

Climbs in the High Andes of Peru

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A record of three short expeditions in the Peruvian Cordillera, with an appendix listing Peruvian peaks, climbed and unclimbed, worthy of attention of American mountaineers.

FEW American climbers are cognizant of the possibilities afforded by the Andes, especially in Peru, of first ascents of considerable difficulty. The strife in Europe will undoubtedly direct attention away from the Alps, the Caucasus and the Himalayas to ranges of equal interest much closer at hand. Certain portions of the Andes are spectacularly rugged and beautiful, but until the past decade most attention has been given to the less difficult peaks of a volcanic origin, such as Aconcagua in Chile and Chimborazo and Cotopaxi in Ecuador.

During two years residence in Cerro de Pasco, Peru, as a geologist for the Cerro de Pasco Copper Corporation, I have been able to make only three short climbing trips. One of these was into the Cordillera de Raura, in the main Andean chain; the other two were into the Huagoruncho massif, in the Cordillera Oriental.

Unfortunately the peaks of the continental divide are not easily accessible from Cerro, although they are only 40 to 80 miles distant. The most difficult peaks lie W. and N. W. from Cerro de Pasco. The drainage of the intervening region is fiendishly devised to thwart direct access to the highest mountains. Waters of the Huallaga and Marañón flow northward in deep canyonlike valleys; those of the Mantaro flow southward across the pampa of Junin.

In spite of knowledge of this unfavorable topography and contrary to the advice of natives of the region, I induced John Moses, geologist for the company, to join me in an attempt to reach the Yerupajá group in the Cordillera de Huayhuash in a one week vacation. We took a guide who claimed to know the region, but who managed to lead us not to Yerupajá but to the peaks around Raura instead. On the basis of this trip and of other similar experiences I have given up the use of guides in this country except for short distances from their native villages.

We planned our trip for the first week of June, 1939, believing that the dry season would be well enough advanced to make

travelling and climbing fairly rapid. On June 1st we left Cerro on the morning train for Goyllarisquisga. The weather, cloudy at first, improved rapidly. At "Goyllar," the C. de P. coal mines, horses and pack mules were waiting for us. By eleven thirty the animals were loaded and we started down the hot, steep, and dusty trail past Chacayan to Uspachaca, at the confluence of the Rios Jaru and Chaupihuaranga. Uspachaca is 9850 ft. above sea level, or 3870 ft. below "Goyllar."

After a short rest we headed W. up the Rio Chaupihuaranga, the one branch of the Huallaga which heads in the continental divide. At about four in the afternoon we reached Michivilca where we left the main trail to Yanahuanca and Oyón and began the arduous climb up the N. side of the valley toward Pillao. Darkness had already set in when we finally urged our weary horses up the main street of this little village perched on a terrace 2500 ft. above the Chaupihuaranga. Sr. Julio Gallo, whose mines we had promised to inspect the following day, received us hospitably. Real beds with clean sheets were a pleasant surprise.

On June 2nd we were delayed in starting not only by thick clouds in which the village was swathed, but also by the customary time-taking gestures of hospitality so often encountered in Latin America. At 10 o'clock we left Pillao on fresh mules and took the upward trail to Colquipucro, about 6 miles from the town. Not until two in the afternoon did we finish examining the mines here. There was a long trail ahead and little time in which to cover it. To save time we omitted lunch and travelled as fast as the pack animals would go. About 4 o'clock we rode over a low divide and were in the Marañón drainage basin. From now until dark the way led across boggy, hilly uplands surrounding the upper reaches of the Marañón. We made camp just before nightfall, buffeted by rain and a penetrating wind.

On the third day of our trip we arose early, ready for a long trek over country strongly cut up by valleys and ridges, the foothills of the cordillera. The trail at first was hard to follow, especially as wide detours had to be made around impassable swamps said to be dry later in the season. Before noon we crossed an Inca road, strongly built of shaped stone blocks. Later we passed a number of glacier-hung peaks probably 16,500 to 17,500 ft. in elevation, few of them presenting serious difficulties to experienced climbers. As we progressed occasional views to the N. W. proved

beyond a doubt that we were heading not toward the Yerupajá group but rather to a series of snow peaks which are somewhat lower and about 15 km. to the S. This is the Cordillera de Raura. Due to the difficulties of the terrain it was obvious that we could not now change our course to reach Yerupajá, so we contented ourselves with an attempt to reach Caballococha in the Raura district. Steep, rarely used trails led us across the northeastern spur of the Raura Range, thence down to Tinguicocha,¹ along the Marañón itself. We continued upstream in a southerly direction, heading straight toward Cerro Raura, towering high and white at the head of the valley. At six in the evening of the third day we pitched camp on the shore of Caballococha at an elevation just above 15,000 ft. We had taken three full days of our week to reach our base. That allowed us one day of climbing if we assumed that the return trip to Cerro would also take three days.

