

- Ulrich, M.** Das Lötschenthal, der Monte Leone, der Portiengrat und die Diablerets. 8vo, pp. 291-327. 20 Jan. 1851  
 — Der Geltengrat, das Heremence- und Bagnethal, das Einfischthal und der Weissthorpass. 8vo, pp. 35-74. 20 Dec. 1852  
 The above are taken from Mit. d. naturf. Ges., Zürich.  
 — Die Ersteigung des Tödi. 8vo, pp. 28; map. Reprinted from Mit. d. Naturf. Ges., 94-6. Zürich, Zürcher u. Furrer, 1854
- Vadianus.** Pomponii Melae de orbis situ libri tres, accuratissime emendati, unâ cū Commētariis Ioachimi Vadiani Heluetii castigatioribus. . . . 4to. Basileae (A. Cratander) 1522  
 In Book 1, p. 34, of this second edition, occurs the account of Vadian's ascent of Pilatus, 'anno posteriore,'? 1521. This does not occur in the 1518 edition.
- Walder, Dr. E.** Aus den Bergen. Wanderungen durch Graubünden und Tirol. 8vo, pp. 170. Zürich, Schulthess, 1896
- Waltenberger, A.** Orographie des Wetterstein-Gebirges und der Mieming-kette. 4to, pp. 59; maps. Augsburg, Lampart, 1882
- Weilenmann, J. J.** Eine Ersteigung des Piz Linard im Unter-Engadin. 12mo, pp. 49. St. Gallen, Scheitlin & Zollikofer, 1859  
 Reprinted in Aus d. Firnenwelt.
- Wenzel, Hch.** Reiseskizzen aus Tyrol und dessen Nachbarschaft. 8vo, pp. 254. Bunzlau, Appun, 1837
- Witte, K.** Engadin. 8vo, pp. 39. Berlin, Schultze, 1855
- Zurcher e Margollé.** Le ascensioni famose alle più alte montagne del globo. Biblioteca di un curioso. 4to, pp. 196; ill. Milano, Tipog. editrice lombarda, 1876  
 A translation of Les Ascensions Célèbres.

The following is an analysis under subjects of the new items of the preceding list:—

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| Africa: Volkens.  | Great Britain: Benson, Collie.                       |
| America: Abercrombie, Fountain.                                   | Himalayas: Chandra Das, Collie, Neve.                |
| Arctic Regions: Abruzzi.  | Mountains, general: Grand-Carteret, König, Le Blond. |
| Canadian Rockies: Collie.   | Norway: Collie.                                      |
| Eastern Alps: Alpenzeitung, D.u.Oe. Zeits., Ficker, Wolterstorff. | Photography: Mazel.                                  |
| Fiction: Dessauer, Rivett-Carnac, Stratz.                         | Poetry: Arnold, Godley, Renk.                        |
| Geology: D.u.Oe. Zeits., Rothpletz.                               | Pyrenees: Darsuzy.                                   |
| Glaciers: Dauphiné, Machacek.                                     |  |

## NEW EXPEDITIONS IN 1902—continued.

### Tarentaise District.

POINTE DE LA GLIÈRE (11,109 ft.).—On July 29, 1902, Messrs. L. W. Rolleston and T. G. Longstaff climbed this peak by a route which appears to be partly new. The mule path is followed for a short distance from the Vanoise hut until the lower end of the moraines of the Grande Casse glacier is reached. Skirting round their foot, a short grassy slope is ascended to a low col, on the other side of which a small lake is shown on the French map. Snow slopes are then ascended to the (true) right side of the terminal ice-fall of the glacier which lies on a shelf to the S. of the peak. No difficulty was experienced in ascending this ice-fall—always keeping to the (true) right; but it is possible that stones occasionally

fall here. The distance is, however, very short, and the comparatively level glacier shelf is quickly reached. This is ascended to the col between the two peaks of the Pointe and Aiguille de la Glière, which was easily reached in  $2\frac{1}{2}$  hrs. from the hut. The ascent is completed by the only route at present discovered—*i.e.* up the steep S.E. ridge. The descent of the glacier from the col just mentioned to the end of the lowest snow slopes and the grassy col occupied only 30 min. The ordinary route is by the cliffs to the S.E. of the glacier, and appears to take considerably longer.

