and then, with a shout of farewell, Josele and I turned southward. For some time we had nothing but a trudge knee-deep in snow till we arrived at the point where the southern ridge of the Thurnerkamp sinks to the level of the snow-field we were in. Here Josele preferred to cross the ridge and descend to the next glacier to the east, viz. that at the head of the Weissenbach Thal, and so gain the route of the Trattenbach Sattel, a course to which I had no objection, as I thereby obtained a complete view of both sides of the latter pass. To reach this glacier, however, we had to descend a long snow slope, and thereby had some additional excitement; for the instant Josele set his foot on it, the whole of the surface snow broke away, and thundered down in a tremendous avalanche. This turned to our favour, for the old snow was exposed, and, jumping into the track of the avalanche, we descended swiftly behind it in perfect security to the lower glacier. By keeping too much to the right, under some low cliffs, we ran a little danger of falling stones; but this could have been easily avoided by more care. The end of the glacier was then reached without any difficulty, and we had a long, apparently endless, but very beautiful, descent down the right bank of the valley to the village of Weissenbach. Thence a pleasant walk took us to Taufers, in the Ahren Thal, an entrance to Brunecken, where I parted from Josele. The evening train carried me on to Botzen, in which place, after a day or two of bad weather on the Tuxer Gebirge, Taylor and Hudson rejoined me.

So ended our Zillerthal journey; in which, from first to last, there had been nothing but pleasure. The scenery is often extremely beautiful, and the natives kind; the musician or student of folk-lore can find ample opportunity for investigation and profit; and, last, but not least, except a few members of the German Alpine Club, nobody goes there.

The Ampezzo-Cadore-Auronzo Passes.

By M. Holzmann.

HAVING in a former paper* given an account of the passes in the district N. of the valley of Auronzo, I now propose to describe those on its S. side. The area may be divided into three groups, viz., the Croda Malcora group to the W., the Marmarole group to the E., and the Antelao group to the S. Whilst no doubts can arise regarding the

* See Alpine Journal, vol. vii. p. 9.

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limits of the latter, different lines of separation may be drawn between the two former. Although I fully agree with Mr. Ball that it is not desirable to abandon the name of Croda Malcora as the collective designation for the vast mass of rock to the W. of the Monti Marmarole, I cannot follow him in taking the Forcella Grande as the dividing line of the two groups. The inhabitants of the valley of Auronzo as well as those on the S. side of the chain generally look upon the Monti Meduce as the western termination of the Marmarole range. Moreover, a careful examination of the structure of this region has led me to take a pass which I propose to call Forcella di Venodel as the proper orographical line of separation. On the N. side that branch of the Val di San Vito, which runs up to the Forcella Grande, undoubtedly cuts most deeply into the mass, but it ends in an undulating plateau of considerable extent and its head might more correctly be placed to the N. of the rocks which on some maps are called Cima Melcora, than at their SE. corner, although it happens that a passage can be effected only at the latter place. There is no feature on the S. face which would point to the Forcella Grande as the true line of separation. By following, however, the short eastern branch of the Val di San Vito, locally called Val de' Bestioï, to its head, the crest of the ridge is struck at a deep though narrow depression which coincides with the upper end of the Val di Venodel on the S. side.

VI.—The Croda Malcora Group.

Starting from Cortina its boundary follows for 1¾ hrs. the road through Zuel, Aqua buona, and Chiapuzzo to San Vito. Here it turns to the E. through the hamlet of Costa and up the Val Rusecco. The track, however, keeps at some distance from the right bank of the torrent, a little N. of E. over the broad expanse of débris, turns after 1½ hr. SE. to cross the low ridge which runs from E. to W. on the N. side of the Antelao, and, resuming its eastern course, reaches in ¼ hr.

1. *The Forcella Piccola*, 2,140 m. = 7,021 ft.* The track

* My attention having been drawn to a passage in the footnote on page 12 of my former paper with regard to differences of temperature which seems to refer only to the temperature of the instrument, I will here add that the error caused by the difference of temperature in the column of air between two stations has been deliberately ignored. I have done so principally on account of the difficulty experienced by an ordinary traveller in making trustworthy observations of the tempera-

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rapidly descends into Val Oten, keeps at first on the left bank of the watercourse, passes to the right on approaching more level ground, and arrives in 50 min. opposite to the opening of Val Venodel. Quitting the track which runs down Val Oten the boundary now follows Val Venodel up whose left bank leads a footpath which afterwards crosses to the right bank. Higher up the path disappears, the way ascends a slope of débris, and finally a narrow, chimney-like couloir which brings in 2 hrs. to

2. *The Forcella di Venodel* (?), 2,311 m.=7,582 ft., a deep indentation of the ridge between the Meduce and Col Negro. The boundary line on the N. side of the pass follows the watercourse of the Val de' Bestioï to its junction with the Val di San Vito. The pedestrian, however, having descended the slope of débris partly covered with snow, has to follow a faintly marked path which appears on the left side of the ravine where the barren débris begins to show signs of vegetation. It runs close under the rocks of the projecting spur of Col Negro and often disappears after having entered the brushwood and forest. Here it seems best to keep as close as possible to the edge of the rocks on the left bank of the watercourse. When the Corno del Doge appears in sight on the left hand it is advisable to turn westward in order to strike after about 1¼ hr. into the track which comes down from the Forcella Grande. Shortly after, the floor of the Val di San Vito is gained, the track passes through the splendid forest of the Vizza di San Marco, crosses after some time to the left side of the stream and immediately also of the Anziei, where it strikes after ½ hr. into the road to the Mesurina lake, about 5 min. W. of the Casa di San Marco. The line now follows that road westward for ½ hr., crosses the Aqua Mesurina and reaches in ¼ hr. Val Buona. Some time may be saved by crossing to the left bank of the stream as soon as the level part of the Val di San Vito is reached, and by proceeding through the forest, at first in N. direction, afterwards wheeling round to the W.; a path is met which runs up the right bank of the Anziei, crosses the Rio di Sorapis, and leads to the huts of Val Buona whence the circuit is completed by crossing the Tre Croci Pass in 2 hrs. to Cortina.

