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BLACK FOREST MOUNTAIN, PAMIRS.

By W. RICKMER RICKMERS.

I AM the bearer of glad tidings. His Highness Badrap Khan, Lord of the Silent Places, has entrusted me with the following Letters Patent :

‘Whereas We feel Graciously pleased to invest our beloved friend, Editor “A.J.,” with a Coat of Arms as hereunder set forth :

‘Névé, a stick Alpine horizontal. Above: a Lemon Squeezer agape; a Lemon intact approaching from dexter trustful. Below: a Lemon Squeezer clenched; a Lemon enjawed weeping. Bottom: a Container emblazoned “A.J.” overflowing.’

Now, I really do not mind oozing for the ‘A.J.’ when I am full; but there was not much in me from the beginning, and other editors have had their fill of that. The ALPINE JOURNAL owes its freshness to the own doings and own sensations of its contributors. I was only a glorified ‘bus-conductor and scribe who shouted from time to time, ‘All change for Fedchenko Glacier’ or ‘Alight here for climbing Mount Kaufmann.’ Then I was left alone to clean the ‘bus. Only once did I leave it secretly to scale a little hill of my own.

Six times I have written painstakingly, systematically and chronologically about the aims, doings and results of the German-Russian Alai-Pamir Expedition. At least twenty times I have held forth to spell-bored listeners. So the reader,

even the ungentlest of them, will understand that I am getting pretty sick of the subject. If anyone takes an interest in the general record of the venture, he can easily look it up in the *Geographical Journal* for September 1929. If not, there is no need for me to repeat it here. I therefore propose to make Peaks, Passes, and Glaciers the theme of this article, ending up with my ascent of Kara Tugai Tau or Black Forest Mountain.

Our discoveries are crystallized around the highest peak, the oldest pass and the longest glacier of Middle Asia.

Strutt tells me that the R.G.S. is lending the map which it had prepared to accompany my paper.¹ As usual it is an excellent map. The humble mountaineer will, however, notice that it is a Q-map, fearfully and wonderfully spelt according to the rules of the Permanent Committee on Geographical Names. Let me hasten to say that I submit to discipline. But he who obeys is entitled to reasonable protest. Should it however be too late to protest, let me at least indulge in a little grousing.

It would be unfair to make too much of such discrepancies as Qaramuk, Qizil Su, Tashqurghan, Kabadian, Turkistan, Muk Su, Kuliab, and many others. The Names Committee is a necessary and useful institution; I love it. All the same its inordinate affection for the Q seems to show a wee little want of logic and imagination. To begin with, a topographical map is not a medium for teaching grammar or pronunciation. An English (or German, or French) map is for the reading ear or hearing eye of all the English (or Germans, or French). Nobody will put his finger or at least a silver spoon down his throat in an attempt to pronounce Qarateghin properly. I think K and Kh are quite enough to cover the wide range of gutturals for British use.

True, the Committee adds 'For British Official Use' after its name. That is very cautious of them. Unfortunately a caution which protects oneself is also a caution that warns others off. Do I perceive the first thin crack of a widening crevasse which separates Officialdom from Unofficialdom, Leaderdom from Followdom? Is this a secret code in the making? We want guidance towards uniformity and simplicity. Funny-looking words tell us far too much, and they tell the specialist far too little. A bad compromise equally useless for the laymen and the learned. 'Please, Sir, where in the Old World runs the boundary line between K and Q,

¹ See the end of this Volume.

between Qarlsbad or Qandersteg and Karashar or Kairo ? ' They think they have caught the Turki, but I fancy they have caught a Tartar.

Have they forgotten the schools where the official things of to-day are to become the common things of to-morrow ? (That is where the want of imagination comes in.) I can see the man in the street—you or me—skipping an article headed ' Revised Version of the Quran ' or ' Construction of Quairwan.' He will suspect algebra. Give me plain figures ; give me Wooloobooloo simplified to Wulubulu. The editor has not corrected my (unintentional) misspelling of Kara-jilga and others in the last number² of the ALPINE JOURNAL. But the most glaring case of insubordination is given by the first number of the *Himalayan Journal* where I do not find a single Q-name. And Mason a high official at Qalqutta ! I denounce him ; may he be shot at dawn !

It is a far cry from climbing to spelling, but a lemon squeezed to the uttermost cannot yield its last drops but with a bitter taste from the rind.