At 6 A.M. of the fourth day, mountains, lake, and tent were buried in a dense fog; the temperature was 27°; not a breath of air stirred. Discouraged by the weather prospects I arose, leaving Moses and the guide Cotrina still asleep, and began to walk around Caballococha. A short time later the fog began to lift, exposing tantalizing bits of rocky slope N. W. of the lake. I followed the openings through the clouds, drawn on by the knowledge that this was our only day of climbing. First over loose talus, then over rocks of moderate difficulty I scrambled upward, with the rapidly rising clouds still above me. About 1500 ft. above camp the going increased in difficulty; a roped party of two was essential to sane climbing. But for 200 ft. farther I kept on, climbing chimneys and vertical pitches in hard banded argillite which affords good hand and foot holds. At an elevation of about 16,730 ft., about 300 ft. below the summit, a corniced ridge blocked my advance, as I had with me neither ice-axe nor crampons. A properly equipped party would find little difficulty in climbing the remaining snow pitch to the summit.

It was now 9.30 A.M.; the clouds had largely dispersed. Below, around the tent, there were signs of impatience at my prolonged and unjustified absence. Therefore I took only a short look at the splendid view unveiled during the climb. Most striking spectacle was Cerro Raura (18,760 ft.), draped on its N. flank with

¹ *Cocha* is the Quechua word for lake.

a heavily crevassed glacier extending almost down to Caballococha. This climb could be made almost entirely over the glacier, which exceeds 3 km. in length.

To the S. W. a long rock summit, the highest point of which is 18,710 ft., loomed well above my perch. It is a rocky peak horizontally banded by limestone and hard shale beds, with a steep wall on the E. side. This mountain may be the most difficult in the region, although Peak No. 10² (18,170 ft.) would run it a close second. The easiest line of attack appears to be along the N. ridge, which may be approached by a rather large glacier clinging to its eastern side. The peak I had nearly climbed is almost due E. of Peak No. 10 and is separated from the E. ridge of the latter by a glacier-covered saddle.

Below me lay five lakes, clear blue in the morning sun. Near the upper one, Laguna Santa Ana, is a brilliant red and ochre hill said to conceal deposits of mercury and silver. Off to the E., whence we had come the preceding day, the view was largely of rock peaks rising steeply to elevations between 16,500 to 17,500 ft. Many of them would make interesting, though not difficult, climbs. A few of them have small glaciers at their summits or clinging to deep cirques well up on their flanks.

It took me about one hour to descend to camp, whereas the ascent had taken some three hours. Once at the tent only a few minutes were necessary to make peace with John and to have breakfast. At 10.45 A.M. we were again on the march, this time toward the Raura Glacier which we hoped to ascend somewhat N. E. of the summit of Cerro Raura. A short walk brought us to the toe of the glacier, which we circled to the right, climbing upward over good hard limestone. About 500 ft. above the lowest point of ice an easy route onto the glacier appeared. We roped up and I set to work cutting the few steps necessary at the start while Moses and the guide inspected a vein of orpiment recently uncovered by the receding ice. Snow on the glacier was in good condition; crevasses were deep and well-defined, yet strong snow bridges could be found when they were needed. Progress was rapid. We worked diagonally upward across the glacier in a southeasterly direction. Near the top an easterly traverse under

² The nomenclature of peaks in the Cordillera de Raura is that of the map accompanying "The 1927-1928 Peruvian Expedition of the American Geographical Society," by O. M. Miller, *Geogr. Rev.*, xix, 1929, 1-37.

banded ice cliffs was necessary.³ Thence it was an easy pull to the summit of the ridge where it dipped to form a gentle saddle at an elevation of about 17,230 ft. Thanks to my impromptu climb of the morning I was, however, reaching the limit of my endurance. Cotrina, in the middle of the rope, could not learn to keep it clear of the snow, thus making my job as leader unnecessarily arduous. Our first view across the col was disappointing. A heavy storm was rapidly approaching from the S. E. In view of this threat and of my loss of energy we decided to beat a hasty retreat without attempting either of the easy snow peaks which flanked the saddle. So at 4 o'clock, after only fifteen minutes on the ridge, we began retracing our steps. Part way down the glacier the storm caught us. Heavy hail pounded us all the way back to camp, which we reached shortly before six.