3A. *The Forcella Grande*, 2,265 m.=7,431 ft., may be approached from the S. side by three different routes. The tra-

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ture of the air at high altitudes, partly also because the error due to this neglect is generally compensated by another which is owing to a certain want of elasticity in aneroids.

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veller coming from Cortina will quit the road after 1½ hr., just before reaching Chiapuzzo, and turn nearly due E. up to the shoulder of the Col del Prato di Mason (1,759 m.=5,771 ft.), a low spur which projects SW. towards the Ampezzo road. There the path turns N., zigzags up a shallow furrow filled with fine débris, and brings in 1¼ hr. to the summit of the pass. Starting from San Vito the traveller may either advance straight towards NNE., up the steep declivity of La Rotta to the Col del Prato di Mason, or take a somewhat longer but less steep course by following for some time the track to the Forcella Piccola, turning after 1 hr. to NW., and ascending by a path which leads obliquely up the S. slope of Monte Bel Pra and joins the other track a little below the Forcella. In either case the summit is gained in less than 2 hrs. from San Vito. The descent goes at first NNW. over the gently sloping plateau, wheels round the W. and N. sides of the Torre della Forcella Grande, bends NE. and passes on the right bank of the watercourse through the gate formed by the Col del Fuoco and Corno del Doge. Under the N. face of the latter the track turns for a short time due E., keeping close to the rocks, winds through a thicket of brushwood and high grass on resuming a northern direction, and reaches at last through the Vizza di San Marco in 2½ hrs. the Casa di San Marco.

3B. *The Forcella del Monte Bel Pra* (?), 2,380 m.=7,809 ft., offers only a slight variation to the route of the Forcella Grande from the summit of which it may be reached in ¼ hr. by ascending the slope on its E. side. The descent leads SE., down a very steep furrow which can only be entered by passing under a gigantic boulder fallen into the cleft. Although it is often possible to slide down with the moving mass of grava, 40 min. are required to reach the foot of the furrow. A path is soon found which, running SW., brings in 40 min. more to San Vito. On reversing the course probably not less than 2½ hrs. will be necessary to reach the pass. Although the name of Monte Bel Pra is on most maps given to the Punta del Val di Mezzo, it really belongs only to the hill whose pasture-covered southern slope lies immediately to the E. of the Col del Prato di Mason.

4. *The Forcella del Val di Mezzo*, 2,472 m.=8,111 ft., was first pointed out to me by a man, named Antonio di Lotto Nadalino, who seems to possess the most intimate knowledge of the country in the neighbourhood of San Vito. Starting from the latter place the way follows for 1 hr. 25 min. the track to the Forcella Piccola. It then turns N. and ascends the slope towards the precipitous rocks which face the Antelao. After

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¾ hr., on reaching the point where the débris touches the rocks, the traveller has to face to the W. in order to ascend a ledge which in several places slopes steeply off the rocks and turns in ¼ hr. round a projecting corner towards NW. The ledge then becomes considerably broader and descends rather steeply. After another ¼ hr., before the lower end of the ledge is reached, it is necessary to face NE., and to climb the rocks which become easier at every step. The summit of the pass, on the crest of the ridge S. of the Punta del Val di Mezzo, is reached in ¾ hr. On the E. side below the pass lies the extensive rock-plateau of the upper shelf of Val di Mezzo, sometimes called Val di Col Negro, the portals at the N. end of the oval being formed by the Col Negro and the Corno del Doge, the latter rising at the N. end of the ridge whose highest peak is the Punta del Val di Mezzo. The descent leads towards that gate over two rock barriers which force the drainage of the plateau to seek a subterraneous course. As a direct descent into Val di San Vito is impracticable, the traveller has, after 25 min., a choice of two routes, the one leading over a projecting buttress of Col Negro into the Val de' Bestioï, and thence following the way from the Forcella di Venodel; the other by a well-marked path on a rather narrow ledge round the N. face of the Corno del Doge. This path turns after 35 min. towards SSW., and joins in 5 min. more the track from the Forcella Grande, by which the Casa di San Marco can be reached in 1½ hr.

5. *The Cengia del Banco Pass*, 2,582 m.=8,472 ft., is without doubt the most interesting pass of the whole group. A track, not easily found without a local guide, leads from Val Buona SSW. through the forest, and ascends steeply on the left bank of the glen in 1¼ hr., to the Lago di Sorapis, at the opening of the upper Val Sorapis. Thence the course mounts through a wilderness of rocks and débris nearly due W. to the higher shelf of the Tondi di Sorapis. Instead of moving straight up to the lowest depression in the ridge at the head of this hollow, which is 160 mètres lower than the point where a passage can be effected, the traveller has to bear a little more to the S., and to advance obliquely up the slope of débris until the foot of an irregular ledge at the N. base of the Foppa di Mathia is reached in 1 hr. 10 min., close to where the water trickles down from the accumulated snow above. An easy ascent of about 20 min. brings to the edge of the formidable precipices which overhang the valley of the Boita. The ledge descends along these precipices in the direction of San Vito, at first with a slight fall, and is succeeded by some short slopes of

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débris alternating with easy rocks. After ½ hr. the way turns to the right, and follows another ledge in the direction of Cortina, until, in ¼ hr., the furrow is reached which carries off the water falling from the W. face of the Foppa di Mathia; it then descends the slope of débris on the left bank, afterwards in the bed of the furrow itself. Where the water reappears from under the rocks, a path is found which zigzags steeply down in S. direction, follows the right bank of a broad stream of 'grava,' and strikes, after 40 min., into the high road, ½ hr. above San Vito.

