

everything that Mr. Ball wrote is of as much service to travellers now as it was fifteen years ago. It will be only necessary to bring the work up to date, preserving the lines which he laid down. Nor is there any intention of entering into competition with 'The Pennine Guide,' or other books adapted solely to the requirements of the *Hochtourist*. It cannot be too carefully remembered that the ultimate divisions of the book are 'Routes,' not 'Excursions;' and that while due notice is taken of the more important peaks, it has not been thought necessary to give minute directions for the ascent of every point in every ridge. At the same time an endeavour will be made to render the new edition a trustworthy guide for mountaineers. The best service towards its preparation will be done by those who will act (to borrow an apposite term used by Mr. Tuckett in a letter to the present writer) as 'topographical missionaries,' those, that is, who will devote a part of their next summer's tour to working out in detail one or more sections of the book—correcting and supplying as may seem to them necessary. The most gratitude will, of course, be earned by those who will undertake the least-frequented districts. For the great Italian, French, and Swiss 'centres,' and several of the Tyrolese groups abundance of information is to be got from English sources, though, in the case of the latter, we should often be all the better for such careful working as a few of our members have bestowed on the South-Western Alps. But when we come to districts like the Silvretta, and its northern division the Ferwall group (reported to offer some of the best rock-climbing in the Alps), or to the ranges east of the Glockner, or to those that enclose the Ultenthal and Val di Rabbi, we shall find plenty of work for our 'missionaries.' Let them name their sections, and they shall be supplied with interleaved copies and pencils.

REVIEWS AND NOTICES.

Jahrbuch des Schweizer Alpenclub. Vol. XXV. 1889-90. (Bern: J. Dalp).

THIS volume, No. XXV., is larger than any of its predecessors, containing no less than 744 pages. As in previous volumes, the interest passes more and more from the accounts of mountaineering expeditions to the articles which are indirectly connected with the Alps in the departments of history or science. In the Preface the Editor (Herr A. Wäber) calls the particular attention of the Club to three points. (1) The request of Professor E. von Fellenberg for specimens of rock from new summits to enable him to classify their geological position and to correct errors. This request is motivated by the fact that Herr Montandon found granite on the top of the Lauterbrunner Breithorn, which has hitherto been regarded as entirely limestone. (2) Another request from Herr Reber, asking tourists to spare the trigonometrical signals set up by the Federal surveyors. When on the Fluela Schwarzhorn preparing to observe the signal on the Scesa Plana, 40 kilometres (25 miles) distant, the first thing he saw was a party of

tourists engaged in demolishing the signal. He had to send two men to rebuild it, and several days were consequently lost. (3) The necessity for the different sections of the Club sending in a list of the guides to whom they have granted certificates. He has repeatedly urged this on the Club, but with indifferent success, the section Rhätia alone having furnished him with a list. The Editor announces his resignation, after having occupied the post for nineteen years. His task has been an arduous one. It is now proposed to establish a central secretary's office, in whose duties the editorship of the 'Jahrbuch' will be included.

The following new ascents, or ascents by new routes, have not already been noticed in the 'Alpine Journal':—

In the Mont Blanc range the Grand Luis (? 3,500 mètres = 11,483 feet) was ascended by MM. Attinger, Colomb and Kurz, with two guides and a porter, on June 3.

In the Bernese Alps the Viescher-Gabelhorn (3,870 mètres = 12,697 feet) was ascended by the brothers Paul and Charles Montandon, without guides, August 8. This mountain is a summit lying between the Kamm and the Gross Wannehorn in the chain which divides the glaciers of Aletsch and Viesch.

The Lauterbrunner Breithorn (3,143 mètres = 10,312 feet) was ascended on August 4 by the same with three friends, without guides.

On August 6 the same party made the ascent of the Jungfrau from the Roththal Hut by the S.W. ridge. They think the difficulties of the ascent have been underrated. It is curious that on the occasion of the first ascent by this route it should have been regarded as comparatively easy by a person who had never done anything harder than the Tschingel Pass. The difficulties must vary enormously with the weather and the state of the snow. Herr A. Beck alone ascended on August 10 the Ghudelhorn (2,427 mètres = 7,962 feet) and the Schaffhorn. There are two subordinate peaks in the ridge which descends from the Tschingel Grat to the valley of Lauterbrunnen, the latter involving a short but rather dangerous scramble. Pfarrer H. Baumgartner and two friends, Dr. Körber and Professor Studer, with the guides, J. Tannler, A. Anderegg, and J. Moor, starting from the Pavilion Dolfuss on July 10, made their way to the Vorder Trifthorn glacier, W. of the Hühnerstock ridge. The ridge was attained by a steep couloir, and after a difficult climb they reached a peak, which they call the Hinter-Hühnerstock. To the N. of their peak was the culminating point with the stone man, which was ascended by Messrs. Coolidge and Gardiner in 1886; to the S. a lower point, which they concluded to be the point marked 3,310 mètres on the Federal Map. Their peak appeared very slightly lower than the main peak, and they put its height at *circa* 3,340 mètres, or 10,950 ft., whilst the Editor gives it the same height as the main peak (3,348 mètres). Messrs. Coolidge and Gardiner, on the other hand, from the summit saw no peak so nearly approaching to it in height.* It is improbable that two such experienced mountaineers should be mistaken in this matter. It is

* See p. 324.

also much more easy to misjudge a higher peak when seen from a lower one than the reverse.

In the Dammastock group Herr E. Huber, with the guide Joseph Gamma, on September 12, ascended the Gletschhorn (3,307 mètres = 10,850 feet) from the Geschenen Alp. They built no stone man, and left no card. Being a teetotaller (abstinenzler) he had no bottle. This was probably the first ascent by tourists, though the summit had probably been visited by crystal-hunters.* The Salbitschyn (2,989 mètres = 9,807 feet) in the ridge E. of the Voralpthal was ascended by the same on July 27, and the Stüchlistock (3,309 mètres = 10,862 feet), N. of the Fleckistock, no less than three times, on April 14, November 4, and November 17. On the second occasion a new descent was effected by the Ruti glacier into the Meienthal. This mountain had not been ascended for twenty-four years. Herr Huber with Gamma, starting from Amsteg at 1.45 A.M. on September 13, reached the summit of the Oberalpstock by the Rogenstalden† glacier at 1.30 P.M., and the Rusein Alp over the Cavrein Pass at 5 P.M., a very long traverse, involving a climb of 2,800 mètres (9,186 feet).

The first ascent of the Sustenhorn (3,512 mètres = 11,522 feet) from the Voralpthal was made on August 4 by Herr C. Seelig with the guide, Jos. Zraggen.

The Gross Zanayhorn (2,825 mètres = 9,269 feet), S. of Piz Sol in the Graue Hörner, was ascended by Herr E. Imhof alone on July 22, and a week later by Dr. W. Gröbli with the guide D. Kohler.

The central peak of the Fluchthorn (Silvretta group) was climbed on August 22 by Herr H. G. Schwarz with the guides J. Lorenz and G. Walter, of Galthür.