The return trip to Goyllarisquisga occupied two full days, days of cloud and rain. We returned by Pampamachay, S. of Lauricocha, a slightly longer but less difficult trail. At Pampamachay, during a lull in the bad weather, we were blessed with a splendid view of the Cordillera de Huayhuash, dominated by Nevado Yerupajá about 20 km. to the N. W. The E. face of Yerupajá rises more than 8000 ft. above the lake, Carhuacocha, in the valley at its foot. The E. walls of all the Yerupajá group are precipitous, avalanche-swept, and in spite of their steepness, snow-covered. The range has been thoroughly explored by a German party led by Dr. Hans Kinzl in 1936.⁴ Two peaks over 6000 m. (Siulá and Rassac) were climbed by the party. The ascents of the unclimbed peaks will present real difficulty not only because of corniced, knife-edged ridges and avalanche-swept faces, but also because of the inaccessibility of the range as a whole.

The first night of the return trip we camped at the Inca road. The second day we followed the route by which we had entered the mountains, through Pillao, Michivilca, Uspachaca and Chacayan to Goyllarisquisga, arriving about 10 P.M., June 6th. As there was no passenger train the next morning we rode the cab of a

³ Probably it was these cliffs that prevented Miss Annie Peck from reaching the top of the ridge in 1906. *A Search for the Apex of America*, New York, 1911, 285-293.

⁴ Hans Kinzl: *Die Kordillere von Huayhuash (Peru)*; *Zeit. des Deutschen und Österreichischen Alpenverein*, Stuttgart, 1937. Also see map *Cordillera de Huayhuash (Peru)* published by the Deutscher Alpenverein late in 1939. The scale is 1:50,000.

above sea level.⁵ After my first glimpse of the mountain, known by the Quechua name of "Huagoruncho," I felt an irresistible desire to go to it, to explore its flanks and, if possible, to climb it.

Accordingly, on July 28th, 1938, a party of four including Mr. and Mrs. Paul Long, my wife and myself, set out, taking advantage of a three day holiday celebrating the anniversary of Peru's independence. The journey to Huagoruncho is made from Cerro de Pasco by taking train or car to Tambo del Sol; thence proceeding by narrow gauge railroad to Huachón. We left Cerro on the 6.50 A.M. train and one hour later were at Tambo del Sol transferring without delay to an "autocarril" (a Ford adapted to run on railroad tracks). The ninety-minute trip to Huachón, crossing the unspectacular divide between the drainage basins of the Mantaro and Perené Rivers, becomes of interest when descending the steep-sided valley of the Rio Huachón. In a series of switch-backs and sharp curves the railway drops 2000 ft. down a slope of approximately 45°. The railway grade is about 4½%.

At Huachón, a pleasant mining town at an elevation of 11,120 ft., officials of the Compañía Minera Nacional made every effort to expedite our trip. Mules were furnished us and we were offered the use of the company's cabin at Tarata, a small mine near the base of Huagoruncho. By noon we were able to begin the ride to Tarata, an easy journey of three hours. Soon after starting from Huachón heavy clouds, which had been shrouding our hopes of a successful trip, began to lift. For the following two days the weather was perfect.

Huagoruncho is hidden from view until one is almost at its foot due to the fact that the trail circles around the S. side of a large moraine. The peak bursts upon one suddenly, overwhelmingly magnificent, towering 5000 ft. above yet only 4 km. away. The first view is of the sheer S. face, with steep corniced ridges sweeping the eye upward at either hand to an amazing pinnacle of ice crowning the summit.

Exhilarated and deeply impressed by the sight of such a powerful adversary, we pushed on to Tarata. Here we found a concrete cabin admirably, even luxuriously, adapted to use as a base camp. The cabin has a sleeping room with two beds, a dining room warmed by a small stove, and another room which served as an office when

⁵ Miller, *op. cit.*, 35.

the small mine nearby was active, but which now is an excellent repository for equipment. With a little rearrangement the cabin could accommodate eight people.

On the morning of the second day we started for the mountain well after daybreak, having spent some time planning routes. The terrain was entirely unfamiliar to all of us. We decided to approach the peak by the S. W. ridge. The route lay first along rocky buttresses beneath glaciers hanging on the E. slope of the Jancahuay-Incatana ridge. Going was easy, over glacier-polished granite slabs, and no rope was necessary. We climbed slowly, not wishing to attain an elevation higher than the saddle between Incatana and Huagoruncho. Approaching this col we were able to choose between two routes, one over rock, the other over a small triangular glacier on the S. side of the col. Due to inexperience with snow climbing of the majority of the party we chose the glacier route for the sake of practice. A few steps were necessary at the edge of the ice; otherwise the going was without difficulty. The snow, even at midday, was of good consistency except where it was banked on steeper slopes. Crevasses were deep and wide, yet easily crossed by strong snow bridges similar to those on the Raura Glacier.

We reached the summit of the saddle about noon and estimated its elevation at about 15,800 ft., using a clinometer and an estimated distance from Tarata, the elevation of which is known to be about 14,300 ft. After lunch my wife and I pushed on up the S. W. ridge to get a better view of the S. face. This is a tremendous wall of ice and snow-coated rock which drops from the summit (18,860 ft.) to a little lake at the head of the Quebrada de Huagoruncho, at an estimated elevation of 13,500 ft. An approximate clinometer reading on this face is between 65° and 70° . It is overhung by a large ice cornice from which avalanches occasionally break, sweeping the whole face. At a vantage point some 500 ft. above the col of the triangular glacier we halted.