The traveller, starting from Cortina, may, without going to Val Buona, reach the upper Val Sorapis by several routes, all leading over the Monte Casa Dio. This name is given collectively to the low, pasture-covered hills above the left bank of the Begontina, although local custom assigns separate names to a great number of places.

6. *The Cadin del Laudo Pass*, 2,291 m. = 7,517 ft., is approached by the Tre Croci road. About 1 hr. 5 min. above Cortina, and a little beyond the point where the cart-track ascends to the Pian di Begontina, a faintly marked footpath, which often entirely disappears, ascends SE. to the Pian di Fraïnis, there turns S. until it has crossed the Campo Marzo, resumes its SE. course till beyond the Pian di Tardeba, and, bending E., leads up the slope in 1 hr. 5 min. to the crest of the pass. This is not the watershed between the Begontina and the upper sources of the Anziei, as both the N. and S. sides of the pass drain towards the Rudavoi, whilst the former watershed is more than once imperceptibly passed in the advance over the undulating ground between the Pian di Fraïnis and the Pian di Tardeba. The way descends into the hollow of the Cadin del Laudo, and reascends slightly in ¼ hr. to the E. face of the spur which separates it from the Val Sorapis. Moving round to the S. and SW., the traveller descends in ½ hr. to the Lago di Sorapis.

7. *The Monte Casa Dio Pass*, 2,276 m. = 7,468 ft., the depression at the head of Val Faloria, a glen ascending NNE. from Aqua Buona, is most conveniently reached from the Tre Croci road by turning about 50 min. above Cortina up a steep footpath on the left bank of the Ru delle Caure until a cart-track is met which leads SW. to the Pian di Forno. The course then goes SE. to the Campo Zotto, bends somewhat more S. into the little glen of Val Girilada, which is reached in 50 min., leads up that glen, and, skirting the N. slope of the Tondi di Faloria, comes in 25 min. to the summit of the pass at the N. base of the Punta Negra. The way down Val

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Faloria, first in the trough of débris, afterwards through creeping pine, is rather rough. After ¾ hr., within a short distance of Aqua Buona, a path turns NW. through the forest, passes in 20 min. the huts of Fraïna, and returns in ¼ hr. to Cortina.

8. *The Selletta Pass*, 2,614 m.=8,577 ft.,* between the Punta Negra and the highest point of the Croda della Cesta, may be reached from the Monte Casa Dio Pass in 35 min., by ascending SSE. in zigzag over débris and easy rocks. A rather rough and steep descent in ESE. direction brings in ¾ hr. to the Lago di Sorapis. The traveller who intends to combine with this pass that of the Cengia del Banco will direct the descent more to the S., to the Tondi di Sorapis.

9. *The La Rotta Pass*, 2,623 m.= 8,606 ft. The western buttress of the Punta Negra, generally called Croda Rotta, presents towards the valley of the Boita a face of precipitous cliffs hardly inferior to those of the Foppa di Mathia. Along these cliffs leads a passage similar in character to that of the Cengia del Banco, but it is more difficult to traverse, and even a local guide must pay constant attention not to miss the right direction. A broad track leads through the hamlet of Begontina di Sopra, and a little S. of E. through the larch plantations; it becomes narrower on approaching the rocks, turns SE., and ascends very steeply in zigzag through creeping pine in 1½ hr. to the saddle between the highest point of Mte. Crepedel and the Tondi di Faloria, across which leads a passage from Val Girilada into Val Faloria. Continuing SE., the way descends slightly into Val Faloria, and remounts the débris and rocks which slope down from the Punta Negra. It gradually turns round to the S. and SW., and reaches, after 1 hr., the edge of the precipices above the Boita valley in the depression between the Punta Negra and the summit of the Croda Rotta. As the couloir which descends in the direction of Aqua Buona is impracticable, the way goes nearly due S. down a rather steep ledge, which, in consequence of its rotten state, must be passed with great care. Afterwards the rocks become more broken, alternating with patches of débris. When the growth of creeping pine begins, after 1½ hr., the course has to be altered to the NW., without any considerable change of level, until it enters in ½ hr. the lower end of the couloir and

* Although my measurements do not claim to be more than approximative, I am convinced that the difference of height between the Selletta Pass and that of the Cengia del Banco is only about 100 ft., and does not amount to 204 ft. as stated in Mr. Ball's Guide, apparently on the authority of Dr. Grohmann.

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crosses by a short narrow ledge to its right bank. The descent then continues close to its edge, reaches after another ½ hr. the lower precipices, which make it advisable to return to the left bank of the couloir, and to follow the broad stream of débris which brings in ½ hr. more to the high-road, close to Aqua Buona, and ¾ hr. from Cortina.

VII.—The Marmarole Group.

Its western boundary, being formed by the way over the Forcella di Venodel, has already been described in detail; on the N. it follows for 3½ hrs. the whole course of the Anziei, from the Casa di San Marco to the Tre Ponti; on the E. it coincides with the road which passes from the latter spot down the Piave valley through Lozzo and Domegge in 2 hrs. to the Ponte di Molina; and finally on the S., with the rough track running through Calalzo, along the right bank of the Molina, to the opening of Val Vedessana, and thence on the left side of Val Oten in 1 hr. 50 min. to the foot of Val Venodel.