### CANADIAN ROCKY MOUNTAINS.

Starting on July 24 from Laggan Railway Station, Messrs. H. Woolley, H. E. M. Stutfield, G. M. Weed, and N. Collie, with the guide Hans Kaufmann, on July 29 ascended *Mt. Murchison* (11,100 ft.). The route followed was first up a snow gully on the N.W. face, and afterwards up the western arête to the summit. On August 4 the above party, together with Rev. J. Outram and Christian Kaufmann, ascended *Mt. Freshfield* (10,900 ft.) from the Freshfield Glacier. The same route was followed as that described in a former number of the 'Journal' (vol. xix. p. 447). After passing the highest point reached on that occasion the S.E. arête became more difficult, but, led by Christian Kaufmann, the summit was reached. The descent was made on the southern side of the mountain, and the route followed in the ascent was joined just above the Freshfield Glacier. The same party climbed *Mt. Forbes* on August 10. Starting early from a bivouac on the southern side of the mountain and at the limit of the forest, a very fine climb up the S.E. arête took the party (again led by C. Kaufmann) to the top of the mountain. The descent was carried out on the N.W. face, which for more than 1,500 ft. consisted of hard snow at a very steep angle and necessitated the cutting of every step. A col was finally reached which joins *Mt. Forbes* with the main range on the W., a descent from the col to a glacier on the S. was made; this glacier was then crossed to the S.E., and at sundown the bivouac was reached.

On August 11 G. M. Weed, Rev. J. Outram, and N. Collie visited a new pass—*Bush Pass* (7,600 ft.)—which crosses the continental divide from the head waters of the Saskatchewan to those of the Bush River. On its S.W. side there is no snow, but on the other a small but steep glacier makes it impossible to get horses across this pass.

The *House Peak* (10,800 ft.) was climbed on August 14 by the first mentioned party (Rev. J. Outram and C. Kaufmann having left on August 12 to climb some peaks further north). The ascent was made from the W. side and consisted almost entirely of climbing on snow.

On August 21 the Lyell Ice-field was visited.

During the return to civilisation a rock-peak—*Mt. Noyes* (10,000 ft.)—situated on the E. side of Bear Creek, was climbed.

From its summit a most extensive view was obtained from Mt. Columbia on the N. to Mt. Temple, S. of the Canadian Pacific line. Laggan Railway Station was reached on August 27, a month and four days having been spent amongst the mountains. Before returning to Banff, Desolation Valley (S. of the railway line) was visited. From this valley *Mt. Neptuak* (10,500 ft.) was ascended by the N.W. arête, which gave some excellent rock-climbing. The party returned to Banff on September 5.

MOUNT COLUMBIA (alt. *c.* 12,500 ft.). *July 19.*—With Christian Kaufmann, guide. Situated about 70 miles N.W. from the point where the C.P.R. crosses the continental Divide. Route taken: from Laggan up the Bow valley, across the Bow Pass, down the S. fork of the North Saskatchewan, up the N. fork as far as the W. branch, which was ascended to its source. Distance by trail, about 120 miles.

Left camp 2.15 A.M., alt. *c.* 6,000 ft., and traversed trackless forest for  $\frac{3}{4}$  hr., then took to the dry glacier close to its point and proceeded by it and terraces on the left bank for 1 hr. From thence we were on snow the whole way. Early it was hard, but soon became troublesome. Some very large crevasses were met with, and two awkward bridges had to be crossed. We roped at 5.30 at about 8,000 ft., and swung well round to the E. and N. to avoid the much crevassed glaciers of the Pacific slope and the rocky portals between which the central one cascades. A halt was made at 7.30 for breakfast (*c.* 9,500 ft.) before descending into the dip at the head of this central icefall, and our way then led gradually upwards over wide undulations until the base of the mountain proper was reached about 11, at an altitude of some 10,500 ft. Half an hour later we made our second stop, just below the bergschrund, above which the only climbing at all began. Thus far it had been a long, monotonous tramp, over a dozen miles in length, through soft snow, with an almost constant easy rise. Now a steep snow arête rose before us, somewhat ladderlike, in which we sank up to our knees or deeper, though at almost every step our feet reached a glassy surface of ice, necessitating caution against both slipping and avalanching. Near the summit the gradient became much easier until the last few feet, where steps had to be cut up a steep ice wall, and at 1.40 we stood upon the white top, and planted a Union Jack at the highest altitude yet reached in Canada.