From here the S. face confronted us directly, awesome in its verticality. Ahead of us our ridge abruptly steepened, rising rapidly through a series of fluted cornices and intricate rock pitches to its junction with the S. E. ridge. No feasible route up the S. W. ridge is evident. The S. E. ridge, on the other hand, looks possible, but was totally unattainable from our position. The W. ridge presents great difficulties in the form of extremely unstable looking cornices. The lower end of the W. ridge is a sharp saddle

at an elevation of about 16,500 ft. From there it rises abruptly again to the ragged crest of another peak, unnamed, but called for convenience Peak A on the accompanying map. This peak will probably be moderately difficult to climb. The S. face is covered with a series of steep glaciers and icefalls. The N. side is likewise glacier-hung, but not so steeply and the best route apparently lies up this N. glacier to the N. W. arête and along the arête to the summit.

At about 2.30 in the afternoon we acknowledged the inadvisability of proceeding farther and began retracing our steps down the ridge to the col and thence over the triangular glacier to its foot. From here we dropped down over easy ledges and couloirs to a lake nestled between moraines below Tarata.

Once back at the cabin we gazed upon the mountain, first in the soft light of late afternoon, then in the glorious rose glow of a tropical sunset. Could it be climbed?

The following day it was necessary to return to Cerro. We sent our packs back to Huachón by mule, then proceeded afoot to a pass just below the S. side of Jancahuay. There we bade good-bye to Huagoruncho and dropped down a steep trail into the Quebrada de Sajshatambo, which leads due south to Huachón. This trail is impassable to mules or horses but is easy afoot.

We were again received in Huachón in most friendly fashion, this time with drinks and a large dinner. After a short visit to the concentrating plant we again boarded the autocarril and reached Tambo del Sol in time to catch the evening train to Cerro de Pasco.

Our second trip to Huagoruncho was somewhat in the nature of an experiment. We went during the three-day Carnival holiday, February 4th to 6th, 1940, primarily to observe snow and weather conditions in the sierras at the height of the rainy season. Before starting we had little reason to be optimistic about the weather. Interrupted by only a few clear days, rain, hail, and snow had prevailed at Cerro for several months.

In spite of such an inauspicious prelude, a party of four (Scott Gordon, Mike Reinhardt, my wife and myself) left Cerro after work on Saturday, February 3rd. At Tambo del Sol we were met by the autocarril as before, and were again hospitably received at Huachón, some time after dark.

The next morning we left Huachón in a slow, steady rain, following the Tallenga trail to Tarata. This time the brilliant, spec-

tacular first view of the mountain was denied us. A gentle rain and low clouds fogged even the nearest peaks. We arrived at Tarata about noon, waited half an hour for the pack animals and after a light lunch started for the S. glacier, the Flores de la Nieve. The rain had somewhat diminished in intensity and alternated with flurries of snow. We passed between the two lakes below Tarata and then circled the larger, lower lake, with the Flores de la Nieve perched well above us. Heavy clouds hung just about at the level of the lowest ice. From the edge of the lake we climbed diagonally upward over talus and soon entered a couloir which afforded an easy approach to the E. end of the glacier. Above the couloir we climbed over polished slabs to the edge of the ice and the edge of the clouds.

A route onto the glacier which necessitated no step-cutting was found at once. We decided to go across the ice a short distance to get an idea of conditions we should meet the following day. We found the snow rather difficult, heavy going. On level stretches some three feet of the current season's snow had accumulated, the upper foot of which was loose and heavy. In places we would sink well above the knees and flounder helplessly. Danger from hidden crevasses was considerable.

At 4.30 P.M., in the midst of a heavy snowstorm, having been able to advance only about half a kilometer over the unfamiliar glacier, we turned around and headed for Tarata.

The next morning the weather was unchanged. Not once had we seen the top or even the flanks of Huagoruncho. However, we left Tarata soon after seven, retracing our route of the previous day up onto the glacier. About eight inches of new snow had fallen during the night. As before, clouds were low and progress on the ice was consequently slow. To guide our return we stuck wands of brush, gathered near Huachón, into the snow at short intervals. Shortly before noon further climbing became distinctly dangerous due to inability to see crevasses even at close range. We halted for lunch and waited, hoping for a break in the clouds which would permit us to pick a route to the summit of the long S. E. ridge. After some time the clouds did lift a bit. We crossed the upper edge of the glacier close to a bergschrund below a vertical rock wall and approached the ridge at a triangle of snow to the N. of this buttress. The final pitch below the ridge was steep, approximately 55° , and was topped by a soft snow cornice through

which a passage had to be broken. In these upper pitches going was very slow due to the extremely soft snow, into which we sunk up to our waists at every step. From our difficulties a technique new to us was evolved. It was found that reasonable progress could be made by crawling if care were taken to keep the whole shanks from knee to toe and at least one arm from hand to elbow constantly parallel to the surface. Purchase to prevent sliding was obtained by sinking the ice-axe to the hilt at each forward movement. To avert the all too obvious danger of starting an avalanche, we climbed well separated and directly up the slope.