Whilst the eastern part of the group consists of comparatively low hills covered with forest and pasture, the western part rises to a considerable height, shows a picturesque outline of crags, towers, and pinnacles, and supports a number of small glaciers in the hollows on its N. slope, the S. face being steeper and weather-worn in a marvellous degree. The passes of this western part are somewhat inconvenient, as considerable distances have to be traversed in the lower valleys both at the beginning and end of the walk, owing to the non-existence of inns near its base on either side. Auronzo and Pieve di Cadore are respectively the nearest places at which tolerable quarters can be found.*

* It may perhaps not be out of place to say here a few words about the merits of the different inns of the whole district. Those on the Austrian side of the frontier are decidedly superior to their Italian neighbours, but all have made great progress during the last years, especially since the opening of the Pusterthal Railway. The inn near the station of Toblach is well spoken of. The houses of Landro and Schluderbach compare favourably with the best in other parts of the eastern Alps, and both are well adapted for a protracted stay. At Cortina the same may be said of the 'Aquila nera' and 'Stella d'oro,' the former being much enlarged and improved since it has been rebuilt; the 'Croce bianca' has likewise advanced, and a fourth house, 'All' Ancora,' highly recommended by those who have frequented it, has been opened at the Brewery. The new inn at San Vito, 'All' Antelao,' although hardly finished, promises well for the future. Less inviting are the houses at Borca and Venas. A change for the better is said to

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1. *The Forcella di Monticella* (?), 2,555 m.= 8,383 ft., if crossed from the S., must be approached through a lateral glen of Val Oten, called Val Saline, whose opening may be reached in 1½ hr. from Pieve di Cadore. A track starts on the left bank of the glen, goes for a short time over to the right, but soon returns to ascend the steep slope of the left bank. When after 25 min. it turns up the eastern arm of the glen, the central branch must be taken. The way lies at first in the bed of the torrent itself, afterwards almost exclusively on the left bank along the grass slopes of Mte. Monticella, until after 1¼ hr. it becomes necessary to return to the trough of the ravine, where late in the season some rather difficult places have to be surmounted. In consequence it takes 1¾ hr. more to reach the crest of the central mass of the Marmarole, although earlier, before most of the snow has disappeared, it will undoubtedly be possible to advance with greater facility and speed. The descent leads nearly due N. into a hollow partly filled with snow, and then over a rock-barrier polished by glacier action. A small undulating rock-plateau, strewn with boulders of every size, and furrowed by numerous funnels and dykes, follows. In one of the latter a faintly marked track is met after ½ hr. which soon turns NE. to descend a short ravine. On coming after 5 min. to more open ground, where the growth of creeping pine increases, the path assumes a NW. course, and zigzags steeply down through creeping pine and other scrub, with a thick undergrowth of rhododendron and bilberry, which, after wet weather, are exceedingly unpleasant to pass through. The torrent, which rises in an abundant spring not far off on the E side, is met after 1 hr. The path follows its left bank for 5 min., crosses shortly after the Anziei, opposite the huts of Stabiziane, reaching the Casa di San Marco in ¼ hr. more. It is impossible to descend from

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have taken place at Tai. 'Al Progresso,' at Pieve di Cadore, affords very fair accommodation. More primitive are the quarters at the apothecary's of Lozzo. The two inns at Auronzo are about equal in merit, although Signor Bombassei's house has the advantage of being less noisy than 'Alle Grazie,' which is more frequented by the natives. On the Comelico road the inn of San Stefano is well spoken of and preferable to the one at Candide. In the Sexten valley the 'Post' offers the best accommodation, the closer proximity of the 'Sextnerbad' to the Fischleinthal not being a sufficient compensation for its roughness. The 'Kreutz' and the 'Rose' at Sexten are also inferior to the 'Post.' The 'Innichner Wildbad' is rather superior to similar establishments in the Dolomites. At Innichen the 'Ross' and the 'Bär' are both good.

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the Marmarole into the valley of the Anziei by any other route, unless the traveller should cross the ridge to the E. into Val Bajon, or pass over to the Meduce,* from which a similar track leads down into the Vizza di San Marco.

2. *The Forcella di Froppa* (?), 2,650 m.= 8,695 ft. The Monte Froppa, when seen from Pieve, rises as a high and sharp-pointed cone immediately to the E. of the highest tower of the Marmarole, and appears to form one of the numerous summits of the central chain. In reality, however, it is only connected with the main mass by a narrow ridge, its detached structure being more easily distinguishable from the N. Nevertheless, the inhabitants of the Auronzo valley do not seem to know the name of Mte. Froppa, nor that of the Croda di Ciastelins, its eastern continuation. They generally give to both together the name of Croda di Bajon. From Auronzo the way to the pass which crosses the point of junction with the Marmarole proper, leads up the left bank of Val di Rin in 1¼ hr. to the Prati di Rin. Thence the track continues to ascend through the Bosco di Sta. Giustina on the left bank of Val Bajon. After 1 hr. 5 min. the course is changed to SW., up the right bank of a short lateral branch which brings in ¾ hr. to the foot of some rocks at the base of the E. cliff of the highest peak of the Marmarole. There facing S., the traveller, after a short climb, is landed on a gently sloping snow-field, and reaches finally over some débris in 50 min. the summit of the pass. On the S. side a steep couloir, the passage of which seems to be attended with some difficulty, falls into the highest eastern branch of Val Saline. The traveller bound for Pieve, instead of descending that valley, will probably find it more convenient to cross over the shoulder of the hill on which stands the Casera Ageron, and to pass down the Val Vedessana.

3. *The Forcella di Marmarole* (?), 2,775 m.=9,105 ft., can be reached in 12 min. from the summit of the previous pass by moving WNW. up a slope of débris to the southern face of the highest peak of the Marmarole. The pass does not cross the main ridge, but a lateral one which branches off from it in

* A determined attack on the S. face of the Meduce through the wild glen of Val Federa proved unsuccessful. It was only afterwards that I was assured on the authority of a forester of Calalzo, named Petrozzi, who has the reputation of being thoroughly acquainted with the Marmarole and Antelao districts, that the only way to scale the S. side of the Meduce would be at their SW. corner through Val Venodel. The man being absent from home, and I unwilling to run the risk of another fruitless attempt without the aid of an experienced local guide, I could not test the truth of the statement.

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northern direction. After a glissade down the glacier on the W. side, followed by a short walk over débris in NW. direction, the descent unites in ½ hr. with that from the Forcella di Monticella, reaching the Anziei at Stabiziane in 1 hr. 20 min.