The Alai-Pamirs are the mountains between the Amu Darya (Oxus) and Syr Darya (Yaxartes). They are the block of the Pamirs with its western streamers or tassels, the longest of which, the Alai, reaches as far as Samarqand. The eastern margin, namely, the Qungur-Mustagata chain, is not included as it is supposed to belong to the other side. The ' Twostreamland ' of Turan between Oxus and Yaxartes makes a fascinating unit, lending itself to comparisons with Alpine Europe. The sandy desert of Qizil Qum forms its lowest dump, the Sea of Aral its lowest basin. At the other end, but 12,000 ft. higher, there is another rubble-shoot in the shape of the various Pamirs or desert valleys. To complete the likeness there is even a salt lake without an outlet, Lake Great Qara Köl. As to recent discussions about dumps in the press (I mean the discussions not the dumps in the press) let me assure you that owing to extremes of heat and cold and owing to the complete absence of organic matter these two dumps of Turkistan are wonderfully hygienic. They contribute nothing to the dear old smells of Asia. Nor have travellers caused a nuisance by leaving paper or tins about. I have never seen a broken bottle out there. Paper is soon blown into the nearest river by the everlasting wind ; empty tins and bottles are eagerly picked up by the mountain folk. I suggest that people leaving litter

² *A.J.* 41, 156-160 ; he was far too ignorant !—*Editor.*

about be condemned to picnic from one to fourteen days on one of London's dustheaps, beginning on a Monday morning, in Hyde Park.

The Pamirs as a whole may be likened to a stork's nest, the bottom of the inner hollow—the average bottom of the valleys called Pamirs—lying 12,000 ft. (4000 m.) above sea level. The dividing ridges rise 1000 m. (3000 ft.) above the valleys, the maximum represented by the highest peaks (6000 m.) being 2000 m. The rim of the nest—Himalaya-Hindukush, Mustagata range, Transalai and Seltau—is 1000 m. higher (maximum 2000 m. and more). That is to say, with reference to sea level, the mean height of the marginal ranges surpasses that of the interior ranges by 1000 m. The difference is still greater when we take the highest peaks which do not rise above 6000 m. in the interior, but reach 7500 m. and 7600 m. in the outer ranges. When we stand in the valleys, however, this difference of absolute heights above sea level is sharpened into a tremendous contrast between relative heights, for the inner landscape is Pamirian, the outer landscape Alpine. A Pamir is a flat shingle-bed ten miles wide and more; an Alpine valley is a notch. Imagine the Prätigau at Davos, the Rhône valley, or any part of the Upper Engadine twenty times wider, taking care to extinguish every tree and village, and you have a Pamir. The ranges bordering this vast plain will appear even lower than they are. Sometimes they look like lakeland hills, an impression agreeably and slowly dispelled by a stiff grind of three or four hours.

The main valleys of the outer ranges are 1000 m. deeper, so that a good average peak will tower 3000 m. or 10,000 ft. above you, whereas a corresponding peak on the banks of a Pamir will only rise 1000 m. or 3300 ft. above your standpoint. Looking up to the highest summits the difference will be 4500 m. and 2000 m. respectively. Some of the Pamir ranges are undulating hills, especially around the Khargush Pamir, but many, like the Muzkol, are truly Alpine, so that the typical Pamir landscape only appears in views taking in the valley as the main feature. Losing oneself among the Muzkol peaks is like entering a Norwegian fjord from the wide expanse of the sea.

The Pamirs are a cluster of ranges drowned in their own rubble up to their breasts and necks. Nature, the sculptor, has been left in the lurch by her charwomen, the rivers, so that her statues are partly buried in chips. This accumulation was worked into ground moraine by the glaciers which once covered the Pamirs forming an ice-cap akin to that of Greenland.



Photo. W. R. Rickmers.

Shoot cone below KARA TINGAI TAU.

To-day, weathering proceeds apace owing to sharp extremes of temperature. Hence the rivers attacking the Pamirs from all sides are faced by a tough job, for the upper dump increases steadily. At present it is impossible to say whether there is an excess of transportation by the rivers over the accumulation by weathering. In the long run the basis of erosion represented by the Sea of Aral will of course gain the upper hand in the process of levelling down unless upheavals or variations of climate change the present order.

Owing to its dry climate Turkistan is a country of violent contrasts which strike us with tenfold intensity among the mountains where the continental conditions of the plains combine with the effects of height above sea level. The desert of the plains is dovetailed into the desert of ice. Glaciers dig their cool snouts into grey rocks blistering with heat. Sand dunes striped with wind-ripples overlies beds of dead glacier ice. Wherever we seem to notice a transition, it is merely due to fields and gardens irrigated from the rivers, or to some favoured flank which receives a little more rain. With one notable exception the height of the Alai-Pamirs makes not the slightest difference in the rainfall (precipitation of rain or snow). The glaciers are merely the result of careful saving. Up there every snowflake is kept in cold storage, and the annual share of accumulated capital is paid out at the ends of the glaciers. In the plains the summer rains evaporate immediately, while the winter rains run to waste. There being no springs worth mentioning, the whole of the civilization depends on glacier water.

The exception referred to is the Seltau, the western rim of the Pamirs. Running N.—S. and rising to an average height of 6000 m. (20,000 ft.) this range acts like a powerful refrigerator which thoroughly chills the western winds, freezing out what little moisture they contain. This makes the Seltau the only bad-weather range in the country, at the same time explaining its big glaciers. The Seltau serves as an umbrella to the Pamirs, where the rainfall is but one half of that observed at Kazalinsk, near the Sea of Aral, where the dunes of the Qizil Qum cover tens of thousands of square miles. While the climbing weather of the Seltau closely resembles that of the Alps, the ranges west of it, such as Peter the Great and Alai, gladden the mountaineer with a dry season lasting from the end of July to the end of October. During September there comes the usual short autumnal break which may bluff the inexperienced into untimely retreat.