At about 1.30 we succeeded in forcing our way through the final cornice and were on the long lower reach of the S. E. ridge. We were favored with occasional gaps in the clouds, through which we glimpsed the serrate E. ridge of Huagoruncho up to its junction with the central mass of the mountain. Far below us to the E. we momentarily saw a somber lake encircled by wet, black cliffs above which hung white fangs of ice. At intervals avalanches broke loose from the lower edges of these glaciers and crashed over the cliffs to the talus slopes by the lake. For one brief moment we caught sight of the S. E. ridge of Huagoruncho, extending from our position almost straight toward the summit. It is steep, exposed, and badly corniced and yet affords the most feasible route to the summit. After this momentary but revealing view a bitter wind laden with hard fine snow forced us from our exposed position. To walk down the steep snow slopes proved to be almost as hard as climbing up them. The only solution was to slide supine, using the ice-axe for control. Halfway down the glacier the clouds parted again, and we had our first and last near view of the whole of Huagoruncho. We scanned the ridges with powerful glasses only to find one obstacle after another blocking each suggested route. It is a peak of crystal guarded by sheer facets of ice and rock, close yet immeasurably distant, to be viewed with awe and humility not only by the humble folk of the valley but by us as well who have the temerity to believe it can be climbed.

Again the majestic peak disappeared in the clouds. We continued the descent of the glacier and the slabs below it, thoroughly wet in the steady rain that had set in. The dry cabin, a strong bracer of whiskey, and hot coffee were needless to say most welcome.

The third day, as on our previous trip, we walked the valley of the Sajshatambo to Huachón and returned to Cerro by auto-carril and car. Still swathed in clouds, Huagoruncho, unscathed, defied the world.

APPENDIX

In the following pages available data concerning the major mountain groups of Peru are assembled. The information has been compiled by personal observation, by reference to publications and by discussions with other climbers; it is necessarily incomplete.

The difficulty of any ascent over 17,000 ft. in Peru will naturally vary greatly according to the season. The more difficult climbs obviously can be attempted only under ideal weather conditions. These are most likely to be encountered during the first half of August, at the height of the dry season. Even then, however, good weather cannot be counted on. Throughout the high cordilleras and pampas of Peru an afternoon storm is the usual occurrence even during the dry season. In the high sierras these storms bring snow, fine hail, and a piercing wind.

Climbs of any difficulty are absolutely impossible during the rainy season, which extends from the end of September to the middle of May. This is due to the low cloud ceiling (about 15,000 or 15,500 ft.) and to the almost continual snowfall in the higher regions, with consequent serious danger of avalanches. Moreover many areas are inaccessible due to washed-out trails and impassable swamps.

In this appendix the mountains of Peru are arranged geographically without regard for difficulty. They are discussed by groups or ranges, within any one of which climbs may vary from easy to impossible.

I. CORDILLERA BLANCA

This is a long group of snow and ice covered peaks, many of them over 20,000 ft. high. The range extends in a southeasterly direction from latitude $8\frac{1}{2}^{\circ}$ to latitude 10° S., a length of about 170 km. It runs parallel to and E. of the great valley of the Rio Santa. The top of Huascarán, 22,206 ft., is exactly $8\frac{1}{2}$ miles from Mancos, the elevation of which is about 8500 ft., giving a difference in elevation of 13,700 ft.

Maps of the Cordillera Blanca.—The best map is that accompanying "Die Weisse Kordillere," by Philip Borchers. The scale

is 1:100,000. It covers the northern two-thirds of the range. Other maps, good for the habited valleys but lacking detail in the high mountain areas are the Huarás and Recuay sheets of the Servicio Geográfico del Ejército del Perú; 1934. Their scale is 1:200,000.

Climbs.—For details of all 1932 climbs the reader is referred to the book by Borchers.⁶ A summary of climbs made in 1932, 1936, and 1939 was recently made by Kinzl.⁷

The first climb in the region was by Miss Annie Peck, who claimed to have reached the N. summit of Huascarán in 1908.⁸ The later German expeditions have questioned the veracity of this claim, but for want of conclusive proof to the contrary Miss Peck's word must be taken at face value.

