet. An hour and three-quarters was spent on the summit, and the kosh regained at 6.30 P.M.

Elbruz from the N.E.—On August 28 the whole party left Urusbieh at 7 A.M. with a native and a horse carrying the sleeping-bags and provisions, proceeded by a good path up the Kirtik Glen as far as the highest kosh and then followed the stream till 3.15 P.M., when, on the native refusing to take his horse farther, the baggage was carried to the nearest suitable rocks and a halt made for the night.

At 6.15 A.M. on the following morning the party quitted the sleeping place, and turning up a ravine running in a north-westerly direction, walked up the left moraine of a small glacier which blocks the head of the ravine, and from it, by means of a short snowslope, reached at 7.30 a depression in the ridge about 12,000 feet high, and very little above the almost level glacier, which extends round the base of Elbruz on the N.

This glacier was crossed in the direction of the lava rocks extending for some distance up the E. face of the mountain, the lowest patch being reached at 12.30. Keeping to the right of these rocks, the ascent was continued to a chain of rocks running up the N. side of Elbruz towards the saddle, but such a violent and intensely cold wind was encountered that the party were forced to halt at 5.45 P.M. at the lowest rocks, where a sheltered sleeping-place was found at a height of between 15,500 and 16,000 feet. The night was intensely cold; but at 1 A.M. the wind fortunately abated, and at 5 A.M. on the 30th the rocks were left, the saddle gained at 7 o'clock and the western summit at 8.45 A.M.

The snow was for the most part in fair condition, and good distant views in all directions, except due W., were obtained.

After leaving a card in the cairn built a few days before by the Signori Sella, the party left the summit at 9.20, bivouacked for the night in the Kirtik Glen, and arrived at Urusbieh at 7 o'clock on the following morning.

Attempts to ascend Ushba.—At 4 A.M. on September 8 Mr. Woolley and Jossi left a sleeping-place in the rocks at the foot of Gulba, with the intention of ascending the S.W. peak of Ushba.

Mr. Cockin's route was followed, and the snow found to be in good condition, but very hard, and requiring continual step-cutting. At 9 A.M. a point had been attained within about half an hour of the rocks of the N. peak, when the sun began to melt the ice in the cliffs above, and a continuous cannonade of stones of such a serious nature began that further advance by the couloir was out of the question, and retreat equally dangerous.

After breakfasting under the shelter of a patch of rocks, the ice-slopes were traversed in an easterly direction, until the line of fire was passed, and then steps were cut up to the base of the cliffs of the N. peak, which were gained at 1.15 P.M. Facing W. again, the party climbed along the base of the rocks (all stones going over their heads), till about 3 P.M. the source of danger was passed, and the ascent of the couloir above the ice-fall commenced. At first snow only was found, but higher the couloir was lined with ice, and progress became so slow that the saddle or neck connecting the two peaks was not gained till 6.30 P.M., and here such a strong, cold wind was raging that it was decided not to persevere in the ascent. The descent was effected by moonlight (still avoiding the lower part of the couloir), and the sleeping-place reached at 2.30 A.M. on the 9th.

On September 12 a second attempt was made, Kaufmann joining the party. The base of the cliffs of the N. peak was attained at 5 A.M.; but here the weather suddenly became unfavourable, and an obstinate case of frost-bite caused the ascent to be abandoned.

On September 14 Mr. Woolley and his guides left Betsho for Kutais and Batum. H. W.

The Signori V. and E. Sella, with Maquignaz, of Breil, and three Italian porters, left Vladikavkaz for the mountains at the same time as the search-party. They proceeded first to the Bezingi Glacier. The Saluinan Chiran range and the ridge dividing the Dych-su and Bezingi Glaciers were visited, and numerous photographs taken. Maquignaz then fell ill with dysenteric symptoms, and was sent home.