On the Pamirs we meet with every kind of desert or half-desert from the mangy steppe to the rocky, pebbly and sandy desert. On the southern peninsula of Great Qara Köl bare rocky spurs varnished by wind and sun form a genuine Nubian desert. During July the weather on the Pamirs is bad with little precipitation, that is to say, overcast and windy with an occasional shower not lasting more than five minutes. One gets into the habit of leaving one's things lying about in the open. Curiously enough carapace glaciers and ice-floes on the valley bottoms often mimic arctic landscapes. But a map showing the rainfall of the world tells us that Greenland belongs to the dry belts on earth. The ice floors and the sharp rims of the snowcaps seem to be witnesses of climatic contrasts. I imagine the summer weather of Greenland to be similar to that of the central Pamirs: uncomfortable but not exactly soaking.

The usual Turkistan glacier forms a type of its own. It lies in a deep and relatively narrow ditch. The head of its valley is not a bowl of cream but a steep corry with ice-armoured walls meeting the valley glacier at a steep angle. Ice slopes and icefalls feed the glacier stream proper. Thus we find no gradual transition from dry glacier to fields of névé. Up to the foot of the corry walls the glacier is practically all snout, marked off from its feeding shoots by the sharp break in the slope or by rim-clefts (*Randklüfts*). Sluggish, fat and short, the warty dragon lies at the almost level bottom of its stony trough. A typical Alpine glacier only ends at the top of the watershed, the scientific névé-line separating the feeder from the fed being the result of various formulae giving different results. The Alpine glacier is like a river oozing out of swamps; the Turkistan glacier is like a stream below a waterfall.

Looking at one of these glaciers one wonders why it is so big, for a few icefalls seem to offer but poor nourishment. I explain this apparent anomaly by climate and the shape of the bed. This again is also due to a dry climate where sharp weathering produces rock faces unwilling to wear a cloak of protective névé. Lying flat and not being subject to the deliberate pressure from a basin above, the snout crawls very slowly. Covered with rubble and showing but few crevasses it offers only a small surface to the attacks of the sun. It melts, of course, as the torrent proves, but I should say that it melts less than a glacier of the same size in the Alps or Himalaya. Let us distinguish between *melting* and *evaporation*. Moist warm air, although more or less saturated, will cause any

amount of melting. It produces sloppy conditions. Moreover, it acts continuously, the bulk of the atmosphere not cooling down very much at night or in the shade. Taking quantity for quantity evaporation can never take the place of melting unless there be a sustained hot blast (*Föhn*). The solid ice of the Turkistan glacier with its small surface and shield of rubbish cannot suffer much from evaporation. Hence nearly all the melting is done by the sun. Where a shadow is cast or when night falls, melting ceases at once. Thus the period of melting is strictly confined to the hours of sunshine. Old snow hardly ever gets sloppy on these mountains unless there be complete absence of wind in a hollow, a rare case.

Moreover, the length of a Turkistan glacier is mostly a sham owing to a dead end which is often many miles long. According to local conditions the dead ice may form one-fifth or even one-third of the whole length of the snout. Approaching from below we enter a vast expanse of rubble heaps. Only here and there is the dirty ice laid bare. It is honeycombed with funnels containing small lakes of pea soup. The black dripping facets of exposed ice remind one of wet coal-dust. The mounds of loose blocks are often a hundred feet high.

This part of the snout does not move at all, for otherwise the round craters could not remain open. Near the end some of them seem to touch the very bottom of the glacier bed. After an arduous walk we reach the white or living glacier which is sometimes separated from its former self, but more usually kneaded into it. Should it ever advance again it will eat up its own dead parts.

The dead ice has been left stranded by the last retreat. Assuming that glacial movements in the Alai-Pamirs and the Alps have been timed by a common cause, then we must look to the advance and retreat which in the Alps took place during the middle of last century (round about 1850). The Alpine glaciers have not left any dead ice behind because a steady supply from the rear (shape of basin, climate) enabled them to retreat in order. In Turkistan everything is sudden. At the same time this shows how long ice will keep out there when covered.

There is, however, a disturbing factor in our reckoning, namely, earthquakes. Undoubtedly the frequent earthquakes of Middle Asia cause irregular feeding by shaking the ice from the walls of the corry. And there may have been a tremendous earthquake affecting all the glaciers. If so, it must have taken

place before the Russian occupation, that is to say, before the time of reliable written records.