The panorama was magnificent. Peaks over 80 miles away, south of the railway, were clearly recognised, and others more distant still in the Selkirks stood up distinctly. All the mountains within sight appeared to be of less elevation than our peak, except Mt. Forbes, of practically equal height, and Mt. Robson, 60 miles or so still further north. My estimate of Mt. Columbia's altitude may be still too great, but in any case a very large reduction must be made in almost every one of the reputed heights in this region.

Leaving at 3.15, the steep descent took little time: at 4 we had another brief refecation near the bergschrund, and set out on the

weary plod through the deep snow towards camp. Taking a wide détour to the left we avoided all the worst crevasses, and had no troubles except the distance and the snow. But it was rather a severe trial for the first climb of the season, and it took 5 hrs. of hard going to gain the dry glacier soon after 9 o'clock. Here we unroped, and hastened down by moonlight to the entrance of the forest. The moon then failed us, and we spent two awful hours, utterly worn out, making our way through the dense woods, finally, after fording two ice-cold streams, reaching camp soon after midnight.

**MOUNT LYELL** (alt. *c.* 11,900 ft.). *July 24.*—From a camp (*c.* 5,300 ft.) near the junction of the main stream of the W. branch with that flowing from a splendid triple glacier at the southern angle of the valley. Direction of peak nearly due south. (This peak is marked 'Lyell' in Professor Collie's map, but it seems to me doubtful whether it is the mountain intended by Dr. Hector to bear that name.) Started at 2.30, crossed the stream on horses, and ascended the valley to the glacier; keeping along the right bank to the foot of the icefall of the E. affluent, we scaled some awkward cliffs, worked to our right, and went up the steep lateral moraine to the level ice above the fall (*c.* 7,000 ft.)—6 A.M. Roping at about 7, a large bergschrund was soon crossed, and breakfast taken an hour later on the rocks above. From the top of these rocks we again had a purely snow ascent. A badly crevassed hollow had to be traversed over soft snow and steep but easy slopes to a col between the W. peak (on the Divide) and the central, which is the highest. Sheltered up to this point, we had been baked by the hot sun, but here we encountered an icy wind which blew with great violence all the 3 hrs. we spent on the summit. The thermometer fell 20° below the freezing point, and surveying and photography were attempted under difficulties. This is the key peak of the large group of mountains contained between the head waters of the N. Saskatchewan, the Athabasca, and Bush Rivers, Mounts Forbes and Columbia being the monarchs of the southern and northern sections, and Lyell occupying a central position. Arriving at 11.10 we left the top at 2.15, and made a very rapid descent to the top of the icefall in 2 hrs., exclusive of lunch, and arrived in camp at 8.

**AN UNNAMED PEAK** (alt. *c.* 10,200 ft.). *July 31.*—This peak lies at the head of the large glacier west of Mt. Forbes, flowing N.E. to the head of Glacier Lake. It is on the Divide, which here makes a strange right-angled bend with this peak at the angle, and it occupies, therefore, a commanding view of the Pacific side. From a camp near the lower end of Glacier Lake Kaufmann and I skirted the northern shore and bivouacked about a mile from the Lyell glacier tongue (alt. *c.* 4,900 ft.). Next morning at 4 we were under way. Half an hour took us to the glacier, the extremity of which was crossed and the S.W. glacier reached in an hour more. After  $\frac{3}{4}$  hr. an icefall drove us to the rocks on the left side, but at the top we again took to the glacier, and for the third time had an easy snow ascent. The crevasses were rather bad, however, and the

snow, as usual, soft ; so much care was needed. Ascending by a treacherous snow face, the N.E. arête was struck and followed to the top, the last few hundred feet being tremendously steep, but hard. A very large snowfield extends from Mt. Lyell on the W. slopes, joined by one sweeping down from the N. side of our peak. Mt. Forbes showed as a magnificent spotless pyramid from this direction, towering close above, and we were able to make some notes which aided us considerably in our descent of that mountain. At 12.30, after 1 $\frac{3}{4}$  hr. on the summit, we commenced the return journey, the first part requiring a backward descent. Following nearly the same route as before we went extremely fast, and, in spite of a full hour spent in photography on the way, got below the icefall by 3.30, and were off the Lyell glacier 1 hr. later. Darkness overtook us as we approached the upper end of the lake, and a second bivouac was necessary, camp being reached next morning at about 5 o'clock.

MOUNT FRESHFIELD (alt. *c.* 10,800 ft.). *August 4.*—Ascended in company with Professor Collie's party.

MOUNT FORBES (alt. *c.* 12,500 ft.). *August 10.*—Ditto.