Herr P. H. Kind, in an account of a tour from Elm to Vättis over the Mutten Grat, gives some interesting particulars about the colonisation of the Kalfseuserthal by Walliser (or 'Walser') early in the fourteenth century. These were tenants under the convent of Pfäfers, which owned all the land from Ragatz to the Kunkels Pass, and they were brought there to occupy and increase the value of the convent property.

Herr Aug. Walker gives us three expeditions in the Dolomites, the last being the ascent of the Grosse and the Kleine Zinne on the same day, August 4. His guide, Veit Innerkofler, though he had only made the ascent once before, found the somewhat complicated route up the rocks without a check. Michael Innerkofler, who perished in 1887 on the Cristallo, had been leader in the previous fifteen ascents.

The Triglav (Teroglou) (2,864 m. = 9,396 ft.) was ascended by Herr E. Chambon and two ladies, with the guide Skumanc from Moistrana. There are now three huts on this mountain:—(1) The Maria Theresien Schutzhaus (2,404 m. = 7,887 ft.) on the S. side, under the Little Teroglou, on the usual line of ascent from Mitterdorf, in Wochein. (2) The Baumbach Hut (600 m. = 1,968 ft.) at the head of the Isonzo Valley, on the so-called Kugy route. (3) The

* See p. 311.

† *Alpine Journal*, vol. ix. p. 369.

Deschmann Hut (2,200 m. = 7,218 ft.) on the N. side, on the line of ascent from Moistrana. A path has been constructed and wire ropes fixed in several places. This route will probably be the one most followed in future ascents.

Herr Rutimeyer Lindt considers that he found an easier route up Mount Serbal (2,052 m. = 6,732 ft.) than any previous explorer, from Wadi Aleyat, by the ravine of Abou Hamid. In Wadi Barak he gathered a plant (*Lasiospermum brachyglossum*) hitherto only seen S. of the Equator in Namaqualand.

In a chapter on the 'History of the Special District for 1888-9,' Prof. G. Meyer v. Knonau gives an interesting account of an old map found in Vol. I. of the 'Theatrum Europæum.' This work was commenced by Matth. Merian, a native of Basel, who settled at Frankfurt-am-Main. Vol. I. was published in 1635, and contains the account of events during the period 1619-1629. The map (of which the W. half is reproduced in the text) included the Prättigau, Mayenfeld, Chur, and the Valley of the Plessur. It was meant to illustrate the troubles during the war, called the 'Prügelkrieg,' between the Austrians and Graubünden in the years 1621-1623. Not only are the mountains, rivers, towns, &c., pictorially represented, but we see the very conflicts taking place. Chur has a fort on the S. side, and on the N. a girdle of fortifications from the Rhine to the mountains. The assailants are seen swarming round the defences. Further N., between Mayenfeld and Luziensteig, the whole valley is full of the contending hosts. We see the cannon firing and villages burning. Prof. Meyer gives many interesting particulars about Sargans, which, after being for four centuries a subject land of the VII. Orte, was, in 1803, attached to the Canton of St. Gall. When the Constitution (Mediation) came to an end with the fall of Napoleon, an agitation was commenced in Sargans for joining either Graubünden or Schwyz. It was abandoned as hopeless in November 1814; but the effects are even yet visible.

Few of the travellers who, in passing Chur, look up to the cliffs of the Calanda, above Felsberg, are aware that there is a gold mine in the face 700 mètres (2,300 ft.) above the river. The gold was first observed in the stones used for building a dyke near the Rhine about the beginning of the century, and a company was formed to work it in 1803. The gold (as Herr E. Bossard tells us) was found in a vein of quartz and felspar, running at an angle across the strata of limestone. The vein varied from 8 inches to 5 feet in thickness. Sulphate of iron and of arsenic (Schwefelkies und Arsenkies) were present. The gold was found in a very pure condition, often in the form of 'octahedra.' One piece was found worth 400 francs (16l.). After some time they drove through the lode, and, not observing the fact, worked on into the limestone. The workmen did not mind, as they were paid by the cubic foot, but the directors were in despair. They sent for a somnambulist from Zürich, who indicated a spot 300 mètres (1,000 feet) lower down. Here they sunk a shaft 80 feet deep without success. Meanwhile, the somnambulist had disappeared. The wife of the manager, Hitz, now assumed the part of clairvoyant, and selected a

spot lower down, where they drove a gallery 330 feet long and a shaft 60 feet deep. Two other attempts were made at spots pointed out by her, one of them near (W. of) the original entrance; so that now 5 adits and 3 shafts had been made, of which only the first was productive. The company dissolved with great loss about 1830, having spent upwards of 70,000*l.* in these vain attempts. In 1856 search was made in the original adit, and some fine specimens of ore were found for the exhibition at Bern in 1857. The direction of the vein was observed and the mine was worked until 1861. The proportion of gold was about $\frac{1}{2}$ oz. per ton of the matter which came to the smelting-house. Up to the present time the mine has been worked at intervals, but seldom profitably.

Bezirk's-Förster Bächtold tells us of the wood on the Gonzen, near Sargans, and the iron mine there. This was worked in Roman times, and documents concerning it go back as far as 1438, chiefly concerning the rights of the mine to wood and charcoal, which the owners, on the one hand, sought to maintain, and the neighbouring parishes, on the other, sought to restrict. In 1823 the mine came into the hands of the Neher family, who worked it until 1868, when it was stopped owing to the low price of iron. The working was resumed in 1878, but, to ensure success, better modes of transport and of smelting are required. The mine is 1,100 mètres (3,600 feet) above the floor of the valley, and the cost of transport at present is 8–10 francs per ton from the mine to the smelting mill. Concessions have been granted for a tramway, and also for an aerial railway (*Drahtseil*), but neither has been constructed. The Gonzenwald, which is so valuable to the mine, extends from 740 mètres (2,428 feet) above the sea to 1,250 mètres (4,100 feet), and its surface covers 81·87 hectares (202 acres). The presence of iron in the mountain is said to make the wood more valuable. Up to 1874 the cutting of the wood was not regulated, and the leaves were carried away by the neighbouring *Gemeinde*; but now the former is under careful supervision and the latter forbidden. The leaves formed a rich 'humus,' which not only favoured the growth of the trees but prevented sudden inundations.