Let me hasten to say that not all the glaciers of Turkistan are true to the standard pattern. We find quite a number approaching the Alpine type. Nor are the glaciers of the Seltau, of which I shall now speak, all of them Alpine. On the contrary, the majority of small and middling glaciers of the Seltau are Turkistanic. But here is the only large area presenting an Alpine landscape. The Notgemeinschaft Glacier, 25 miles long, has a good-sized Alpine basin. But its snout ends in a vast desert of dead ice covering at least two square miles. The leading feature of the Seltau is the enormous Fedchenko Glacier. One only in name, it stands for a whole world of glaciers and snowfields. It is not a worm with a few stumpy suckers at its head, but a Medusa with many long tentacles splayed at their ends. It has no dead ice, but is active throughout. Naturally the tip of its snout is covered with surface moraine for a mile or so.

The Fedchenko Glacier is the longest in the world, measuring 48 miles (Siachen 45, Inylchek 44, Hispar 38). When I wrote for the *Geographical Journal* it was only 44 miles long. Since then, Dr. Finsterwalder, our topographer, has been able to calculate more exactly from the data of his photogrammetric survey. He measured along the stream-line, as usual. As I know him to be a sportsman, I do not suspect him of unfair dealings in order to oust the British glacier! Arctic glaciers do not come into this competition, being, like Greenland, bulging jelly-fish with fringes all round. Fundamentally, of course, the glacier system of a central mountain group is also an ice-cap, although broken by ridges. It resembles the saddle-cloth thrown over a bony mare.

In spite of its wide upper basins the Fedchenko Glacier does not entirely run away from type. The rims of the basins fray out into steep rock faces studded with icefalls. Thus the peaks closing in the heads of the valleys present a general scheme of black and white. Nowhere do we see a Jungfrau-firn or Ewigschneefeld with their pure white undulations descending from the skyline.

Only by the coming together of the most favourable conditions could such a mighty glacier have been born under the sun of Turkistan and within the cramped space of the Pamir fringe. The Seltau is not a divide outlined by mountain folding, for the 'strike' of the Pamirs and their western continuations runs E.—W. The Seltau is a watershed at right angles to



Photo, W. R. Rickmers.

GARMO Mountain (7,500 m.) from MIRZA TASH (5,400 m.) on GARMO Glacier.

the geological strike. The long and often narrow chains between the rivers Bartang, Yazgulam, Vanch, Khingab and Surkhab are the true continuations of the Pamir ranges. The Seltau is probably the outcome of a fault as witnessed by the icefalls, sometimes 3000 ft. high, in nearly all its glaciers descending on the outer or western flank. I consider it very likely that this was accompanied by a parallel fault on the eastern side more or less in line with the Fedchenko valley. The long longitudinal block thus raised became the foundation of a transverse watershed. On the western flank the old heads of valleys managed to rejoin their lower ends by eroding the cliff. The eastern fault—overhung by a higher plane on the Pamir side—collected all the rainfall, leading it towards the N. One may be allowed to suspect that something similar happened along the Transalai and Mustagata ranges. This would explain the higher rim of the Pamirs and also the tendency of all the inner rivers and glaciers to skirt the ranges. The Pamirs always remind me of an unfolded rose into whose middle one has strewn sand, leaving the larger outer petals free.

Thus the Fedchenko Glacier enjoys the following advantages : It lies on a long flat plateau, being in fact a Pamir filled with ice instead of shingle ; it taps the whole length of the highest portion of the Seltau and just at the right height ; the Seltau runs N.—S. and is the westernmost rim, thus trapping the most and the best of the moisture carried by westerly winds ; the glacier hugs the eastern flank where the clouds will unload their heaviest cargo just after passing the top of the refrigerator. In short, every possible trick of situation and surface has been made use of to extract the uttermost from an unwilling climate. I take it as an illustration of modern business methods helped by Caledonian thrift. The poor Seltau has turned out a longer glacier than the rich Himalaya.

In 1913 I climbed a mountain 5400 m. high on the right bank of the Garmo Glacier (Upper Khingab). In honour of our Bukharan official I called it Mirza Tash or Stone of the Scribe. From the top I saw the Seltau unfolded in all its glory. Having worked steadily eastwards for the last twenty years I now stood on the threshold of the last and mightiest fortress. My imagination filled it with the longest glaciers, the highest peaks, and the most mysterious passes of Turkistan. The dream of the longest glacier has come true beyond the dreams of record-breaking. The Seltau also boasts of the highest peak of all the Russias. I even saw Mount Garmo close at hand, although

I did not guess its royal claim. Finsterwalder has meanwhile not only managed to stretch the Fedchenko Glacier, but has also dethroned Mount Kaufmann which is only 7130 m. high, whereas Mount Garmo touches the 7500 m. mark, for such are the triumphs of mathematics applied to the negatives from a photo-theodolite. Thus Mount Garmo surpasses Mustagata and remains second only to Qungur.