4. *The Forcella di Saline* (?), 2,822 m. = 9,259 ft. A short climb from the Forcella di Marmarole in S. direction along the W. side of the ridge brings in 8 min. again to the crest of the main chain at a spot where a furrow leads down into Val Saline, which is more easily passable than either of those through which the neighbouring passes to the W. and E. must be approached from the S. A little eminence above the pass, only 5 mètres higher, commands a magnificent view in every direction.

5A. *The Forcella di Peroi*, 2,197 m. = 7,208 ft., sometimes called Forcella di Bajon, leads through the gap between the Mte. Froppa and the Croda di Ciastelins, well seen not only from Pieve, but also from the valley of Auronzo. From the latter place the way follows that to the Forcella di Froppa for 2 hrs. 20 min.; but keeps then due S. instead of turning SW. Bending after 50 min. somewhat to the left the traveller reaches the gap in 10 min. more, progress during the last hour being retarded by the roughness of the ground. The descent goes down one of the numerous ravines which cut into the slopes of the upper Val Vedessana. The paths of the charcoal-burners which have been cut in every direction add to the difficulty of finding the shortest way to the principal torrent of the valley. When it is reached in about 1 hr. the track follows the water-course, but crosses and recrosses constantly before it joins, in ¾ hr., the road coming down from Val Oten by which Pieve is reached in ¾ hr. more.

5B. *The Forcella di Ruverde*, probably a trifle lower than the last, lies somewhat more to the NE., and its passage would occupy about the same time. But it may be reached about ½ hr. sooner by turning, shortly after having quitted the way to the Forcella di Froppa, up the slope on the left hand towards a conspicuous gap. Probably an equal amount of time will have to be added to the descent which takes a more circuitous route, passing close to the Casera del Becco, which stands a little below the ridge separating Val Vedessana from Val Langerin.

6. *The Forcella di Ciastelins*, 2,295 m. = 7,530 ft., is the last pass to be mentioned which crosses the rocky crest of the Marmarole range. It is reached from the Casera del Becco in 50 min. by moving nearly due N. up the steep slope of stony pasture towards the deepest indentation in the Croda di Ciastelins. On the N. side of the gap descends a slope of débris at

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the foot of which on the left hand is a track which leads in almost a straight line steeply through the forest, turning only to the W. on approaching the Valderino torrent. By crossing at once to its right bank, the highest of the meadows at the foot of Valderino is reached in 1 hr. 5 min. from the pass. Thence the cart-track follows the right bank of the Val di Rin, crosses after 20 min. to the left bank, reaches the Anziei in ¼ hr. and Auronzo in 35 min. more. The ridge above the left bank of Val Vedessana is crossed by several low passes connecting the valley with the glens which carry the drainage of its E. side to the Piave.

7A. *The Forcella di Sondi Dove,* 1,617 m.=5,305 ft., the lowest point of the ridge between Val Vedessana and Val Biegga, is reached in 2 hrs. from Pieve di Cadore by proceeding to the Ponte di Molina, ascending to Grea, and thence following a mule-track which winds up the right bank of Val Biegga and passes over the Pra di Ronco and Pra di Capo. From the pass the track runs eastward along the S. side of the Croda di Bagion (generally pronounced Baion), a rocky eminence of inconsiderable height, but commanding a splendid view, and comes in ¼ hr. to

7B. *The Forcella della Croda di Bagion,* 1,730 m.=5,676 ft., a broad green saddle on its E. side, connecting Val Vedessana with Val Vizza which ascends from Domegge. The track then turns N., runs for 8 min. on the side of Val Vedessana, crosses at the Prati di Domelle (1,695 m.=5,561 ft.) to the side of Val Langerin until it reaches in 12 min. the lowest depression in the ridge,

7C. *The Forcella di Langerin* (?) 1,555 m.=5,102 ft., whence the track leads in 25 min., first on the E., afterwards on the W. side of the ridge to the Casera del Becco. Moving from here in NE. direction, along the S. face of the Croda di Ciastelins, the traveller reaches in ¾ hr. at its eastern declivity

8. *The Forcella di Palle,* 1,827 m.=5,994 ft., over which leads a passage from Val Langerin into Valderino. The descent follows the left bank of the latter valley, crosses, after a short time, near a hut to the right bank, and leads in about 1 hr. to the meadows on the right bank of Val di Rin where it joins the track coming down from the Forcella di Ciastelins, by which Auronzo is reached in 1 hr. 10 min.

The way over the Forcella di Palle skirts the W. side of the Piano de' Buoi, an undulating green plateau of moderate extent, with numerous glens radiating from it in every direction, viz., Valderino, Val Salega, Vallazza, Val Sandoles, and several arms of Val Langerin. More or less frequented tracks

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descend into all these glens; that leading due E. into Val Sandoles crosses the edge of the plateau between Col di Lozzo and Monte Chiadin at a height of 1,873 m. = 6,145 ft. Monte Chiadin (1,936 m. = 6,352 ft.), rising between Val Sandoles and Vallazza, commands a very extensive view and may be reached in ½ hr. from the Forcella di Palle.

9. *The Forcella di Brusau* (?), 1,644 m. = 5,394 ft. From the bridge which crosses the Anziei at Villa Grande of Auronzo a broad track ascends on the right bank of Val Salega, though at first at a considerable distance from the Socosta torrent. A walk of 1 hr. through charming forest scenery, alternating with rich sloping pasture, brings to the Casera Valsalega. A few steps further on the torrent forks, and the beaten track comes to an end. By selecting the W. branch and, when this again divides, by following a faintly marked track which runs nearly due W. on the ridge between the two arms, the traveller reaches in 40 min. the pass on the crest of the ridge which separates Val Salega from Valderino. The spot is marked by a cross standing near a hut to the S. of Col Brusau. Although there seems to be no obstacle to a direct descent through the forest, it will be found more convenient to follow the track which runs due S. just below the crest of the ridge on the side of Valderino, and after 20 min. to turn down the regular track which descends to the Prati di Rin. By continuing the southern course for 10 min. longer, the traveller comes to the Forcella di Palle.