MOUNTAIN UNNAMED (alt. *c.* 11,000 ft.). *August 19.*—This is the highest point of the ridge extending from the peak No. 9 towards Mt. Bryce. Kaufmann and I were alone again and back in the valley of the W. branch. From the Lyell camp (*c.* 5,300 ft.) we started to attempt peak No. 9, at 5 A.M. Proceeding up the united glacier, we branched off to the W. affluent, along which our course lay to the base of the icefall. As usual rocks were resorted to—quite a scramble. Then névé to a lofty glacial pass, nearly 10,000 ft. high, leading over to a tributary of the stream flowing from Thompson Pass into the Bush River. From the pass we ascended by the long arête towards our goal. The highest point was gained in 1 $\frac{1}{2}$  hr. (1.30), and we went on for another hour until it was clearly seen that the cliffs before us were absolutely unscalable, and a return was compulsory at once. Regaining the col at 5.15, we turned our faces towards Thompson Pass, as I had sent our outfit to our old Columbia camping ground and wished to try to make it that night. We knew there was no pass, as the cliffs on the further side of the ridge are perpendicular, but we thought we could make a way along the ridge and by traversing

PEAK UNNAMED (alt. *c.* 10,500 ft.) find some means of descent between that peak and the fine rock guardian of Thompson Pass. One of the cliffs on the ridge proved quite an undertaking ; the dip below it was reached at 7.30, and in the dark the rocky tower of our summit was surmounted, its snowy northern side descended, steep snow and scree slopes tackled gingerly, and the pass, 6,800 ft. in elevation, gained at 10 P.M. After a halt the temperature urged us not to stay the night there without blankets, so we worried our way onward in the fitful moonlight down the trackless forest to camp at 12.40.

MOUNT BRYCE (alt. *c.* 11,700 ft.). *August 21.*—To be described in a separate paper.

MOUNTAIN UNNAMED (alt. *c.* 11,500 ft.). *August 23.*—This peak, attempted on the 19th, dominates the central portion of the W. branch, and like all the previously named mountains, except Mts. Forbes and Bryce, is on the continental watershed. Starting, as before, from the Lyell camp (*c.* 5,800 ft.) at 5.20, the same route was followed to the glacier col, reached at 10.10. Profiting by previous experience, we now crossed the pass, skirted the western base of the Divide ridge, over névé in good condition, traversed a spur from No. 6 peak on to a still larger cirque of glacier, and struck the W. arête of our peak at another col, from the further side of which a third sweep of névé gave rise to one more tributary of the Bush River. Here at 11.15 we had our first meal, and about an hour later commenced the final climb. With the snow of nice firmness there was no difficulty and the top was reached at 1.30. Fifty minutes later we were glissading delightfully down the steep decline, and, making good progress, arrived at the pass in 1½ hr., and were back in camp by 7.25.

MOUNT WILSON (alt. *c.* 10,800 ft.). *August 26.*—This massive mountain stands to the east of the N. Fork, and occupies the angle between it and the main Saskatchewan. Our camp (*c.* 4,900 ft.) was located about a mile below the mouth of the W. branch, and we rode for nearly an hour before we turned off at 5.45 to enter a high lateral valley N. of Mt. Wilson. A very steep ascent of 1,000 ft., aided by an ancient Indian trail, led to the rock-bound valley, which is adorned by a fine waterfall, descending over a precipice at its head. Bearing to the right we crossed a side valley with a little glacier, and ascended a long ridge, with very bad footing, to its crest. Below us on the further side lay a long glacier, to which we had to make a somewhat nasty descent rather than go a long way back. The glacier was reached at 11.15 (alt. *c.* 8,300 ft.), and ascended to the summit of a ridge running towards Mt. Wilson from the peak to the N. (on the back of which our glacier lay). Rocks and a snow traverse brought us to the N. arête of Wilson, and we were on the summit at 2 o'clock precisely. The view was most fascinating, supplementing all the others of the trip, and embracing every peak we had climbed, and also our entire route from the Bow Pass onwards. Descending by way of the great glacier on the E., we came in for a fine rock scramble in avoiding a very dangerous bit of crevassed glacier, and emerged through a cleft in the southern precipices, in 2½ hrs., at 8,000 ft. A wild succession of scree and grassy slopes enabled us to arrive in ½ hr. more 2,500 ft. lower down, and at 6.40 we found our camp pitched at the junction of the N. and middle forks. Four days later we were resting comfortably at Lake Louise.