Nor did the mysterious pass disappoint us. Borchers and Wien, two members of my 1928 party, found and crossed the Kashal Ayak which, on the Russian ordnance map, had puzzled me long years with the bracketed information 'Frmr. Ps.' A climber will at once ask himself what can have induced mountain peasants to give up an easy pass which shortens a journey of seven days to one of three days. The natives reply either that they know nothing about it, or that the pass has been blocked by ice. Surely something tremendous must have happened then. Of course the villagers may simply wish to keep the col secret. Such was indeed the case with the Sagran Pass which my companion Ficker crossed in 1913. The cast of the Kashal Ayak is different. Let me describe it first. From the headwaters of the Vanch river one follows a narrow glacier through a deep gorge to the top of the Seltau watershed. The usual icefall is not quite so high as the others and can be circumvented on easy slopes. From the Pass (4200 m.) one walks down about 600 ft. over gentle névé to the surface of the Fedchenko Glacier (4000 m.). Now comes a long tramp of ten miles in a south-easterly direction, that is to say, *up* the glacier until one reaches a large bay in the right or eastern bank, a bay filled level with an arctic expanse. Thus the glacier stream, which is one and a half miles wide here, bulges out into a width of two miles. This is a very curious place. After reaching the innermost recess of the bay, and after scrambling over a few moraines, we suddenly look down into a dry valley below, the valley of the Tanimas river running due E. and later on bending S. forming the Bartang. In other words the surface of the Fedchenko Glacier is level with the top of the Tanimas Pass. It even sends a slight overflow across. Our progress down the Tanimas valley is blocked by three side-glaciers forming bars. While they merely bore us stiff they really worry natives in soft boots. Moreover, in the days gone by they were probably longer and therefore more crevassed in the portions which now are their lowest ends. All those glaciers are studded with ice pinnacles. The lowest, the Notgemeinschaft Glacier, can be circumvented round the snout

of dead ice if one has ordered horses to meet one for fording the stream. Otherwise one has to foot it over another long mile of rubble, ice gullies and serrated ridges. Thus the Kashal Ayak is really a double pass from the headwaters of the Vanch to those of the Bartang. It is also a forked pass, for by descending the Fedchenko Glacier one can reach Altin Mazar and thence Daraut Qurghan in the Alai valley across the Ters Agar, which is an easy horse pass.

Now before the last advance of the glaciers over a hundred years ago one could walk dryshod up the Tanimas valley and down the Kashal Ayak. The intervening stretch of the Fedchenko Glacier though long is easy and safe, there being hardly any treacherous crevasses. Then the ice came and made the pass not worth while even for smugglers, although it may still have been used by fugitives from the justice or injustice of the Amir of Bukhara and his bloodsucking minions.

But a few decades after the ice came also the Russian conquest, and with it came law and order. The Tajiks settled on both flanks of the Seltau need no longer fear to pass through the pasture lands of the Qirghiz or the territories of feudal lords. To-day the pass is practically open again, but meanwhile the demand has stopped. An attempt to resume traffic would be like trying to revive Vauxhall or Cremorne Gardens. Even the tourists of the future will fight shy of it owing to the difficult approach on the eastern side. Even before reaching the lowest glacier in the Tanimas valley one has to travel through thirty or forty miles of uninhabited country. Only a Tajik capable of trotting two days on an empty stomach can face a short cut of eighty miles from one village to another. Comparing length, difficulty and legend, the Col du Géant would be the best Alpine counterpart, I think.

As to Mount Kaufmann I do not know more about it than what Herr Wien told me in a letter written on September 28 from a base camp at Qulgun Tokai in the Saukdara valley which runs along the southern flank of the Transalai and debouches upon the gravel plain of Qutass Qushti (Altin Mazar). Nor is there very much to say about this ascent. Of all attempts upon peaks of similar height this was probably the simplest. Lest I be understood as detracting from the feat, may I remark that a quick and elegant performance, however simple it may look, is not necessarily easier than a laborious one. On the other hand, everybody must admit that a mountain of the right shape came halfway to meet three men of the right

shape. Dr. Allwein is just now clawing and hacking at a bigger prey, Qanchenjunga³ to wit.

‘DEAR RICKMERS,—Allwein, Schneider and I climbed Mt. Kaufmann⁴ on September 25 by the E. ridge from a saddle in the main range. Not trusting any of the side valleys we decided to attack along the main glacier from which rises the Sauk Dara or Sauk Sai river. This glacier begins at the col due E. of the summit, runs about ten miles towards S.E. and then bends sharply W. From the bend to the tip of the snout is two miles more. A few miles further down lies our base camp Qulgun Tokai. From here to the East Col is 15 miles, to Altin Mazar 35 miles, making altogether 50 miles for the total length of the Sauk Dara valley.

‘We left Qulgun Tokai on the 21st with two porters and slept near the end of the glacier (3800 m.). On the 22nd up the glacier to 4600 m. On the 23rd we reached the upper basin (5200 m.) where we left the porters and then went on to the East Col (5700 m.).

‘On the 24th we scouted and climbed the Corner Stone (6100 m.) to the E. of the saddle. We then spent a second night on the East Col in our Asmü-tent.

‘On the 25th we climbed the mountain, leaving the East Col at 08.30, and reached the top at 15.30. We returned by the same way and lugged our camping kit into the basin (5200 m.). But the porters had skedaddled meanwhile. The cold was so intense that all of us got frozen feet. Inside the tent the thermometer went down to -18°C. (-1°F. , or 31° of frost). It could not descend further because it was not long enough. Schneider had suffered the worst damage. Accordingly we did not go fast, and on the 26th only got down as far as 4300 m. Yesterday I ran on ahead to Qulgun Tokai where I met Borchers who immediately set out to help the other two. While I am writing this I can see them arriving safe and sound.