10. *The Pian di Sera*, 1,321 m. = 4,334 ft., is the saddle across which leads a passage from the foot of Val Bajon to the upper valley of the Anziei, at the point where Monte Rosiana is connected with the principal mass of the Marmarole. From the Prati di Rin a track passes over the Gasoni di Rin, and there turning W. leads up the left bank of the torrent in ½ hr. to the meadow which drains both towards E. and W. The track descends on the right bank of the Val Pian di Sera, and crosses, after 25 min., the Anziei near the châlets of Somprade, whence Val Buona may be reached in 1¾ hr.

VIII.—The Antelao Group.

The boundary runs from San Vito over the Forcella Piccola down Val Oten to Calalzo, and there turning SSW., in about 5 hrs. to Pieve di Cadore; thence more WSW. through Tai and Valle to Venas, and gradually bending to NW., through Vodo and Borca in 3½ hrs. back to San Vito. In consequence of the peculiar structure of this group, which con-

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sists of one commanding summit with only short projecting ridges, the number of high passes is naturally small.

1. *The Antelao Pass* (?), 2,573 m. = 8,442 ft., is undoubtedly the most interesting one. From the Forcella Piccola the way ascends in SE. direction, following for a short time the old route of the ascent of the Antelao,* descends slightly before reaching the glacier, and leads eastward across the tongues of the two branches of the Antelao glacier. Then facing S., the ascent recommences up the smooth rocks on the E. side of the glacier, which are climbed without difficulty except where coated with ice. The crest of the ridge is gained in 1½ hr. at the spot where the glacier, which flows both towards Val Oten and Val Antelao, forms a little pool. As it is exceedingly difficult, if not impracticable, to descend the rocks at the foot of the left bank of the glacier, the traveller has to cross over to the right bank, to traverse the terminal moraine towards its left side, and to descend two other steps of the valley until he reaches in 1 hr. 20 min. the former Casera Antelao which now, however, is only a herdsman's hut. The way then passes over an old lake-bed of considerable length, descends steeply on the right bank of Val Antelao, and joins in ¾ hr. the track through Val Oten, by which Pieve di Cadore may be reached in 1½ hr.

2. *The Forcella di Feltrume*, 2,378 m. = 7,802 ft., leads through the gap between the Antelao and its W. buttress, the

* It is possible to reach the summit of the Antelao by at least three different routes. In 1868, on the first day of my acquaintance with Santo Siorpaes, who had acted as porter to Mr. Latham and the late Lord F. Douglas in 1864, I intended to ascend the Antelao by the route discovered by Dr. Grohmann. Santo missing the right way after leaving the Forcella Piccola, we turned up the rocks at the wrong place and soon became involved in great difficulties. Passing over several very awkward and dangerous places, we reached the summit only after 5½ hours' uninterrupted climbing from the Forcella Piccola. Unwilling to descend by the way we had come up, I insisted, against Santo's protests, and before trying to find Dr. Grohmann's route, on proceeding down the W. branch of the NW. ridge. We thus succeeded in discovering the easy route which is now generally used. It starts, about 5 min. below the Forcella Piccola, on the San Vito side, up the débris which fills the corry enclosed between the two branches of the NW. arête. Near the upper end of this hollow it is easy to scale the wall on the W. side by climbing from ledge to ledge until the ridge is gained which runs straight up to the highest tower of rock. A cleft in the latter leads without difficulty to the summit. Late in the season, when the ridge is usually almost bare of snow, 5 hrs. will be sufficient to complete the ascent from San Vito.

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Punta di Feltrume, which caused the great bergfall in 1816. About 10 min. above Vodo the road is crossed by a watercourse called Ru Forada. At that point a woodcutters' path starts in NE. direction up the forest, turning afterwards more to the N. After 1 hr., when the track, before approaching the rocks, has come to an end, the way quits the forest and ascends the steep slope, scantily overgrown with creeping pine, keeping near the left bank of a broad ravine filled with débris. This is the Rio Secco of the maps, although that name is rarely used by the people of the country. The ravine becoming, after 40 min., gradually narrower, and finally contracting into a steep couloir, the ascent leads up the trough of the watercourse. As the couloir just below the ridge is blocked up by an enormous boulder wedged in between the two walls, it is necessary to climb the rocks on the W. side, the crest of the ridge being reached in 1 hr. 5 min. On the other side of the pass the way leads at first W., then descends a slope of grava in a NW. direction, turns, on coming to the rocks at its foot, again to the W., until it meets a path which resumes once more the NW. direction and falls steeply towards the torrent coming down from the Forcella Piccola. Crossing the torrent the path follows its right bank, strikes into the track from the Forcella Piccola and reaches San Vito in 1¼ hr. of very fast walking. The ascent from this side would probably take not less than 3 hrs.

At the SE. side of the Antelao, between the summit and the ridge of the Croda di San Pietro extends an irregular rock-plateau covered with scanty pasture which has given its name to

3A. *The Campestrin Pass*, 2,160 m. = 7,087 ft., connecting the Val Antelao with the glens of Ruvinian and Vallesina. From the Casera Antelao the way leads SW. up the valley in 1 hr. to the pass. The descent may be taken either down the ridge which separates Vallesina from Val Ruvinian and thence into the W. branch of the former, or E. arm of the latter, or into the main branch of Val Ruvinian. In the last case the way continues for 10 min. nearly due W., turns to the S. down a steep ravine at the foot of which are seen the houses of Vinigo, and descends, when the ravine becomes too precipitous, on the spur which divides it from the E. arm. Lower down, a path is met which crosses over to the right bank, brings in 1 hr. 5 min. to Vinigo, in 10 min. more to the highroad, and thence, in 20 min., to Venas.