The Signori Sella, with their porters, went up the Doumala glen, whence they made the first ascent of the Ullu-

auz-bashi of M. Djukoff (Mala-tau of Mr. Freshfield), 15,351 feet. They subsequently ascended the W. peak of Elbruz, crossed to Suanetia, photographed round Betsho, and climbed the central peak of the Leila. Their journey has been very successful from a photographic point of view, and its results (as well as Mr. Woolley's) will be looked for with much interest.

Two ascents of Kazbek, besides Mr. Woolley's, have been recorded this year. The first, made on June 20 by Herren Eugen Ruckdeschel and Georg Hirsch with the guide Franz Hofer of Kals, was effected by M. Lerco's route direct from the post-station, up and down in one day of 16½ hrs.*

Another ascent, subsequent to Mr. Woolley's, made by Russians, has been recorded in the Tifis newspapers. Further particulars will doubtless come to hand.

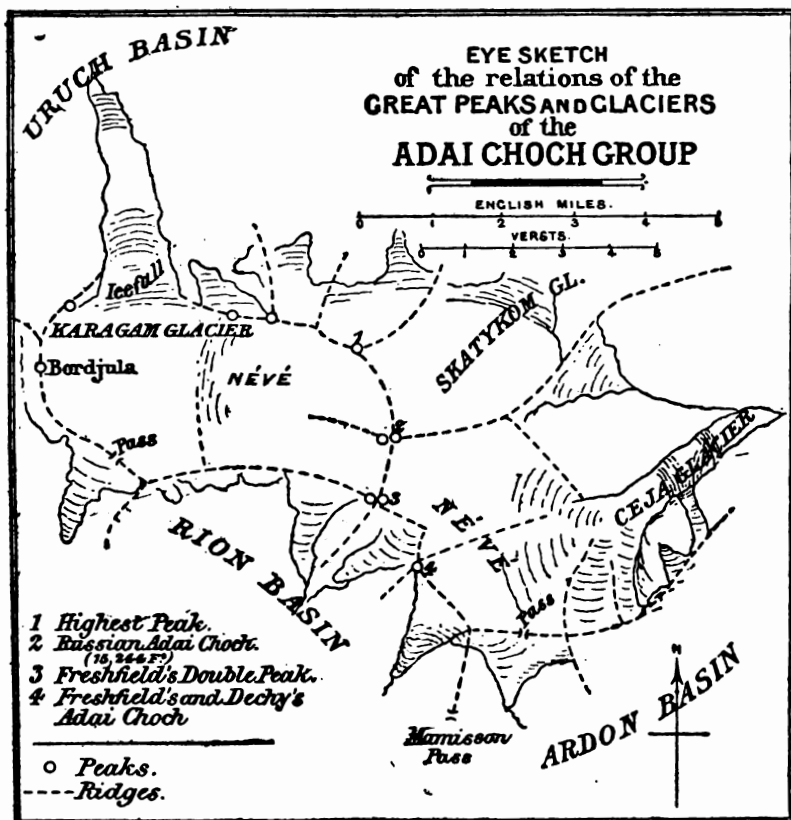
Topographical Results.

Any complete account of the topographical results arrived at in this year's explorations by English mountaineers must be deferred to future numbers. A very brief summary only can be here given.

The Adai Choch group still requires a detailed exploration before any map of it having the smallest pretensions to even general accuracy can be constructed. The two high peaks seen by Mr. Freshfield in 1887, from heights above the Rion basin, appear to stand at the head of the eastern névé of the Karagam Glacier. The northern and loftier of these two peaks (No. 1) is on the same ridge and somewhat east of the rock-peaks above the ice-fall of the Karagam, and probably overlooks on the other side the Skatygom Glacier. This is the highest peak in the group. The second summit, first seen by Mr. Freshfield in 1887, rises between the heads of the Ceja and Karagam Glaciers, and behind and close to the 'double peak' of Mr. Freshfield's 'Central Caucasus.' This summit (2) is visible from the village of Ceja, and is probably that to which the name of Adai Choch and the height of 15,244 feet were assigned by the authors of the 5-verst map. A pass may be made between peaks 1 and 2 from the Karagam Glacier, probably to the Skatygom: another pass between 2 and Mr. Freshfield's double peak from the Karagam to the north-western head of the Ceja Glacier. It follows that the sketch-map published with M. de Déchy's paper in the twelfth volume of this journal, as well as a much more pretentious map issued, with a recast of the same paper by M. de Déchy, in 'Petermann's Mittheilungen' for September last, are to a great extent inaccurate. The portions of these maps of real value are the basin of the Ceja Glacier (which M. de Déchy himself visited), and the