The following peaks were climbed in 1932 by the German party led by Philip Borchers and including climbers H. Hoerlin, H. Hein, and E. Schneider in addition to three non-climbing members: Huascarán, S. summit (6768 m.), the highest mountain in Peru. Chopicalqui (6400 m.). Huando (6395 m.). Artesonraju (6025 m.). Nevado de Copa (6203 m.). This was used as a base for physical observations. All these peaks lie in the N. and central portion of the range.

In 1936 the following peaks at the N. of the range were climbed by the Germans E. Schneider and A. Awerzger: Quitoraju (6100 m.). Pucajirca (6050 m.). Nevado Champará (5748 m.).

In 1939 another German party, including H. Schweizer, W. Brecht, K. Schmidt, and S. Rohrer made first ascents of Contrahierbas (6036 m.). Palcaraju (6150 m.). Ranrapalca (6165 m.). Ticliaraju (6050 m.). Pamparaju (6300 m.). Hualcán (6150 m.). Huascarán, N. summit (6655 m.). Second ascent.

Although so many peaks (14) more than 6000 m. in height have already been climbed, many more remain untouched, as can be seen by reference to the 1935 map. It is the opinion of Dr. Kinzl and Dr. Brecht that at least one peak in the range is unclimbable.

⁶ Borchers, P., *Die Weisse Kordillere*, Berlin, 1935. Map in separate folder.

⁷ Kinzl, H., "Las tres expediciones del 'Deutscher Alpenverein' a las Cordilleras Blancas," *Boletín del Museo de Historia Natural 'Javier Prado'*, iv, No. 12, 3-24, 1940.

⁸ Peck, A. N., *A Search for the Apex of America*. New York, 1911.

The range is undoubtedly a magnificent area for a prolonged expedition during which numerous difficult first ascents could be made.

Means of Access.—The peaks of the Cordillera Blanca are easily reached from the valley of the Santa River. The towns of Yungay and Huarás apparently make the best points of departure. The easiest way to the Santa Valley is by railway from Chimbote on the coast; a good highway joins Chimbote to Lima. A rather poor automobile road leads from the coast to Huarás, crossing the high pass over the Cordillera Negra.

II. CORDILLERA DE HUAYHUASH

This spectacular, compact group of mountains lies S. E. of and essentially parallel to the Cordillera Blanca. The high peaks are limited to a zone only about 25 km. long, the center of which is at about $10\frac{1}{4}^{\circ}$ S. latitude.

Map of the Cordillera de Huayhuash.—An excellent map of this range has been compiled by Dr. Hans Kinzl and published by the Deutscher Alpenverein. The scale is 1:50,000. Details of valley, peak, glacier, and moraine is remarkably good. The date of the map is 1939.

*Climbs.*⁹—Nevado Yerupajá, the highest peak in the range, has never been climbed, though it was attempted twice in 1936 by the Germans Schneider and Awerzger. The mountain is the second highest in Peru, with an elevation of 6634 m. Its breath-taking, sheer, ice-covered E. face rises 8100 ft. above Carhuacocha. In 1936 Schneider and Awerzger camped in the saddle between Siulá and Yerupajá and attempted the steep and badly corniced S. ridge on July 28th, but were unable to advance far. Later in the season an attempt was made on the W. ridge. On August 8th, from a camp on the glacier W. of Yerupajá at an elevation close to 5600 m., the W. ridge was climbed nearly up to the junction with the S. ridge, at an elevation of about 6000 m. As Awerzger was not well they had to retreat. This ridge appeared to offer the only possible route to the summit.

The peak next S. of Yerupajá, named Nevado Siulá, was climbed by Awerzger and Schneider on the day of their first attempt on Yerupajá. The elevation of Siulá is 6356 m. The mountain was climbed by its N. ridge, with occasional spectacular traverses

⁹ Kinzl, H., "Die Kordillere von Huayhuash (Peru)," *Zeit. des Deutschen und Österreichischen Alpenverein*, Stuttgart, 1937, 1-20.

on both the E. and W. faces. The summit was approached by a steep climb up ice on the E. face. The climbers were unable to approach to within more than a few meters of the summit itself because it consisted of a thin cornice overhanging the tremendous E. wall of the mountain. To stand on top would have been suicide. This N. ridge appears to be the only practicable route to the top of Siulá.

Nevado Rassac (6040 m.) was climbed by Schneider and his porter Faustino after the second unsuccessful attempt on Yerupajá. The ascent was by the E. ridge and was comparatively easy.

Of the other peaks of the Cordillera de Huayhuash, Sarapo (6143 m.) to the S., and Nevado Rondoy (5883 m.) will present few difficulties. Yerupajá Chico (6121 m.), next N. of Yerupajá, will probably be climbed by its S. ridge. Apparently the chief difficulty will be in reaching the col between Yerupajá and Yerupajá Chico.