The great finds of quartz crystals in the Alps have been but few. The greatest was found in 1719 on the Zinkenstock, the terminal mountain between the Ober- and Unter-Aar glaciers. The editor (Herr A. Wäber) found in the museum at Bern a pamphlet, published in 1721 by David Marki, Pfarrer at Diemtigen (Simmenthal), who visited the cave in 1720. He describes his journey up the Hasli Thal to the Grimsel Hospice and the crystal hole, and gives many curious particulars. A white quartz band in the rock (*Blust*) was observed by Melchior Brügger, a crystal-hunter. He showed this to Peter Moor, a miner, and they thought it promised good results. Early in the summer of 1719, along with three brothers of Moor and five paid workmen, they began, and drove an adit six fathoms in length. Here Brügger was discouraged and gave up. Moor had no means to go on himself, but he succeeded in interesting other persons, and in the autumn they began again, and four days later broke into the crystal cavern. This was 60 ft. in length, by about 25 ft. in width. They got out

about 25,000 lbs. weight of crystals before the winter compelled them to desist. They then walled up the entrance. In spite of this the mine was plundered during the winter, though not completely, since Marki saw crystals there in 1720. Brügger now brought an action against Moor for a share of the profits, and a certain sum was paid to him as discoverer. Thus the Bern authorities heard of the find and they claimed the tithe. Hence proceed the crystals of this date in the Bern museum. At first the crystals were disposed of to dealers from Uri and Wallis to little profit; but later an arrangement was made with the convent of Engelberg to convey them into Italy. The convent willingly undertook this, as the owners spent much of the proceeds in goods which they brought from Italy. The traffic was carried on at first over the St. Gothard Pass, but later over the Grimsel and Gries Passes. The search for crystals became now so animated and successful that the commune of Meyringen in the Hasli Thal were able in 1734 to regulate the course of the Alpbach at a cost of 1,426 kronen 10 batzen, entirely out of the tithe paid on crystals. There were subsequently considerable finds of crystals in cantons Wallis and Uri, notably that of 1868 on the Tiefenstock, but none of them approached in value that on the Zinkenstock.

At the Club festival in 1889 a paper was read by Prof. C. Schröter on Oswald Heer, the naturalist. A list of his works is given, &c., but the article is chiefly devoted to showing his love for the mountains. He made two first ascents, that of the Piz Linard in the Lower Engadine, August 1, 1835, with the guide Madutz (so often mentioned in the early Swiss tours), and that of the Piz Palü in the Bernina group, with the well-known chamois-hunter Colani.

Prof. F. A. Forel, in his 10th Report on the 'Variations périodiques des Glaciers,' states fifty-five glaciers are retreating at the end of 1889, as against forty-two at the end of 1888. The movement progresses from west to east. Whilst all the glaciers of the Mont Blanc group are now advancing, those of the eastern Alps (with the exception of the Ortler group) are still retreating.

Herr L. Held, after summarising the glacier observations from those of Venetz in 1822 to the present day, reviews the work done on the Rhone glacier from 1874 to 1888. Four rows of stones coloured black, green, yellow, and red were set up across the glacier at elevations of 1,800, 1,890, 2,420, and 2,550 mètres above the sea. Two lines were above the icefall, and two below it. These rows contained respectively 25, 27, 56, and 53 stones of larger size with numbers. At present the black row has cleared the glacier, and the green one also, except a few stones on the moraine of the left bank. The yellow row has passed the icefall, twenty of the fifty-one numbered stones being still visible. The greatest speed attained by this row was 210 mètres (690 ft.) in the year. The red row reached the position of the yellow one in 1886. Its greatest speed was 119 mètres (394 ft.) in the year. Stones that fell into crevasses mostly reappeared below in line with their fellows in the row.

The ablation or decrease of the ice in thickness was on the red line on an average 3 mètres (10 ft.) per year; on the yellow line 4-4½

mètres (13-14½ ft.) per year, and on the green line 12-13 mètres 39-42 ft.). No variation in speed was noticed to a depth of 30 mètres (98½ ft.) below the surface.

Herr A. Wäber made an attempt to find the route from Adelboden to Sierre over the 'Strubeleck' Pass. This pass is described in general terms in Ball's Guide, ed. 1873, Central Alps, p. 47. Leaving Adelboden on July 18 the party spent the night at the Adelboden Alp (1,940 mètres). On July 19, starting at 1.45 A.M., they crossed the Amerten Pass, ascended the Gross-Strubel, and reached the Strubeleck at 9.30 A.M. From this they ascended the Steghorn at 10.30. No descent to the south seemed possible, nor a direct ascent from Adelboden to this point. The party made their way down the steep rock faces of the Steghorn to the Lammerthal and the Gemmi Pass, and thence to Schwarenbach.

The excursion district for 1890-91 is the Prättigau and adjoining valleys, and includes sheets 273-4, 415-16, and 418-19 of the Siegfried atlas. The map of the district in the folding case is a model of excellence. In 1888 125 guides were insured for 373,000 fcs. In 1889 75 guides for 247,000 fcs. The Club still continues to pay 3 per cent. of the premiums. The Zürich office refuses to pay the insurance money to the relatives of Kaspar Streich, who perished in the Caucasus; a subject on which we shall probably have more to say in a subsequent number.

The Club have managed to stop the advertisements which defaced the cliffs near the Devil's Bridge. No new ones will be put up, and the old ones are to be removed.*

They will take no part in forwarding the Jungfrau railway. Great defects are reported in the 'mountain huts,' and much injury from weather. In November 1889 the Stockje hut was completely destroyed by an avalanche. Henceforward the Club will only allow huts to be built where situation has been carefully examined, and whose structure is of the most solid character.

The Bêtamps Legacy (3,000f.) is to be applied to building a hut on the Platte on Monte Rosa at a height of 2,990 mètres (9,810 feet).

* [This unhappily turns out to be premature. From a circular which we have received from the Committee of the S.A.C. it appears that no legal power exists which can either restrain the Corporation of Uri—i.e. the united parishes of Andermatt, Hospenthal, and Realp—to which the land belongs, from letting it, or annul the contracts under which the lessee has, for a consideration, permitted various tradesmen and innkeepers to disfigure the place. The Corporation has indeed somewhat grudgingly consented to cancel the lease, if the lessee is willing. This person, however, declines to forgo the 1,500 francs a year which he expects to make. Under these circumstances the occasion would seem to be a good one for a little 'exclusive dealing.' If all tourists who resent this disfigurement of some of the grandest scenery in the Alps will resolve, so long as the objectionable *réclames* remain, to put up at some other hotel than the 'Bellevue' or the 'Tourist' at Andermatt, it is possible that in a year or two Herr Sebastian Christen-Kesselbach will find it his more profitable course to cancel his contracts with the advertisers (one of whom is his own son, the landlord of the 'Tourist'), and pay such forfeit as they may require.]

The commune of Zermatt has granted the site, but forbids the establishment of a restaurant.

A list is given of no less than 537 Alpine huts, of which some 40 are building or to be built. Of these 273 are opened as inns during the summer, amongst them being included such as the Eggischhorn and Bel Alp Hôtels, the Monte Generoso Hôtel, &c. The highest yet built is the cabin on the Italian side of the Matterhorn (4,144 mètres = 13,498 feet), and the highest projected is that on the summit of the Punta Gnifetti (4,540 mètres = 14,896 feet).

At the end of 1889 the Club numbered 3,344 members, and had a balance of 39,755 francs.

Besides numerous illustrations in the text, the map of the special district and five larger views are in a folding case which accompanies the volume. J. S.

Bollettino del Club Alpino Italiano per l'anno 1889, No. 56. (Turin, 1890.)

The latest 'Bollettino' of the Italian Alpine Club contains a larger number of interesting and valuable papers than has been the case for some years past. Signor Vittorio Sella gives a detailed account of his journey in 1889 to the Central Caucasus. This was undertaken mainly for photographic purposes, and a list of 113 photographs taken, appended to the paper, shows how valuable the results of this journey have proved. The small map given is rather indistinct, but the twenty-one reproductions of photographs which illustrate the article are very interesting, and are generally accompanied by useful notes. This is also the case with the large panorama from near the summit of Elbruz, which thus forms a very useful key to the original magnificent photograph. Signor Sella adds to his narrative some useful practical hints for future explorers in the Caucasus.