3B. *The Cadin da Val*, 2,084 m. = 6,838 ft., is the name of a pass at the head of the Vallesina glen and on the W. side of the highest part of the Croda di San Pietro. From the open-

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ing of the glen, 1 hr.'s walk from Pieve di Cadore, a path ascends alternately on the right or left bank in ¾ hr. to the huts of Aoneda. Thence the most direct way leads due N., but it seems more convenient to turn after 25 min. to the W., to ascend in 20 min. to the ridge between Vallesina and Val Ruvinian, and then for ¾ hr. in NW. direction up its crest until the edge of the rocks which overhang the glen of Vallesina is gained. By moving eastward along this edge, a little S. of, and nearly parallel to, the way over the Campestrin Pass, the Cadin da Val is reached in ¼ hr. after a slight descent. On the N. side the descent leads in ½ hr. to the Casera Antelao.

4A. *The Forcella Mandruzzi*, 2,082 m.=6,831 ft., is the depression between the two highest peaks of the Croda di San Pietro, and connects Val Antelao with Val Maisăma, the E. arm of the Vallesina glen. It can be reached in 20 min. from the Cadin da Val by moving along the N. or S. face of the Croda di San Pietro. A very steep path descends in zigzags into Val Maisama, whilst another leads on the N. side in 20 min. to the Casera Antelao. Continuing from the pass in E. direction, either along the N. or S. face of the rocks, a slight descent brings in 20 min. more to

4B. *The Forcella di Mandrini*, 2,027 m.=6,651 ft., at the E. side of the highest peaks of the Croda di San Pietro. It also connects Val Maisama with Val Antelao. By proceeding in SE. direction down the ridge which separates Val Maisama from Val Paje, the traveller descends in ¼ hr. to its lowest depression,

5. *The Forcella di Maisama*, 1,770 m.=5,807 ft., across which leads a passage from Val Maisama into Val Paje. A path runs along the slope in ESE. direction in 12 min. to the depression between Col San Dionigi and Monte Tranego,

6. *The Forcella di Nebbiu*, 1,680 m.=5,512 ft., at the head of the central branch of the Nebbiu glen. A frequented track continues eastward along the S. side of Val Paje, wheels round the E. slope of Monte Tranego, and descends to Pozzale. But the valley of the Pieve may be more quickly reached either by moving along the left slope of the Nebbiu glen, round by its E. branch, and over the Costazza ridge into a ravine which falls down towards Pozzale; or by descending due S. first on the left, afterwards on the right bank of the glen in 40 min. to the village of Nebbiu, thence taking a path through the fields which strikes at Tai into the high road, and brings in ½ hr. to Pieve di Cadore.

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APPENDIX.

Having in the summer of 1874 revisited several places of the district described in my former paper, I am enabled to make the following additions.

II.—The Cadini Group.

4B. *The Forcella d'Onge* (?), 2,201 m.=7,221 ft. By proceeding from the Forcella di Maraja, which may be reached in 1 hr. 35 min. from Val Buona, in NE. direction, the traveller without descending much will find a faintly marked footpath just above the marshy meadow near the hut of Le Saline. It soon turns E. to ascend the rocky ridge which separates the upper part of Val d'Onge from a short E. branch. By descending into it, turning S., and advancing to its head, the summit of the pass, forming a broad green saddle, is reached in ½ hr. A steep descent leads down to Stabiziane.

5. *The Passo Campoduro*, 2,161 m.=7,090 ft., can be reached from the Forcella d'Onge in little more than ½ hr. by passing along the edge of the SE. cliffs of Monte Campoduro, and over its highest point (2,238 m.=7,343 ft.). The descent leads down a steep grass slope in 20 min. to a casera, where a broad track begins, which in 25 min. brings to the carriage road a little below Somprade, 1 hr. 35 min. above Auronzo.

III.—The Birkenkofl-Dreischuster Group.

10. *The Steinalbljoch* (?), 2,661 m.=8,731 ft., is a pass which leads over the ridge between the Gsöllknoten and Dreischusterspitz, at the spot mentioned by Dr. Grohmann in his account of the ascent of the latter peak. Proceeding from Sexten into the Fischleinthal and up the Weisslahn in 1 hr. 35 min. to the foot of the 'Schusterflecken,' some small patches of pasture lying on the rocks N. of the Weisslahn, the traveller reaches the summit of the pass after an ascent of 1 hr. 5 min. up these rocks. Near the northern precipices of the Dreischusterspitz a long slope of débris and a small snowfield descend into the corry of the 'Hinter Innerfeld' (N.M.), locally called Steinalbl. At its lower end two steep ravines lead down to the Innerfeldthal, that to the S. being the most convenient one. The floor of the valley is reached in 50 min., and 1 hr. 10 min. more bring back to Sexten.

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IV.—The Popera-Najarnola Group.

I had stated that the Eilferkofel (on the new Ordnance map erroneously called Rothwandspitz) appeared from most points of observation to be the highest peak of the group, but that the map assigned a greater height to another nameless summit which ought to have been designated as Monte Popera. A renewed attempt to ascend the Eilferkofel was only in so far successful that I gained in 1¾ hr. from the Eilferkofeljoch the point which on a previous occasion had appeared to be the highest pinnacle, but which the unfavourable weather had then prevented us from reaching. My measurements now gave it a height of 3,071 m. = 10,076 ft. Although clouds and snow did not fail again to make their appearance, yet occasional glimpses enabled me to see that the snow-covered ridge of Monte Popera, was considerably lower, and that between the two rose an almost isolated tower which overtopped the peak on which I stood by 10 or 12 mètres. It was impossible, however, to ascertain the possibility of climbing that tower. On making, a few days later, an ascent of the Monte Popera itself its height was found to be only 3,037 m. = 9,964 ft., although the summit exactly agrees with the point to which the new map gives a height of 3,088 mètres. It also was evident that the isolated tower not only surpasses the Popera by at least 40 mètres, but that it forms part of the mass of the Eilferkofel, being separated from the former by a small glacier which overhangs the larger one on the E. side of the Eilferkofeljoch.