Jirishanca (6126 m.), next N. of Yerupajá Chico, is a spectacular, pointed mountain up which there is no obvious route. Perhaps it is unclimbable.

Means of Access.—The Cordillera de Huayhuash is one of the most inaccessible mountain groups of Peru. It may be reached from Ticapampa, a small town on the Lima-Huarás road near the head of the Santa Valley. From here a trail leads over the Toca Pass through Chuquián to Pacllón, whence the W. side of the range is accessible. Three or four days are necessary for the trip. Another route starts at Goyllarisquisga, end of a branch of the Cerro de Pasco Railway. A trail from "Goyllar" leads to Lauricocha, up the Marañón to Antacallanca and then northward over a pass to the Rio Nupe. From Huayhuash on the Nupe a good trail goes northward to Carhuacocha, at the foot of the E. face of the range. This route will take from three to five days, depending upon conditions.

III. CORDILLERA DE RAURA

This range lies a few miles S. E. of the Cordillera de Huayhuash and is separated from the latter by a pronounced valley and low pass. It is less spectacular and less of a unit than the Cordillera de Huayhuash. Actually the Cordillera de Raura may be divided into two parts, that W. of the Oyón-Lauricocha trail being known as the Gaico Range, and that E. of the trail as the Raura

Range. Unlike the peaks of the Cordillera Blanca and the Cordillera de Huayhuash, the rock is here not granite but, rather, well stratified limestone and hard shales. Dikes are, however, fairly abundant.

Map.—The only map of the region is "A Topographical Survey of the sources of the Marañón and Mantaro Rivers," by O. M. Miller and K. M. Hodgson, *Geographical Review*, 1929. The scale is 1:200,000. This is a fairly good map of the central parts of the range, but entirely lacks information in the peripheral areas.

Climbs.—Cerro Raura, a twin peak whose highest point is 5717 m., is the highest peak of the Cordillera de Raura. It is a round-topped mountain with a long glacier on its N. slope. No attempt has been made to climb the summit, but the N. E. ridge has been stormed twice. In 1906 Miss Annie Peck made a partial ascent of the N. glacier. In July, 1939, J. H. Moses and W. F. Jenks ascended the glacier to the N. E. ridge but proceeded no farther. The climb to the summit should not be difficult, following the N. glacier and N. E. ridge.

A peak the elevation of which is 5703 m. and which lies some 3 km. S. W. of Laguna Santa Ana is probably more difficult than Cerro Raura. A logical route appears to be up the glacier W. of Laguna Santa Ana to the N. ridge and thence up the ridge to the summit. This climb has never been attempted.

Peak No. 10 (5539 m.) is a prominent rock and snow peak centrally located in the Gaico Range. It is unclimbed. The best route appears to be up the E. ridge. The lower peak, E. of Peak No. 10 and separated from the E. ridge of the latter by a glacier-covered saddle, was climbed by its rocky S. face to within 300 ft. of the summit in June, 1939, by W. F. Jenks.

Means of Access.—The Cordillera de Raura is most easily reached by a two-day muleback ride from Goyllarisquisga, at the end of a spur of the Cerro de Pasco Railway. One of the best trails, which goes through Yanahuanca to Anamaray Pass, leads one close to the S. side of Cerro Raura.

IV. TUNSHU RANGE

The Tunshu Range is a fairly compact group of mountains with its center at about 11° 55' S. latitude and 76° W. longitude, along the continental divide. Though none of its peaks rises higher

than 19,000 ft., the range is an interesting climbing center, one major peak of which has not been climbed.

Map.—The only map of the region of any degree of accuracy is an unpublished hacienda map in the files of the Cerro de Pasco Copper Corporation.

Climbs.—Tunshu, the second highest mountain of the range, is 5707 m. in elevation. It is the easternmost peak and has several subsidiary summits. The first serious attempt on it was by T. A. Dodge of Los Angeles, Calif., and his porter, D. Dionisio, in September, 1938. They followed the S. E. ridge to a point about 500 ft. below the summit, and were then stopped by a steep, narrow, corniced arête. In August, 1939, a party comprising Hans Schweizer and Siegfried Rohrer, Germans, and Jacob Diener, Swiss, attempted the E. ridge but were stopped by poor snow conditions. The next day, August 29th, they were about to attempt the S. E. ridge when an avalanche, starting on a slope later measured as 34°, swept over them. All three were instantly killed. This tragedy emphasizes the subtle dangers of high Andean climbing near the Equator.

The best route to the summit of Tunshu appears to be this S. E. ridge. The climb will be interesting and difficult, but not comparable in difficulty to Huagoruncho or the high peaks of the Cordillera de Huayhuash.