Next come two very thorough and complete monographs on particular groups. Signor Bobba describes in detail the ranges round the little known but very beautiful valley of Rhêmes, one of the southern tributaries of the Val d'Aosta. It is to be hoped that it will be reprinted (a number of small slips and misprints having been corrected) in a separate form (together with the many illustrations which brighten it), as it is a model guide-book to the mountains of Rhêmes. The other is a joint paper by Signori C. Fiorio, C. Ratti, and G. Rey on the Aiguilles d'Arves, three fine rocky pinnacles which rise on the borders of Dauphiné and Savoy. These gentlemen have (without guides) ascended the central and southern aiguilles and the lower point of the northern one. They seem to have found the central peak more difficult than usual, but are certainly not inclined to minimise the horrors of the *mauvais pas* on the southern one. Save the actual details of their ascents, almost every fact in their paper may be found in Mr. Coolidge's numerous articles on the group and in the works referred to in the bibliographies of the 'Guide du Haut-Dauphiné.' It would, perhaps, have been more graceful if a fuller and more direct acknowledgment of this perfectly lawful borrowing had been given. As to other points, it may suffice here to say that many photographs (though mainly unpublished) of the Aiguilles are actually in existence, and that the defeat

of the Austrian party on the southern aiguille cannot have been due to the shock of Zsigmondy's death, which took place a fortnight after, not before, the attempt on the peak. It was quite unnecessary to query one of the 'times' recorded by Mr. Coolidge on his second ascent of the same summit, as it is copied quite accurately from these pages. Two useful outline maps are given with this paper, but the sketch (from memory) of the *mauvais pas* already referred to is about as unlike the reality as it can well be. It is to be hoped that this paper will attract the attention of the right kind of mountaineers towards one of the most striking, and even now least known, regions of the Alps.

Professor Achille Ratti narrates his experiences on the Macugnaga side of Monte Rosa. His party (the first Italians to succeed by this route) seem to have reached the summit after two nights spent out on the mountain. On the third day, in the vain hope of recovering a lost ice-axe, they descended a long way down the base of the final rocks of the Grenzspitze, and then remounted to the opening between it and the Zumstein Spitze—the Zumstein or Grenzsattel—of which they thus claim to have made the first passage.

Two minor articles describe some ascents in the Basilicata, and a journey from Palermo to Etna, while geology is represented by a paper by Dr. Sacco (in continuation of his former contributions) on a bone cavern in the Gesso valley. We have kept to the last the paper which contains the most novel and startling announcement. This is by Professor Uzielli, who sets out to prove that Leonardo da Vinci possibly ascended one of the peaks of Monte Rosa (or perhaps a peak in the Adula group). It is known that he went up a high mountain called 'Monboso,' and this Professor Uzielli tries to identify with Monte Rosa. It seems that 'Monboso' is the name still given to Monte Rosa in the Val Sesia, while in the valley of Ayas it is called 'Monte della Roiza' (a name which appears on one map only, published by Magini in 1620); and in Val d'Aosta, 'Les Monts Roeses.' Now Simler in the sixteenth century, in his 'Commentarius de Alpibus,' distinctly says that the mountain which the Salassi call Rosa is named Silvius by the men of the Vallais; * and Professor Uzielli conjectures that

* P. 193 of the Elzevir edition of 1633. There are two other passages in Simler's works which Professor Uzielli might have quoted to show that in the sixteenth century Mons Sylvius was the Vallais name for Monte Rosa. One is in the 'Descriptio Vallesiae' (*ibid.* p. 56), wherein it is said that the Visp flows from Mons Sylvius into the Zermatt valley; and the other in the 'Commentarius de Alpibus' (*ibid.* p. 255), which states that 'per juga Montis Sylvii' there are two passes, one being clearly the Theodul, and the other leading over into the Val Sesia to Varallo, 'alterum in vallem Sessitis fluvii ad Varallum oppidum ducit.' This last pass, which may be the present Lysjoch (though Schott, in his *Die deutschen Colonien am Monte Rosa*, p. 231, makes it the Weisssthor, over which pilgrims are said to have formerly gone to the Sesia Valley, clearly after crossing from the Val Anzasca by a second pass), suits Professor Uzielli's theory very well, while the application of the name Mons Sylvius to the whole chain between the Matterhorn and Monte Rosa seems to point on to the time when that name became limited to the peak of the Matterhorn, and was transformed into the familiar 'Mont Cervin' (see Coolidge's *Swiss Travel and Swiss Guidebooks*, pp. 177-9). Simler too (*ibid.* p. 234) supplies an instance of 'collis' in the sense of a col or

'Monboso' was regarded as a corruption of 'Mons Boscus,' which again was converted into 'Mons Silvius' by the scholars of the Renaissance age. We cannot here discuss at length this very interesting and tempting theory, which seems to us to be weighted with very serious topographical difficulties; but the numerous contributions to the history of Alpine topography scattered broadcast throughout this paper deserve attention, as also the facsimiles of seven old maps of the central part of the Alpine chain, and the mention of the curious inscription 'A. T. N., 1615,' which is said to be still visible at a height of nearly 10,000 feet on the rocky ridge running from the Vincent Pyramide to the Col d'Ollen. Nor can we pass over the very curious extract from Fra Salimbene's chronicle, describing the ascent of the Canigou (9,132 feet), in the Pyrenees, made by Peter III., king of Aragon (1276-1285), a most noteworthy feat which completely throws into the shade Philip III. of Macedon's ascent in the Balkans (181 B.C.) and Petrarch's ascent of the Mont Ventoux in 1336. In short, Professor Uzielli's paper bristles with paradoxes, and is one of the most remarkable contributions to the history of the Alps that has appeared for a long time.

Readers must, however, be warned that his accuracy is not always equal to his erudition. In one or two instances he has quoted Mr. Freshfield as writing the reverse of what he has written (*e.g.* as to the meaning of Rosa). He holds it worth while to argue that Leonardo is correct in asserting that clouds only mount twice in summer to the highest peaks, and that hail, not snow, falls there! and he thinks Mr. Ball invented the name *Höchste Spitze* subsequently to the Swiss suggestion of Dufour *Spitze*. And even in antiquarian and literary matters he is not above reproach. Thus he asserts that Wyndham and Pococke, in 1741, 'made known' the name *Mont Blanc* and attempted its ascent. They did not even mention 'Mt. Blanc'; the Genevese party of 1742 did. He says that Bourrit, by a map published in 1789, popularised the name. It had been used by De Luc in 1772; Bordier, in 1773, headed a chapter with it; and, finally, De Saussure published his first volume in 1779. We might proceed, but enough has been said to show that Signor Uzielli's statements must be verified before use by all cautious students.

Zeitschrift des Deutschen und Oesterreichischen Alpen-Vereins. 1890.
Vol. xxi.