* *Mittheilungen des Deutschen und Oesterreichischen Alpenvereins*, 1889, No. 13, p. 160.

glens of the Dargom and Skatygom, in which the *new* Russian survey has been used. The internal features of the Ceja névé are fairly indicated, but the geographical position given to its bounding ridges is not, I believe, accurate. The representation of the rest of the group (including the glens and horsepath between Kamunta and Zenaga) is copied from the 5-verst map, which is fictitious in this district. Through following its indications Petermann's mapmaker has in this instance (as I have myself in others) been entirely misled. The accom-



panying rough diagram may make more intelligible this intricate piece of orography.

In the central group the upper basin of the Tutuin Glacier has been discovered, and Mr. H. Woolley has cleared up the relations of the ridges and glaciers between it and the Dych-su Glacier.

In the sketch-map published in June last in the 'Geographical Proceedings,' the eastern branches of the Chegem valley are (as I warned readers at the time was probable) erroneously represented. The

Bulungu Glacier is in reality small and unconnected with the watershed. A vast glacier, flowing parallel to the main chain, stretches from the western base of the Saluinan Chiran peak to the Gara-su, or eastern head of the Chegem valley, and is called the Shaour-tu.

In the same map the Chegem spur is incorrectly laid down. The existence of three passes over it, and the relations of its main glaciers, have now been ascertained. The limestone peaks of the Jilki-su form a separate *massif*.

The existence of two practicable passes E. and W. of Ushba to Suanetia from the Shichildi Glacier has been established.

The northern and western valleys of the Leila chain have been visited for the first time by travellers, and a lofty glacier pass through the heart of the group used by the natives, and leading directly from Ezeri to Lentechi, made known.

Finally, the problem of finding a practicable mountain route for travellers with luggage horses through the uninhabited and almost pathless forests to the west of Suanetia has been solved. It is believed that no traveller has passed through these forests since Mr. Spencer, fifty years ago, if, indeed, his very confused and disjointed narrative refers to the route traversed by Captain Powell and Mr. Freshfield.*

The information thus collected should be of some service to future travellers. But the most satisfactory and important fact connected with the exploration of the Caucasus remains to be mentioned. General Shdanoff, the Head of the Survey Department, has taken up in earnest the task of re-mapping the chain with the utmost attainable accuracy, and with all reasonable speed. This summer Survey Officers were found in Suanetia and in every valley on the N. side. Their sketch-maps and memoranda were placed without reserve and with the greatest courtesy at the disposal of English mountaineers. It is by them, concurrently with the climbers of this year, that most of the above-mentioned rectifications have been established; and it will be to them that the first authentic picture of the great glaciers will be mainly due. With some little help from mountaineers with regard to inner portions of the chain invisible from any spot accessible to natives, the new Survey promises to be among the most accurate yet constructed of any snowy range, and if it is reproduced in the style of the portions privately issued last year (Elbruz and the Mishirgi Glacier), it will vie with the productions of any country in Western Europe. When the whole of the sheets depicting the Central Caucasus have been published, men of science and mountaineers will alike be astonished at the extent and complexity of a glacier system which has no rival in the Alps, and new material of great value will be furnished for all those who make a study of mountain phenomena.

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* See Spencer's *Travels in the Western Caucasus*, vol. i. p. 319, London, 1838.