‘Please send us dermatol powder, ointment, bandages and a pair of gigantic goloshes for Schneider.’

Borchers added a few lines expressing grave fears about Schneider’s frostbites. His feet were quite black and blistered.

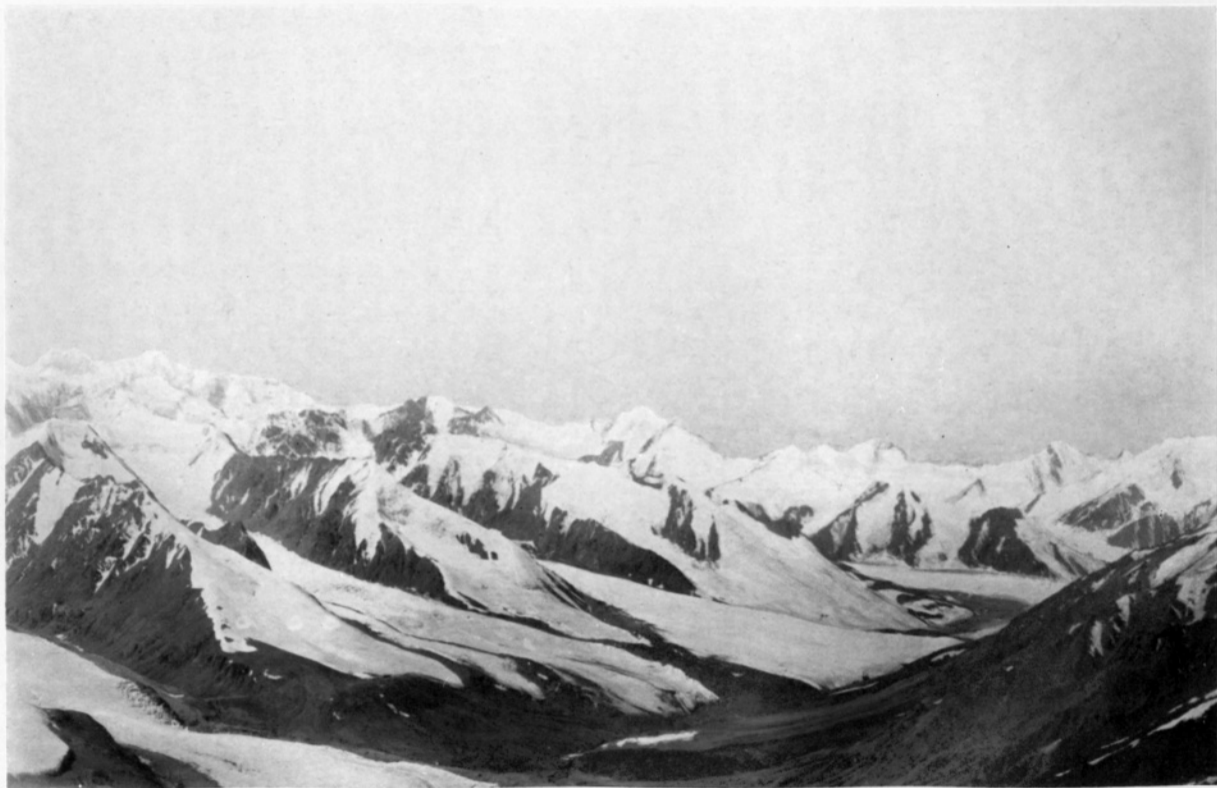
³ Kangchenjunga; we can trust Mr. Freshfield to maintain his own spelling.—*Editor.*

⁴ For reasons given in *A.J.* 41, 160, footnote 3, we have ventured to alter the name in Herr Wien’s letter as well as throughout the text.—*Editor.*



Photo, W. R. Rickmers.

Mt. KAUFMANN from TENGHIS BAI Pass.



Photo, W. R. Rickmers.

TANIMAS Glacier III in foreground, carapace Glaciers and FEDCHENKO in background.

When asked whether we should send Schneider to the nearest city as quickly as possible, he replied : ' Better not. He may fall into the hands of a *regular* surgeon.' Luckily Schneider recovered very quickly and got quite well again.

I must mention here that Borchers was prevented from joining in the fray owing to serious injuries received in an attempt to wade through the Vanch river after the crossing of the Kashal Ayak. The torrent took him between the millstones.

And now I may be allowed to have my permitted say. For six weeks on end Dusting Jane had held me in her powdered embrace. Dusting Jane was the wind who, day in day out, amused herself by flicking moraine dust from one mountain shelf to another. On its way to various destinations this dust passed through our base, which was called Dust Camp from the very moment when we first set foot upon its deceptive floor. It was a wonderful floor when we arrived, as smooth as satin with a silver sheen. But the tramp of horses and men soon changed it into a fine powder ankle-deep and yellow. All around us was an arid mountain steppe bordering immediately upon the world of ice. Otherwise it was a very roomy and convenient position just above the big Notgemeinschaft Glacier. Only two more glaciers to pass on one's way to the Tanimas saddle or Fedchenko Gap.