This volume contains two historical articles. Dr. Oswald Redlich (Innsbruck) gives an account of the bishopric of Brixen up to 1590 A.D.

pass ('collem Crucis,' the well-known Col de la Croix, between Bobbio and Abriès), a tendency which Professor Uzielli is inclined (on Durandi's authority) to date back as far as 1011, though he thinks that the word used was rather 'collum' (see his article, p. 103, foot-note). So too in the introduction to the 1634 Elzevir edition of Lambert Van der Burch's treatise, *Sabaudia Respublica et Historia*, we read of 'Agnellus collis, petram habens pertusam per quam ex Galliâ in Italiam patet iter,' though there is here an unlucky transfer to the Col de l'Agnello of the famous fifteenth-century tunnel under the Col de la Traversette, which is no small distance off.

This was established as early as 550 A.D. at Säben, above Klausen, and transferred to Brixen in 990 A.D.

Dr. Joh. Alton (Wien), who wrote in a previous volume upon the Grödner Thal, now takes us to the adjoining district of Enneberg and Buchenstein, and gives many curious particulars about its population, the nobles, and castles in former times.

Herr H. S. Prem (Innsbruck) gives an explanation and account of the growth of the legend of Kaiser Max on the Martinswand.

Herr August Schaeffer (Wien) writes on Alpine landscape painting an article illustrated by no less than sixteen engravings of Alpine landscapes by different artists.

Professor F. Schindler (Riga) discusses the regions and limits of cultivation in the Oetzthal Alps. He finds that the conditions in the Innthal are favourable, owing partly to the low elevation and partly to the 'scirocco.' These conditions must also affect the Oetzthal and other lateral valleys. Also that as the average height of a mountain increases so the height of the isotherm of 0° , and the consequent height to which vegetation will rise, also increase, above all when other conditions, such as favourable exposure, &c., are added; and he adds that all the conditions are more satisfied in the Oetzthal than anywhere else in the Eastern Alps.

Dr. Fritz Frech (Halle a. S.) writes on the geology of the cosmic Alps, with illustrations of the different periods, and discusses the causes which led to their present form.

Herr Karl A. von Zittel (München) describes a visit to the Rocky Mountains in 1883. The only permanently active volcano in this range is Mount St. Elias (5,822 metres=19,100 feet*). Mount Shasta (4,423 metres=14,511 feet) is best known. Mount Tacoma (4,404 metres=14,449 feet) was first ascended in 1857 by Lieutenant Kautz, and twice in 1870. The writer, along with four German friends and three Englishmen (Messrs. Bryce, Benson, and MacLeod), visited the mountain in September 1883, but only reached, on the ice of the Willis Glacier, a height of 10,000 feet. Some fine peaks in the range—Mount Adams, Mount Helens, and Mount Baker—whose heights and geological formation are unknown, yet remain unexplored. The great difficulty is the approach to their bases, which are surrounded by almost impenetrable forest.

Dr. S. Finsterwalder (München) discusses the two outbursts which took place from the Martell Glacier on June 5, 1888, and June 5, 1889. The three glaciers Zufall, Langen, and Furkele had formerly a common termination. The Furkele Glacier has shrunk back, and the Zufall Glacier now crosses the valley, and has blocked the Langen Glacier. The water accumulates in a depression between the two glaciers and the left bank, and finally works its way out by a channel near that of the Plima. A repetition of the outbreak is to be expected annually, as long as the glaciers maintain their present position. The inhabitants believe the inundations to have been caused by the bursting of a sub-glacial lake, but this is improbable.

* See p. 371.

Herr Friedrich Müller (Triest) gives an interesting description of the explorations in the grottoes of S. Canzian. The river Reka, after running for thirty miles above ground, disappears here, and after passing below the Karst falls into the sea as the Timavo. These caverns were known from the earliest times. They were visited and partially explored in 1818 A.D. by the savant Hoppe, but the first serious attempt to render them accessible was made in 1823. The first who ventured in a boat on the river was Herr G. Svetina Brunnenmeister, of Trieste, in 1840. In 1850 an expedition, headed by Dr. Adolf Schmidl, assisted by miners and firemen, worked for fourteen days, and succeeded in reaching the sixth waterfall (about 400 yards from the entrance), when a sudden rise of the Reka carried away all their apparatus and obliged them to beat a hasty retreat. The idea of supplying Trieste with water from this river was abandoned, and the work of exploration discontinued for many years. In 1883 the Section Kustenland took up the matter. The writer and three friends, in a series of difficult and dangerous expeditions between January 1884 and September 1887, succeeded in reaching a distance of 1,000 yards from the entrance. Three grand halls beyond the Rudolf Dom were discovered. As the journey to the farthest point occupied seven or eight hours, their first care was to construct a 'Rettungsweg,' to secure their retreat in case of a sudden rise of the water. The quickness with which this sometimes ascends nearly to the roof of the great domes is astonishing. Since 1887 their labours have been devoted to making their discoveries accessible to the public. The writer concludes with an account of various remains found in the cavern, amongst which is a bronze helmet found in a crack above the stream, about 400 yards from the entrance. It was probably floated into its position on the dead body of its wearer. Experts assign to it the date of 500 B.C.

Herr F. Kilger again writes on the Mieminger Kette, and describes various excursions in this little-known district. The Obere Platte (2,743 mètres=8,999 feet) as seen from the N. is a fine obelisk, and affords some sharp climbing. Good quarters are to be found at Obsteig and Obermicmang.

The Austrian Alpine Society 'Preinthal' has devoted itself to the exploration of the Lesser Tauern. This region is enclosed by the Gross Arlthal on the W., the upper courses of the Enns and Muhr on the N. and S. respectively, and on the E. by the line of railway from Liesing to Leoben. Herr Hans Wödl (Wien) describes the peaks and passes in the western part of this district, and some ascents, of which that of the Faulkogel (2,653 mètres=8,704 feet), a limestone ruin (as its name implies) at the head of the Ennthal, is perhaps the most interesting. The easiest of its peaks was ascended in 1882 by Herr L. Purtscheller. The writer ascended the most difficult.

Dr. Carl Diener gives an account of his excursions about Sappada (Canale di Gorto) in 1889. These, he says, exceed in difficulty anything he knows in the Dolomites. Besides the ascents (five in number) made by himself, he gives a summary of peaks climbed by other tourists in the district. Three of these were climbed in 1880 by Mr. M.

Holzmann,* with Santo Siorpaes; Monte Siera (2,470 mètres=8,104 feet), Mont Gheu (2,470 mètres=8,104 feet), and the S.W. peak of the Terza Grande. The most lively account amongst them all is the ascent of the Engen Kofel (2,350 mètres=7,710 feet) by Herr Julius Pock, of Innsbruck, September 23, 1889. The weather was bad, and Pock proposed to the guide, Peter Kratter, to ascend another peak nearer to them. 'You *must* go to the top,' said Kratter. 'How they would laugh at me in Bladen' (Sappada) 'if they knew I had guided a tourist and not taken him to the top.' Pock's little dog, as usual, accompanied him, but hurt one of his feet, and had to be carried in the guide's *Rucksack*. This animal, in 1888, was lost for a fortnight on the Walderkamm Spitze, near Innsbruck, and was restored to its owner a perfect skeleton, but soon recovered. Dr. Diener describes the routes by which Sappada may be reached, the inns, &c., and this article, as well as the two preceding, may be regarded almost as guides to the regions referred to, which they describe.