Two other peaks, Pachancoto and Tullujuto are worthy of particular mention. Pachancoto (5394 m.) is the mountain next W. of Tunshu. It is covered on its S. side by an exceptionally large glacier. The ascent was attempted for the first time in September, 1938, by T. A. Dodge and Scott Gordon, a Canadian. They tried unsuccessfully to follow the E. ridge. A few days later Dodge and his porter, Dionisio, climbed Pachancoto by its N. face.

Tullujuto is a twin peak S. W. of Pachancoto. The N. summit (5699 m.) was climbed by Dodge and Dionisio in 1936. It is an easy climb. The higher, much more difficult S. summit (5752 m.) was first climbed in September, 1938, by Dodge. The upper part was a very exposed ridge climb which Dodge made alone, leaving his porter 500 ft. below the summit.

Two other peaks in the Tunshu Group, Tatajaico (5591 m.) and Jija (5513 m.) are over 18,000 ft. in elevation, but offer no

great difficulties. To the best of my knowledge neither has been climbed.

Means of Access.—From Yauli, on the Ferrocarril Central del Perú an auto road climbs to San Cristobal, whence it is only a five- or six-hour muleback ride to the Tunshu Range. An alternate route is from Pachacayo (also on the Ferrocarril Central) to Cochabambas, by muleback. Cochabambas is a hacienda S. E. of the range. This is a longer but more convenient route.

V. HUAGORUNCHO MASSIF

The Nevados de Huagoruncho are a compact group of granite peaks, largely covered with ice and snow, which dominate the eastern cordillera of Peru. The center of the small massif is at $10^{\circ} 32'$ S. latitude and $75^{\circ} 55'$ W. longitude. The range is of interest primarily because of its prominent high peak, Huagoruncho, which towers so high over the surrounding mountains that it is clearly visible from high points in the Tunshu Range, 170 km. away.

Map.—There has been no map of this region published prior to the one appearing with this article. The accompanying map is compiled chiefly from a topographic map in the files of the Cerro de Pasco Copper Corporation, but with many additions and corrections from my own observations.

Climbs.—Huagoruncho is a steep pyramidal peak with an elevation of 5748 m. It is higher than any other mountain of the eastern cordillera except perhaps one or two summits in the Lamsontai Group, far to the S. The peak has never been climbed, and, if it ever is successfully stormed, will prove to be exceedingly difficult. A reconnaissance trip a short way up the S. W. ridge was made in July, 1938, by P. W. Long, W. F. Jenks, and their wives. Another such trip was made in February, 1940, at the height of the wet season, by E. Reinhardt, Scott Gordon, W. F. Jenks, and Mrs. Jenks, this time to the lower part of the S. E. ridge. All ridges are badly corniced and steep; the W. ridge would be especially dangerous for this reason. The chief difficulty with the S. W., S. E., and E. ridges lies in steep, extremely exposed ice cliffs near the summit. The most likely route, however, appears to be the S. E. ridge. Due to constant avalanche danger all face climbs are out of the question.

Peak A (see map) is a ragged, heavily glaciated mountain to the W. of Huagoruncho and joined to the latter by a col and the steep W. ridge. The elevation is estimated at about 5300 m. The peak has never been climbed and will be moderately difficult. Although the S. W. ridge looks possible, a better approach for a climb to the summit appears to be by the N. W. ridge. I have, however, never observed the latter route close at hand.

Incatana (5122 m.) and Jancahuay (5160 m.) are the high points on a ridge extending S. from the col at the foot of the S. W. ridge of Huagoruncho to a point just W. of Tarata. These summits were triangulated in 1927 by Miller, working from Cerro de Pasco.¹⁰ Jancahuay has been climbed by a native caretaker at the Tarata mine; Incatana is, to the best of my knowledge, unclimbed. Both should be fairly easy, although the final rock pitch on Incatana may present some difficulty.

Means of Access.—From Tambo del Sol, a station on the Cerro de Pasco Railway, a narrow gauge railway leads to Huachón. Here mules are obtained for the three-hour ride to Tarata, in the heart of the massif.

VI. LASONTAI GROUP

This is a small group of snow and ice covered peaks only an hour's drive N. E. of Huancayo, following the road up the Rio Acopalca. Although the range is easily visible from the road, little is known about it. According to H. Kinzl, who spent some time in the range in 1939, the highest peaks rise to elevations between 5700 and 5800 m. Judging from photographs, the Lasontai Group deserves much more attention from climbers. There is no map of the range.

VII. NEVADO COROPUNO

This is a mountain totally unlike all the rest which have been mentioned, as it is a high, massive peak of volcanic origin. All information I have been able to collect shows that it has not been climbed. Its elevation is 6614 m., one of the high points in Peru. It is located at 15° 31' S. latitude and 72° 42' W. longitude. It is certainly worthy of the attention of climbers.

¹⁰ Miller, O. M., *op. cit.*, 34.