Easy peaks surrounded me on all sides. But business and the scarcity of porters limited my excursions to our near neighbourhood. At last my opportunity came on September 3 with a fresh draft of porters from which I borrowed three young men.

Black Forest Mountain is a misnomer in so far as it is neither black nor forested, but grey and bare. I have christened it Qara Tugai Tau (Black Jungle Peak) after my good friend Dr. Finsterwalder (Dr. Darkwood). It is 5500 m. high and stands on the left bank of the Tanimas just opposite the second glacier descending from the higher mountains facing N. Sharp readers will find out that my peak has grown 200 m. since I wrote my last short note to the JOURNAL. That is not of my doing, for Dr. Finsterwalder has raised the whole of the Tanimas landscape by 200 m., including Dust Camp (now 3700 m.) He discovered some error in the level of reference.

I took so many porters because I wanted to go fast, or rather as fast as my condition would permit. I therefore loaded the porters moderately and did not carry anything myself. A rough calculation showed that the lifting of a moderate ruck-

sack would mean about 180,000 foot-pounds in 7 hours, or about 6 pounds per foot per second. Now, according to Hingston's famous Everest formula, the square root of the number of blood corpuscles in a cubic inch of blood divided by one's age, multiplied with the inverse ratio of the foot-pounds to the height of the starting level and the time of training at this level, gives the absolute maximum height which one may be expected to reach—unless one collapses sooner. Finding neither the time nor the courage to count my own corpuscles, I hoped to arrive at a rough approximation by asking Juldash, our cook, to count them in the next sheep he killed. He reported 'Yok bar,' which means 'There are none.' I then gave up science and trusted to luck.

Three main factors determine perfect acclimatization to one's climbing base: age, length of stay, and the work to be done (foot-pounds to be lifted). Age cannot be reduced; weight cannot be reduced beyond that of one's body. Hence a man of let us say fifty cannot get beyond a certain point however long he may lead an active life on the 15,000 foot level. For a man of fifty the upper limit might be about 7000 m. or 23,000 ft. Unfortunately my blood corpuscles have not yet been at 6000 m., so that we cannot say whether they are the decisive factor, and whether age fails in not being able to bring the blood up to the necessary standard of more than 8,000,000 corpuscles to the cubic millimetre.

Above the living level comes the fighting belt in which lie the highest points to be attained. One might also call them subject and object levels. But flooring and ceiling suggest themselves as the simplest words. When I feel as fresh and energetic at 3000 m. as on the home plains I have adapted myself to a flooring of 3000 m., and I should be able to touch a ceiling 2000 m. above me without undue over-exertion. I should say that a span of 2000 m. between flooring and ceiling represents the rough average of mountaineering experience. It is the span between ordinary daily work and a short maximum effort compatible with some reserves of energy. If we take the average height of club huts as our usual Alpine flooring after a week's training, then a (relative) ceiling of 2000 m. will cover the average height of all Alpine peaks above the snowline.

Young people enjoy an unlimited ceiling because they cannot climb beyond the height of Mount Everest. We feel pretty sure that the top of the world can be reached with a fair rucksack and without oxygen.

At 5 p.m. I left Dust Camp with my three ragamuffins following the well-trodden path to the high camp below the Tanimas

Pass. Here and there autumnal cranesbill shot tongues of fire athwart the gritty slopes. Near Glacier II, I found that the porters serving the higher camps had discovered a new way across the snout. I lost it, however, among the mud avalanches between the ice and the old moraine, so that I was forced upwards on to our old all-ice route. The so-called improvement was a complicated zigzag, making use of every stepping-stone and keeping as near as possible to the banks. The natives are like vessels hugging the coast, which comforts the mind in spite of its dangers. The mountaineer, the experienced captain of nailed barges, prefers the ease and safety of the high seas.

At dusk we landed on the gently sloping scree-fan at the foot of Qara Tugai Tau. The place was thickly overgrown with Qirghiz wormwood (*Eurotia ceratoides*), which along with dung is the only fuel of the Pamirs. I call it wormwood for want of a better name. Where it gets a chance beyond the reach of nomad camps, it grows high and thick like heather. Here I wanted to wait for midnight and the moon—midnight in order not to arrive on the cold top too soon, the moon in order to throw some light on our path.

The way up I knew blindfold, so often had I fondled it from the opposite side. It was not lovely but beautifully straight. I estimated at 1700 m. the difference between me and the summit. Of this, 1100 m. meant a very steep grind to the eaves of the roof. This roof or whaleback represents the fragment or section of an old land surface. Ages ago this upper level was a country of vast undulating hills, since then cut up by the ravines of gnawing rivers. Longingly I looked up to the rim of promise, trying to steel my heart against an everlasting grind. A shoot cone, broad and brown, was the foot of my ladder of screes. Becoming narrower and narrower it was at last drawn out into a furrow through the broken rocks of the mountain's necklace.