Herr Gustav Euringer, who has made so many first ascents in the Dolomites, describes two ascents in Switzerland. On August 31 he reached the Wengern Alp, with the intention of ascending the Eiger. He had with him the guide Kederbacher, of Ramsau, and dispensed with a local guide, as an Englishman (Mr. Hills) intended to make the ascent the same day. They started at 3.30 A.M., and reached the summit at 10.15 A.M. Shortly before reaching it Mr. Hills asked them to go in front, and Kederbacher distinguished himself. Herr Euringer was much impressed, especially by the narrow ice arête on the descent. On September 2 they went to Murren, and next day to a bivouac near the Buttlassen Lücke to ascend the Gspaltenhorn. They took with them only a porter, Ulrich Brunner, who had never been farther than the *gîte*. On September 4, starting at 4.30 A.M., they reached the base of the rocks about seven. Here they kept too much to the right, and got into an unpleasant position, from which they extricated themselves by an ugly traverse, which they will not readily forget. The 'Böse Tritt' was easily passed, by the help of the rope which is fixed there. Herr Euringer thinks that even without this it would not be very difficult, and considers the climbing in many of the Dolomite ascents more difficult. The snow above was favourable, and the summit was reached at 9.15 P.M. Leaving at 10.15, the Buttlassen Lücke was reached at 12.15, the Seftinen Furke at 3.30, and Murren at 7 P.M.

Dr. Johann Frischauf (Gratz) takes us to a remote district, the 'Uskokan Gebirge,' a mountain region lying between the Save and its branches, the southern Gurk and the Kulpa, on the borders of Carniola and Croatia. There is good accommodation at S. Barthelma (188 mètres=617 feet), on its northern edge, and at Möttling (166 mètres=544 feet), on the S. The church of St. Nicholas (969 mètres=3,180 feet) commands a very fine view of the Sannthaler and Julian Alps. The highest summit in the district, on which stands the ruined church of S. Gera, is only 1,181 mètres=3,874 feet.

Herr J. Baumann describes the mountains of Jotunheim, N.E. of

* See *Alpine Journal*, vol. x. pp. 106, 107.

the Sogne Fiord, in Scandinavia. The beauties of this almost uninhabited district have been made more accessible to tourists by the huts (inns rather), three in number, built by the Norwegian Tourist Club at suitable spots. Good beer and wine and tinned provisions are always to be had. The tourists (Norwegian, that is, for he specially excludes the English, of whom there are many) are very good fellows, though not well equipped for mountaineering.

A chapter (xi.) on the Pasterze Glacier, and the usual review of the scientific literature of the year, conclude the volume.

Besides upwards of 120 illustrations in the body of the work, there are, in a band attached to the volume, the sixteen engravings illustrative of Herr Schaeffer's article; panoramas from the Luschari Berg, and the Plosse, near Brixen; a map of the Gross Glockner group, &c.

J. S.

Annuaire du Club Alpin Français, 16^{me} année, 1889 (Paris).

If the ranges which lie between the Val de Rhêmes and the Val de Tignes are not well known by this time, it is not for want of thorough exploration. As will be seen by reference to the Italian 'Bollettino,' reviewed in our present number, Signor Bobba has worked them out from the Italian (which oddly enough is in this case the north) side; while in the 'Annuaire' before us the most important mountaineering paper, by M. Henri Ferrand, gives the results of his investigations from the other side of the frontier. His studies were mainly devoted to that beautiful peak, the Tsanteleina (formerly called Ste. Hélène), of which he aids his readers to understand the topography by photographs taken from far and near. As seen from the Pointe de Goletta (a small eminence near the pass of that name, which M. Ferrand has scored as a 'new ascent'), it bears, to judge from the view given, a striking resemblance to the Adamello. It is interesting to note that in his paper M. Ferrand sketches out, as a possible new and improved route to the summit, one which, as will be seen by reference to the last number of this Journal (p. 297), he succeeded in effecting just a year later. We do not understand his 'axiome bien connu,' that high peaks are usually ascended by the south face. As a matter of fact, very few of the highest were first ascended from that side.

M. Pierre Puiseux follows with an ascent of Mont Tondou, a peak which seems to have been less frequented than it deserves. From its position on the extreme south-west of the mass of Mt. Blanc, it ought to give a fine view both ways. M. Puiseux did not get the view, but he seems to have had an interesting little climb, and gives an entertaining account of it. The name of the next paper, 'Rochers et Aiguille d'Argentière,' appears at first sight to take us to the other end of the Mt. Blanc range. As a matter of fact, however, it relates to quite a different region. This Aiguille d'Argentière, of which M. V. Cadiat writes, is in the group of the Belledonne, near Allevard. It seems to be a rather exciting little rock peak, 2,917 mètres high, of which 15 or so still remain to be climbed; the final mass, which he compares to a house, having been 'one too many' for M. Cadiat.

The next writer, M. P. Beaumont, does however take us very near to the real A. d'Argentière. He has been exploring the frontier between the Cols de Balme and du Tour, a very little known bit of the chain, and ascending the principal summits in it. The peculiar taste of the Latin races in the matter of nomenclature unluckily makes it impossible in this Journal to indicate, otherwise than by description, the highest of these, of which M. Beaumont appears to have made the first ascent. It lies about half a mile N.E. of the Aiguille du Tour, marking a salient angle in the French frontier, and is credited by the maps with 3,349 mètres (just under 11,000 feet) of height: an estimate which M. Beaumont's observations lead him to think below the mark by nearly 100 m. A well-executed map, on the scale of 1 : 30,000, accompanies the paper.

An ascent of the Ortler (under the rather comprehensive title 'Les Montagnes du Tirol'), by M. Edgar Vatin, completes the tale of strictly Alpine papers, though one on the Pic de Campbiel (3,175 m.) in the Pyrenees, by M. Fontès, is in its proper place in an Alpine periodical. The same may be said of the geology, fauna, and flora of the Pic du Ger, and of a short paper by M. Durier on the movements of the Chamonix glaciers. But when we come to grottoes, caves, 'Six Jours au Pays des Ksour,' 'Autour de la Mer des Antilles,' and, oddest of all, a boating expedition on the Ardèche, we can only say that the term *Alpin* 'surprises by himself,' etc. All this of course makes a very handsome volume; even though the pictures are not quite up to the mark of those which adorn the 'Zeitschrift.' In the matter of book-illustration, where anything beyond mere prettiness is required, Germany is certainly ahead of France just now.

On March 8, 1890, a commemorative tablet was placed on the house at Dijon in which Adolphe Joanne was born. This volume contains the speeches made on the occasion by MM. Party, Ch. Durier, and Paul Joanne.

We are sorry to learn that the numbers of the C. A. F. have undergone a slight reduction. As this however leaves it with 5,356 members (as against 5,431 in the previous year) there seems no immediate fear of its extinction. Still we trust that the vigorous appeal which M. Caron makes in his annual report of the Club's progress will bear the fruit it deserves.

Die Entwicklung der Hochtouristik in den Oesterreichischen Alpen. Von Dr. Gustav Gröger und Josef Rabl. (Vienna: Lechner.)