The way to the Monte Popera leads from the N. base of the Hohlast, which is reached in about 2 hrs. from Sexten, eastward up a slope of scanty pasture to the opening of a corry immediately below the SW. precipices of the Eilferkofel. After 35 min. the traveller turns to the S. in order to pass up a furrow which becomes visible on the face of the rocks opposite to the E. side of the Hohlast. On the other side this furrow assumes more the character of a broad ledge, which slightly slopes down to the foot of another corry on the W. side of Monte Popera. By turning SE. to ascend to the upper shelf, the tongue of the Popera glacier is reached in ½ hr. The course then goes up the glacier, first eastward, later wheeling round to the N., in ½ hr. to the rocks of the ridge which forms the barrier between the Popera glacier and the small hanging glacier mentioned above. Zigzagging E. and N. up the rocks, the traveller comes to the snowfield which covers the flat summit of Monte Popera, when a final turn to the SE. leads in 35 min. to its highest point. It is perfectly feasible to cross from

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the Popera glacier (which also may be reached from the Forcella di Giralba) to the small hanging glacier, but to effect a descent to the lower large glacier seems to be difficult, if at all possible.

V.—The Drei Zinnen-Col Agnello Group.

5. *The Forcella di Cengia.*—The rocks at the head of the E. branch of Val Cengia, reported to be impassable, proved on closer examination to present no serious obstacles. I effected a descent into Val Cengia without difficulty by keeping as much as possible to the S. side of the rocks, which are covered with vegetation in many places.

9. *The Forcella del Val Riva Secca* (?), 2,352 m. = 7,717 ft., connects, as I had anticipated, the head of Val Riva Secca with the upper Val Giralba. It is easily gained from the Forcella di Giralba bassa by first moving for 20 min. in NW., then for ½ hr. in N. direction. A slope of grava on the N. side of the pass quickly turns to the E., but, by continuing northward under the rocks on the left hand, a descent can be effected into the hollow in which lies the small tarn to the S. of the Forcella di Giralba, that pass being reached in ¾ hr. by a slight reascent.

I will add a few particulars of an attempt to ascend the Col Agnello in company with Santo Siorpaes, which probably would have succeeded but for the unfavourable weather prevailing through the greatest part of last summer. Having reached the Lämmerbüchel in 2 hrs. 55 min. from Sexten, we passed for 7 min. along the W. face of the Col Agnello, and, turning eastward, mounted the slope of rough débris in 8 min. to the foot of a ledge which ascends gently in S. direction. Following this ledge, and then zigzagging up the rocks, we succeeded in penetrating into the cleft which runs up due E. to near the summit of the peak. The cleft being almost throughout filled with exceedingly hard snow or ice, of great steepness, we advanced as much as possible by the rocks in order to save the time and labour of step-cutting. When further progress by the rocks became impossible, we returned to the snow. After 2½ hrs.' work, having risen about 300 mètres above the Lämmerbüchel, we were obliged to abandon the attempt in consequence of the showers of stones which with the advancing day swept the couloir in increasing quantity and frequency. It was evident, however, that at a more favourable season, when the danger from falling stones must be greatly diminished, it would be possible to reach the upper end of the cleft, whence the rocks separating it from the summit

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seemed to offer no special difficulty. I have recently come across a report that about a month after my attempt two brothers Innerkofler, of Sexten, had reached the summit by such a cleft as I have described; but whether it was by this, or by a similar one on the E. side of the peak, I have been unable to ascertain.

In conclusion, I will mention that a new map of a large portion of the Dolomites, drawn by P. Ritter von Wiedemann, has been published with the first part of the fourth volume of the German Alpine Club. The map, as far as the Austrian territory is concerned, is based upon the new military survey, and generally has adopted its nomenclature. On the Italian side, where the materials were more deficient, it is less correct. Although it is undoubtedly capable of improvement in many respects, it certainly does not deserve the severe criticisms which, even before its appearance, Dr. Kurtz had pronounced upon it in the preface to his 'Guide to the Dolomites,' and which since its publication he has repeated with greater detail in vol. vii. p. 303 of Amthor's 'Alpenfreund.' The revised edition of Dr. Kurtz's paper, which has now been published as a 'Guide,' is a considerable improvement on its original form, but it is still by no means free from errors. On the whole, the pedestrian will probably find the guidebook to be less useful than von Wiedemann's map.

LIST OF MARCHES FROM THE GANGES, NEAR MAICHA, TO CHINI; ALSO FROM SIMLA TO CHINI, AND FROM CHINI THROUGH TIBET TO CASHMERE. By WILLIAM SIMPSON, F.R.G.S. Summary of a paper read on the subject before the Alpine Club, on April 6, 1875.

In the 'Alpine Journal' of May 1874, is a paper of mine, giving the journey from Mussoorie to Gangootree, or the source of the Ganges, with the list of marches, and this itinerary is only a continuation of the other, both including the principal points of interest in the Alpine regions of the NW. of Hindoostan.

It may be mentioned that a march may vary from 10 to 20 miles, but they usually average from 12 to 15 miles.

In vol. iii. of 'Alpine Journal' there is a paper by C. M. Smith, describing this route as far as the Parung Pass. In the same vol. there is a paper by J. F. Cheetham, F.R.G.S., entitled 'The Thibetan Route from Simla to Srinagar.' Mr. Cheetham went by Lahoul and the Bara Lacha Pass; otherwise his route is the same as this itinerary. In vol. iv. of 'Alpine Journal' is a paper called 'Trips in the Himalayas,' by Captain J. R. Oliver, who went from Simla to Chini, and returned over the Roopin Pass. In the same vol. is a paper on 'The Sooroo Route

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