We started at once tearing out and piling up a cartload of fuel for the fire which was to warm and amuse us during the long hours of waiting. Behind a rock I screened myself from the evening breeze, at least in part, for it is almost impossible to find natural shelter from the Pamir winds. By dint of ceaseless work they seem to have stream-lined every obstacle, so that by now they can glide a sinuous feeler round every corner.

I threw the Zdarsky bag over my shoulders, lit my pipe and looked into the fire or at the sky. Rarely did I catch a gentle touch from the wings of flying sleep. The flames unfolded acanthus leaves into the gloom or pierced the night with the

forked tongues seen on old etchings. A star had settled on the very point of the 'Weisshorn' as if climbers were signalling to me. Slowly it detached itself, swimming westwards. Growling, I scanned the fangs of the Seltau where clouds of discontent threatened to erupt in sheaves. The dryness of the air enabled me to entertain the porters with fireworks. When I pulled the yellow resinous stuff of my wrap over my head friction against the hair made such bright sparks that I glowed like a phosphorescent ghost.

At 10 P.M. the moon rose and the evil clouds began to retreat. At midnight I began the first step towards those interminable zigzags which became shorter and shorter as the hours dragged past.

Half of the way we found good footing among loose screes. Then naked cement began to appear where irons would have been a comfort. Grey dust and scarred rocks told their story of a spring-drunk mountain disgorging spates of mud and stones. Now everything was quiet, cast into the bonds of drought. Four hours or 10,000 steps took us to the edge of the upper plateau. I always keep wondering how it is possible to outlive such a treadmill. Thinking of the goal ahead is about the worst thing one can do. But a sort of artistic devotion to footwork endows utter boredom with a modest charm and shortens the thread of patience. Also one is able to follow some chain of thought which the hasty and stumbling beginner can never hope to pay out unbroken through the hawses of the brain.

Like Prometheus unbound, I swung over the edge between captivity and freedom. Below me an abyss of cinders; in front of me a wide and open world like swelling pastures that greet the wanderer at the outlet of a dismal gorge. The mountain no longer weighed upon my eyelids but beckoned from afar, a rounded hill. Tired but not exhausted I crawled into a maze of black rocks which seemed to be some kind of moraine. Here I boiled tea with the snow given by some white friars who perilously rode the steep screes below me. I saw the whole length of the Tanimas ditch. Opposite me the Notgemeinschaft Glacier slung its hairpin curve around castellated peaks.

Shortly before sunrise the thermometer showed only -3° C. Evidently the quicksilver felt warmer than I whose bones seemed to rattle on the icefields of Siberia. The shining day rose in glory. At six we started again. A hard tennis court paved with flat stones and gently sloping invited a gay stride winged by the nippy air. After an hour the ground broke up

into looser stuff and rocky mounds between which appeared strips of snow, the ragged edges of a white caparison that decked the saddle-back. Thinner air began to quicken the breath and to muffle the zeal of the legs. Rocks forming an angle offered absence of wind with presence of sun. Half an hour was spent in this delightful heat-trap.

Then came the first patch of snow so eagerly welcomed by those who know when it is not too steep or hard. This here was no ordinary *névé* but a sort of flat wedding cake: on a sheet of ice parallel rows, about a foot apart, of crinkly white stuff akin to foamy sugar or the lacework of Dresden china. This is the last stage of a snowfield in Turkistan. Early in the summer it becomes fluted like a marble column. The furrows deepen, the ridges begin to disintegrate, and all ends up in the autumnal ice-froth. The furrows are undoubtedly outlined by the wind ripples across the last snowfall at the beginning of the dry season.

The porters struck. Their skin boots would slip on the ice and feel very tender on the splintering glass of the ridges. This was a case for the crunching drive of armoured cruisers. Each pounding step made a wonderful foothold. These would be the ideal conditions for climbing the steepest ice slope without crampons and without cutting steps. The porters soon gained confidence and followed like lambs.

Soon the lungs demanded a short rest after every tenth step or so. But we had only to scramble over a few more heaps of jumbled blocks and at 9 o'clock stood on the dry top of Qara Tugai Tau. The view was so fine that I cannot describe it. Only my friend Mount Garmo had wrapped himself in clouds, which I thought very unkind, as I had come specially for him. With frozen hands I opened a tin with fish in tomato sauce made in Russia. Its label bore the English legend 'Flesh of the Sturgon in Pickles by the Direction of Preserved Works in Vladivostok.' For dessert we had a delightful German confection called *applekrout*. For our benefit the makers had rushed into poetry and adorned each tin with a different verse about the joys and sorrows of travel as seen from the *applekrout* angle. The English version of this one ran:

'The jolly juice of *applekrout*
Will *beribi* and *scurvy rout*.'

They were routed, down to their very letters.

[We express our thanks to the Council of the R.G.S. for use of their map.—*Editor*, 'A.J.']