As perhaps might have been expected from what we know of the Austrian character, sport and adventure rather than even an ostensible pretext of science gave the first incitement to mountain exploration in that region of the Alps. It is all very well for Herren Gröger and Rabl on their first page to talk about the discussions on natural science in the first circles of Döllach in the Möllthal. Very likely the Barons of Zoys and Wulfen did meet there and talk about the mountains; but it may be safely assumed that their interest in the mountains did not extend far beyond the levels at which *Campanula Zoysii* and *Wulfenia*

Carinthia were to be found. When his Eminence Franz Xaver 'Altgraf und Fürst Salm-Reifferscheid, Cardinal und Fürstbischoff von Gurk' (let us give the good man his full style and titles for once) decided at the age of fifty to try if he could get up the Glockner, and 'do for Austria what the first climbers of Mont Blanc had done for Switzerland,' it is quite clear that scientific observation did not trouble him much. Indeed a ladder, a telescope, and an iron cross to set up on the summit seem to have represented the whole of the apparatus taken by the first party. The Prince-Bishop, like a wise man, had the route explored, and a good solid hut built at a height of about 9,000 ft. before he adventured himself. In 1799 a party, of peasants only, reached the second summit, or Klein Glockner; and in the following year, on July 26, a mighty caravan of sixty-two persons, the Bishop at their head, supported by his Vicar-General, Freiherr von Hohenwarth, many nobles and clergy, and his cook, proceeded to the hut. There they feasted, we are told, on pine-apples and peaches, figs and melons, champagne, tokay, and malaga. It is not surprising that the journey was not resumed till the next day but one. The Bishop got as far as the Hohenwarth-hütte, which had been erected near the point now called Hohenwarth-scharte, about 10,300 ft.; the Vicar-General and two other clergy achieved the Klein Glockner, and the actual summit was reached by the guides, and Pfarrer Horrasch of Dellach in the Drauthal. The name of this plucky parson ought surely to be better commemorated. He alone, of all the most eminent Glockner explorers, seems to have no hut dedicated to him. Next day science had its chance. 'The young mathematician Valentin Stanig, who had been detained in Heiligenblut by the necessary scientific counter-observations'—to what, we are not told—perhaps the figs and champagne—went to the top with the guides, and occupied himself in the scientific task of climbing up the pole which the guides had erected, 'so as to be able to say he had been higher than the Glockner.' Our authors remark upon the interest of this detail, as the first case in which we meet with documentary evidence for the 'echt sportlich angelegte Hochtourist.' And he the scientific member of the expedition! Then they all went down again; the Bishop anticipating M. Janssen by crossing the Leiterkees on a sledge. No one seems to have been the worse except Valentin Stanig, who took the mountain fever in an acute form. In a few days he had made the first ascent of the Watzmann (where he was nearly brought to grief by his barometer); in December he went up the Untersberg. In 1808 he climbed the Triglav, of which the first ascent had been made twenty years before by one Lorenz Willonitzer. Stanig died a canon of Görz in 1847. Prince-Bishop Salm had yet another 'shot' at the Glockner in 1802, and got as far as the second peak, which is about 100 ft. lower than the highest, or somewhere about 12,350 ft.; a very good performance for an elderly ecclesiastic; indeed probably an episcopal 'record.' He lived another twenty years, but does not seem to have made any more ascents. In this truly *gemüthlich* fashion did Austrian mountaineering begin. From it our authors carry us on, through Dr. Gebhard, the Paccard of

the Ortler, and Joseph Pichler (or P'sseyrer Josele), its Balmat, Archduke John, Thurwieser and his friend Prince Schwarzenberg (another climbing bishop), Ruthner, Grohmann, Payer, Barth, Hofmann, Stüdl, Senn, and other well-known names, to the 'Vienna School,' the Zsigmondys, Purtschellers, and Schmitts of these latter days. These last names may serve to remind us how fast and how far Austrian climbing has progressed since 'C. C. T.' ascended the Glockner in 1873 ('Alpine Journal,' vol. vi. p. 151). The greater part of the book is taken up with a *catalogue raisonnée* of tours notable either as made for the first time, or for any other reason, from 1852 onward. As a list of 'New Expeditions,' it is not indeed quite complete, but amply sufficient to show the gradual development of mountaineering in the Eastern Alps, and the conquest of them; in which the English reader will find that his countrymen have borne no mean share. It may be enough here to recall the fact, that if Mr. Tuckett did not make the first ascent of the noblest of all Tyrolese peaks, the Königs Spitze (and we doubt much if his only alleged predecessor, Corbinian Steinberger, is not mythical), he certainly showed the way up it.

The book is an example of the advantage to be obtained from looking at things from different points of view. Herr Rabl, if we may judge from his utterances in the 'Touristen-Zeitung' and other quarters, has no special affection for the modern 'Vienna School,'—the school of guideless, or even solitary expeditions, of 'Maximalleistungen,' 'Gratwanderungen,' and so on, of which Dr. Gröger is a distinguished exponent. So between them they have produced a very interesting and useful book.

Across East African Glaciers. By Dr. Hans Meyer. Translated from the German by E. H. S. Calder. (Philip.)

Just a year ago we gave in these pages a summary of the account published by Dr. Meyer in Petermann's 'Mittheilungen' of his successful efforts, aided by Herr Purtscheller, to ascend the highest peak of Kilimandjaro. The present handsome volume adds little information for our purposes to that account; since, from an Alpine point of view, we have not much to do with his journey to the mountain, or his return to Zanzibar, or his estimate of the comparative merits of different African potentates, or his criticisms on former travellers' estimates of the same. Still less are we concerned here with the attack which he has thought fit to make on Mr. H. H. Johnston, a traveller who, as his review of the book in a recent number of the *Speaker* shows, is thoroughly competent to defend himself. It may, however, perhaps not be out of place to remark that one of Mr. Johnston's statements which excites Dr. Meyer's wrath, to the effect that Kilimandjaro is a mountain which could be climbed without even a walking-stick, would appear, if Dr. Meyer's photographs can be trusted, to be strictly true. Judging from these, which show the incline pretty much all over the mountain, it would seem that the slope of 35° up which he and Herr Purtscheller cut their way represents by far the steepest snow-slope to be found upon it; and, as a rule, the mountain generally seems to lie at an angle with which decent hobnails ought to be quite able to

cope. Where the 'precipice running almost sheer down to a depth of 3,000 feet' hides itself, we cannot divine. No trace of it is to be seen in any of the views of Kibo, whether from E., S.E., or S.W., nor in the views given in Mr. Johnston's book. Dr. Meyer flatly contradicts his predecessor's statement that he reached a height of 16,315 feet. The aneroid is, of course, not wholly trustworthy as a means of estimating heights—some sceptics, we believe, are not convinced that Dr. Meyer reached a height of 19,700 feet—but there is a curious corroboration of Mr. Johnson's estimate given by Dr. Meyer himself. Mr. Johnston stopped when he reached the snow. Now Dr. Meyer, at very nearly the same time of year, a little earlier, if anything, in the summer, met with the first snow, in the same quarter of the mountain, at 16,400 feet. However, these bickerings and jealousies are things of which the Alpine Club, we trust, knows nothing. All we know is, that Dr. Meyer and Herr Purtscheller have achieved one of the most notable 'first ascents' in history; not, indeed, from the purely mountaineering or gymnastic point of view—there it is surpassed, no doubt, by the conquest of many a tooth and pinnacle in the Alps—but from the ancient renown of the peak which they have reached and the kind of mystery which has so long attached to it. Either they or someone else ought now to explore the W. side of the mountain, and bring us news of the great glacier, the only true glacier, it would appear, existing there, which streams through the breach in the crater. From the description of the ice-cap on the other side, it would seem to resemble more the odd fan-shaped glaciers which lie on the N. side of the Marmolata than any others which we know in the Alps. There is no great *névé*-basin outside the crater; the ice is formed from the snow which falls on the summit-ridge, and packs together by its own weight, alternate thaws and frosts no doubt aiding; a process which we have had plenty of opportunities during the present winter of seeing at work on a smaller scale.

The book contains appendices on the geology of the region—Kibo, it may be observed, is a mere infant in years beside its fellow Mawenzi, wherefore Mawenzi, though the shorter, is by far the tougher adversary, and so far remains unconquered—on butterflies and beetles, lichens and mosses, liverworts and other plants, cartography and bibliography, to review all which properly would require a scientific syndicate. The translation is excellently done, and would, indeed, never be taken for other than an original if the title-page did not reveal it. We even suspect that the translator, in his desire to be idiomatic, has occasionally strayed a little from the original; at any rate, we wonder where he found German equivalents for 'a sporting parson' or 'a regular masher.'

Of the illustrations, some are photographs; some, drawings in Mr. Compton's well-known style from photographs; some, chiefly the vignette initials and tail-pieces to the chapters, woodcuts. All are charming.

Minor Notices.

The Swiss Alpine Club has commemorated the completion of its first twenty-five years of existence by the publication of a little work,

mainly statistical in character, to show the advance made in that period by the Society. The work (*Die Ersten 25 Jahre des S.A.C.-Glarus: Bäschlin*) has been executed by Dr. Ernst Buss. For some reason—darkly hinted at, but not revealed—it appears two years after date. Fortunately, this delay only enables the chronicler to record further prosperity. Starting in 1863 with 8 sections and 358 members, the Club had reached by the middle of 1888 the respectable figure of 2,989 members, distributed among 34 sections, with an expenditure for the year of over 600*l.*, and a capital (apart, as we understand, from yearly subscriptions) of twice that amount. It had, indeed, reached nearly its present figure in 1879, but was reduced to less than half by expenditure on the measurement of the Rhone glacier. These, indeed, are figures to make the mouth of our treasurer water.

It is amusing to read that when the proposal to found a Club was first mooted, in 1863, among Swiss mountaineers, one of the grounds of opposition which the promoters had to encounter was that 'it is unworthy of us to ape the English; we require something much better.' Better counsels prevailed, and the climbing world at large has profited.

Of what may be called the 'sub-Alpine' Clubs, one of the most energetic appears to be the *Associacio d'Excursions Catalana*. Their only mountain of anything like Alpine dimensions is the Canigou (2,785 mètres = 9,132 feet), which they seem to ascend with praiseworthy diligence. A pleasant account of one of these ascents is given in the *Bulletí* for January–March, 1890 (Barcelona, at the Society's office), by D. Francisco de S. Maspons y Labros. The excursion seems to partake more of the nature of a picnic than of a climb, the terms 'perilous' and 'difficult' applied to the last bit being probably complimentary rather than accurately descriptive. The same number contains an account of a visit to a subterranean river. Otherwise the articles in this number and the next are mainly scientific and literary. Besides its 'Bulletí' the Society has put out sundry guides to various parts of Catalonia, which seem well arranged and practical. Of two before us the joint authors are D. Arthur Osona and D. Joseph Castellanos. That to the Western Pyrenees is announced as in preparation.

For the series of *Touristen-Karten*, published by Artaria at Vienna, and executed by R. Maschek, Herr Meurer has recently edited six, comprising, roughly speaking, the whole of Tyrol except a little on the extreme W. and N., with a small portion of Salzburg and Carinthia. They are on a scale of $\frac{1}{130000}$, or almost exactly two miles to the inch, and are printed on *Leinenpapier*—i.e., so far as we can make out, linen faced with a coat of paper-pulp. This material is untearable, and much lighter, of course, than paper mounted on linen. By its use, too, the divisions which are necessary in a mounted and folded map, and which always come in the most inconvenient places, are wholly avoided. The maps themselves seem to be based on the 'Generalstabskarte,' and have the merits and defects of that work. They give a good deal of information to anyone who has learnt to read them, and are in the main accurate; but they are far too heavily shaded, and the

letters used are not clear for their size. Besides the information usually given in maps, these show the approximate average times required for the various routes, indicated by red lines, arrows for direction, and figures; also the position of huts, those which are 'bewirthschaftet' in summer being distinguished by a line under the name. We expressed our opinion some time ago* as to the red-line system; the other speciality of these maps is purely useful. The Austrian map-makers have, however, a long way to go before they can rival either the North Germans or the Swiss.

Herr Leuzinger has published a *Relief-karte* of Switzerland (Bern, Kümmerly), to which the remarks which we made in August last on his map of Tyrol equally apply. The scale is a trifle smaller (530000), the names, perhaps, rather better selected. He sends also a specimen of the map before the insertion of the names, which shows the configuration of the country a good deal better.

Mr. L. Cumming, of Rugby, has reprinted in a pamphlet called *Notes on Glacial Moraines* (Liverpool, Tinling) a paper, originally published in the 'Proceedings of the Liverpool Geological Society.' His main points are that the moraine is composed entirely of fragments fallen from the rocks surrounding the glacier, *not* broken off by the glacier; that the stones in a fresh moraine are very rarely polished or rounded, and, therefore, that when such stones are found in ancient deposits we must assume the operation of water; and that the sand which forms the cement whereby the stones of a moraine are bound together is rather that which winds have blown on to the surface of the snow or glacier from dry places than the product of any grinding process due to the glacier itself, which, in his view, is only to be looked for at the bottom of the glacier. He suggests 'with hesitation' that the convexity of the transverse section of glaciers is due to the more rapid melting of the sides, caused by the radiation from the rocks which bound it, and accounts in the same way for the fact that moraines on a glacier often appear to lie in a kind of trough. On the vexed question of the glacial origin of lakes he says: 'Having in the last twenty years visited very many valleys whose upper ends are occupied by glaciers, both in Norway and in Central Europe, the writer has never seen one such lake in process of forming—as, for instance, a glacier ending in such a rock-bottomed lake, which increased in length as the glacier retired.'

WINTER EXHIBITION.

THE annual exhibition of pictures and photographs, brought together on the occasion of the winter assemblage of the Alpine Club, attracted this year even more attention than usual. For several years the photographic section of the exhibition has been markedly increasing both in size and importance. This is doubtless chiefly due to the fact that the camera is becoming a more and more ordinary part of the normal

* *Alpine Journal*, vol. xiii. p. 286.